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POPULAR COMMUNICATIONS

JANUARY 2013

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SWLers, Scanner Buffs and Hams Retreat This Month to *A Very Quiet Place*, p. 12

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The **Bonito 1102S** *RadioJet* shortwave receiver combines innovative design with the advantages of modern computer technology. It has a frequency range of 40 kHz to 30 MHz with an excellent sensitivity of .03 µVolts on a noise level of -137 dBm with an extreme resolution of 144 dB at a sampling of 24kHz. The Noise floor is extremely low, because there are no active parts between the antenna and the ADC. Strictly speaking, this radio is not an SDR, although it is exclusively controlled by computer. So far, no SDR has defined, controlled, read or computed anything like the RadioJet. Bonito *RadioJet* is a short wave receiver with a built-in USB audio device and a 24kHz multichannel IM jack or to put it simply: The most obvious application of modern radio technology. The software has been designed in such a way that its size and its coloring can be custom-tailored to any screen. This can be achieved with the presets or user-defined. The center piece of this IF-receiver is the supplied software. It makes all the different applications possible. An IF-Input-Device is built into the *RadioJet* so that the radio is like an external USB-Audio recorder and an easy installation without a complicated driver is assured: simply plug and play. The supplied standard software features: Reception and recording of transmissions in USB, LSB, CW, AM, FM and DRM. All filters are completely variable and can have their waviness and notches drawn by hand with the equalizer. S-meter and spectroscope have an extremely accurate dBm-scale and can be calibrated. This device derives its power from the USB connection. BNC antenna input. Made in Germany. 4.5 x 1.25 x 4 inches. This device requires a USB cable (not supplied).

Order #5789 **$699.95**

PERSEUS

The **Microtelecom Perseus** is a cutting-edge, multimode, software defined receiver covering 10 kHz to 40 MHz. Enjoy world class performance: 3rd order IP: +31 dBm, Sensitivity: -131 dBm, Dynamic Range: 104 dB (BW 500 Hz CW). Nine six-pole front end bandpass filters prevent overload of the A/D converter. There is a 3 step attenuator plus switchable low noise preamplifier. An impressive full span lab-grade spectrum display function is featured. An almost magical spectrum record feature allows you to record up to an 1600 kHz portion of radio spectrum for later tuning and decoding. A Wide/Narrow noise blanker has recently been added. The audio source is via your PC soundcard. The Perseus operates from 5 VDC and comes with an international AC power supply, AC plug converter, SO239 to BNC RF adapter, USB cable and CD with software and detailed manual. Made in Italy.

Order #0122 **$999.95**

The **Shuttle Pro V2** hand controller adds great ergonomic versatility to your Perseus receiver. It allows one-handed access to nine fully programmable push buttons as well as a shuttle/jog knob for analog type tuning. *Order #5319* **$99.95**

SDR-IQ

The **RFspace SDR-IQ™** with RF DSP™ offers unprecedented performance with a frequency coverage of 500 Hz to 30 MHz in 1 Hz steps. (Please note the low end tuning range is 500 Hz, not 500 kHz). It features the fastest and highest resolution plug and play spectrum display available. The SDR-IQ™ comes with the latest version of SpectraVue™ software. It supports AM, WFM, USB, LSB, N-FM, DSB and CW with fully adjustable DSP Filter bandwidths and FFT sizes of 2048 to 262144 points. The resolution bandwidth is as low as 0.031 Hz. The SDR-IQ™ is the smallest SDR with RF DSP™ that samples the whole HF band at once and performs the initial filtering at a 67 MHz sample rate with 23 bit accuracy. It has a high performance Analog Devices 14 bit analog to digital converter and sends 16 bits of I/Q Data to the PC via USB (no messy soundcard cables required). The SDR-IQ is USB powered so no power supply is required. Works great with laptops running on batteries. It offers incredible receive performance and high resolution spectrum display capability. The rear panel has a USB port, serial port and BNC antenna input jack. The SDR-IQ software CD works with Windows 2000, XP and Vista. Made in the United States.

Order #0106 **$509.95**

NetSDR

The **RFspace NetSDR** is a high performance networked software designed receiver with 1.6 MHz bandwidth. The NetSDR uses a high performance 80 MHz, 16 bit ADC with both dithering and randomization for best performance. The output I/Q bandwidth is configurable via software. PC communications are handled over a 100 base-T port using 24 or 16 bit I/Q words. The NetSDR is a complete plug and play solution. As opposed to other SDRs in the market, there is no need for additional preamplifiers, preselectors or code development. The unit is compatible with the Moetronix SpectraVue and SDR-Radio software that will have you up and running in minutes. The software includes analog and digital mode demodulation and I/Q capture of spectrum at up to a 1.6 MHz bandwidth. The SDR-Radio software allows the use of the NetSDR over the Internet. The full 1.6 MHz waterfall and demodulation audio can be transported via a 5 KB/s link. For those interested in writing their own applications, RFspace supplies a fully documented protocol for communicating with the hardware. There is no need to calculate the down converter DSP parameters. The NetSDR just needs the center frequency, attenuator and preselector filter settings, output sample rate and mode to begin streaming data. Other solutions require complicated USB interfacing that is platform specific. The NetSDR utilizes straight TCP/IP and Ethernet for all communications. This offers the highest possible performance due to the highly optimized Ethernet drivers on PC, Mac and Linux systems. The NetSDR packets are fully routable so that the receiver may be placed at remote locations. Multiple receivers can also be combined and their data transported over a higher data rate Ethernet pipe using simple switches and routers. In this application, each NetSDR can be set to a different IP address or port. *Order #0383* **$1449.95**

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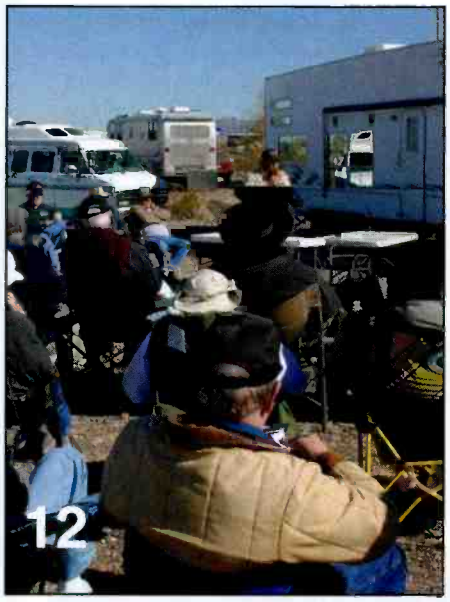

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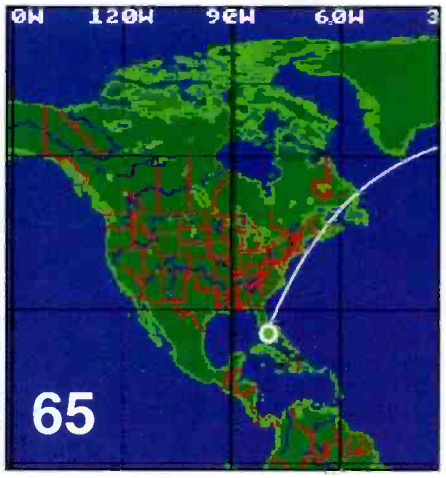

ON THE COVER

At this month's 2013 Quartzfest hobby communications gathering in Arizona, a wide range of radio activities are jammed into 10 days of fun in a very quiet RF environment. With antenna building and testing, direction-finding foxhunts, SWLing, scanner monitoring, and practically non-stop seminars, there's always something to do. *(Photograph courtesy of WPC6NOA. Cover design by Pop'Comm Art Director Liz Ryan)*

COLUMNS

DEPARTMENTS

Tap into secret Shortwave Signals

Turn mysterious signals into exciting text messages with the MFJ MultiReader™!

MFJ-462B **$199.95**

Plug this self-contained MFJ *MultiReader*™ 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.

You'll *read* interesting commercial, military, diplomatic, weather, aeronautical, maritime and amateur traffic . . .

Eavesdrop on the World

Eavesdrop on the world's press agencies transmitting *unedited* late breaking news in English -- China News in Taiwan, Tanjug Press in Serbia, Iraqui 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.

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. 5¼Wx2½Hx5¼D inches.

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

MFJ-1800 **$29.95**

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

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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.

Super Active Antenna

MFJ-1024 **$159.95**

"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 elec- trical noise for maximum signal, mini- mum 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 auxilary or active antenna. 6x3x5 in. Remote has 54" whip, 50 feet coax. 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, $15.95.

Indoor Active Antenna

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Compact Active Antenna

MFJ-1022 **$69.95**

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. 3⅛x1¼x4 in.

Eliminate power line noise!

MFJ-1026 **$199.95**

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

MFJ-959C **$119.95**

Matches your antenna to your receiver so you get maximum signal and minimum loss.

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

MFJ-1045C **$89.95**

High-gain, high-Q receiver preseletor 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

MFJ-752D **$119.95**

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.

MFJ Shortwave Headphones

MFJ-392B **$24.95**

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

MFJ-956 **$69.95**

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

MFJ-1046 **$119.95**

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 attenuation and very low passband loss. Air variable capacitor with vernier. 1.6-33 MHz.

MFJ Shortwave Speaker

MFJ-281 **$12.95**

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 All Band Doublet

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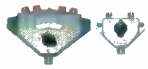
MFJ Antenna Switches

MFJ-1704 **$79.95**



MFJ-1702C **$39.95**

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

MFJ-461 **$89.95**

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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EDITORIAL
Tuning In

by Richard Fisher, KPC6PC/KI6SN
<editor@popular-communications.com>

Pop'Comm @ 30: *Pop'Comm Monitoring Station* Program Puts a Candle on the Cake

A year ago at this time we were ceremonially pulling the veil covering the *Pop'Comm Monitoring Station* program — an open invitation to an SWL and scanner community that since January 1, 2012 has grown by leaps and bounds. Much like the propagation on which we'd so like to depend.

For *Pop'Comm @ 30* this month, we're taking a look to the not-so-distant past to recall how a question on *Pop'Comm's* Facebook page from Bob Finn, of New Brunswick, Canada, started a whole monitoring movement:

Are the WRØ, WPE and WDX monitoring station programs — dating to the 1950s — still around? To the best of our knowledge, we said, *no.*

In a July 2011 editorial, we asked readers: "Should *Pop'Comm* launch a monitoring station program of its own?" The response was overwhelming and almost unanimous: *Yes!*

CQ Communications Publisher **Dick Ross, K2MGA, (WPC2A)**, Editorial Director and *CQ* Editor **Rich Moseson, W2VU, (WPC2RIY)** were enthusiastic supporters of the concept and helped plan the program's launch, set for January 1, 2012.

Jason Feldman, who would soon become **WPC2COD** under the PCMS program, was appointed Director of Registration. **Katie Fisher, WPC4KT**, of Charlotte, North Carolina, was tapped to design the *Pop'Comm Monitoring Station* certificate of registration — modeled on the late **Tom Kneitel, WPE2AB's**, *Popular Electronics Short Wave Monitor* certificate. Tom's was the granddaddy of all monitoring station programs, launched more than 50 years ago.

Unfortunately the WPE program withered and died when Kneitel left *Popular Electronics.* He would later become founding editor of *Popular Communications* — which debuted in September 1982. On January 1, 2012, Tom was posthumously awarded PCMS station identification **WPC4A**.

To the Drawing Board, Then 'Liftoff!'

Reflecting our times, in mid-2011 we began mapping a strategy to make PCMS an online program. *"Pop'Comm Monitors On the Web"* was created at <http://popcommmonitors.blogspot.com/>. A video was produced, explaining the program and how registration was to work. PCMS was heavily touted in the pages of *Pop'Comm*, on its Facebook page, and via Twitter. An open, online station identification database was created. A separate email address with established for PCMS: <PopCommMonitor@gmail.com>.

With the pieces in place, we waited with anxious anticipation for the dawn of 2012. Hundreds of requests for PCMS station identification signs appeared January 1, 2012 in our newly created email box. We processed them as fast as we could. It would take several months to bring the backlog down to a manageable number. *What a great problem to have.*

Word spread quickly. In its first year, the PCMS program welcomed more than 1,200 monitoring stations into this ever-growing community.

The program was featured in an extensive interview at the 2012 Huntsville Hamfest with **Gary Pearce, KN4AQ**, host of *Ham Radio Now*. *(**IN DEPTH:** For details on the show, see this month's Monitoring, page 61, and visit: <http://bit.ly/TkLr7m>. – KPC6PC)*

At press time we learned *Pop'Comm Monitoring Station* **KPCØUFO** was featured in the *Discovery Channel* program "America's Most Secret: Structures." **Mike Coletta** appears in a segment about the U.S. Air Force's Space Fence. We'll have full details on 'UFO's remarkable monitoring work next month.

Shortwave clubs around the world have embraced the PCMS program, and there seems to be a spring in the step of many monitors who like the idea of rejuvenating a listening community — coalesced around *Popular Communications'* program.

Wanted: Your PCMS Awards Program Ideas

So, where do we go from here? As promised in October 2011's *Tuning In*, a PCMS Awards Program is being announced in 2013. We've got some ideas. Of course, we want your suggestions during its development, as well:

- What specific monitoring awards would be appropriate for **SWLers? For VHF/UHF/UHF+ spectrum scanners? Utility station** and **aircraft beacon** chasers? **Amateur radio band** monitors? And more.
- Should awards be tiered to provide endorsements for higher and higher achievement?

You get the idea. Let us know by writing: <PopularCommunications@gmail.com>. We'll share your suggestions with readers in upcoming editions.

What a great way to start 2013: A *Happy New Year,* indeed.

– Richard Fisher, KPC6PC/KI6SN

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The Weirder Side of Wireless, and Beyond

Compiled by Richard Fisher, KPC6PC

RadioShack® Catalog Memories

Forgive us: This is not so much *weird* as it is *wonderful.*

If you're yearning for RadioShack® catalogues of old, have we got a website for you: <http://bit.ly/Yepqbk> **Photo A.** Look all the way back to 1939 at the sales brochures you used to get at your local "Shack" or in your mailbox — long, long, long before the Web.

Yes, RadioShack® at times sold radio receivers and amateur radio transmitters — during the company's many metamorphoses.

In the 1939 edition, for example, you'll find Hallicrafters Sky Rider, Sky Buddy, and Sky Challenger receivers listed alongside UTC SX-25, -80, and -200 transmitters. There are tubes, parts, and books galore in its 72 pages. *And that's for just one year.*

The complete collection — 1939 to 2005 — is a pictorial history of wireless as we knew, and know it. *Those were the days, my friend . . . (Source: Published reports)*

Beautiful Screamers . . . In Space

Q: *Can anyone hear you scream in space?*

A: Heck if we know.

But the STRaND-1 nano-satellite being developed by Cambridge University Space Flight (CUSF) may find out through the Scream in Space Project. The little satellite will be launched into Earth orbit carrying an Android smartphone "which will serve as the platform for our investigation," according to a report from *Southgate ARC News.* "Videos of people screaming will be played from YouTube, and we'll be recording with a microphone to see what we can hear." The results will be radioed back to Earth.

So, do *you* have what it takes to be a scream volunteer? **Photo B.** *Too bad.* Competition for the 10 best screams closed last November. But you can check on progress of the mission at <http://www.screaminspace.com/mission>. *(**LISTEN:** To scream entries at <http://bit.ly/PgPdhz> – KPC6PC) (Source: AMSAT-UK <http://bit.ly/SoA4eO>)*

Photo A. Classic RadioShack® catalogues dating to 1939 can be found in an online gallery at <http://bit.ly/Yepqbk>. *(Internet screen grab)*

Photo B. Immi Daynes belts out a spine-tingling scream on YouTube as her entry in the Scream In Space Project, sponsored by Cambridge University Space Flight. *(Internet screen grab <http://bit.ly/PgPdhz>)*

Judgment Day: Family Radio Hits Jackpot with Wrong Prediction

Family Radio listener Doris Schmitt took Harold Camping at his word when the radio preacher predicted Judgment Day would be May 21, 2011. She left all but $50,000 of her $300,000 savings to the 66-station ministry upon her death May 1.

Of course, you know — as we do — that the Rev. Camping was a bit off on his end time prediction — a fact that was not lost upon two of the late Ms. Schmitt's nieces.

"Her family members believe that had she lived long enough to see the May 21 prediction fail," a report on *Christianpost.com* noted "she would not have left her inheritance to the Christian radio network behind the failed doomsday claim."

*(**NOTE:** Read the full story on Christianpost.com at <http://bit.ly/Rpcgql>. – KPC6PC)*

"Some Family Radio listeners believed in Camping's May 21 prediction and quit their jobs, went on luxury vacations, and emptied their bank accounts to fund ads about the impending Judgment Day," the posting noted. *(Source: CNN, Christianpost.com, published reports)*

RFID Assumes Role as Socks Matchmaker

Trouble keeping your socks paired during the whole *washing-drying-folding thing?*

Blacksocks, a Swiss company that "provides a subscription service consisting of replacement black dress socks in order to ensure that a man *never* has to venture to work wearing mismatched or faded socks," has added RFID tags to its portfolio of *hipsterness.*

Blacksocks' Smarter Socks system — yes: *system* — uses button-shaped 13.56-MHz high-frequency (HF) RFID tags — one sewn onto each sock — and a small RFID reader paired to an Apple iPhone via a Bluetooth connection <http://www.blacksocks.com/en-us> for sock mating.

"Until now, once the company's socks arrived at a user's house, *anything* could happen," according to *RFID Journal.* "The socks could become lost in a dryer or end up missmatched, for example — thus, a man could arrive at his office wearing a new black sock on one foot, and a faded, overwashed one on the other." *Oh, the horror.*

Such problems are a thing of the past, the firm reports, thanks to RFID. *(Source: RFID Journal, published reports)*

Communications News, Trends and Short Takes

By Richard Fisher, KPC6PC

Deutsche Welle, BBC, VOA Hit By Jamming in Middle East

Calling them an attack on freedom of the press, Deutsche Welle Director General Erik Betterman has condemned recent incidents of jamming against DW, the BBC, and VOA in the Middle East.

European satellite operator Eutelsat said in October that the "deliberate and intermittent interference" originated in Syria. Western radio and television broadcasts to parts of the Middle East have apparently been cut off by the targeted jamming.

According to published reports, Betterman said that in cooperation with other foreign broadcasters, Deutsche Welle was preparing a resolution against the jamming.

Some authorities "suspected that Iran was behind the current interruptions." The country has allegedly jammed reception of a variety of broadcasters in recent years. The most recent episode, experts said, "could be connected to a Eutelsat decision to stop carrying 19 Iranian channels," according to published reports.

"The satellite operator in October stopped broadcasting television and radio stations operated by Iran's state media organization, Islamic Republic of Iran Broadcasting (IRIB) . . . The programming offered by these channels, including the international news channel Press TV, is no longer available outside of Iran. *(Source: Deutsche Welle, <http://bit.ly/SQrTFE>)*

Frequency Change Announced for Radio Taiwan International

Radio Taiwan International's transmission to North America changed to 6115 kHz and 15440 kHz from 2200 to 2300 UTC in late October, authorities said.

In addition, RTI's programming can also be heard on 1210 kHz from 0400 to 0500 UTC in Sacramento, California and on 750 kHz from 1400 to 1500 UTC in Baltimore, Maryland.

In Europe, listeners can tune in to RTI programs on 3965 kHz from 1800 to 1900 UTC. *(Source: Radio Taiwan International <http://english.rti.org.tw/>)*

New eBook Focuses on Clandestine and Opposition SWLing

A new eBook, published in late September, "contains a detailed list of clandestine and opposition shortwave broadcasters listed by time (GMT)," according to author Steven Handler, N9ABC. Included, in his *"Clandestine and Opposition Shortwave Broadcast Guide,"* as well, are "frequencies, and for most of the listings, the target of the broadcaster, transmitter sites, and other information. There are also several chapters with information about the operations of several of these broadcasters." There is a chapter devoted to QSLing clandestine and opposition shortwave stations. Some of the chapters come with postal and email addresses in many cases.

"Clandestine and Opposition Shortwave Broadcast Guide" is available from Amazon.com as a Kindle eBook for $3.99. Its stock number is: ASIN: B009HC5ESU

"For more information, including viewing sample pages, visit Amazon.com," the press release said. "For those who do not have a Kindle, Amazon.com offers free Kindle eBook programs allowing Kindle files to be read on both PC and Macintosh computers. *(Source: Published reports)*

Petition Drive Launched to Save RCI Sackville Transmitting Site

A petition drive to save the Radio Canada International transmitter site near Sackville, New Brunswick, Canada from being dismantled has been mounted by Thomas Witherspoon, K4SWL, of Swannanoa, North Carolina.

"Your voice will be added to the petition," Witherspoon said, "and it will automatically email the appropriate Canadian politicians who could, at the very least, put a halt to the destruction of the RCI Sackville site. Canada — indeed, the world — needs this vital shortwave resource." For more information visit <http://bit.ly/U86N4G>. *(Source: The SWLing Post)*

CRI Crosses 80-Overseas-Station Threshold

China Radio International launched an overseas radio station in Katmandu, capital city of Nepal, bringing the number of its overseas stations to 80.

CRI held an inauguration ceremony at its headquarters in Beijing, China. Li Wei, Vice Minister of the State Administration of Radio, Film, and Television, stressed the significance of the Katmandu station, saying the launch of the station marks CRI's "enhanced influence and competitiveness."

The newly launched station will broadcast in Nepalese for 18 hours each day. It will provide Nepali audiences with programs produced locally, bringing them the latest and most comprehensive news and information about China. *(Source: Asia-Pacific Broadcasting Union)*

28 Community Radio Stations Set to Serve Farmers in India

The Tamil Nadu government in India has set up 28 community radio stations to provide information to the farmers in the state, authorities said.

Agriculture Minister S. Damodaran announced the initiative while inaugurating the *Farm School of All India Radio on Nutritious Millets* in Chennai, according to *Radioandmusic.com.*

All India Radio began broadcasts of the 30-minute, 13-week course on November 1.

Damodaran underscored it is important to adapt to "integrated farming, and growing millets in addition to rice and other crops for the country — and to increase the farmers' income. The farmers thus need to use media to learn about the latest farm technologies."

"Since India would become the capital of diabetes by 2025," Tamil Nadu Agricultural University vice-chancellor Dr. K. Ramasamy noted, "it was important to produce more millet." *(Source: Radioandmusic.com <http://www.radioandmusic.com/>)*

Capitol Hill And FCC Actions Affecting Communications

by Richard Fisher, KPC6PC/KI6SN

Google Hires Former FCC General Counsel

A former FCC General Counsel, who served with the Commission until mid-June 2012, has joined the Washington legal team for Google, the company announced.

Austin Schlick, who had oversight of defense of the Commission's regulations regarding indecency, network openness, and the loosening of newspaper-broadcast-ownership, joined the FCC in 2009. Prior to his FCC service, Schlick had been litigation chief for the State of Maryland.

(Source: Broadcasting & Cable <http://bit.ly/V10bKV>)

Alleged FM Pirate Nabbed By FCC in Iowa City

Agents from the FCC's Kansas City office allege Thomas Costa has been broadcasting illegally on 87.9 MHz after tracing a signal to the basement room he was renting in Iowa City, Iowa.

Costa "admitted to setting up the radio station, which included a chimney-mounted antenna," according to a report from *RBR.com/TVBR.com* posted on the Internet, "but said he did it not for his own benefit but for '. . . several unnamed individuals.'" Costa said they paid him for providing a location for the station, "and he in turn used the money to pay rent to his landlord."

A $10,000 fine has been levied against the alleged FM pirate, who told authorities he "did not have the names of the station owners . . . because they did not want that information falling into the hands of the FCC. He said they warned him that he might get a visit from the FCC at some point."

In its finding, the FCC wrote that it found "it implausible that Mr. Costa would install radio equipment, rent space, allow for unlawful operations in the rented space, and incur potential financial and other liability on behalf of complete strangers."

*(**IN DEPTH:** Read the text of the FCC Notice of Apparent Liability against Costa at <http://bit.ly/PhaRCt>. – KPC6PC)*

(Source: FCC and RBR.com/TVBR.com <http://bit.ly/PD1hex>)

FCC Proposal: No Re-Testing for Former Radio Amateurs

The FCC is proposing to allow former hams to regain their licenses — but not necessarily their old callsigns — without re-testing, to shorten the grace period for license renewal, to reduce the minimum number of examiners at license test sessions to two, and to permit remote administration of amateur exams in hard-to-reach areas, according to a report in the *CQ Newsroom* <http://www.CQNewsroom.blogspot.com>.

See additional detail in the December and January issues of *CQ*. The complete *Notice of Proposed Rule Making, WT Docket # 12-283,* may be downloaded from <*http://fcc.us/UyoPlS*>. The deadline for filing comments was December 24, 2012, with reply comments due by January 22, 2013.

(Source: CQ Newsroom <http://fcc.us/UyoPlS>)

Analysis Shows Where Two Parties' Political Ads Landed

As we ready for this month's Presidential inauguration, an unscientific analysis by *Yahoo News'* Chris Wilson of ads position during the 2012 political campaigns indicates that for:

- Democrats: The CBS sitcom *2 Broke Girls* heavily leaned toward the Democrats (the Obama campaign, Democratic committees, and outside Democratic groups are all grouped together). Also: *Judge Joe Brown, Jimmy Kimmel, Big Brother, House, Seinfeld,* and *Family Feud.*
- Republicans: By contrast, the Olympics saw a large amount of Republican ads airing (by Mitt Romney's campaign, committees, and outside groups). *The Andy Griffith Show* was the second-most Republican leaning, according to Wilson. Other shows that appear to lean slightly toward the GOP in the sample analysis include CBS's *Face the Nation, ABC World News Tonight, Meet the Press* and *Wheel of Fortune.*

*(**IN DEPTH:** See the full Hollywood Reporter story at <http://bit.ly/Ub7gTN>. – KPC6PC)*

(Source: Hollywood Reporter, Yahoo News)

Commission Cracks Down on Sale of Cellphone Jamming Devices

The FCC has issued citations to people and companies advertising cellphone jammers on Craigslist — citing the Communications Act of 1934, which prohibits blocking radio communications in public.

"The small, battery-powered devices can be used to create 'dead zones' within a small area, usually 30 feet or so, and have been used by movie theaters, restaurants, and schools to keep people off their cell phones," according to a story in *U.S. News & World Report.* "But they also cut off 911 calls, can disrupt navigation near airports, and have been used near police stations to interrupt radio communications . . . Many cheaper versions, which sell for as little as $25, are imported from Asia, according to the agency."

The Commission alleged the jammers had Craigslist postings for areas including Orlando; Philadelphia; Mississippi; Charlotte, North Carolina; Washington, D.C.; Cincinnati; and Corpus Christi and Austin, Texas."

"Merely posting a signal jammer ad on sites like Craigslist.org violates federal law. Signal jammers are contraband for a reason," Michele Ellison, the FCC's enforcement bureau chief, said in a statement. "One person's moment of peace or privacy could very well endanger the safety and wellbeing of others."

(Source: U.S. News & World Report <http://bit.ly/YfDrFz>)

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- 1250 Alphanumeric Memory Channels
- Dualwatch Receive
- 4-hour Digital Recorder

IC-RX7 Track Ready

- RX: 0.150–1300.0MHz*
- AM, FM, WFM
- 1825 Alphanumeric Memory Channels
- 100 Ch/Second High Speed Scan
- Computer Programmable[2]
- Water Resistance Equivalent to IPX4

IC-R6 Pocket Compact

- RX: .100–1309.995MHz*
- AM, FM, WFM
- 1300 Alphanumeric Memory Channels
- 100 Ch/Second High Speed Scan
- Computer Controllable[1]

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When We Try *Not* To Communicate

By Rob de Santos
<commhorizons@gmail.com>
Twitter: <@shuttleman58>

"If we have a device transmitting into the ether, someone else can listen in . . . Wireless techniques have risks not found in wired communications"

Perhaps a better headline would be: "When We Try to *Limit* Communication"

When you step up to an ATM, for example, you want to communicate only with your bank and only access information related to your accounts. You certainly don't want to access the wrong account. Or worse: have someone *in on* your transaction and possibly gain access to your funds.

This is perhaps one of the most mysterious areas of modern — and future — communications. It involves issues of cryptography, privacy, security, and finance.

As radio hobbyists, we have all listened-in on communications intended for others. This could be as innocent as hearing an air-to-ground transmission from an airliner back to its base of operations with maintenance traffic. It could be two radio amateurs having a conversation or a numbers stations reciting a string of digits presumably carrying a coded message for agents in the field.

In almost all of these cases, the information was of limited value to you. Your hearing it resulted in little or no consequence to the sender or receiver. Or it might have been unintelligible to you.

Every day, though, we engage in tens, perhaps hundreds of communications where the risk is substantial and whether we think about it or not, we depend on those messages remaining private between ourselves and the intended recipient.

The tools used to accomplish this include cryptography, passwords, pin codes, and so on. Think about it: every time you access private information — for example, using your smartphone, logging into your email, making a bank transaction, and more — you're depending on maintaining the privacy of the communication. In addition, if you have Wi-Fi, Bluetooth, or NFC-enabled tools, you also depend on the communications between the devices remaining private. *(**NOTE:** NFC is "near field communications," the topic of "Horizons" in the May 2011 Pop'Comm. – K8RKD.)*

Largely, unless you are trained in the field and have some understanding of the mathematics behind it, it is difficult to understand the techniques in use or determine the security of the communications.

As readers with an interest in communications, most of us understand issues that may not occur to the average person. Secure communications involves more than just a good encryption technique. It involves physical and electromagnetic security, as well. If you want to protect private messages on your mobile phone, you need to keep it out of the hands of those you don't want to have access to it.

We understand as hobbyists that if we have a device transmitting into the ether, someone else can listen in. If we don't want it understood, the communications itself must be secure. Wireless techniques have inherent risks not found in wired communications.

Our old friend Claude Shannon has told us that often we can reconstruct a message from even partial information. *(**NOTE:** For details, see "Horizons" in the January 2011 Pop'Comm. – K8RKD).* This may help us get enough information for that QSL card, but it also means that those intending us harm need not copy *everything* to be able to compromise a message that was intended to be private.

Securing communications, therefore, requires that we ensure messages cannot be easily reconstructed. Mathematicians will tell you this requires a high degree of apparent "randomness" in our messages. This is the precise opposite of what usually happens when we try to send an understandable message.

In other cases, we need only to use knowledge of human behavior to determine how to gain access to information. A great example of this is the way many people choose their passwords or PIN codes. Most criminals easily break the common four-digit PIN. While they could try 10,000 possibilities in a brute force attack, this is usually not practical or necessary.

A recent study <http://tinyurl.com/d4b5jhx> found that the 20 most common PIN codes comprise 27 percent of *all* codes. If you found a credit card on the street, odds are better than one-in-six that you will gain access to the linked account in fewer than three tries!

It's clear that if we are to realize the possible benefits of our increasingly complex communications systems, limiting some communications to the intended recipients is essential. How we do that will be determined by the vendors of the technological tools we use, as well as by what standards we — the users — insist and expect in the products we use.

In February's *Horizons* we will have more on the theory behind modern encryption techniques and what we can expect in the future. We'll also tackle questions of whether any encryption technique is "unbreakable" and thus completely secure. HINT: numbers stations anyone?

Have you thought about what security your communications have or need? Are you concerned about privacy? Let me know your thoughts on this issue by the secure or not so secure method of your choice and I'll be back next month.

WORLD RADIO TV HANDBOOK

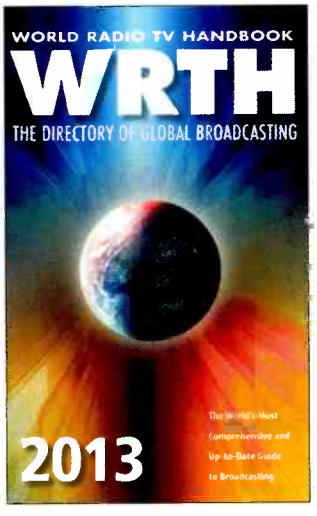
WRTH 2013

We are very pleased to announce the publication of the 2013 edition of *World Radio TV Handbook*, the bestselling directory of global broadcasting on LW, MW, SW & FM

The Features section has a look at some classic 1990s DSP receivers, reviews of the latest equipment, an article on DXing on Curaçao, a visit to Khmer Post Radio, and other articles and items, including our *Digital Update*.

The remaining pages are, as usual, full of information on:

- National and International broadcasts and broadcasters by country with frequencies, powers, languages, contacts, and more, including Clandestine and other target broadcasters
- MW frequency listings by region. International and domestic SW frequency listings, and DRM listings
- International SW broadcasts in English, French, German, Portuguese & Spanish.
- Reference section with Transmitter locations, DX clubs, Internet Resources, and much more



Available December 2012

SOME COMMENTS ON WRTH 2012

The 2012 World Radio TV Handbook is the ultimate and most comprehensive reference book for broadcast radio hobbyists. The World Radio TV Handbook continues to set the gold standard in broadcast reference information. It remains the very best, most authoritative, and comprehensive reference book in the broadcast world. It is an exceptional annual guide that should be in every radio hobbyist's listening post – *Gayle Van Horn*, Monitoring Times

I recently purchased the 2012 edition of your handbook. I'm enjoying all of the exquisite detail and information that I've missed since the last issue I bought years ago – *Bill Calderwood, USA*

There's a reason I purchase the WRTH every year: It's a superbly executed publication that makes the Dxing hobby a true pleasure for all involved. I still get a thrill when each new edition appears – *William Patalon III, USA*

The WRTH is a must-have publication for all who work in international broadcasting, and those who like to hear or see broadcasts from outside their own country – *Radio Netherlands Worldwide*

WRTH 2012 gets 5 stars, because both in the past and for 2012, it earns that pinnacle. It is *indeed* the World Radio and Television Handbook – *Joe Rotello*

Let me express my thanks for publishing another great issue of the handbook. WRTH has been an indispensable reference for my radio listening hobby since 1989 – *Matthias Gatzke, Germany*

The mix of data, information and product news is superb – *John S Carson, USA*

The resources provided by WRTH are not only essential to radio listening but also an excellent knowledge tool – *David J Morris, UK*

I am new to WRTH, very impressed so far. Don't know how I survived without it – *Adrian Morgan, Ireland*

Delightfully Dry Lightning

Communications Hobbyists Hit the Arizona Desert Floor for an Electrifying 10 Days of 'Quartzfest'

By Gordon West, WB6NOA

When does 10 trump 7? Setting aside anything to do with Las Vegas, it's a winning number when referring to the days being devoted to *Quartzfest* — the annual gathering of radio enthusiasts in the Arizona desert. This year, for the first time, it's expanding from a week to 10 days.

That cloud of dust you see each January is kicked up by shortwave listeners, scanner buffs, and radio amateurs converging in the Southwest for non-stop radio activity — this year from January 15 to 25.

Quartzfest, **Photo A**, has become *so popular,* communications hobbyists from around the country have been known to rent an RV out of Phoenix or Yuma to attend — staying free of charge at this rural, hard-packed sand site overseen by the Bureau of Land Management.

Where in the World? . . .

The event is held near 33.586667 North latitude by -114.225556 West longitude, **Photo B**. If it looks like it's in the middle of nowhere, you're right. And it's *radio quiet.*

"That cloud of dust you see each January is kicked up by shortwave listeners, scanner buffs, and radio amateurs converging for non-stop radio activity."

Although Quartzfest is only a short hop from civilization and Quartzsite, Arizona <http://bit.ly/VEJhTq>, at the radio-active event you can pick a tall cactus, deploy your solar panels and enjoy the camaraderie of camped-out fellow radio enthusiasts! No electricity, no water spigots, no pay phones, no potty stations — other than the sanitation truck on his rounds — and no trash collection bins. "What you take to the desert floor, you bring out when you leave," Quartzfest organizer Steve Weed, KO4QT, said.

"With hundreds of ham operators and scanner and shortwave enthusiasts, we have you covered . . . No one goes without water, first aid, coach battery charging — everyone pitches in so we

Photo A. A sprawling area in the Arizona desert is the annual site of Quartzfest, attracting thousands of communications hobbyists for 10 days of fun to this rural, *radio quiet* location on Bureau of Land Management land near the town of Quartzsite. "The sand is hard packed," writes Gordon West, WPC6NOA, "so there's no worry about digging in!" *(Photography courtesy of WPC6NOA)*

Photo B. Quartzfest is a stone's throw from the Arizona-California border, the Colorado River and the town of Quartzsite, Arizona. The radio hobbyist event is outside of town near mile marker 99 off U.S. Highway 95. *(Internet screen grab courtesy of Google Maps)*

all can enjoy our stay at Quartzfest. We are unlike any other commercial campground."

*(**VISIT:** The Quartzfest website at <http://www.Quartzfest.org>. – WPC6NOA)*

A Day in the Life

Each morning at 7 o'clock — *sun-up* — the VHF radio net on 146.550 simplex lays out the day's activities. At two nearby fire rings, **Photo C**, there is nearly continuous action.

- Solar panel show and tell
- Demonstration of Winmor/Winlink in action
- New scanner radio devices, accessories, and antennas
- Digital Signal Processing speaker demos
- Automatic Position Reporting System demos
- Amateur Radio Direction Finding foxhunts, **Photo D**
- Working FM Satellite passes, and live demo
- Nighttime shortwave listening, broadcast band and down
- Antenna walk-about
- VE Ham and commercial testing
- Incident Command System Certification 100, 200, 700, 800
- Tracking noise inside your RV or motor home
- Chili cook-off, **Photo E**
- Nighttime stargazing
- Used gear swap meet
- HF automatic antenna tuner demos

Photo C. Every night of Quartzfest, there are movies around the campfire — radio oriented, of course.

Photo D. Kids take part in antenna building at Quartzfest. These will be used during radio direction finding "foxhunt" activities.

Since there are no nearby power lines, *Pop'Comm* shortwave listeners will have ample time for DX monitoring.

With no streetlights, the *heavens* unfold for stargazing. Amateur astronomers, **Photo F**, can bring out the latest in optical hardware.

The special event amateur radio station, **W7Q**, will be in full swing, with major rigs and antennas available for all to operate.

For presenters, each fire ring forum location offers a battery-operated PA system, **Photo G**, so supply your own field or deck chair and get close to the fire if it's chilly.

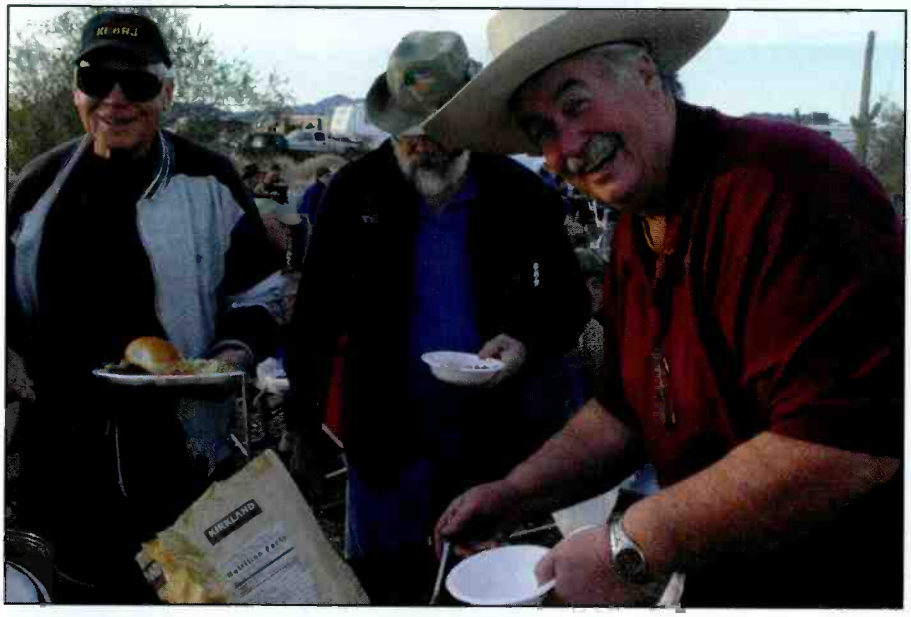


Photo E. Shortwave listeners, scanner buffs, and radio amateurs in a chíli cook-off can produce results that are absolutely delicious.

"But don't get too comfortable," cautioned KO4QT. "Many times our seminar speakers will have you up and out for metal-detecting for gold, or helping build wire antennas, or tracking down noise sources with a tiny AM receiver." This is Weed's fourth year as Quartzfest organizer. He is also the guy who solicits the prizes that are given away by leading radio manufacturers.

Evenings are fun: Pass around the wireless microphone for story-telling or fireside chats on your worst RV mishap. *(**NOTE:** KO4QT has many mishaps to share. – WPC6NOA).* There are also sing-alongs, ghost stories, your best DX tales, and so on.

The weather is usually mild during the day and cool-to-chilly at night. There is good cell phone coverage at this BLM site.

Quartzfest organizers encourage *quiet hours* after 10 p.m. There are mostly smooth-packed roads for low clearance vehicles, and since there are no overhead power lines, QRN (interference) is virtually non-existent.

After Quartzfest, Head West

Quartzfest annually is followed by an optional caravan January 26 to the ARRL-sanctioned Palm Springs Ham-

Photo F. The lack of light pollution makes Quartzfest an ideal site for star gazing, and visitors can learn a lot about the night sky from astronomy experts who generously lead seminars.

Photo G. Two seminar areas are kept busy all the time. Wireless microphones and battery-powered amplifiers allow the speakers to be heard clearly without having to shout.

fest, as well! *(**IN DEPTH:** For details on the Palm Springs hamfest, visit <http://bit.ly/**WJ4rPz**>, **Photo H**. – WPC6NOA)*

While the Palm Springs event will feature more than 30 commercial exhibitors, Quartzfest has *zero*, priding itself on being absolutely non-commercial on BLM property. So, while Quartzfest may have wall-to-wall radios, shortwave receivers, scanners, and tons of accessories, there are *no commercial sales allowed.*

Plenty to Do

Quartzfest is scheduled at the same time as the annual RVer pilgrimage for the weeklong *RV Sport and Vacation Show* <http://bit.ly/s8kIMB>, along with the *Gem and Mineral Show,* held in the town of Quartzsite.

"The RV show alone draws *thousands* of visitors each year, with *thousands* of RVs of all kinds spread out all over the desert floor," according to Verlyn Michael, W7BUE, also known as *Quartzsite Mayor Mike.*

Since many full-time RVers are also communications hobbyists, it was a "natural" that they began "boondocking" together, five miles south of the big RV

Photo H. The Desert Rats homepage is the Internet site for details about the Palm Springs Hamfest, January 26, <http://bit.ly/WJ4rPz>. *(Internet screen grab)*

Photo I. During Quartzfest's daylight hours, PowerPoint presentations are moved into shade, making it easy for attendees to see.

Photo J. When Quartzfest organizers say there's something for everyone, they mean it. Musical talents are warmly welcomed!

show tents, at mile marker 99 on U.S. Highway 95, just 10 minutes away, **Photo I**.

Ladies and gentlemen not *playing radio* may enjoy their own activities as well as shopping trips into town.

Some fire ring events include genealogy study, beading classes, needlework and quilting projects, ladies-only *Koffee Klatch,* and gourmet food making. *(**NOTE:** One camper frequently makes wonderful candy to share. Yum, yum! – WPC6NOA).*

There also is a recipe exchange and campout cooking lessons. Bring your cast-iron pots! There are even radio kits to build — the ladies' dexterous hands are great for winding those toroidal inductors!

One day — with no scheduled fireside seminars — some folks caravan into town for the giant RV and mineral shows, while others head for the hills in a caravan for rock-hounding.

There is plenty of real estate for setting up your motorhome coach, van, RV, camper, or travel trailer. Rides into town are plentiful for restocking your coach.

Even a weekend can get you into the swing of things at Quartzfest. The encampment is close enough to town that there is plenty to see and do if you get *radio'd out!*

There is constant activity within the Quartzfest perimeter, **Photo J**, and you might find an aspect of *wireless* that is new and fascinating to you.

Your Turn to Speak

If you are an *expert* in an area of radio and want to share your knowledge for 40 minutes or so, KO4QT can get you on the presenter list. Contact him at <Organizer@Quartzfest.org>.

Hope to see you on the desert floor during the 10-day Quartzfest run and the next day out at Palm Springs! – WPC6NOA

So, You Want to Go to Quartzfest?

Here is basic information on this month's Quartzfest:

When: January 15-25

Where: Near mile marker 99 on U.S. Highway 95 outside of Quartzsite, Arizona <http://bit.ly/TGuosu>

Admission: Free

Amenities: None

Radio Acvitity: Non-stop

Website: <http://www.Quartzfest.org>

Email: <Organizer@Quartzfest.org>

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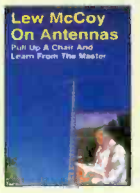

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An Artful Jammer: Stalking the Elusive Firedrake Across the Shortwaves

By Gerry Dexter, WPC9GLD

They may be of legend, but don't be fooled. The dragons are out there. They're on the prowl. Spitting, roaring, snarling, exhaling fire — out to disrupt your reception of the Sound of Hope this morning, or any other day you might try to listen.

It's an artful form of shortwave jamming in the form of Chinese opera — specifically the Fire Dragon Dance, **Photo A**, also referred to as Firedrake.

*(**LISTEN:** To an interview on YouTube titled "The Chinese 'Firedrake Jammer,'" during which Happy Station PCJ's Keith Perron interviews Mark Fahey about transmission of the interference packages to Chinese transmitting sites via satellite, <http://bit.ly/S5JXy0>. CD-quality firedrake is played during the interview, **Photo B**. – WPC9GLD)*

The jammers aren't nice about it. They make the most nerve-jangling, nails-clawing-at-a-dozen-blackboards sounds you've ever heard. Robert Graettinger's "City of Glass" would sound like a Jerome Kern tune by comparison.

*(**WATCH and LISTEN:** To the David Kweksilber Big Band perform "City of Glass," <http://bit.ly/PR6rU8>. – WPC9GLD)*

"Spitting, roaring, snarling, exhaling fire — out to disrupt your reception of the Sound of Hope this morning, or any other."

To my ears, Firedrake is a harsh, raucous, ear-bashing noise conglomeration designed to send one screaming into the night! It's a combination of flutes, drums, rattles and gongs. And it's enjoyed by millions-upon-millions of Chinese citizens. The Sound of Hope has *little hope* of getting through when the dragon is on frequency. *(**LISTEN:** To Chinese Firedrake jamming on 7598 kHz, received at a Philippines shortwave monitoring station, <http://bit.ly/UE8k7C>. – WPC9GLD)*

7 Years of Transmissions, and Counting

Firedrake transmissions ostensibly began in the summer of 2006, exhaling fire upon the transmissions of the Sound of Hope (SOH), <http://www.soundofhope.org>, **Photo C**, based in Sunnyvale, California. The station is operated by the Falun Gong organization. Apparently, the Chinese government believes the Falun Gong is a religion with subversive tendencies. It outlawed the group in 1999.

Actually, it is reported the organization combines an exercise regimen with meditation, teaches certain moral values, and claims it has no intention to topple the Chinese government.

SOH uses high-power transmitters in Taiwan and Tajikistan to beam Chinese and Tibetan language services into China. Early on, Firedrake signals were reported interfering with SOH in the 20-meter amateur band, specifically on 14260 kHz.

*(**NOTE:** That revelation begs the question: Why wasn't the amateur radio community upset that Sound of Hope was intruding on its territory? – WPC9GLD)*

Photo A. Chinese New Year's revelers perform the Chinese Fire Dragon dance, also known as Firedrake, celebrating the start of 2003. *(Courtesy of Wikimedia Commons. For picture credit, visit <http://bit.ly/P3wsy6>.)*

The Dragon Takes On VOT

Also targeted is the Voice of Tibet (VOT), <http://www.vot.org> which has its headquarters in Norway. It, on the

Photo B. In an interview on YouTube titled "The Chinese 'Firedrake Jammer,'" Happy Station PCJ's Keith Perron talks with Mark Fahey about transmission of Firedrake interference packages to Chinese transmitting sites via satellite, <http://bit.ly/S5JXy0>. *(Internet screen grab)*

other hand, does push for greater freedom, if not actual independence from China — a status which Beijing would hardly welcome.

So China sends the dragon after VOT transmissions, as well. The programs are in Mandarin and Tibetan from the 100-kilowatt site in Tajikistan and use a 250-kilowatt transmitter in the United Arab Emirates, as well.

VOT features programs of unbiased news and information, Tibetan culture, and lessons in democracy, all intended to give hope to the Tibetan people.

As early as 2003, the BBC, Radio Liberty, and Radio Free Asia's broadcasts in Uzbek were reported to have been jammed by transmissions from China National Radio's Minorities Service (CNR-8). The jamming continued into early '04.

Notes From the Log

Global Information Guide reporter Mark Taylor's research found reports of similar Chinese jamming against those stations on 18080, with parallel jamming transmissions in the 7- and 17-MHz bands appearing soon afterward.

Steven Handler, in an article in the July 2011 edition of *The Journal of the North American Shortwave Association*, <http://www.naswa.net> reported on his extensive monitoring of Firedrake. He found there were two distinct Firedrake groups:

- Group 1 had the most frequencies in use and the signals were synchronized.
- Group 2, was using fewer frequencies and its signals were out of synchronization — sometimes by up to several minutes.

I assume the first group focuses on Sound of Hope and the second goes against Voice of Tibet, which uses fewer frequencies. No frequency, reports Handler, belongs exclusively to either group.

Some days they are part of one group, another day they move to the other group.

In the first group of frequencies, the jamming will close abruptly at hour's end. The second group will continue for several seconds past the hour before going off. ***(NOTE:** All Firedrake content features the same hour's-worth of music. – WPC9GLD)*

Photo C. The Sound of Hope, of Sunnyvale, California, <http://www.soundofhope.org>, has long been a target of Firedrake jamming. *(Internet screen grab)*

Photo D. WPC9GLD reports the Chinese government increases Firedrake jamming around the time of the National People's Congress, "because every Communist Party official of any import will be in attendance at Beijing's *Great Hall of the People*. The Party does not want any 'propaganda' from the Sound of Hope or the Voice of Tibet being heard by these 'servants of the people.'" *(Courtesy of Mr. Chen Hualin via Wikimedia Commons)*

Photo E. The dragon is said to be the strongest of the signs of the Chinese astrological zodiac. The others are wood, earth, water, and metal. *(Courtesy of Jakub Halun via Wikimedia Commons)*

Occasionally, two to five seconds of programming, presumed to be from China National Radio, will be transmitted. I expect these are cases of operator error.

When the broadcasts start again after 60 minutes, they go into a loop-like repeat of the previous hour. Other reports show the transmissions lasting for as few as 40 or 50 minutes.

One theorizes that this practice leaves time for the operators to check to see if the enemy signal is still there and provides the time needed to move the jamming signal to a new frequency.

Likewise, sign-on times are not always in concert; not timed to the second. The variance can be up to 60 seconds, Handler says. To me, such irregularities are another indication there are "live" operators being employed. Since one cannot be two places at once. Even computerized control sometimes isn't timed to the split second.

About That Satellite Download . . .

The Firedrake signal is downloaded from the ChinaSat 6B satellite, manufactured by Thales Alenia Space, <http://www.thalesgroup.com>. Launched in July 2007, the satellite has 38 transponders and cannot be hijacked — *or so they say.* This has not been the case with previous Chinese or other Asian satellites. *(**NOTE:** Falun Gong programming suddenly appeared on Chinese TV in one instance! – WPC9GLD)*

The transmissions come down on 4175 MHz on a feed circuit labeled *Lzh8djy*. The right channel carries the CNR-8's Minorities Service while on the left channel you find Firedrake content.

Thus, any Chinese transmitter broadcast site with a satellite dish and the other necessary equipment would be able to broadcast the Firedrake signal. As there are estimated to be up to 70 such sites within China, there are enough ingredients involved to create an extremely messy situation.

Early on in this radio war, the German Telecom agency conducted direction-finding techniques on a Firedrake signal and found it to be coming from Hainan Island in the Gulf of Tonkin. I think that barely brushes the complete story. I doubt the Firedrake signals come from a single transmitter site.

Hearing a Firedrake of Your Own

The Firedrake transmissions are best heard in the early-to-mid North American

mornings (1200-1500 UTC). Firedrake activity seems to spike around late February as the annual National People's Congress approaches.

It's said the government increases the jamming then, because every Communist Party official of any import will be in attendance at Beijing's *Great Hall of the People*, **Photo D**.

The Party does not want any "propaganda" from the Sound of Hope or the Voice of Tibet being heard by these "servants of the people."

One of the many problems in researching Firedrake phenomenon is that, lacking a web connection to a strategically-placed remote global tuner, there is no way one can study these signals on a regular basis. We don't even know which or how many frequencies are in use — or against which stations — at any one hour or given day. It thus makes it virtually impossible to draw more than a few tentative conclusions.

The best we can do is to make an educated guess. With delays in sign on times for Firedrake, it may be a profitable idea to wait until after the beginning of the hour before tuning for the jamming signals.

Sometimes it may be up to half an hour before the jamming starts. If you check early you could easily miss the action.

There are many frequencies used by Firedrake jammers — some quite regularly; others just once in a while; and some very rarely.

If you want to pretend that you're Sir Lancelot, here the grounds on which you can make your stand: 7130, 7155, 7185, 7970, 9200, 9300, 9450, 9530, 9690, 9780 9905, 9930, 10130, 10135, 10300, 10500, 11520, 11550, 11590, 11605, 11765, 11785, 11925, 12230, 12300, 12500, 12600, 12670, 13130, 13625, 13715, 13725, 13830, 13920, 14000, 14005, 14010, 14030, 14050, 14070, 14230, 14260, 14310, 14350, 14700, 14970, 15510, 16100, 16270, 16980, 17330, 17525, 17550, 17580, 17605, 17650, 17715, 17880, 18060, 18180, and 21660.

Note the number of frequencies that are out of the normal shortwave broadcasting bands.

A Bit of History

The Chinese Fire Dragon dance is a traditional event — one of 368 forms of Chinese opera performed at Hong Kong's mid-autumn festival. Next to the Chinese Lunar New Year celebration, the Fire Dragon Festival is considered the second most important in China.

The dragon is said to be the strongest of the signs of the Chinese astrological zodiac. The others are wood, earth, water, and metal. All five are related to the Yin Yang symbol. These five elements are then associated with the signs of the zodiac to create 60 different personalities in the Chinese version, **Photo E**.

The dragon is a complex fellow. Because of his qualities and idiosyncrasies, Chinese emperors used the sign of a dragon as an imperial emblem. The dragon can be a symbol of strength, a humanitarian, having a spirit of adventure, very competitive, and up to any challenge. He's a born leader.

However, he's easily provoked. He takes guff from no one. The fire element can also be used to represent a southerly direction, the summer season, the planet Mars, a vermilion bird, a hot red color, or the heart. *(**NOTE:** All this puts me in a quandary. I can't even keep track of who's who among my wife's several nieces and nephews! – WPC9GLD)*

Keeping Multiple Ears Open

The Chinese Firedrake seems to put only 10 to 12 frequencies in use at any one time. I hope your receiver has lots of spare memory channels!

Note there are several cases where Firedrake has intruded into the amateur radio bands, which has caused quite a stir. These days, with the decreasing action on shortwave, chasing and trying to figure out the Firedrake is one of the diminishing challenges lying in wait for your attention.

Good luck in putting out the fire. Don't get burned!

AM Broadcast Band DXing is Heating Up

by Bruce A. Conti, WPC1CAT
<contiba@gmail.com>

"Geomagnetic disturbances caused by the sun that produce the aurora borealis — northern lights — will enhance tropical reception on the AM broadcast band, as well."

Ample tropical signals are keeping DXers toasty this winter thanks to an increase in solar activity. The same geomagnetic disturbances caused by the sun that produce the aurora borealis — *northern lights* — will enhance tropical reception on the AM broadcast band, as well. The energy in the ionosphere suppresses propagation of sky-wave signals from the north, thus opening the path for southern signals arriving at low angles beneath the auroral dome.

Sometimes signals from northern latitudes can still be received at lower frequencies during auroral conditions depending upon the position of the auroral dome, as the groundwave component at low frequencies tends to cover more area. This holds especially true at coastal locations, so this month's selected logs begin with reports of long-wave broadcast reception in Florida and Massachusetts. All times are UTC.

198 *BBC Radio 4*, Droitwich, United Kingdom, at 0031 talk about meeting between U.S. and French officials; fair. (Connelly-Massachusetts) At 0100 BBC time pips and ID. (Wilkner-Florida)

Photo A. A YouTube video takes viewers on a tour of the Europe 1 station in Felsberg, Germany. In this screen capture, running sheep are barely visible beneath the mammoth broadcast antennas at the facility. According to information accompanying the video, "the station for the French Europe 1 (was) built in the '50s when Felsberg (was part of the) French sector of occupied Germany. Here, it is on long-wave, broadcasting with 1.2 megawatts of power." ***(WATCH:** The Europe 1 video at <http://bit.ly/Tb2sRi>) (Internet screen grab)*

171 *Medi Un*, Nador, Morocco, at 0029 female Middle East vocal, strings; good. At 0300 female Arabic vocal, orchestra; good. (Connelly-Massachusetts) At 0520 a good signal with Arabic to 0530 UTC. (Wilkner-Florida)

183 *Europe 1*, Felsberg, Germany, at 0520 mention of frequency into music bridge; good signal. (Wilkner-Florida) ***(TAKE:** A video tour of Europe 1 in Felsberg, Germany at <http://bit.ly/Tb2sRi>, **Photo A.** – WPC1CAT)*

207 *Deutschlandfunk*, Aholming, Germany, at 0030 parallel 153 kHz with piano music; some interference from QI beacon. (Connelly-Massachusetts)

252 *Radio Algerienne*, Tipaza, Algeria, at 0300 a sad-sounding Arabic vocal; way over an English talker presumed to be Ireland. (Connelly-Massachusetts)

530 *Radio Rebelde*, Guantánamo, Cuba, at 0720 fair; Donna Summer songs parallel 540, 600, 670, and 710 kHz. 670 and 710 were over U.S. stations. Used 5025 kHz shortwave parallel as a cross reference. (Hill-Virginia)

530 *Radio Enciclopedia*, Villa María, Cuba, at 0940, <http://bit.ly/RPUnOU>, **Photo B**, easy listening format, classical flute and guitar music. Rooster crowing at 1000 UTC. *Radio Rebelde* in distant background. (Hill-Virginia) At 1000 over *Radio Rebelde*; pre-recorded ID with theme music, "Transmite CMBQ Radio Enciclopedia, desde la Habana, Cuba." (Conti-New Hampshire)

540 WFLF Pine Hills, Florida, at 0359 good; "540 WFLA now has a second address. Find us on the FM dial at 104.5. You can now listen to all your favorite shows, plus news, weather, and traffic at 540 AM like you always have, or check us out on the FM dial at 104.5. Go ahead and check! We'll wait." (Conti-New Hampshire)

549 *Jil FM*, Les Trembles, Algeria, at 2234 parallel 531 with soft dance rock; huge signal! (Connelly-MA) At 0400 good; contemporary Middle Eastern vocal, then canned techno music bed ID, "Jil FM . . . français." (Conti-New Hampshire)

550 WDUN Gainesville, Georgia, at 0000 over WSJW and *Radio Rebelde* Cuba; "North Georgia's news talk, AM 550 and FM 102.9, WDUN" (Conti-New Hampshire)

580 WKAQ San Juan, Puerto Rico, at 0001 WKAQ ID in Spanish talk; over co-channel WTAG and CFRA. (Connelly-Massachusetts) At 0130 weakly audible under WTAG with "WKAQ, cinco ochenta . . . WKAQ FM 104.7" and into Spanish discussion. (Hill-Massachusetts) At 0158 alone with alternating male and female talk, then up-energy station promos, many mentions of Puerto Rico. (Taylor-Prince Edward Island, Canada)

600 *Radio Rebelde*, San Germán, Cuba, at 0925 strong; parallel 710 which was on top of WOR, and 1180 on top of WHAM. (Hill-Virginia)

610 HJKL Bogotá, Colombia, at 0300 ID as "La Cariñosa 610 AM." Thanks to Arnstein Bue of Norway on RealDX for help with the ID. (Whitacre-Virginia) ***(LISTEN:** To a short recording of HJKL from December 2005 <http://bit.ly/RdiJVi>. – WPC1CAT)*

630 RTT Tunis, Tunisia, at 2210 dominant with no co-channel domestics in earshot; Arabic music. Matched with Internet stream from DeliCast. (Taylor-Prince Edward Island, Canada) At 2248 Arabic talk, bit of vocal; under WPRO. (Connelly-Massachusetts)

640 *Radio Guadeloupe*, Point-a-Pitre, Guadeloupe, at 0258 under CBN Newfoundland, with female talk in continental French, a short choral music number across the top of the hour, and then male news announcer. More dominant an hour later, with male announcer reading weather for various locations in France leading up to the news. (Taylor-Prince Edward Island, Canada)

660 *Radio Progreso*, Jovellanos, Cuba, at 0500 midnight playing of national anthem under WFAN. (Conti-NH) At 0743 heard with Spanish talk and music, strong signal peaks at times, mixing with usually heard WFAN New York. (Willie-Newfoundland, Canada)

670 YVLL *Radio Rumbos*, Caracas, Venezuela, at 0030 "NotiRumbos" news promo and ID; fair, dominant. (Connelly-Massachusetts) At 0359 over *Radio Rebelde* Cuba with no sign of WSCR Chicago; heard ID package with several mentions of *Radio Rumbos* at 0400 into music bed under announcer. (Taylor-Prince Edward Island, Canada)

680 WAPA San Juan, Puerto Rico, at 0149 battling local WRKO tooth and nail with lengthy telephone interview in Spanish; single chime at 0200 and time check for "en punto las diez." Stinger followed by "Esta es La Poderosa, WAPA 680 . . . WISO 1260 Mayagüez-Aguadilla." Talk, another chime, time check for "diez y uno" and more talk. (Hill-Massachusetts) At 0158 fair, rising to good over WRKO, with full ID (albeit a little late) just before 0201, call letters in Spanish as well as cities of license including Arecibo, Ponce, and so on. (Taylor-Prince Edward Island, Canada)

690 *Radio Progreso*, Santa Clara, Cuba, at 0000 parallel 640 kHz with man in Spanish, Cuban flute and piano jazz; mixed with CKGM Montreal. (Connelly-Massachusetts) At 0800 good; network ID with theme song, "Radio Progreso, cadena nacional, la onda de la alegría, transmitiendo desde la Habana, Cuba, premier territorio libre en América," then chime and time check. (Conti-New Hampshire)

This Month in Broadcast History

Photo A. Radio star Eddie Cantor joined forces with President Franklin D. Roosevelt in 1938 to help in the campaign against polio known as the "March of Dimes." *(Courtesy of Wikimedia Commons)*

Photo B. The *North American Radio-TV Station Guide* by Vane A. Jones was first published in 1963. Here is how the 11th edition, from 1975, looked. *(Courtesy of Wikimedia Commons)*

75 Years Ago (1938): Eddie Cantor, **Photo A**, asked listeners of his radio show to send a dime to President Franklin D. Roosevelt as part of a fund-raising campaign to combat polio. The campaign became known as the "March of Dimes" named after the popular "March of Time" newsreel.

50 Years Ago (1963): The first edition of the *North American Radio-TV Station Guide* by Vane A. Jones was published by Sams, containing 5,000 AM stations, 1,500 FM stations, and 1,000 TV stations listed by city, state, and frequency, including the Caribbean and Mexico. ***(NOTE:** The NARTSG pictured, **Photo B**, is the 11th edition, published in 1975. – WPC1CAT.)* The *Dick Clark Radio Show* premiered on 13 radio stations. "Go Away Little Girl" by Steve

Photo C. Here's the logo for the Mighty 92, WOKY, Milwaukee. *(Courtesy of WPC1CAT)*

Lawrence was number one on the Mighty 92 WOKY Milwaukee Sing-Along Survey.

25 Years Ago (1988): NBC was looking to get out of the radio business by selling all of its owned and operated stations so the network could focus on television.

Photo B. Using a Sony SRF M35 receiver, BCB DXer Norman Hill copied 530 *Radio Enciclopedia* from Villa María, Cuba, at 0940 UTC — featuring an "easy listening format, classical flute and guitar music . . . Rooster crowing at 1000 UTC." Visit the broadcaster's website at <http://bit.ly/RPUnOU>. *(Internet screen grab)*

711.11 SNRT Laayoune, Western Sahara, at 2235 man in Arabic at low audio level on monster carrier that was stronger than adjacent WOR. (Connelly-Massachusetts) At 2320 heterodynes against 710 WOR with only bits of audio. Measured a bit higher frequency than usual for Western Sahara at 711.111 kHz along with an unidentified 711.000 kHz signal (*France Info* typical) on the spectrum analyzer. (Conti-New Hampshire) ***(DOWNLOAD and LISTEN:** To an interval signal of SNRT Laayoune, Western Sahara at <http://bit.ly/Uslx3x>. – WPC1CAT)*

720 *Radio Catolica*, Managua, Nicaragua, at 0100 serious-sounding talk, *Radio Catolica* ID; through jumble with Cuba and others. (Connelly-Massachusetts)

730 XEX México, at 0200 fair signal, at peaks, several men with friendly banter, lots of laughter. Program promos, sports announcements, into multiple jingles at 0158 with several "Estadio W" announcements. (Wood-Massachusetts) At 0400 "El Larguero, José Ramón de la Morena" and theme song, a sports program from the SER Spain network. Further Internet research found that XEX carries 'El Larguero' at 23:00 local time. See TDW programación at <http://bit.ly/X2lY40>. Thanks to Mauricio Molano of Spain at *RealDX* for help with this. (Conti-New Hampshire)

760 ZYH588 *Radio Uirapuru*, Fortaleza, Brazil, at 0000 piano music. Uirapuru jingle, man in Portuguese; good. (Connelly-Massachusetts)

760 HJAJ Barranquilla, Colombia, at 2258 over/under WJR Detroit and *Radio Progreso* Cuba; "RCN Noticias" news. (Conti-New Hampshire)

760 YVQQ Puerto La Cruz, Venezuela, at 0018 "Doble Q" ID, talk with mentions of Venezuela. (Willie-Newfoundland, Canada)

780 ZBVI Roadtown, Tortola, British Virgin Islands, at 0101 heard "We're online at www.zbvi.com," over YVMN. (Connelly-MA) At 0200 under YVMN; signing off with "God Save the Queen" instrumental anthem. (Conti-New Hampshire)

780 YVMN Coro, Venezuela, at 0845 fair to good, then to excellent by 0905, with standard Latin pop and excited announcers. Many mentions of *Radio Coro* and no sign of WBBM Chicago. (Taylor-PE) At 1000 good; choral national anthem. At 2300 good; "Radio Coro 780 . . . patrimonio de la comunidad." (Conti-New Hampshire)

800 PJB *Radio Transmundial*, Kralendijk, Bonaire, at 0036 religious program in Spanish until 0100, when "Aqui en Radio Transmundial tratamos enviar . . . esperanza: esperanza de vida eterna. Transmitimos desde Bonaire, Antillas Holandesas." Into another religious offering. Lots of competition from local WNNW, CJAD, and perhaps CKLW. (Hill-Massachusetts) At 0259 under VOWR Newfoundland; caught "Radio Transmundial" ID in Spanish just before the hour. (Taylor-Prince Edward Island, Canada)

820 WBAP Ft. Worth, Texas, at 0000 fair; "WBAP Ft. Worth-Dallas, WBAP-FM Flower Mound-Dallas-Ft. Worth," temperature and time check into news from the WBAP 24/7 newsroom. (Conti-New Hampshire)

Photo C. Even in-state broadcast band DXing can be a challenge. Rick Barton, who listens from various locations in Arizona using such gear as a Panasonic RF-2200, RadioShack DX-375, and outdoor Slinky antenna, managed to pull KVOI-AM in Tucson from the muck and mire, <http://www.KVOI.com>. *(Internet screen grab)*

830 WEEU Reading, Pennsylvania, at 0400 under WCRN; "We'll have the forecast and sports next on The Voice, 830 AM WEEU Reading." (Conti-New Hampshire) At 1130 heard with a pet care program featuring interviews and related advertisements. (Hill-Virginia)

910 *Radio Cadena Agramonte*, Camagüey, Cuba, at 0300 received through WLAT; pre-recorded hourly ID, "Desde la cuna de el mayor transmite Radio Cadena Agramonte, Camagüey, Cuba." (Conti-New Hampshire)

910 YVRQ Caracas, Venezuela, at 0558 good; telltale doorbell chimes and male announcer into music which rolled through the hour. (Taylor-Prince Edward Island, Canada)

939.88 XEQ *Bésame*, México, at 0400 fair; "Escucha con cincuenta mil wats de potencias, la señal de la . . . XEQ, Bésame 940 . . . Calzada de Tlalpan 3000, colonia Espartaco," as listed in *World Radio TV Handbook* (WRTH), then announced Web and Facebook information. (Conti-New Hampshire) At 1100, light vocal music, national anthem, into more music and "Besame 940 AM." Also heard earlier in the evening on this off-frequency. (Saylor-Pennsylvania)

1030 KVOI Cortaro, Arizona, at 1258 talk program barely making it through the muck of a couple of other stations, "on AM 1030 KVOI *The Voice*," <http://www.KVOI.com>, **Photo C**. (Barton-Arizona)

Photo D. Brent Taylor, VY2HF, of Prince Edward Island, Canada, logged Radio Algerienne, Algiers, Algeria, "at 2245 (at) even strength with Germany on this auroral night, with a man singing a Koran solo, matching Internet stream . . . Signal took a big dive, along with all trans-Atlantic stations except the low-band Algerians by 2250 UTC." Visit the broadcaster's website at <http://bit.ly/QNMQik>. *(Internet screen grab)*

1030 LS10 *Radio del Plata*, Buenos Aires, Argentina, at 0030 tentative with 2+1 pips on half-hour and a man in Spanish; way under co-channel WBZ Boston. (Connelly-Massachusetts) At 0400 romantic accordion music to the hour, five short and one long time pip (same pitch) while music still played, then ID, "Radio Noticias del Plata" into presumed news in Spanish. (Saylor-Pennsylvania)

1040 KCBR Monument, Colorado, at 0803 very strong all evening, very infrequent ID or announcing, legal ID as "KCBR Monument-Colorado Springs." Pop/country oldies format. (Barton-Arizona)

1070 *Radio Trinchera Antiimperialista*, Guantánamo, Cuba, at 0400 poor through WINA; choral national anthem, fanfare music, "Desde Guantánamo . . . Es la Emisora Provincial de los Guantánameros, Alzan su voz a través de las siglas CMKS. Transmiten las 24 horas del día por los 1070 kHz en AM y por los 91.5 MHz de la FM en Guantánamo, Cuba." (Conti-New Hampshire)

1080 *Radio Cadena Habana*, Villa María, Cuba, at 2300 over/under WTIC Hartford; "Radio Cadena Habana, emisora de la música cubana," into a nostalgic vocal. (Conti-New Hampshire)

1100 KFAX San Francisco, California, at 0400 Billy Graham Ministries program before the hour, to good ID, "AM 1100 KFAX" and SRN news. (Barton-Arizona)

1100 HJAT Barranquilla, Colombia, at 0900 mixed with WTAM Cleveland; emphasis music, man and woman in Spanish with news of Colombia, parallel Caracol network stations on 810 and 1170 kHz. (Connelly-Massachusetts)

1110 KFAB Omaha, Nebraska, at 0100 listened to a retro Art Bell show from 1999. Very good signal dominating the frequency. (Barton-Arizona)

1140 *Radio Musical Nacional*, Cuba, at 0300 over *Radio Surco* Cuba; "Esta es CMBF Radio Musical Nacional, transmitiendo desde La Julia, Cuba" and classical harp instrumental theme music. (Conti-New Hampshire)

1140 *Radio Surco*, Morón, Cuba, at 0100 good; "Esta es CMIP Radio Surco, desde Ciego de Avila, capital de la locución cubana," and Ecos de México music program. (Conti-New Hampshire)

1180 XEDCH Cd. Delicias, México, at 0429 briefly good signal with full ID, "Nombre: Que Buena. Frecuencias: 95.3 FM y 1180 AM. Siglas: XHDCH FM y XEDCH AM. Dirección," etc. (Knight-Arizona)

1220 KHTS Canyon Country, California, at 1230 heard promo, "Right here, each weekday, on your hometown station, AM 1220 KHTS." (Barton-Arizona) This station was featured in the March 2012 *Broadcast Technology* report about local community radio.

1220 ZYJ458 *Radio Globo*, Rio de Janeiro, Brazil, at 0031 Brazil mentions in Portuguese news by woman parallel 1100; to loud peak, strongest of the Brazilians. (Connelly-Massachusetts) At 0558 dominant with high energy announcers and commercials to the top of the hour, then unmistakable *Radio Globo* choral ID. (Taylor-Prince Edward Island, Canada)

1260 KTRC Santa Fe, New Mexico, at 1206 heard "1260 KTRC. This is the Bill Press Show." Fair, but well over the co-channel stations. (Barton-Arizona)

1260 XESA Culiacan, México, at 0415 very good signal with English and Spanish dance music and vocals, "Exa FM 101.7 y 1260 AM," back to dance music. (Knight-Arizona)

1290 YVLF Puerto Cabello, Venezuela, at 0100 briefly over jumble of signals; "Por RCR Deportes," in sports commentary, parallel 750 YVKS Caracas. (Conti-New Hampshire)

1330 KGAK Gallup, New Mexico, at 1315 country/gospel music, jingle ID, announcements in English and Navajo; fair, and good on peaks, but shaky signal after local sunrise. (Barton-Arizona)

1420 WRCG Columbus, Georgia, at 0923 "Marketwatch" program promo, news and talk, 106.9 FM feed mentioned. (Willie-Newfoundland, Canada)

1422 *Radio Algérienne*, Algiers, Algeria, at 2152 accented French talk by man; good. (Connelly-MA) At 2245 even strength with Germany on this auroral night, with man singing Koran solo, matching Internet stream <http://bit.ly/QNMQik>, **Photo D**. Signal took a big dive, along with all trans-Atlantic stations except the low-band Algerians by 2250 UTC. (Taylor-Prince Edward Island, Canada)

1450 XECU Los Mochis, México, at 0406 fair peaks above co-channel graveyarders; ranchera music, full ID mentioning XHECU 91.7 FM and XECU 1450 AM, several "La Rancherita" slogans. (Knight-Arizona)

1520 KVTA Port Hueneme, California, at 1250 promotional spot for "When Radio Was" program; poor signal. (Barton-Arizona)

1540 ZNS1 Nassau, Bahamas, at 0400 over KXEL Waterloo; "The views and opinions expressed on this show or program are not a reflection of the Bahamas Radio Network and as an extension the Broadcasting Corporation of the Bahamas," then "The Broadcasting Corporation of the Bahamas presents News and Views, Immediate Response." (Conti-New Hampshire)

1610 *Caribbean Beacon*, The Valley, Anguilla, at 0300 under CHHA Toronto; announced Los Angeles address in "United States of America," then *University Network* ID with 800 phone number. (Conti-New Hampshire)

1620 *Radio AM 1620*, Mar Del Plata, Argentina, at 2347 sound effects and ID mixing with co-channel *Radio Rebelde* Cuba. (Willie-Newfoundland, Canada)

1650 KFOX Torrance, California, at 1405 fair and fading with onset of local day; program in Korean language. (Barton-Arizona)

Broadcast DX Loggers

This excellent compilation of selected logs comes courtesy of some very skilled DXers. Note the wide variety of equipment used, everything from barefoot *ultralight* radios to software defined radios with directional antenna arrays — demonstrating that anyone can be an AM broadcast band DXer. Boundless distant signals are free to be heard dusk to dawn. All you need is a radio.

- **Rick Barton**, various locations in **Arizona**: Panasonic RF-2200, RadioShack DX-375, outdoor Slinky antenna and Hammarlund HQ-120X.
- **Mark Connelly, WA1ION**, from various **coastal Massachusetts** sites: Perseus SDR; cardioid-pattern Micro-SuperLoop on car roof; square, 2-meters per side with 9:1 transformer on east bottom corner to speaker wire to 2:1 transformer to W7IUV transfer amplifier; and 9:1 transformer on west corner to speaker wire to 500-ohm, null-adjust potentiometer.
- **Bruce Conti, WPC1CAT, Nashua, New Hampshire**: WiNRADiO Excalibur SDR, MWDX-5 phasing unit, terminated 15- by 23-meter Superloop antennas 60-degrees northeast and 180-degrees south.
- **Bob Hill, W1ARR, Littleton, Massachusetts**: Sony ICF-2010 with Kiwa filters, AOR LA390 active loop.
- **Norman Hill, Arlington, Virginia**: Sony SRF-M35.
- **Chris Knight, NØIJK, Phoenix, Arizona**: Drake R8, Micro-SuperLoop antenna on 6- by 6-foot PVC frame, 9:1 transformer on south bottom corner to speaker wire then to 2:1 transformer to Quantum Phaser (used as an amplifier), 9:1 transformer on bottom north corner to speaker wire to 500-ohm null adjust potentiometer.
- **Brett Saylor, Central Pennsylvania**: Perseus SDR and west-pointing Split Delta with Wellbrook FLG-100LN amp.
- **Brent Taylor, VY2HF, Prince Edward Island**: RFSpace SDR-IQ and ICOM R-75 with 16- by 60-foot corner-fed loop.
- **Bill Whitacre**, from the Bay House DXpedition site in **Reedville, Virginia**: Extended D-Kaz antenna pointed at 150-degrees with 1,000-ohm termination which gave a reasonable ~20-dB backside null.
- **Robert Wilkner, Pompano Beach, South Florida**: NRD 535D, 746Pro, and Drake R8 receivers.
- **Allen Willie**, various **Newfoundland** sites: SRF-M37W ultralight radio.

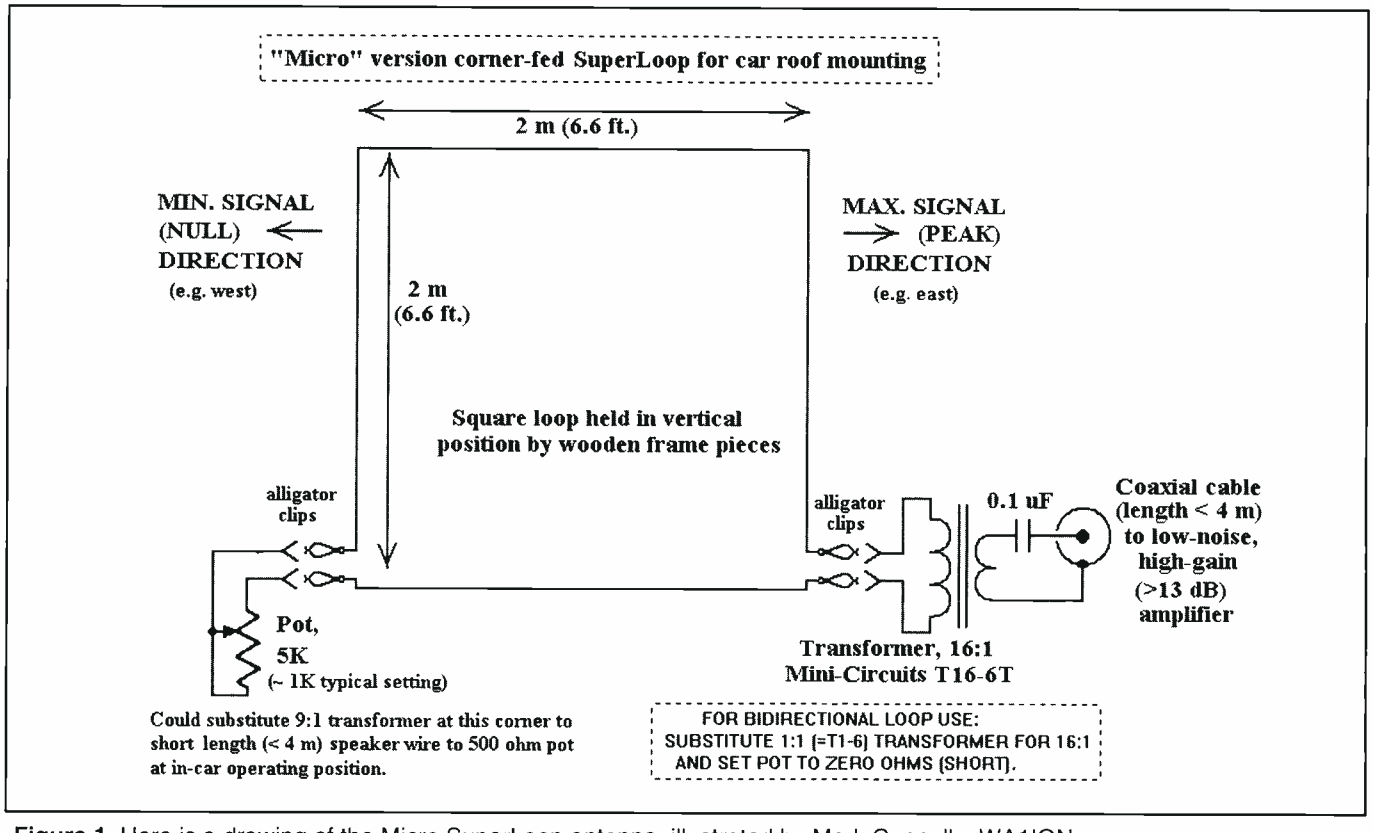


Figure 1. Here is a drawing of the Micro SuperLoop antenna, illustrated by Mark Connelly, WA1ION.

Photo E. "Every monitoring station needs a can of *DX* oil to lubricate reception!" writes WPC1CAT. It is accompanied in the photograph by a Drake R8B receiver, left, with a Lowe HF-225 Europa on top. In the middle is a RadioShack® AM Loop antenna. At right is a Sony ICF-S5W. *(Courtesy of WPC1CAT)*

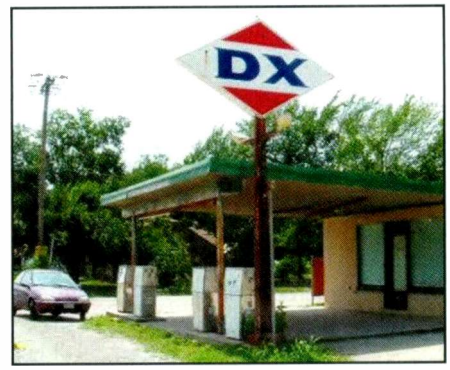


Photo F. Before Sunoco, *DX* gas stations like this one used to ensure that your car would "go the distance." *(Courtesy of WPC1CAT)*

• **Steve Wood, Cape Cod, Massachuetts:** Perseus SDR with 25- by 50-foot SuperLoop antenna.

SuperLoop Feedback

"I'm a fairly new *Popular Communications* subscriber who is a ham radio operator, N7TML, and an SWL, WPC6IVJ," writes Tom Leahy, from Freeland, Washington. "I have a question regarding the terminated loop antennas you discussed in the May 2012 issue.

"I'd like to build a receive antenna for 40 meters and the Micro SuperLoop would fit the bill as far as weight and dimensions and ability to be rotated. Are these antennas broadband and would they perform above the AM broadcast frequencies to 7.3 MHz?

"I plan to use mono-band, 1/4-wave verticals for 40 and 80 meters and would like to have a quieter receiving antenna. In determining terminated loop antenna dimensions is there a frequency specific formula to use?" WPC6IVJ asked. "I'd appreciate any information you can provide."

For the answer, I went to antenna designer Mark Connelly, WA1ION. "The Micro SuperLoop is broadband, as are the various other terminated loop designs," he wrote. "Size is not critical.

"Minimum height of the vertical sides of the rectangular antenna should be 6 feet, or 1.8 meters. The width should be one to three times the height. The pick-up pattern should not vary much from a cardioid shape over a frequency range of at least 150 kHz to 15 MHz.

"Sensitivity should be a bit better on the higher end of that frequency range. For best results, a low noise wideband amplifier such as the DX Engineering RPA-1 or the W7IUV should be used ahead of the receiver. To preserve front-to-back ratio, nulling ability, and local electrical noise rejection, it's important to keep the small loop away from the transmitting antennas, power lines, and other metallic objects."

The Micro SuperLoop, **Figure 1**, is a miniaturized version of the terminated broadband loop antenna originally given its name due to the super-sized dimensions of the loop measuring 15 by 30 meters. WA1ION downsized the SuperLoop design for deployment on a car roof rack at coastal parking sites where space for a super-sized antenna generally isn't available.

The terminated broadband loop family of antennas includes the Delta, Flag, and SuperLoop configurations, all of which produce a cardioid (heart-shaped) beam with a deep backside null. Fine tuning/adjustment of the termination resistance can result in null depth greater than 30 dB. – *WPC1CAT.*

Flying the DX Flag

"Was just reading the 30th anniversary edition (September 2012) of *Popular Communications.* I have read it since issue No. 1. Before that, I read *S9* and all of Tom Kneitel's magazines," writes Gary Hickerson of Oklahoma.

"I saw the picture of the late John Bryant. I'm sure you already know about the *DX* flag that he was flying. *DX* was the brand of gasoline from the Sun Oil Company in Tulsa, Oklahoma, **Photos E** and **F**. Its motto was more "distance" (DX) from *DX* gasoline. There was a *DX* station just a few blocks from our house in Ft. Smith, Arkansas, growing up in the '50s and '60s! I see John had not only the flag, but the cap and shirt. You would get the idea that he worked for Sun Oil!"

Thar' She Blows: Radio NY International

"Read your broadcast history sidebar in the July 2012 edition (25 years ago, 1987: Radio New York International began pirate broadcasts on 1620 AM and 103.1 FM from aboard the Honduran freighter 'Sarah' anchored 5 miles offshore in international waters of the Atlantic) and thought I would mention that at that time I resided along the West Boardwalk of Long Beach, Long Island," recalls Jeff Michaelson.

"My balcony faced the ocean and I had a limited horizontal view of around 200 feet. Well, to make a long story short, that pirate radio boat was offshore directly in my view. The Coast Guard transported the FCC guys to the ship and they either confiscated the equipment or destroyed it, I do not remember.

"Now in Florida, I have a Drake R7 receiver bought from Radio West around 1980, with the antenna hooked up to my four-story rain drain pipe on the first floor. Condo rules, no antennas. Nice inverted L."

*(**NOTE:** DX Oil nostalgia can still be found for sale on eBay. Radio New York International paraphernalia is nearly impossible to find. 73 and Good DX! – WPC1CAT)*

South Carolina Highway Patrol Keeps Scanner Frequencies Busy

by Ken Reiss, WPCØKR
<radioken@earthlink.net>

Photo A. This is the uniform patch of the South Carolina Highway Patrol.

The South Carolina Highway Patrol, **Photos A** and **B**, is the largest division of the South Carolina Department of Public Safety. Formed in 1930, the Patrol has a rank structure similar to that of the military's, **Photo C**.

The SCHP covers almost 83,000 square miles in seven jurisdictions, **Photo D**, and has more than 1,000 employees. The state has a population of more than 4.6 million.

Almost all of the SCHP's communications activity is now on the Palmetto 800 system, as is a large portion of agencies in the rest of the state.

There are lots of frequencies and talk groups to tune in, so let's get to it!

"Almost all of the SCHP's communications activity is now on the Palmetto 800 system . . . with lots of frequencies and talk groups."

Palmetto 800 System

Site	Name	County	Freq		
001 (1)	Russellville (RUSSVL)	Berkeley	866.42500	867.73750	868.32500a
			868.66250c		
002 (2)	Camden	Kershaw	855.18750	857.28750	858.28750
			859.28750	866.78750	867.28750
			868.10000a	868.36250c	
003 (3)	Sandy Run (SANDYR)	Calhoun	866.08750	866.58750	867.08750
			867.87500a	868.15000c	
004 (4)	Prosperity (NEWBRY)	Newberry	855.48750	856.98750	858.98750
			866.32500	866.81250	867.11250a
			868.80000c		
005 (5)	Augusta (AGUSTA)	Richmond	854.08750	854.41250a	854.73750a
			854.98750	855.43750	855.73750
			856.23750	856.66250	856.96250
			857.23750		
006 (6)	N. Augusta (NAUGST)	Aiken	854.38750	854.83750	854.96250
			855.31250	855.58750	855.66250c
			855.96250	856.46250	856.76250
			857.46250	857.76250	857.96250
			858.76250	858.96250	859.76250
			860.73750		
007 (7)	Blythe (BLYTHE)	Richmond	854.93750	855.26250	855.63750a
			856.33750c	856.63750	856.98750
			857.33750	860.98750a	
008 (8)	Aiken (AIKEN)	Aiken	866.36250	866.88750	867.20000
			867.48750	867.75000	867.77500
			868.11250	868.40000a	868.73750c
009 (9)	Charleston Simulcast (CHASCO)	Charleston	854.98750	855.13750	856.33750
			856.83750	857.33750	857.83750
			857.96250	858.33750a	858.71250c
			858.83750a	859.83750	859.96250
			860.26250	860.28750	860.96250
			866.40000	867.26250	868.76250
010 (A)	Canadys (CANDYS)	Colleton	856.38750	857.38750	858.38750
			859.38750a	860.38750c	866.05000
			866.73750	868.37500	868.87500
011 (B)	Holly Hill (H HILL)	Orangeburg	854.88750	854.9125	855.61250
			855.88750	855.93750	856.28750
			856.31250	856.33750	857.31250
			857.33750	858.33750	859.31250
			859.81250	860.31250	860.78750
			866.96250	867.92500a	868.78750c

012 (C)	Summerville (SUMRVL)	Dorchester	856.76250 858.76250c	857.46250 859.46250a	857.76250 860.46250a	858.46250
013 (D)	Plum Branch (PLUM B)	McCormick	854.78750 855.81250 860.91250c	854.81250 856.91250	854.83750 857.91250a	855.01250 859.91250a
014 (E)	Walterboro (WLTBRO)	Colleton	866.78750 868.56250c	867.2875	867.80000	868.07500
015 (F)	Salley	Orangeburg	855.13750 859.83750c	856.83750	857.83750	858.83750a
016 (10)	Laurens (LARINS)	Laurens	855.33750 857.81250 860.81250c	856.46250 858.46250 866.78750	857.21250 858.81250	857.46250 859.86250a
017 (11)	Hogback (HOGBAC)	Greenville	855.13750 866.37500 868.62500c	859.23750 866.96250a	860.23750 867.46250	860.83750 867.83750
018 (12)	Thicketty (THKETY)	Cherokee	860.26250 868.16250	866.46250 868.42500c	867.12500	867.92500a
019 (13)	Spartanburg Simulcast (SPRBRG)	Spartanburg	859.21250 866.77500 868.05000a	859.46250 867.40000 868.70000c	860.46250 867.42500a	866.03750 867.93750a
020 (14)	Lexington Simulcast (LEX CO)	Lexington	855.46250 857.26250 859.71250 860.88750a	855.61250 857.88750 859.96250a 867.65000	856.26250 858.26250 860.26250c 868.50000a	856.88750 859.26250a 860.83750
021 (15)	Joanna (JOANNA)	Laurens 8	56.41250 859.41250 867.90000	857.41250 860.41250 868.28750a	858.28750 866.23750 868.90000c	858.41250 866.90000
022 (16)	Bamberg (BAMBRG)	Bamberg	866.12500 868.81250c	866.85000	867.43750	868.31250
023 (17)	Orangeburg (ORGBRG)	Orangeburg	854.86250 866.75000 868.42500a	866.18750 867.06250 868.92500c	866.46250 867.46250	866.46250 867.98750
024 (18)	Pickens (PICKEN)	Pickens	866.12500 867.71250	866.41250 868.60000c	867.10000	867.36250
025 (19)	McBean (MCBEAN)	Richmond	854.86250a 856.43750	855.16250 857.01250	855.78750c 857.43750	856.28750 860.93750a
026 (1A)	Awendaw (AWNDAW)	Charleston	857.31250 859.31250a	857.81250 860.31250c	858.31250	858.81250
027 (1B)	Ravenel (RAVNEL)	Charleston	866.32500 868.03750	866.82500c	867.21250	867.53750
028 (1C)	Allendale	Allendale	854.76250 867.72500	858.86250 868.21250a	866.32500 868.95000c	867.22500
029 (1D)	Port Royal (PORTRL)	Beaufort	855.01250 860.83750 868.35000	855.06250 866.08750 868.81250c	855.61250 866.98750	856.86250 867.61250
030 (1E)	Richland Simulcast (RICHCO)	Richland	855.78750 858.73750 860.33750c 867.53750a	856.23750 859.33750 866.03750 868.03750a	857.23750 859.73750 866.53750 868.53750a	858.23750 860.23750 867.03750
031 (1F)	Caesars Head (CAESAR)	Greenville	854.46250 868.46250a	866.31250 868.80000c	866.47500	867.25000
032 (20)	Johnston (JOHNST)	Edgefield	856.93750 866.06250	858.86250 866.62500	858.88750 867.27500	859.88750c
033 (21)	Yemassee (YAMASE)	Hampton	855.06250 868.75000a	856.86250c	866.48750	868.13750

034 (22)	Due West (DUWEST)	Abbeville	854.76250 855.51250c	854.78750 856.48750	854.83750 856.73750	855.03750 857.48750
035 (23)	Greenville Simulcast (GVL CO)	Greenville	854.98750 866.18750 867.55000 868.53750a	856.23750 866.87500 867.73750 868.75000a	859.26250 867.18750 868.21250 868.86250c	859.96250 867.45000 868.26250a
037 (25)	Bluffton (BLUFTN)	Beaufort	866.62500 868.23750c	867.12500	867.41250	867.85000a
038 (26)	Conway (CONWAY)	Horry	866.56250 868.11250	866.86250 868.52500a	867.36250 868.86250c	867.75000
039 (27)	Georgetown Simulcast GRGTWN)	Georgetown	866.07500 867.55000 868.35000a	866.45000 867.80000 868.68750c	866.62500 868.07500a	867.12500 868.23750a
040 (28)	Marion	Marion	855.46250 859.48750c	856.93750	857.48750	858.48750a
041 (29)	Kingstree (KINGST)	Williamsburg	855.61250 867.86250	860.28750 868.21250a	866.82500 868.56250	867.18750 868.83750c
042 (2A)	Anderson (ANDERS)	Anderson	854.11250 855.71250 857.01250c 859.43750	854.21250 856.21250 857.26250 859.98750	854.43750 856.51250 857.98750 860.43750	854.61250a 856.71250 858.71250 860.96250
043 (2B)	Greenwood (GRWOOD)	Greenwood	866.35000 868.12500c	866.72500	867.23750	867.62500a
044 (2C)	Harbison (HARBIS)	Richland	856.43750 858.43750 860.43750a	856.48750a 858.48750 860.48750c	857.43750 859.43750	857.48750 859.48750
045 (2D)	Chesterfield (CHSTRF)	Chesterfield	866.07500 868.95000c	866.95000	867.47500	868.67500
046 (2E)	Chester (CHESTR)	Chester	866.13750 867.86250c	866.42500	866.71250	867.57500a
047 (2F)	Newport (YORK)	York	854.83750 866.48750	855.78750	858.28750a	860.78750c
048 (30)	Lancaster (LANCAS)	Lancaster	856.96250 867.95000	857.96250 868.98750c	858.96250	859.86250
049 (31)	Barnwell (BRNWEL)	Barnwell	857.83750 868.25000a	866.82500 868.68750c	867.25000	867.61250
050 (32)	Seneca (OCONEE)	Oconee	866.07500 868.96250c	867.05000	867.66250	868.10000a
051 (33)	Jasper (JASPER)	Jasper	866.17500 866.91250 867.91250	866.25000 867.36250 868.27500a	866.56250 867.45000 868.37500	866.70000 867.88750 868.86250c
052 (34)	Moncks Corner (MONCKS)	Berkeley	854.03750 867.23750	854.46250 867.61250a	866.23750 868.12500c	866.92500
053 (35)	Manning (MANING)	Clarendon	866.90000 868.71250c	867.30000	867.60000	867.95000a
054 (36)	Lee (LEE)	Lee	866.20000 868.61250c	866.80000	867.58750	867.90000a
055 (37)	Effingham	Florence	866.18750 868.96250c	866.96250	868.17500	868.46250a
056 (38)	Darlington (DARLNG)	Darlington	866.32500 868.80000c	866.67500	866.97500	868.27500a
057 (39)	Sumter (SUMTER)	Sumter	857.93750 866.06250	858.93750 866.61250a	859.93750 868.30000c	860.93750
058 (3A)	Union (UNION)	Union	866.75000 868.45000c	867.28750	867.80000	868.07500a

059 (3B)	Winnsboro (FARFLD)	Fairfield	866.17500 867.85000 868.66250c	867.32500 868.23750a
060 (3C)	Bennettsville	Marlboro	866.21250 866.77500 867.67500c	866.48750 867.17500a
061 (3D)	North Myrtle Beach (NMYRTL)	Horry	866.28750 867.45000 868.71250c	866.97500 868.27500a

System Talkgroups:

SC Department of Public Safety (SCHP, SCTP, SC BPS) Statewide Talkgroups

Talkgroup	Description
61280	BPS Dispatch
41936	Ch. 114 BPS 1
41808	Ch. 115 BPS 2
7184	Ch. 129 Exec. Protection (Statewide)
26800	Ch. 133 Blythewood Ops
3856	Ch. 145 Air to Ground (Statewide)
30128	Ch. 146 DPS/DOT Hurricane Evacuation Coordination
61008	Ch. 148 Captains (Statewide)
6864	Hurricane Evacuation Mutual Aid Command
44464	Hurricane Evacuation Coordination
6800	Mait Team Scene Talk-around
26704	Insurance Enforcement (Memo Units)
52752	Insurance Enforcement (Memo Units)
30448	SCTP Headquarters

SC Highway Patrol Troop 1 Talkgroups
Includes Clarendon, Kershaw, Lee, Lexington, Richland, and Sumter counties.

Talkgroup	Description
21520	Ch. 01 Sumter/Clarendon
21488	Ch. 02 TAC 1 (Talk Ch.1)
7152	Ch. 03 Kershaw/Lee
7024	Ch. 04 Lexington
5776	Ch. 05 TAC 2 (Talk Ch.2)
52048	TAC 2
6896	Ch 06 Richland
31888	Ch. 07 STP 1 (STP Sp. Ops)
45776	SCTP Troop 1
20848	Ch. 08 DPS Troop 1 (SHEP)
6992	SHEP Troop 1 Talk-around
32112	SHEP Troop 1 Talk-around

Photo B. Watch a video picture montage of South Carolina Highway Patrol officers and equipment — both old and new, <http://bit.ly/Kx2s9b>. *(YouTube screen grab)*

Pop'Comm January 2013 Reader Survey

Your feedback is important to us at *Pop'Comm*. It helps guide us to make the magazine even more valuable to you each month.

Please take a few minutes to fill out this month's Reader Survey Card and circle the appropriate numbers corresponding to the questions below. We'll pick a respondent at random for a year's free subscription or an extension of an existing subscription as thanks for your participation — so don't forget to fill in your mailing address and other contact information.

We encourage your comments and suggestions in the space provided, as well. Thank you.

Last, but not least: You can now take this survey online. See details below.

As I look ahead into 2013, my main communications focus will be . . . (Choose all that apply):

Upgrading my radio and/or computer gear 1
Establishing achievable monitoring goals and going for them 2
Expanding my communications technology horizons. 3
Improving my antenna(s) 4
Becoming more involved in the monitoring community 5
Better appreciating the gear I have and using it more. 6
The same as it has always been. Resolutions aren't for me. . . 7

I participate in the *Pop'Comm Monitoring Station* program:

With great enthusiasm 8
With mild interest — it's not going to consume me 9
With some interest that might grow with time 10
Only because I like new things. Station IDs are cool 11
Not at all. I've never liked the idea 12

Now that we have 12 months of digital editions under our belt, to which online editions of CQ Communications magazines have you subscribed? Choose all that apply:

Popular Communications 13
CQ Amateur Radio (*CQ* magazine) 14
CQ VHF 15
WorldRadio Online 16

What do you think of the digital editions of all CQ Communications' magazines? Please tell us why you like or dislike them. (Use the comment line.)

Take This Reader Survey Online

You can now participate in this reader survey via the Internet. Simply go to *Pop'Comm On the Web*: <http://www.popcomm-magazine.blogspot.com/> and click the link to the *Pop'Comm January 2013 Reader Survey*. It's quick and easy.

And the Winner Is . . .

For participating in the *Pop'Comm Readership Survey*, the winner of a free subscription or extension is **Robert Kissel, W8KPU**, of **Swartz Creek, Michigan**. In October 2012's survey we asked a series of questions dealing with VHF/UHF/UHF+ scanning. In one, we asked: *"What specific scanning content or topic would you like to see more of in Pop'Comm?"* Robert wants "re-banding" hints to keep scanners up to date with changing the ever-changing landscape of the spectrum. We'll see what we can do about that, Robert! – *Richard Fisher, KPC6PC/K16SN)*

SC Highway Patrol Troop 2 Talkgroups
Includes Abbeville, Edgefield, Greenwood, Laurens, McCormick, Newberry, and Saluda counties.

Talkgroup	Description
7536	Ch. 17 Newberry/Laurens
29104	Ch. 18 TAC 3 (Talk Ch. 3)
52176	Ch. 19 Abbeville/Greenwood
7664	Ch. 20 Edgefield/Saluda/McCormick
48944	Greenwood/McCormick/Saluda Cos.

SC Highway Patrol Troop 3 Talkgroups
Includes Anderson, Greenville, Oconee, Pickens, and Spartanburg counties.

Talkgroup	Description
21136	Ch. 33 Anderson
20880	Ch. 36 Greenville
21008	Ch. 38 Spartanburg
41424	Ch. 39 STP 3 (STP Sp. Ops)
31504	Ch. 40 DPS 3 (SHEP)
45744	SHEP Troop 3
34608	SHEP Troop 3 Talk-around
30864	Ch. 41 Special OPS 3

SC Highway Patrol Troop 4 Talkgroups
Includes Cherokee, Chester, Chesterfield, Fairfield, Lancaster, Union, and York counties

Talkgroup	Description
29360	Ch. 50 TAC 7 (Talk Ch. 7)
29072	Ch. 51 York
46128	York
21392	Ch. 52 Chester/Fairfield
21104	Ch. 54 Lancaster/Chesterfield
41552	Ch. 55 STP 4 (STP Sp. Ops)
30224	Ch. 56 DPS 4 SHEP
45808	SC DPS 4 SHEP
32336	SHEP Troop 4 Talk-around

SC Highway Patrol Troop 5 Talkgroups
Includes Darlington, Dillon, Florence, Georgetown, Horry, Marion, Marlboro, and Williamsburg counties

Talkgroup	Description
29584	Ch. 65 Darlington/Marlboro
44656	Darlington/Marlboro
29488	Ch. 66 TAC 9 (Talk Ch. 9)
29200	Ch. 67 Florence/Marion/Dillon
29456	Ch. 68 Williamsburg/Georgetown
52432	Ch. 69 TAC 10 (Talk Ch. 10)
29328	Ch. 70 Horry
41680	Ch. 71 STP 5 (STP Sp. Ops)
21616	Ch. 72 DPS 5 (SHEP)
32272	SHEP Troop 5 Talk-around
31120	Ch. 73 Special OPS 5

SC Highway Patrol Troop 6 Talkgroups
Includes Beaufort, Berkeley, Charleston, Colleton, Dorchester, and Jasper counties

Talkgroup	Description
29712	Ch. 81 Charleston/Berkeley
44752	Charleston
29616	Ch. 82 TAC 11 (Talk Ch. 11)
29968	Ch. 83 Dorchester/Colleton
44400	Colleton
30096	Ch. 84 Beaufort/Jasper
44432	Beaufort
6928	Ch. 85 TAC 12 (Talk Ch. 12)
30512	Ch. 87 STP 6 (STP Sp. Ops)
21648	Ch. 88 DPS 6 (SHEP)
32240	SHEP Troop 6 Talk-around

SC Highway Patrol Troop 7 Talkgroups
Includes Aiken, Allendale, Bamberg, Barnwell, Calhoun, Hampton, and Orangeburg counties

Talkgroup	Description
30480	Ch. 97/100 Aiken/Barnwell/Bamberg/Allendale/Hampton
45840	Aiken/Bamberg/Barnwell
7568	Ch. 98 TAC 13 (Talk Ch. 13)
30352	Ch. 99 Calhoun/Orangeburg

45904	Orangeburg/Calhoun
7440	Ch 101 TAC 14 (Talk Ch. 14)
30576	Ch. 103 STP 7 (STP Sp. Ops)
21680	Ch. 104 DPS 7 (SHEP)

SC DPS Mutual Aid/Common Talkgroups

Talkgroup	Description
31152	SC Emergency Call (STATEWIDE)
31280	SCHP Ch. 13 Regional Govt. 1
31344	SCHP Ch. 29 Regional Govt. 2
31408	SCHP Ch. 45 Regional Govt. 3
31472	SCHP Ch. 61 Regional Govt. 4
31536	SCHP Ch. 77 Regional Govt. 5
31600	SCHP Ch. 93 Regional Govt. 6
31728	SCHP Ch. 109 Regional Govt. 7
31792	SCHP Ch. 125 Regional Govt. 8
52208	SCHP Ch. 141 Regional Govt. 9
52272	SCHP Ch. 157 Regional Govt. 10
21456	SCHP Ch. 12 Mutual Aid 1 (Law Enforcement)
21584	SCHP Ch. 12 Mutual Aid 2 (Fire)
29136	SCHP Ch. 44 Mutual Aid 3 (EMS)
29264	SCHP Ch. 60 Mutual Aid 4 (Command)
29392	SCHP Ch. 76 Mutual Aid 5
29520	SCHP Ch. 92 Mutual Aid 6
29648	SCHP Ch. 108 Mutual Aid 7
29776	SCHP Ch. 124 Mutual Aid 8
29904	SCHP Ch. 140 Mutual Aid 9
30032	SCHP Ch. 156 Mutual Aid 10
6960	LE Common Call (Statewide)
7088	SCHP Ch. 10 LE Common 1
7216	SCHP Ch. 26 LE Common 2
7344	SCHP Ch. 42 LE Common 3
7472	SCHP Ch. 58 LE Common 4
7600	SCHP Ch. 74/149 LE Common 5
20816	SCHP Ch. 90/150 LE Common 6
20944	SCHP Ch. 106/151 LE Common 7
21072	SCHP Ch. 122/152 LE Common 8
21200	SCHP Ch. 138/153 LE Common 9
21328	SCHP Ch. 154 LE Common 10
51392	SC LE Common 11
51408	SC LE Common 12
51424	SC LE Common 13

SC COBRA Talkgroups

Talkgroup	Description
25104	COBRA-Low-country Ops
25136	COBRA-Midlands Ops
25168	COBRA-Upstate Ops
25200	COBRA-Pee Dee Ops
65376	COBRA-Statewide Common
65392	COBRA-Low-country Common
65424	COBRA-Midlands Common
65456	COBRA-Upstate Common
65488	COBRA-Pee Dee Common

SC Criminal Justice Academy Talkgroups

Talkgroup	Description
12800	SC Criminal Justice Academy Admin/Maintenance
12816	SC Criminal Justice Academy Training
12832	SC Criminal Justice Academy Firing Range
12864	SC Criminal Justice Academy Driving Range CH Drive 1
12880	SC Criminal Justice Academy Driving Range CH Drive 2

SC Department of Health and Environmental Control Talkgroups

Talkgroup	Description
18960	SC DHEC EMS Common
18992	SC DHEC EMS Region 1
19024	SC DHEC EMS Region 2
19088	SC DHEC EMS Region 3
19200	SC DHEC EMS Region 4
20976	SC DHEC Emergency Response Team
44816	SC DHEC Piedmont (Region 1?)
44848	SC DHEC Upstate (Region 2?)
44912	SC DHEC Midlands (Region 3?)
45040	SC DHEC Charleston Area
45072	SC DHEC Region 5?
45104	SC DHEC Grand Strand (Region 6?)
45136	SC DHEC Pee Dee Area (Region 4)
45392	SC DHEC Disaster/Hospital Net Common
45424	SC DHEC Disaster/Hospital Net Region 1 (West Upstate)
45456	SC DHEC Disaster/Hospital Net Region 2 (Midlands)
45488	SC DHEC Disaster/Hospital Net Region 3 (Pee Dee)
45520	SC DHEC Disaster/Hospital Net Region 4 (Low Country)
50336	SC DHEC Common
52336	SC DHEC Statewide
52688	SC DHEC Upstate

SC Department of Transportation Talkgroups

Talkgroup	Description
8528	District 1
8560	District 2
8592	District 3
8624	District 4
8656	District 5
8688	District 6
8128	District 7
8752	Statewide

State Law Enforcement Division (SLED) Talkgroups

Talkgroup	Description
11280	SLED Statewide
11312	SLED Midlands
11344	SLED Piedmont
11376	SLED Pee Dee
11408	SLED Low Country
11440	SLED Special Ops 1
55040	SLED
55056	SLED

Rank	Insignia	Description
Colonel		Patrol Commander
Lieutenant Colonel		Patrol Deputy Commander
Major		Region/Support/Administrative Commander
Captain		Troop Commander
Lieutenant		Troop Executive Officer
First Sergeant		Troop First Sergeant/Post Commander
Sergeant		Team Supervisor
Corporal		Team Supervisor
Lance Corporal		
Senior Trooper		
Trooper First Class		
Trooper		
Trooper Trainee		

Photo C. The ranking system used by the South Carolina Highway Patrol is similar to that of the military's. *(Courtesy of Wikimedia Commons)*

55072	SLED
55088	SLED
55120	SLED

Federal Talkgroups

Talkgroup	Description
35024	Congaree National Park Operations
35040	Congaree National Park Ch.2 Talk-around
41456	Federal Call

Talkgroup	Description
3888	LifeNet Dispatch/Operations (LifeNet, LifeCare, LifeStar, Charleston 7)
3920	LifeNet Helicopter to Palmetto Richland ER (Columbia)
25120	MedCenter Air (CMC Charlotte)
30064	Spartanburg Air-Ground (Regional One)
38352	MTC FlightComm to GMH MedTrans/Dispatch
38368	MedTrans FlightCom (MedTrans 1, Regional 1, Lifeflight)
41216	Omniflight Charleston and LifeCare (Horry)
50368	Meducare Air (Charleston)
50928	Omniflight Helos (No longer used)

Private Ambulance Services Talkgroups

Talkgroup	Description
6192	Medshore Ambulance Service Ch. A
6224	Medshore Ambulance Service Ch. B
20688	Personal Care Ambulance
27904	Gold Cross EMS Vehicle Location Data
27920	Gold Cross EMS Dispatch
37168	Family Medical Transport (Charleston)
37184	Family Medical Transport Meeting 1
41024	Williamston EMS Non-Emergency Transport
50464	MobileCare EMS
53296	Palmetto Ambulance Service Aiken Area
53312	Palmetto Ambulance Service Talk-Around
53328	Palmetto Ambulance Service Greenville Area
53344	Palmetto Ambulance Service Midlands Area

Utilities Talkgroups

Talkgroup	Description
432	SCANA Communications Inc. CH SCI OPS
496	Palmetto 800
560	SCE&G Transmission Service Columbia
592	SCE&G Transmission Service Lexington
608	SCANA Palmetto Center Maint.
624	SCE&G Transmission Service
720	SCE&G Distribution Estill
784	Aiken Electric Cooperative
816	SCE&G Distribution Service CH Columbia Service 1
832	SCE&G Construction Crew
848	SCE&G Distribution Service CH Columbia Service
912	SCE&G Distribution Service West Columbia
944	SCE&G Distribution Service
976	SCE&G Distribution Service Raider Northeast Columbia
1008	SCE&G Meter Service Columbia
1072	SCE&G Meter Readers
1104	SCE&G Meter Service
1136	SCE&G Security Palmetto Control
1200	SCE&G Bus Supervisors
1328	SCE&G Lowcountry
1424	SCE&G Charleston
1456	SCE&G Charleston-Distribution Dispatch
1488	SCE&G Charleston Dispatch
1616	SCE&G Distribution Summerville
1648	SCE&G Meter Readers
1712	SCE&G Charleston
2064	SCE&G Meter Readers Summerville
2160	SCE&G North Augusta
2224	SCE&G Gas Aiken
2384	SCE&G Johnston
2512	SCE&G Distribution
2544	SCE&G Meter Service Lexington
2640	SCE&G Gas Columbia
2672	SCE&G Gas Columbia
2768	SCANA Myrtle Beach
2992	SC E&G Kingstree/Lake City
3056	SC E&G Gas Georgetown
3120	SCE&G Gas Charleston
3248	SCANA Communications Inc.
3280	Motorola Radio Shops
3312	SCANA Communications Inc.
3376	SCE&G Bus Fleet Service
3472	SCE&G Linemen (Beaufort, Jasper, Hampton)
3504	SCE&G Beaufort or Low-country Meter readers
4176	Edisto Electric Coop
4368	SCI Radio Maintenance
4400	Laurens Electric
4432	Laurens Electric
4464	Laurens Electric
4496	SC Utility Call
4624	Laurens Electric
4848	Unknown Electric Utility
5616	Aiken Electric Cooperative
5648	Aiken Electric Cooperative
5712	Aiken Electric Cooperative
5744	Aiken Electric Cooperative
8240	SCANA Survey Crews
8624	SCANA Communications Site Tests
13008	Motorola Service Ch. 1
13040	SCANA Communications
65008	Motorola Service Ch. 2
65360	Motorola

Abbeville County Talkgroups

Talkgroup	Description
25600	Abbeville PD
25648	Abbeville Co. SD Ops
25680	Abbeville Co. SD Tac
51584	Abbeville Co. SD Ch. 1
51600	Abbeville Co. Roam
51616	Abbeville Co. FD
51632	Abbeville Co. Emergency Management
51648	Abbeville Co. Call
51664	Abbeville FD
51680	Abbeville Co. Public Works
51696	Abbeville Public Works

Aiken County Talkgroups

Talkgroup	Description
16912	Aiken County Detention Center
36016	Aiken County EMS 1
36032	Aiken County EMS 2
36048	Aiken County EMS 3
36064	Aiken County EMS 4
36080	Aiken County EMS Roam
40528	Aiken County EMD
42096	Aiken Co. SD Ch. 1 Dispatch
42128	Aiken Co. SD Ch. 2 Talk
42160	Aiken Co. SD Ch. 3 CID
42192	Aiken Co. SD Ch. 4 Warrants
42224	Aiken Co. SD Ch. 5 DUI Task Force
42256	Aiken Co. SD Roam
42288	Aiken Co. SD High-risk Entry
42320	Aiken Co. SD Ch. 8 Admin
54896	Wagener PD Talk-around
57568	North Augusta PD Dispatch
57600	North Augusta PD Ch. 2
57888	Aiken DPS Talk-around
63712	Aiken Co. SD
63792	Aiken County Coroner

Anderson County Talkgroups

Anderson City and Anderson Co SD operate on the Palmetto P25 system. Some Anderson Co. Municipalities still operate on the Palmetto 800 system.

Talkgroup	Description
53584	Honea Path PD
53616	Williamston PD
53632	Williamston PD
53648	Pendleton PD
53680	Iva PD

53712	Belton PD
53744	Pelzer PD
57792	Anderson PD Dispatch
62208	Anderson Co. SD Dispatch 1
62224	Anderson Co. SD Dispatch 2
62240	Anderson Co. SD Ch. 3 Roam
62256	Anderson Co. SD Ch. 4 Mutual Aid
62272	Anderson Co. SD Special Events 1
62288	Anderson Co. SD Special Events 2
62304	Anderson Co. SD Special Ops 1
62320	Anderson Co. SD Special Ops 2
62336	Anderson Co. Communications
62352	Anderson Co. Command
62368	Anderson Co. EMS
62384	Anderson Co. FD

Augusta-Richmond County Talkgroups

Talkgroup	Description
13616	Augusta-Richmond Co. Board of Education Public Safety
13648	Augusta-Richmond Co. Board of Education Public Safety-Administration
21712	Augusta-Richmond Co. Public Works Administration
21744	Augusta-Richmond Co. Public Works Engineering/Street Lights
21776	Augusta-Richmond Co. Public Works Facilities
21808	Augusta-Richmond Co. Public Works Maintenance
21840	Augusta-Richmond Co. Public Works
21872	Augusta-Richmond Co. Public Works-Utilities 1
21904	Augusta-Richmond Co. Public Works-Utilities 2
21936	Augusta-Richmond Co. Public Works License and Inspection/Code Enforcement
21968	Augusta-Richmond Co. Animal Control
22000	Augusta-Richmond Co. Event 1 (Recreation)
22032	Augusta-Richmond Co. Public Works Trees and Landscaping
22064	Augusta-Richmond Co. Public Works Transit
22128	Augusta-Richmond Co. Public Works EMA/Indigent Defense
22192	Augusta-Richmond Co. Correctional Institution
23088	Augusta-Richmond Co. SD Narcotics
23120	Augusta-Richmond Co. SD Vice/Narcotics Ch. 1
23152	Augusta-Richmond Co. SD CID TAC
23184	Augusta-Richmond Co. SD Range
23216	Augusta-Richmond Co. SD Civil
23264	Augusta-Richmond Co. FD Supervisor
23312	Augusta-Richmond Co. FD Tac 1/Dispatch
23344	Augusta-Richmond Co. FD Tac 2
23376	Augusta-Richmond Co. FD Tac 3
23408	Augusta-Richmond Co. FD Tac 4
23440	Augusta-Richmond Co. FD Alert
23472	Augusta-Richmond Co. FD Admin
23504	Augusta-Richmond Co. SD North Dispatch
23536	Augusta-Richmond Co. SD North Tac
23568	Augusta-Richmond Co.
23600	Augusta-Richmond Co. SD South Dispatch
23632	Augusta-Richmond Co. SD South Tac
23664	Augusta-Richmond Co. SD Special Ops
23696	Augusta-Richmond Co. SD CID
23728	Augusta-Richmond Co. SD Records (North)
23760	Augusta-Richmond Co. Records (South)
23792	Augusta-Richmond Co. Jail
23856	Augusta-Richmond Co. FD Metro Aid
23888	Augusta-Richmond Co. SD Event 1
23920	Augusta-Richmond Co. SD Event 2
23952	Augusta-Richmond Co. SD Event 3
23984	Augusta-Richmond Co. Emergency Management OPS 1
24016	Augusta-Richmond Co. Emergency Management Admin 1
24048	Augusta-Richmond Co. Emergency Management TAC 1
24080	Augusta-Richmond Co. Emergency Management OPS 2
24112	Augusta-Richmond Co. Emergency Management Admin 2
24144	Augusta-Richmond Co. Emergency Management TAC 2
24368	Augusta-Richmond Co. EMS to FD First Responder
24400	Augusta-Richmond Co. FD EMS 2
24432	Augusta-Richmond Co. SD Internal Affairs
24464	Augusta-Richmond Co. Marshals Department/ Airport Security
24496	Augusta-Richmond Co. Marshal Ch. 1
24528	Augusta-Richmond Co. Marshals Department/ Municipal Building Security
24560	Augusta-Richmond Co. Marshals Department/ Tactical
24592	Augusta-Richmond Co. Marshals Department/ Supervisor
28752	Augusta State University Police
28784	Augusta State University Parking
43920	Augusta-Richmond Co. FD EMS Tac
46544	Augusta State University PD

Bamberg County Talkgroups

Talkgroup	Description
11728	Bamberg Co. SD

Berkeley County Talkgroups

Talkgroup	Description
10960	Hanahan PD
10992	Hanahan PD
20112	Bonneau PD
20208	Goose Creek PD Special Ops/Narcotics
20240	Goose Creek PD
20256	Goose Creek PD
20272	Goose Creek PD
38544	Berkeley Co. SD Ch. 1 Dispatch
38576	Berkeley Co. SD Ch. 2 Investigations
38608	Berkeley Co. SD Ch. 4 Tactical
38640	Berkeley Co. SD Ch. 3 Admin
38672	Berkeley Co. SD Ch. 5 Special Ops
38704	Berkeley Co. SD
58704	Hanahan PD TAC
59952	Bonneau PD TAC
62736	Berkeley Co. SD Special Ops

Calhoun County Talkgroups

Talkgroup	Description
57376	Calhoun Co. SD Dispatch
57392	Calhoun Co. SD Admin
57456	Cameron PD

Charleston County Talkgroups

Talkgroup	Description
3824	MUSC Ambulance Service (Air and Ground)
12944	Charleston Co. Parks and Recreation
17920	Citadel Maintenance
44016	MUSC PS Dispatch
44048	MUSC PS Operations Ch. 2
44176	MUSC Parking Management
44208	MUSC Engineering
44240	MUSC Occ Safety
44304	MUSC Hospital Maintenance
44368	MUSC Hospital Maintenance

Cherokee County Talkgroups

Talkgroup	Description
26000	Gaffney PD
26016	Gaffney PD

Chester County Talkgroups

Talkgroup	Description
58800	Chester Co. SD Ch. 1
58816	Chester Co. SD Ch. 2
58832	Chester Co. SD Ch. 3
40272	Chester Co. SD Ch. 4
56304	Chester PD
57968	Fort Lawn PD
64896	Great Falls PD

Chesterfield County Talkgroups

Talkgroup	Description
50576	Chesterfield Co. SD
51280	Chesterfield Co. SD
53392	Chesterfield Co. SD
56368	Cheraw Rescue

Clarendon County Talkgroups

Talkgroup	Description
44272	Clarendon Co. FD
57856	Clarendon Co. FD Admin
27792	Clarendon Co. FD Tac 1
27824	Clarendon Co. FD Tac 2
27856	Clarendon Co. FD Tac 3
28240	Clarendon Co. EMS
57648	Clarendon Co. EMS Talk-around
57936	Clarendon Co. EMS to Clarendon Memorial ER
41872	Clarendon Co. SD Dispatch
37904	Clarendon Co. SD Tac
64528	Clarendon Co. SD Tac 2
37936	Clarendon Co. SD
41904	Manning, Summerton, Turbeville PDs Dispatch
64512	Manning PD TAC

Colleton County Talkgroups

Talkgroup	Description
15216	Colleton Co. SD Dispatch
15248	Colleton Co. State-wide Roam

Darlington County Talkgroups

Talkgroup	Description
15584	Darlington Co. FD
50992	Darlington Co. SD Dispatch
51008	Darlington Co. SD Ch. 2
51120	Darlington Co. SD Talk-around
51040	Darlington Co. SD Investigations
51056	Darlington Co. SD Admin
51072	Darlington Co. SD Special Ops
51200	Darlington Co. SD SWAT
51232	Darlington Co. SD Narcotics
51088	Darlington Co. Roaming
51024	Darlington Co. SD
25552	Darlington Co. Magistrate Constables
4816	Darlington and Hartsville FDs
51104	Darlington PD Dispatch
22960	Hartsville FD
51136	Hartsville PD Dispatch
54304	Hartsville PD Tac

Dillon County Talkgroups

Talkgroup	Description
28304	Dillon Co. SD
28336	Dillon Co. SD
43088	Dillon Co. SD Dispatch

Dorchester County Talkgroups

Talkgroup	Description
14640	Dorchester Co. EMS Ch. 1 Ops
14672	Dorchester Co. EMS Ch. 2 Night
15088	Dorchester Co. EMS Ch. 3 Admin
14688	Dorchester Co. EMS to Summerville ER
14256	Dorchester Co. EMS to Roper Northwoods ER
15056	Dorchester Co. EMS to Walterboro ER
14656	Dorchester Co. EMS to Trident ER
14608	Dorchester Co. Fire Rescue
14496	Dorchester Co. Fire Rescue Command
14352	Dorchester EOC Ops/EMS Command
14544	St. George PD

Dorchester County Sheriff Talkgroups

Talkgroup	Description
14320	Dorchester Co. SD Dispatch
14512	Dorchester Co. SD Tac 1
15120	Dorchester Co. SD Tac 2
14384	Dorchester Co. SD Tac 4
14576	Dorchester Co. SD Tac 3
14400	Dorchester Co. SD Admin
14416	Dorchester Co. SD Patrol
14448	Dorchester Co. SD Narcotics
14480	Dorchester Co. SD Detectives
14560	Dorchester Co. SD Special Ops
14704	Dorchester Co. Statewide Roam

Summerville City (Dorchester County) Talkgroups

Talkgroup	Description
14896	Summerville FD
14816	Summerville FD Fireground 1
14768	Summerville FD Fireground 2
15024	Summerville FD Fireground 3
15184	Summerville FD Fireground 4
14928	Summerville PD Dispatch
14864	Summerville PD Tactical
14832	Summerville PD Records
14880	Summerville PD Narcotics

Fairfield County Talkgroups

Talkgroup	Description
56592	Fairfield Co SD Ch. 1
40592	Fairfield Co SD Ch. 2
56608	Fairfield Co SD Ch. 3
56624	Fairfield Co SD Narcotics
56640	Fairfield Co SD Tac/Narcs
58400	Winnsboro PD
56688	Fairfield Co. FDs

Georgetown County Talkgroups

Talkgroup	Description
40816	Georgetown Co. FD/EMS Ch. 1 Dispatch (carried on 154.160)
40880	Midway Fire/Rescue Dispatch (carried on 154.310)
40912	Murrells Inlet Garden City FD Dispatch (carried on 154.145)
57248	Georgetown Co. FD/EMS Admin
57536	Georgetown Co. FD/EMS Tac 1
57616	Georgetown Co. FD/EMS Tac 2
57632	Georgetown Co. FD/EMS Tac 3
57200	Georgetown Co. FD/EMS Tac 4
57232	Georgetown Co. FD/EMS Tac 5
57040	Georgetown Co. FD/EMS Tac 6
40944	Georgetown Co. FD/EMS Ch. 9 "Georgetown SC Talk-Around"
36320	Georgetown Co. FD/EMS Med to Georgetown ER
36304	Georgetown Co. FD/EMS Med to Waccamaw ER
1584	Georgetown Co. SD Ch. 1 Dispatch
2128	Georgetown Co. SD Ch. 2 Talk-around
27664	Georgetown Co. SD CID
27696	Georgetown Co. SD
27728	Georgetown Co. SD
27760	Georgetown Co. SD Special Ops
56992	Georgetown Co. SD "XO" Executive Officers Talk Around
57008	Georgetown Co. SD Narcotics
49008	Andrews Fire Department (simulcast with 154.055 MHz)
40720	Andrews PD Ch. 1 Dispatch
40688	Andrews PD Ch. 2 Talk-around
64272	Georgetown Electric Admin
64288	Georgetown Electric Operations
57520	Pawleys Island PD Admin

Georgetown City Talkgroups

Talkgroup	Description
40784	Georgetown FD Ch. 1 Dispatch
57344	Georgetown PD Ch. 1
57296	Georgetown PD Ch. 2
57312	Georgetown PD

Greenville County Talkgroups

Talkgroup	Description
9136	Greenville-Spartanburg Airport Security
15744	Greenville Hospital Emergency Preparedness
15760	Greenville Hospital Emergency Preparedness
17328	Travelers Rest PD Dispatch
26560	Travelers Rest PD Dispatch
33104	Cedar Mountain Fire Rescue
33296	South Greenville FD Dispatch

39456	St. Francis Hospital Security
39472	St. Francis Hospital Ch. 2
39664	Greenville Co. Landfill Ch. 1
39680	Greenville Co. Landfill Ch. 2
51872	Greenville Hospital Security
51888	Greer PD
52448	Simpsonville PD
52464	Fountain Inn PD
52480	Simpsonville PD Tac
52496	Fountain Inn PD Tac
52512	Mauldin PD
52768	Greenville Co. SD A1
52784	Greenville Co. SD B1
52800	Greenville Co. SD A2
52816	Greenville Co. SD B2
52848	Greenville Co. SD Tac 1
52864	Greenville Co. SD Tac 2
52880	Greenville Co. SD Tac 3
52896	Greenville Co. SD Tac 4
52912	Greenville Co. SD Tac 5
52976	Greenville Co. SD B7
53024	Greenville Co FDs Chiefs
54512	Greenville FD Dispatch 1
54528	Greenville FD Dispatch 2
54544	Greenville FD Command 1
54560	Greenville FD Command 2
54736	Greenville PD Ch. 1 Traffic
54752	Greenville PD Ch. 2 Talk-around
54768	Greenville PD Ch. 3 Dispatch
54784	Greenville PD Ch. 4 Records
54800	Greenville PD
54848	Greenville PD
54864	Greenville PD
54880	Greenville PD
64208	Greenville Transit/Buses Ch. 1
64224	Greenville Transit/Buses Ch. 2
64304	Greenville Building Codes Enforcement
64320	Greenville Animal Control

Horry County Talkgroups

Talkgroup	Description
50864	Horry Co. Jail Transport

Jasper County Talkgroups

Talkgroup	Description
38064	SD Ops 1
38096	Roaming
38128	FD and EMS
38160	FD Tac 1
38192	FD Tac 2
40752	FD Admin
40848	Hardeeville FD Admin
43184	Hardeeville PD Dispatch
43216	Sheriff Dispatch
43504	Ridgeland PD

Kershaw County Talkgroups

Talkgroup	Description
3088	Kershaw Co. EMS Dispatch (Dispatcher only simulcast with 155.745)
3184	Kershaw Co. FD Dispatch
52736	Kershaw Co. FD Fireground
57696	Kershaw Co. SD
57776	Kershaw Co. SD
58240	Kershaw Co. FD
64928	Elgin PD Talk-around

Lancaster County Talkgroups

Talkgroup	Description
36784	Lancaster Co. SD Ch.2
36800	Lancaster Co. SD Ch.1
36832	Lancaster Co. Fire Talk
36880	Lancaster PD

Laurens County Talkgroups

Talkgroup	Description
53776	Laurens PD Ch. 1 Dispatch
53792	Laurens PD
53808	Laurens PD Ch. 2 Talk-around
53824	Laurens Co. SD Ch. 1 Dispatch
53840	Laurens Co. SD Ch. 2
53856	Laurens Co. SD Ch. 3
53872	Laurens PD
53888	Laurens Co. SD Talk
53904	Laurens Co.
53920	Laurens Co.
59856	Laurens Co.
61856	Clinton PD Ch. 1 Dispatch
61872	Clinton PD Ch. 2
61888	Clinton PD
62816	Laurens Co. EMS Dispatch

Lee County Talkgroups

Talkgroup	Description
63600	Lee Co. SD Ch.1
63616	Lee Co. SD Ch.2

Lexington County Fire and EMS Talkgroups

Talkgroup	Description
18096	Lexington Co. FD Ch.1 Dispatch
19056	Lexington Co. FD Ch.2 Regional Fireground
17712	Lexington Co. FD Ch.3 Regional Fireground
17744	Lexington Co. FD Ch.4 Regional Fireground
19568	Lexington Co. FD Ch.5 Regional Fireground
19600	Lexington Co. FD Ch.6 Regional Fireground
19664	Lexington Co. FD Admin
18896	Lexington Co. EMS Ch.1 Dispatch/Operations
18928	Lexington Co. EMS Ch.2 Admin
19632	Lexington Co. EMS Ch.3 to Lexington Medical Center
19536	Lexington Co. EMS to Palmetto Health Richland and Baptist Hospitals
19792	Lexington County EMS Ch.6
25872	Batesburg-Leesville Rescue Squad Talk
40656	West Columbia FD Talk
50736	Irmo Fire District Ch.6

Lexington County Municipal Police Talkgroups

Talkgroup	Description
17872	Swansea/Gaston/Pelion PD Dispatch
19248	Lexington/S Congaree/Pine Ridge/Chapin/ Springdale PD
5808	Cayce Public Safety Talk
20560	Chapin PD
42480	Lexington PD Roam
64704	Lexington PD TAC
64720	Lexington PD
10896	Gaston PD Ch. 2 Talk
50640	Irmo PD Dispatch
50672	Irmo PD Ch. 2 Talk-around
53552	Pelion PD Talk-around
20592	Springdale PD Car to Car
56480	South Congaree PD Talk-around
64480	Swansea PD Ch. 5
20400	West Columbia PD Ch.A Dispatch
20432	West Columbia PD Ch.B Car to Car
20464	West Columbia PD Ch.C
20496	West Columbia PD Investigators
20448	West Columbia PD
64112	West Columbia PD Ch H
64096	West Columbia PD Unknown

Lexington County Public Works Talkgroups

Talkgroup	Description
9040	Lexington Medical Center Security
9072	Lexington Medical Center
17840	Lexington Co. Coroner
18416	Lexington Co. Public Works Admin
18448	Lexington Co. Road Maintenance
18480	Lexington Co. Public Works
18736	Lexington Co. Fleet Service
18800	Lexington Co. Building Maintenance
18832	Lexington Co. Solid Waste Management
19760	Lexington Co. Planning and Development

19824	Lexington Co. Animal Services
20656	Batesburg-Leesville Town Admin Channel
60208	Lexington Co. Public Works

Lexington County Sheriff Talkgroups
Lexington Co. SD operates on encrypted talkgroups that are not monitorable.

Talkgroup	Description
17616	Lexington Co. SD Ch. 4 Co-Op
60016	Lexington Co. SD
60080	Lexington Co. SD Ch. 5
60112	Lexington Co. SD
60240	Lexington Co. SD Ch. 1
60272	Lexington Co. SD Ch. 2
60288	Lexington Co. SD
60304	Lexington Co. SD
60336	Lexington Co. SD Ch. 7
60368	Lexington Co. SD
60400	Lexington Co. SD
60432	Lexington Co. SD
60464	Lexington Co. SD

Marion County Talkgroups

Talkgroup	Description
28496	Marion FD Dispatch
28528	Marion FD Tac 1
28560	Marion FD Tac 2
28592	Marion PD Ch. 1
28624	Marion PD Ch. 2

Marlboro County Talkgroups

Talkgroup	Description
39392	Marlboro Co. Roam
39408	Marlboro Co. SD Ch. 2
40176	Marlboro Co. SD Ch. 1

McCormick County Talkgroups

Talkgroup	Description
25728	McCormick Co. SD

Newberry County Talkgroups

Talkgroup	Description
36736	Newberry Co. Unknown Use
36896	Newberry Co. SD Ch. 1
36912	Newberry Co. SD Ch. 2
36928	Newberry Co. Roam
36992	Prosperity PD
37008	Prosperity PD
37024	Whitmire PD
37040	Whitmire PD
39216	Newberry Co. EMS
39232	Newberry Co. EMS to Newberry ER

Oconee County Talkgroups

Talkgroup	Description
52576	Seneca PD

Orangeburg County Talkgroups

Talkgroup	Description
9648	Orangeburg Co. SD Dispatch
9712	Orangeburg Co. Unknown
9744	Orangeburg Co. Ch 35. Town PDs East Dispatch
9776	Orangeburg Co. Town PDs West Dispatch
10032	Orangeburg Co. EMS
10064	Orangeburg Co. EMS to Hospital
10128	Orangeburg Co. Fire Control
10192	Orangeburg Co. Disaster
10256	Orangeburg Co. Unknown
10288	Orangeburg Co. Unknown
10320	Orangeburg County Statewide Roam
10352	Orangeburg Co. Unknown
10384	Orangeburg Co. SD Ch. 28 Talk
10448	Orangeburg Co. SD Ch. 30 Specials Ops
10544	Orangeburg Co. Ops Channel
10576	Orangeburg Co. SD Ch. 32
10704	Orangeburg Co. Unknown

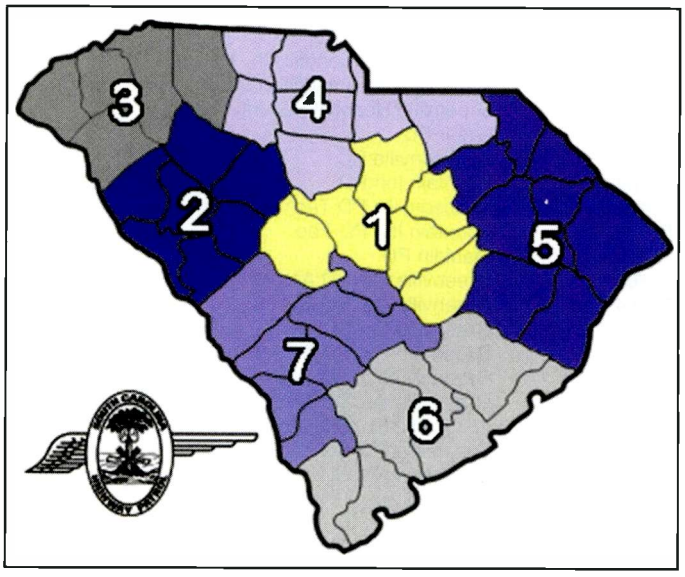


Photo D. South Carolina Highway Patrol troops are assigned to one of seven jurisdictions established across the state. *(Courtesy of Wikimedia Commons)*

10864	Orangeburg Co. SD Ch. 33 Narcotics
11056	North PD Ch. 2

Pickens County Talkgroups

Talkgroup	Description
12672	Easley PD Ch. 2
19856	Pickens Co. Call
26096	Pickens PD
26128	Pickens Co. EMS
26144	Pickens Co. ESD
26160	Pickens Co. FD
26192	Liberty PD
26208	Easley PD Ch. 1
26240	Clemson PD
26256	Clemson University PD
58576	Clemson University FD

Richland County Talkgroups

Talkgroup	Description
3728	USC Maintenance
3760	USC Maintenance
3776	USC Maintenance
3952	Palmetto Richland Memorial Hospital NICU
4000	Palmetto Senior Care Transport
4064	Palmetto Richland Memorial Hospital Security
4976	Eastover PD
4992	Solid Waste Division
5904	Richland Co. Public Works
5968	Richland Co. Building Codes Enforcement
6352	Columbia FD MOSCAD Data
6416	Palmetto Baptist Medical Center Emergency Announcement
6448	Palmetto Baptist Medical Center Security Ch. 01
6480	Palmetto Baptist Medical Security Ch. 02
6544	Palmetto Baptist Medical Center Maintenance
6672	Palmetto Baptist Medical Center
7984	Richland Co. School District 1 Security
16064	Richland Co. Detention Center
16112	Richland Co. Fire Marshall CH HAZMAT
16688	Richland Co. Coroner
16720	Richland Co. Animal Control
16848	Richland Co. Building Maintenance
18256	Columbia College PD
34992	Richland Co. Social Services
40304	Forest Acres PD Talk-around
41712	USC Maintenance
45232	Richland Co. School District 2 Ch. 1

45264	Richland Co. School District 2 Ch. 2
45328	Richland Co. School District 2 Security
50960	Columbia Public Works
63984	Midland's Technical College Security
64144	USC PD
64848	Forest Acres PD Dispatch

Richland County EMS Talkgroups

Talkgroup	Description
16032	Richland Co. EMS Ch. 01
16096	Richland Co. EMS Ch. 02 To Hospital
16256	Richland Co. EMS Ch. 03
16272	Richland Co. EMS Ch. 04 Supervisors
16080	Richland Co. Public Safety/EMS Ch. 6
16048	Richland Co. EMS Ch. 7 Special Events
16288	Richland Co. EMS Media
16560	Richland Co. EMS EKG Data
16576	Richland Co. EMS EKG Data
60608	Richland Co. Emergency Services

Richland County Sheriff Talkgroups

Talkgroup	Description
17232	Richland Co. SD Ch. 1 Region 1 Dispatch
17168	Richland Co. SD Ch. 2 Region 2 Dispatch
17040	Richland Co. SD Ch. 3 Region 3 Dispatch
17088	Richland Co. SD Ch. 4 Region 4 Dispatch
16992	Richland Co. SD Ch. 5 Courthouse 1
17104	Richland Co. SD Ch. 6 Regions 6 & 7 Dispatch
17136	Richland Co. SD Ch. 7 Talk-around
16976	Richland Co. SD Traffic/C.A.T.
17056	Richland Co. SD Investigations
17184	Richland Co. SD Desk Sergeant/Warrant Checks
17200	Richland Co. SD Statewide Roam
17008	Richland Co. SD Courthouse 2
17024	Richland Co. SD Special Ops 1
17120	Richland Co. SD Special Ops 2
17152	Richland Co. SD Special Ops 3
16528	Richland Co. SD Analog Mutual Aid
15920	Richland Co. SD TAC 15 County Admin Building Security
16016	Richland Co. SD S.R.T.
16400	Richland Co. SD Tac 8 Community Action Team (CAT)
60816	Richland Co. SD
60832	Richland Co. SD
60880	Richland Co. SD Narcotics 2

Columbia Fire (Richland County) Talkgroups

Talkgroup	Description
42576	Columbia FD Dispatch Channel
42608	Columbia FD Ops 1
42640	Columbia FD Command 1
42672	Columbia FD Ops 2
42704	Columbia FD Command 2
42736	Columbia FD Tac 1
42768	Columbia FD Tac 2
42800	Columbia FD Tac 3
42832	Columbia FD Tac 4
42864	Columbia FD Admin 1
42896	Columbia FD Admin 2
42928	Columbia FD Admin 3

Columbia Police (Richland County) Talkgroups

Talkgroup	Description
40432	Ch. 1 Records Check/TRU
59008	Ch. 2 West Region Dispatch
59024	Ch. 3 North Region Dispatch
59040	Ch. 4 Metro Region Dispatch
59056	Ch. 5 South and East Regions Dispatch
59072	Ch. 6 Special Ops 1
59184	Ch. 7 Special Ops 2
59088	Ch. 8 Command
59104	Ch. 9 Investigators
59120	Ch. 10 Narcotics
40464	Ch. 11 Community Service Officers (CSO)
59136	Ch. 12 Special Events
59152	Ch. 13 SWAT
59168	Ch. 14 EOC
40496	Ch. 15 Roam
59200	Special Events

Saluda County Talkgroups

Talkgroup	Description
28400	Saluda Co. SD
39312	Saluda Co. SD Ch. 2
39328	Saluda Co. SD Roam

Spartanburg County Talkgroups

Talkgroup	Description
47920	Spartanburg Co. FDs
13680	North Spartanburg FD
47952	Spartanburg Co. HAZMAT
48528	Spartanburg Co. 911/Communications Center
36624	Spartanburg Regional Medical Center Security
36720	Spartanburg Regional Medical Center Emergency Response Team
48432	Spartanburg Co. EMS Dispatch 1
48656	Spartanburg Co. EMS Dispatch 2
48496	Spartanburg Co. EMS Operations
48576	Spartanburg Co. EMS Conference
48608	Spartanburg Co. EMS to Spartanburg Regional Medical Center
48512	Spartanburg Co. EMS to Mary Black Hospital
48464	Spartanburg Co. EMS to Allen Bennett Hospital
48848	Spartanburg Co. EMS Mobile EKG Data
30064	Spartanburg Air-Ground (Regional 1)
48016	Spartanburg Co. SD Ch. 1 Dispatch
48048	Spartanburg Co. SD Ch. 2 Traffic
48560	Spartanburg Co. SD Ch. 3 Talk-Around
48112	Spartanburg Co. SD Ch. 4 TAC/High Risk
48080	Spartanburg Co. SD Ch. 5 Investigations/Warrants
48144	Spartanburg Co. SD Ch. 6 Canine Ops
48592	Spartanburg Co. SD Ch. A7
48336	Spartanburg Co. SD Ch. A8 Detention Center Ops
48368	Spartanburg Co. SD Ch. A9 Detention Center Transport
48672	Spartanburg Co. SD Ch. A10
48544	Spartanburg Co. SD Ch. B1
48176	Spartanburg Co. SD Ch. B2 Conference
48208	Spartanburg Co. SD Ch. B3
48240	Spartanburg Co. SD Ch. C1 Special Events
48272	Spartanburg Co. SD Ch. C2
48304	Spartanburg Co. SD Ch. C3
48400	Spartanburg Co. Jail/Courthouse Security
48720	Spartanburg Co. Municipal 1
48752	Spartanburg Co. Municipal 2
48784	Spartanburg Co. Municipal 3
48816	Spartanburg Co. Municipal 4
17360	USC-Upstate Security
25712	USC-Upstate Security

Union County Talkgroups

Talkgroup	Description
36576	Union PD
52704	Union Co. SD

Williamsburg County Talkgroups

Talkgroup	Description
36688	Kingstree FD
36704	Kingstree FD Roam
40336	Williamsburg Co. SD Dispatch 2
40368	Williamsburg Co. SD Roam
58512	Hemingway PD Dispatch
58544	Greeleyville PD Dispatch
58592	Lane PD Dispatch
58624	Kingstree PD Dispatch 1
58640	Kingstree PD Narcotics
58656	Kingstree PD Roam
60912	Williamsburg Co. SD Dispatch 1
60928	Williamsburg Co. SD Admin
60944	Williamsburg Co. SD Warrants
60960	Williamsburg Co. SD Investigations
61904	Williamsburg Co. FD Ch. 1
61920	Williamsburg Co. FD Ch. 2
61936	Williamsburg Co. FD Roam
61952	Williamsburg Co. EMS

World News, Commentary, Music, Sports, And Drama At Your Fingertips

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
0000	4895	Radio Novo Tempo, Campo Grande	
0000	14950.7	Salem Estereo	SS
0000	9745	Radio Bahrain	
0000	21740	Radio Australia	
0000	7260	Voice of Turkey	TT
0000	9965	Radio Cairo	
0000	11965	Radio Romania International	
0000	15275	Radio Thailand	
0000	9800	Voice of Russia	
0000	6030	CFVP - Canada	
0000	5110	WBCQ	
0000	6190	Deutschlandfunk	GG
0000	5050	Ozy Radio	via St. Mary's
0100	6175	Voice of Vietnam	
0100	6180	Radio China International	via Kashi-Saibagh
0100	7430	Voice of America	via Kuwait
0100	11875	Radio Taiwan International	via Tainan
0100	15160	Radio Australia	via Shepparton
0125	15745	Sri Lanka BC	
0130	7425	Radio Tirana	via Shijak
0200	7375	Croatian Radio	
0200	17700	Radio Pilipanas	EE / Filipino
0200	3945	All India Radio	via Gorakhpur
0200	7555	KJES Vado	
0200	9315	Radio Cairo	via Abu Zaabal
0200	9665	Voice of Russia	
0200	9925	Croatian Radio	via Wertachtal
0200	11710	Radio Argentina Exterior	
0200	15425	Voice of Russia	via Petro-Kamchat
0230	9560	KBS World Radio	
0230	6175	Voice of Vietnam	
0250	9610	Vatican Radio	via Sackville
0300	21275	Radio Australia	via Shepparton
0300	5950	Radio Taiwan International	via Okeechobee
0300	5980	Channel Africa	via Meyerton
0300	17800	T8WH Shepherd's Chapel	via Palau Medorn
0300	9133	Coalition Maritime Forces	Various languages
0300	9515	Voice of Turkey	
0300	3345	Channel Africa	via Meyerton
0300	9625	WINB	via Red Lion
0300	13750	China Radio International	via Beijing
0300	9645	Radio Romania International	via Tiganesti
0300	4930	Voice of America	
0300	15355	Radio Sultanate Oman	via Thumrait
0300	9625	CBC Radio Nord Quebec	
0300	15425	Voice of Russia	
0300	6175	Voice of Vietnam	via Sackville
0300	9665	Voice of Russia	
0300	15335	Radio Sultante Oman	via Thumrait
0300	9645	Radio Romania International	via Tiganesti
0330	11920	Voice of the Islamic Republic of Iran	via Kamalabad
0400	7295	Radio Algerienne	AA
0400	6180	Deutsche Welle	via Sines
0400	5965	Radio Exterior de Espana	SS
0400	9730	Voice of Korea	via Kujang
0400	6175	Voice of Vietnam	SS / via Sackville
0415	4010	KYRGYZ Radio 1	via Bishkek
0400	11740	Family Radio	SS
0400	7220	Voice of Korea	via Kujang
0400	12060	Voice of Russia	SS
0400	4960	Voice of America	via Pinheira
0400	7570	Radio Taiwan International	SS / Okeechobee
0400	5905	China Radio International	RR
0400	9805	Radio France International	via Issoudun
0400	15760	Voice of Russia	
0400	6165	Zambia NBC Radio 2	
0400	11735	Voice of Korea	via Kujang
0400	9480	RFE / Radio Liberty	RR / Lapertheim
0400	15110	Radio Tatarstan	RR / Tatar
0400	17130	China Radio International	via Xian
0400	4930	Turkmen Radio 3	RR / Turkmen
0430	9460	Myanmar Kachin Radio	
0500	9955	WRMI World of Radio	
0500	11625	Vatican Radio	
0500	15120	Voice of Nigeria	via Ikorodu
0500	4055	Radio Verdad	
0500	13630	Radio Australia	via Shepparton

UTC	Freq.	Station/Country	Notes
0500	5920	WHRI Cypress	
0500	11970	Radio Japan	Issoudun
0500	12025	Voice of America	via Selebi-Phikwe
0500	4405	Voice of Korea	via Kujang
0500	5925	Deutsche Welle	via Kigali
0500	11710	China Radio International	via Cerrik
0500	4755	TWR Africa	via Manzini
0500	3960	Star Radio Liberia	EE / FF
0730	15185	AIR New Delhi	via Kingsway
0600	6090	ANGUILLA - Caribbean Beacon	
0800	17815	Radio Cultura	PP
0800	9850	Voice of Russia	DRM
0900	9580	Radio Australia	
0900	5680	Radio San Rafael	SS
1000	15435	Radio Free Asia	Tibetan
1000	5885	Voice of America	via Kuwait
1000	9525	Voice of Indonesia	via Jakarta
1000	9655	KNLS Anchor Point	
1100	6020	Radio Australia	
1100	9760	KBS World Radio	DRM
1135	11620	AIR New Delhi	via Khampur
1100	5955	China Radio International	via Beijing
1100	7205	Voice of Russia	via Chita-Atamankova
1100	15825	WWCR Nashville	
1100	3360	Voz de Nahuala	SS / Quiche
1100	6060	Radio Nacional de Venezuela	SS / EE
1100	21610	Exterior de Espana	SS / via Noblejas
1100	4055	Radio Verdad	via Chiquimula
1100	5995	Radio Australia	via Brandon
1130	9840	Voice of Vietnam	via Hanoi
1200	21570	Radio Romania International	via Tiganseti
1200	9705	Radio Ethiopia	via Addis-Ababa-Gedja
1200	11670	Adventist World Radio	via Trincomalee
1200	15575	KBS World Radio	via Kimjae
1200	5010	Radio Misionnes Ineternational	SS
1200	15190	Radio Japan	via Montsinery
1200	5005	Radio Nepal	EE / Vernaculars
1200	12150	Voice of America	via Udon Thani
1200	7405	Radio Marti	SS / via Greenville
1300	11650	Radio Australia	
1300	6110	Radio Azerbaijan	GG / DD / EE
1300	15568	Voice of Tibet	Tibetan
1300	3560	Voice of Korea	via Kujang
1300	12075	Voice of Russia	via Dushanbe-Orzu
1300	11730	Radio Japan	via Tashkent
1300	4976	Radio Uganda	EE / Vernaculars
1300	11715	KJES Vado	
1300	5950	Radio New Zealand International	via Rangitaiki
1300	9570	KBS World Radio	via Kimjae
1300	6140	MV Baltic Radio	via Mauen
1300	4970	AIR Shillong	via Shillong
1330	17520	Radio Pakistan	Urdu
1400	6085	AIR Gangtok	EE / Hindi
1400	9635	Radio Serbia International	via Beograde
1400	15140	Radio Sultanate	via Thumrait
1400	3290	Radio Central	EE / Hiri Motu
1400	4319	AFN Los Angeles	via Diego Garcia
1500	9655	ALASKA - KLNS	
1500	9505	Radio Japan	
1600	9585	Vatican Radio	RR
1600	7385	PBS Xiang	
1600	15345	Radio Cairo	via Abu-Zaabal
1600	15470	Voice of America	via Lampertheim
1700	4880	SW Radio Africa	via Meyerton
1700	17895	Voice of America	via Santa Maria di Galeria
1700	3960	Star Radio Liberia	EE / FF
1800	5915	Zambia NBC Radio 1	18:00 to 18:10 UTC
1800	11720	Scandanavian Weekend Radio	Saturday only
1800	11735	Zanzibar Broadcasting Corporation	via Dole
1800	3995	HCJB Deutsch	GG / via Weenermoor
1900	11775	ANGUILLA - Caribbean Beacon	
1900	3365	Radio Milne Bay	EE / Hiri Motu
1900	9425	AIR National Channel	via Bengaluru
1900	11800	Radio Deutsche Welle	via Kigali
1900	3305	Radio Western	EE / Hiri Motu
1900	11760	Radio Habana Cuba	
2000	13675	UAE Radio Dubai	AA
2000	9830	Chinese National Radio 1	CC
2000	11870	Radio Biafra London	EE / Igbo
2000	7365	Vatican Radio	via Santa Maria di Galeria
2000	7290	Radio Pridnestrovye	via Kishinev-Grogoriopol
2100	15084	Voice of Iran	Farsi
2100	9810	Radio Havana Cuba	SS
2100	21740	Radio Australia	
2145	9635	Voice of Vietnam	VV
2200	9855	Radio Australia	
2200	15440	Radio Taiwan International	via Okeechobee
2200	9265	WINB	via Red Lion
2230	5820	Voice of America	via Tinang
2200	15320	KSDA-AWR Guam	via Agat
2200	7505	WRNO	via New Orleans
2200	15230	Radio Australia	via Shepparton
2200	3995	HCJB Deutsch 'Life FM'	via Weenermoor
2200	6090	Caribbean Beacon: Univeristy Network	via Anguilla
2200	13362	AFN Los Angeles	via Barrigada
2200	6055	All India Radio	via Delhi-Khampur
2200	6100	Radio Serbia International	via Bijeljina
2300	5915	Radio China International	
2300	9745	Radio Romania International	SS
2300	9835	HCJB Quito	GG
2300	17750	Radio Australia	
2300	7290	Voice of Russia	via Kishinev-Grogoriopol
2300	5955	Radio Cultural	SS / EE
2300	3360	Voz del Upano	SS
2300	15250	Radio Nacional de Venezeula	SS / EE
2300	9965	Radio Cairo	via Abu Zaabal
2300	11810	Radio Romania International	via Tanganesti
2300	5040	Radio Habana Cuba	
2300	12020	Voice of Vietnam	via Hanoi-Sontay
2300	3195	WWCR Nashville	
2300	9740	BBC	via Kranji
2300	6060	Radio Argentina Exterior	SS
2315	3985	Croatian Radio	via Deanovec

Communications Trivia and Other Pursuits

By R.B. Sturtevant,
KPC7RBS/AD7IL

Q: Anyone who studies amateur radio history knows that the President has the right to close the airwaves to hams during a national emergency. Many of us who are old enough remember President Roosevelt imposed a silence right after the attack on Pearl Harbor in 1941. Was it ever done before that?

A: Yes. During World War I amateurs were ordered off the air and administration of radio was put in charge of the U.S. Navy. It worked so well that it took hams until 1920 to get their privileges back because the Navy wanted to keep those frequencies for itself.

Before World War I, the President also barred the use of the airwaves to amateurs in Texas, Arizona, and New Mexico along the Mexican border. This was to ensure the air was clear for General J.J. Pershing, **Photo A**, who entered Mexico in a punitive raid to capture Pancho Villa. This one was not a national shutdown — only a regional one. The President still has this authority.

Photo A. An operation to capture Pancho Villa in Mexico by General J.J. Pershing, seen here in New Orleans in February 1920, silenced radio amateurs along the Mexican Border by order of the President. *(Courtesy of John Tibule Mendes via Wikimedia Commons)*

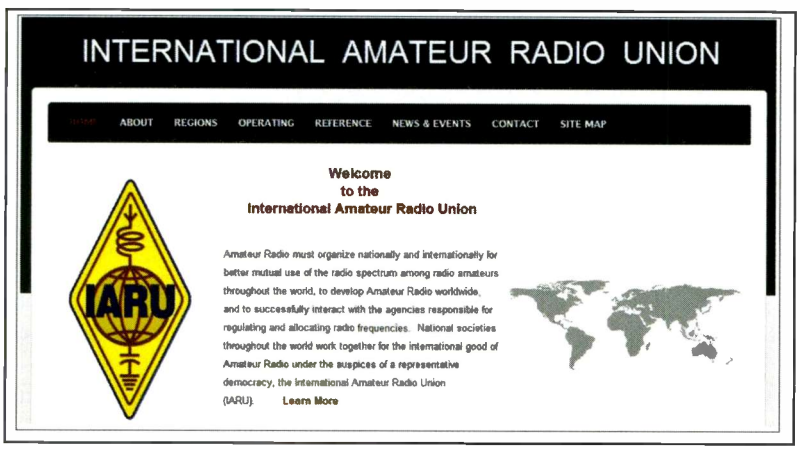


Photo B. Check the IARU website <http://www.IARU.org> for links to information about amateur radio operation from countries around the world. Requirements and privileges vary from nation to nation. *(Internet screen grab)*

Q: Was the Titanic the first major sea disaster to involve radio?

A: Nope. The steamships Republic and Florida collided in 1909 off the coast of New York and 1,500 lives were saved thanks to the distress signals sent by Jack Binn aboard the Republic. Everyone thought things must have been fine since there were no casualties. It took the 1912 sinking of the Titanic to shock people into doing something about the safety of life at sea.

Q: I want to go out of the country and plan to take my rig with me. How can I find out what licensing restrictions I'll have to work with to use my equipment?

A: You'd better check with The International Amateur Radio Union and the International Telecommunications Union. Both are part of the United Nations and are located in Geneva, Switzerland. The IARU has a website — <http://iaru.org>, **Photo B** — listing all the member nations and has a link to their websites. No matter what country you plan to visit you should check out its website and find out about the regulations for radio amateurs operating in that country.

- Will you need to test?
- Is your American ham license valid?
- What are the fees for getting a local license?
- What frequencies can you work?

These questions and many more can be answered by contacting the local amateur radio society where you plan to visit. Check out the IARU website to see about the health of amateur radio around the world.

Q: What was the original meaning of the word "ether" and how did it become related to radio?

A: Ether was a term used by the Scotsman James Clerk Maxwell, **Photo C**. He was the first to speculate on the existence of electromagnetic waves somewhere between heat waves (that travel slowly) and light waves (which we all know go much faster). In 1867 he speculated that these waves permeated the universe and were electromotive forces.

Between 1886 and 1889 the German physicist Heinrich Hertz determined through lab experiments there were such waves. What Hertz discovered was the "stuff between heat waves and light waves" was *ether* — "a hypothetical substance supposed to occupy all space, postulated to account for the propagation of electromagnetic radiation through space." The various frequencies were referred to as Hertzian waves. I suppose that sounded better than Maxwellian waves: *"Let's move our contact up 10 Maxwells."*

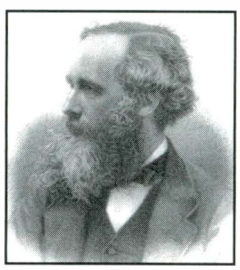


Photo C. Scottish physicist James Clerk Maxwell (1831-1879) "first speculated on the existence of electromagnetic waves somewhere between heat waves (that travel slowly) and light waves (which we all know go much faster)." *(Courtesy of Wikimedia Commons)*

By Jason Feldman, WPC2COD

New Adventure Radios for 17 and 12 Meters

MFJ added two new models to its Adventure Radios™ series of SSB transceivers. The MFJ-9417 covers 18.08-18.17 MHz (17 meters) and delivers 12 Watts SSB PEP and the MFJ-9412 covers 24.890-24.990 MHz (12 meters) and delivers 20 Watts SSB PEP.

Adventure Radios™ sport MFJ's exclusive *ConstantCurrent*™ syllabic speech processing for an added 4 to 6 dB of gain. On the receiving end, the MFJ-9417 and 9412 feature a super-het receiver design with a low-noise front end and double-balanced mixer to fight intermod. They also have a 2.3-kHz crystal ladder filter and a built-in, low-pass filter to help avoid TVI.

Photo A. The brushed aluminum face of MFJ Enterprises, Inc., new 17- and 12- meter transceivers feature a real analog S-meter. *(Courtesy of MFJ Enterprises, Inc.)*

The front face has a genuine analog S-meters that doubles as a speech processing level monitor, analog tuning with no unexpected rate shifts or stair-stepping, powerful one-half watt of audio from its 3.5-inch top-mounted speakers, and a solid-state FET switch to key an external amplifier. Each model includes a dynamic handheld microphone so hams can operate SSB.

The MFJ-9417/9412 is designed to operate from a 2-amp AC supply or from a 12-volt battery. MFJ says that the Adventure Radios™ are built-to-last through conservative design, plate-through PC boards, a handsome brushed-aluminum faceplate, and tough cabinets.

They say the Adventure Radio can fit just about anywhere: Each is just 6.5-inches wide by 2.5-inches high by 6-inches deep.

The MFJ-9417/9412 is protected by MFJ's famous *NoMatterWhat*™ one year limited warranty. The MFJ-9417X has an MSRP of $269.95, while the MFJ-9412X has an MSRP of $289.95. *(VISIT: MFJ Enterprises website: <http://www.mfjenterprises.com>.)*

DX Engineering Intros New Guy Rings For Vertical Antennas

Stabilizing vertical rigid telescopic tubing has gotten easier according to DX Engineering as they announced their new series of guy rings. These newly engineered guy rings are intended for rope guying DX Engineering, Hustler, and all brands of aluminum tubing vertical antennas, as well as the DX Engineering Telescoping Fiberglass and Aluminum Tubing Kits. DX Engineering said that the guy rings would fit 0.75-, 1-, 1.25-, 1.50-, and 2-inch OD tubing.

The guy rings feature smoothed holes with no sharp edges, protecting your directly threaded ropes. Six 5/16-inch diameter attachment holes allow guy ropes to be properly spaced for three- or four-way guying systems.

DX Engineering guy rings are made from the same black-UV resistant, glass-reinforced poly-resin material found in DX Engineering's Universal Wire Antenna Kits EZ-BUILD™ UWA Center-T and End Insulators. DX Engineering claims that they are virtually impervious to extreme outdoor conditions and mechanical stress. With their 1/2-in.-thick center hole shoulder, the guy rings simply slide over their respective tubing size and seat firmly against the top of the larger tubing section below.

DX engineering said the MSRP of the new guy rings is $7.95 for a set of five. *(VISIT: DX Engineering's website: <www.dxengineering.com>.)*

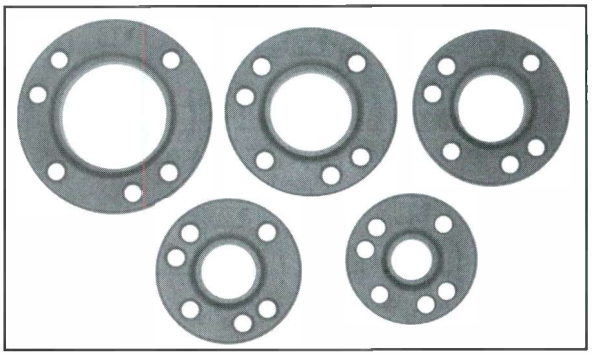


Photo B. DX Engineering said that the guy rings would fit 0.75-, 1-, 1.25-, 1.50-, and 2-inch OD tubing. *(Courtesy of DX Engineering)*

Understanding the Chatter of 'Approach Control'

By Bill Hoefer,
KPC4KGC/WPE4JZZ/
KG4KGC
<flacap388@gmail.com>

"This month's 'Plane Sense' is the next leg in our journey to unravel the various aspects of aviation communication."

As my German friends say: *Glückliches Neujahr!* Happy New Year! Here's hoping you had a great holiday season.

This month's *Plane Sense* is the next leg in our journey to understand the various aspects of aviation communication as they relate to keeping order in the sky and on the ground.

We've already touched on Flight Service *(September 2011 Pop'Comm, page 24)* and the Control Tower *(October 2011 Pop'Comm, page 46)*. With this installment, we tackle Approach Control. That's the order in which most pilots use them. We complete "the course" with Air Traffic Control Centers next month.

Approach Control

In the earliest days of aviation there was no need for air traffic control as we today know it. Few aircraft existed and the public was, as a whole, skeptical and leery of aviation safety, **Photo A**. The first attempt at commercial aviation was successful until the end of "tourist season" in Florida. That was established by Thomas Benoit in St. Petersburg in 1914 — taking people to Tampa and other towns in the region. The first paying passenger was the mayor of Tampa. Today it's easier to drive on the three main bridges than to fly across the bay.

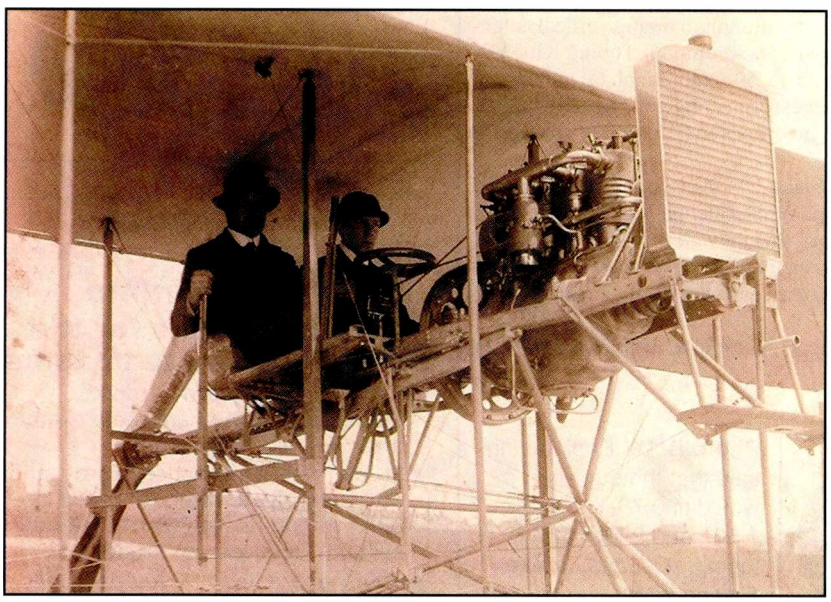


Photo A. In 1909 there was little need for air traffic control. There were so few airplanes at the time there was very little "traffic" to worry about. Radio communication, itself, was still in its childhood. That's Harold Blackburn, left, sitting in a Blackburn-Walker biplane in its original configuration. *(Courtesy of Wikimedia Commons)*

The earliest attempts to fly mail across the continent were limited to daylight flying. Later a series of bonfires — yes, think high school football rallies, or Burning Man — were used to guide pilots flying the mail at night, **Photo B**. After the bonfires, the postal service started setting up a series of rotating beacons.

Beacons are still used today at public, military, and commercial facilities, and can tell you what type of airport it is — even if the weather is inadequate during daylight hours.

- A light with a single green beam with a white beam is a civilian land base.
- A split or double green with white indicates it's a military or joint civilian/military field.
- An amber and white says it's a seaplane base.

*(**NOTE:** I'm unaware if there are any military seaplane facilities still around. Does anyone know differently? – KPC4KGC)*

Up until these beacons were in place, it took trains up to three days to deliver mail across the country — night flying pilots could now get the same mail across the country in less than 30 hours.

Early Legislation

The "Air Commerce Act of 1926" set up the rules and regulations for air traffic, flight training, and aircraft certification. It also established the various airways and navigational aids.

Because of Lindbergh's trans-Atlantic solo flight in 1927 and Ford's production of the "Tri-Motor" in the same year, confidence in flying soared. *(**NOTE:** Bad pun, I admit it. Let the booing begin. – KPC4KGC)*

It wasn't until 1930 that the first radio-equipped ATC facility began in Cleveland, Ohio. Eight three-light beacons were fully installed by

Photo B. Unsung heroes of early U.S. air mail delivery service included the mechanics who kept the planes flying. This photograph was taken in May 1919. *(Courtesy of Library of Congress and Wikimedia Commons)*

1932 to allow pilots to look for the beacons to navigate at night. In the next few years, numerous radio beacons were installed to help pilots fly during periods of low visibility.

Air Route Traffic Control Centers were begun by 1936. We'll get into those in an upcoming column.

Radar Changes Everything . . .

It was after World War II that the biggest boon to air traffic came in to play — radar. The official definition, for air traffic use, is found in the ATC handbook — FAAO 7110.65:

"A device which, by measuring the time interval between transmission and reception of radio pulses and correlating the angular orientation of the radiated antenna beam or beams in azimuth and/or elevation, provides information on range, azimuth and/or elevation of objects in the path of the transmitted pulses."

That's a mouthful. Basically the pulse is sent out and when it comes back it gives the position from the radar antenna. There are two types of returns:

- Primary: Raw, or skin paint
- Secondary: Digital information

The controller uses this information to locate and guide the aircraft toward his destination, all the while keeping aircraft from one another.

In 1946 the CAA — precursor of the modern FAA — experimented with the installation of radar at various airports, but due to budget cuts in 1952, installation was curtailed. It was only after the collision of two aircraft over the Grand Canyon in 1956 that Congress acted by appropriating $250 million to upgrade and modernize air traffic, **Photo C**.

It was in 1960 that the new FAA required commercial airliners to have transponders installed to allow approach and center controllers to "see and identify" the aircraft. Until then, all controllers could do was write information down on pieces of plastic or wood that were called "shrimp boats," which would be moved manually by controllers to ensure separation from other aircraft.

With the advent of newer secondary radar transponders, a specific "code" would be assigned to a specific aircraft, which would then allow the controllers to "see" the airplane. But with only 4,096 available codes (still in use today) it's very feasible that a cross-country airplane would have to change his codes numerous times.

. . . But It's Not Perfect

Radar does have limitations. The greater distance the aircraft in flight is from the radar antenna, the less accurate the position. So approach and center controllers must ensure increased

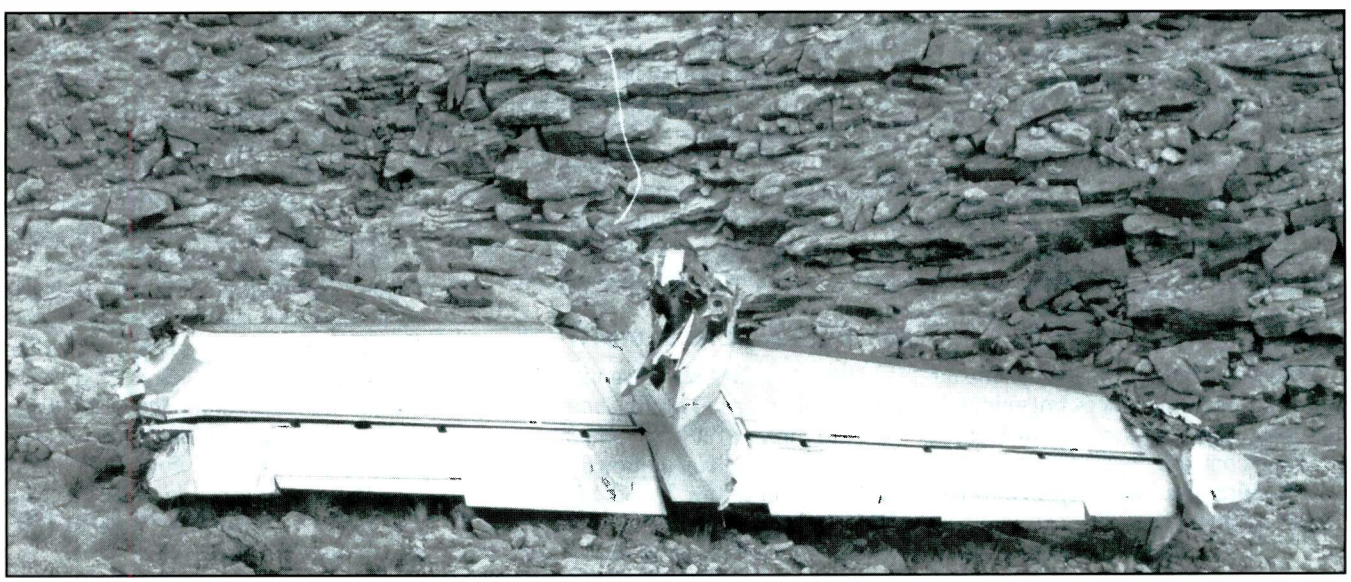


Photo C. The severed tail section of a TWA airliner involved in a mid-air collision on June 30, 1956, rests in the base of the Grand Canyon. The tragedy would prompt Congress to allocate $250 million to improve air traffic control. *(Courtesy of National Park Service)*

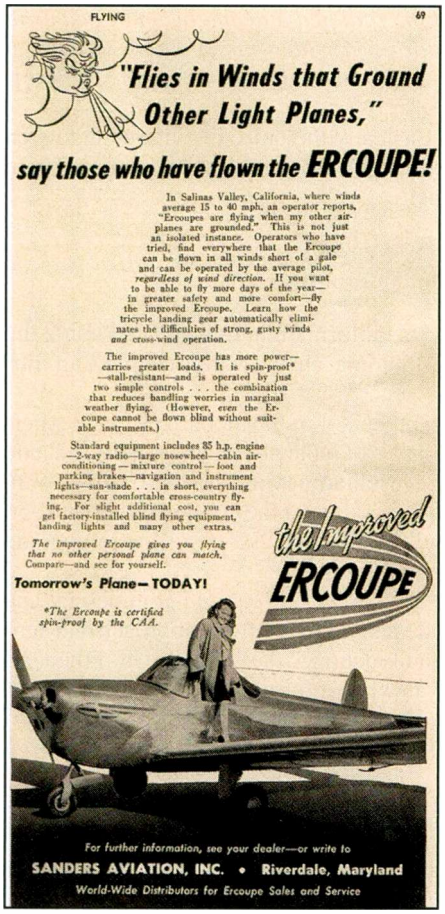


Photo D. By June 1948, Sanders Aviation Company had taken over sales and marketing of the Ercoupe. This advertisement appeared in the June 1948 issue of *Flying* magazine — touting the aircraft's ability to fly "in winds that ground other light planes." *(Courtesy of Wikimedia Commons)*

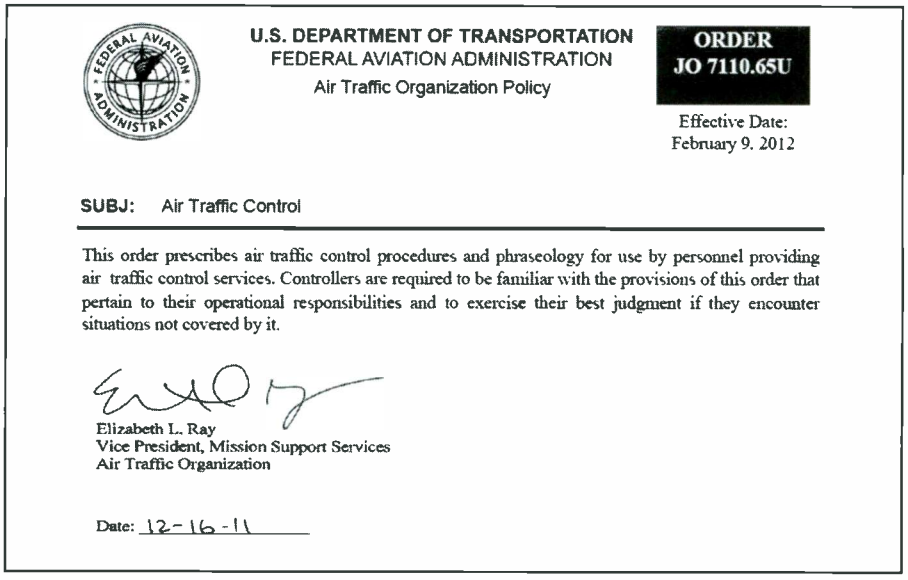


Photo E. The current "bible" of air traffic, the FAAO 7110.65U, can be accessed online at <http://1.usa.gov/RKhJpV>. The 7110.65V will be issued in February 2014. *(Internet screen grab)*

separation exists. Separation can be as close as 3 miles and up to 10 miles between aircraft at greater distances from the antenna.

The speed and weight of the aircraft are other criterion the controller must be aware of. A small aircraft such as an Ercoupe, **Photo D**, needs additional separation behind a heavy bird like a B747, C5, or the like. Wake turbulence is a definite problem.

The controller not only keeps the aircraft separated from others, but guides the pilot toward his or her destination, as well. The controller would sequence and align the aircraft to the proper runway.

The controller:

- Must know the weather at the airport and what runway is in use.
- Will "vector" — turn, climb, or descend the aircraft — as needed, and also be able to think in three dimensions in order to guide the aircraft.

For example, a Cessna 182 flying into runway 9L at Sanford, Florida (SFB) is 15 miles west of SFB and the controller at Orlando approach gets a pop-up inbound — a Lear-jet 55.

The controller has options including keeping the Lear above or laterally to the north or south of the Cessna until the Lear is in front. He could request, or order, the Cessna to "side-step" laterally to allow the Lear in first, or even require the Cessna pilot make a "360" left or right and roll back behind the Lear. The combinations are endless.

Today's controllers must know capabilities of the airspace, the navigational aids, the characteristics of the aircraft involved, weather, temporary flight restrictions, and so on. It means thinking on their feet and not working with just the *here and now,* but looking five to 10 minutes ahead to see if the plan is feasible and safe.

A Vulnerable System

What if radar fails? Up until the PATCO (Professional Air Traffic Control Organization) strike of 1981, there were many non-radar, or "conventional" approach controls still in use. I worked at the non-radar approach control in Albany, Georgia (ABY) from 1982 until the airspace was taken over by Jacksonville Air Route Traffic Control Center (ZJX) in 1987.

We would use the low-altitude charts that pilots used for navigation. We would write on the maps the separation minima to keep aircraft separated. An example of what I would tell the pilot coming into Albany from the north:

"Cessna 12345, Albany approach. Cleared to the PUTNEY radio beach via Victor 97 PECAN direct. Maintain 5,000 until AMAPO then descend to 3,100. Expect the ILS runway 4 approach. Weather at Albany is wind zero six zero at one-two, visibility 4 miles, light rain, ceiling two thousand three hundred overcast, temperature two one, dew point one niner, altimeter two niner niner seven. Report crossing AMAPO and leaving five thousand."

The pilot has been cleared to a radio beacon south west of Albany, but has not been given a clearance to the airport. The pilot must acknowledge his instructions and obey them. If the pilot cannot, due to weather or mechanical issues, he must say so to receive amended instructions.

In this case, if the pilot was based at Albany he could surmise that he would be number two for the ILS (Instrument Landing System) approach as the altitude he was given, 3,100 feet, is 1,000 above the altitude for the approach — 2,100 feet.

If he was going to the be the *only one* on the ILS approach I could have said:

"Maintain 5,000 until AMAPO, cross PECAN at or above 3,000, then descend and maintain 2,100. Expect . . ."

Again, I must need to think on my feet to get the aircraft to the airport.

If you'd like to see the current "bible" of air traffic, the FAAO 7110.65U, go to

<http://1.usa.gov/RKhJpV> which has the current (as of October 2012) 628-page document, **Photo E**. The 7110.65V will be issued in February 2014.

Defining the Approach Control Playing Field

There is no specific *general area* for approach controls. The "rule of thumb" when I entered ATC in 1972 was basically a 40-nautical-mile radius from the antenna from the surface to what altitude was needed.

At Patrick AFB, Florida, (COF) in 1973-1975 it was an odd shaped piece of real estate that stretched from just south of New Smyrna Beach (EVB) down airway Victor 3/57 to just south of Valkaria FL (X59). It included the Kennedy Space Center and west to just east of Orlando FL (MCO) airspace.

The control space went only to 5,000-feet altitude, but we had military high-altitude approaches that started 20 miles east of Patrick that used arcs to allow military fighters and bombers to remain as high as possible for fuel efficiency.

Many of today's approach controls, if cut in half vertically, resemble an upside down wedding cake. A good sectional chart won't give you that view of the airspace but will show you what the airspace looks like when viewed from on top.

There's also an item found only in military approach controls, and to my knowledge in no FAA approach, called Precision Approach Radar, or PAR. *(**NOTE:** If I'm wrong about this, please correct me. – KPC4KGC)*

Also known as Ground Controlled Approach or GCA, PAR uses two antennas side-by-side in a rotatable building roughly half way down a runway. One moves back and forth laterally, the other vertically.

The PAR scope would supply the controller with two radar returns:

- The lower one gives the radar return laterally, giving position relative to the airport.
- The other vertically gives the position above the ground.

Certain computer-generated items included the extended runway centerline, the intended glide path, and "ticks" marking off mileage until touch down. The controller would give two to three degree turns to keep the pilot on track and advise if the pilot was on, above, or below the glide path.

The pilot makes his own decision concerning his descent. To get an idea of what the scope looks like view the action film "Skyjacked" from 1972. I made my case some 10 years ago as to how inaccurate this film is in its portrayal of air traffic control, but the scope is realistic, **Photo F**.

Just remember that PAR scopes are for military flight control only and not found in towers. They "see" out only about 10 miles.

A Couple of Closing Observations

Just two final anecdotes, both PAR related:

No. 1: In my years of ATC I've controlled literally hundreds of different types of aircraft, from Ercoupes to B-52s and much of those in between.

The Lockheed Martin C-5 Galaxy, the largest cargo plane in the U.S. Air Force inventory, and I'm sure the current C-17 Globemaster III of today, would give a double radar return while flying a PAR approach. This bird is *not* stealthy in the least.

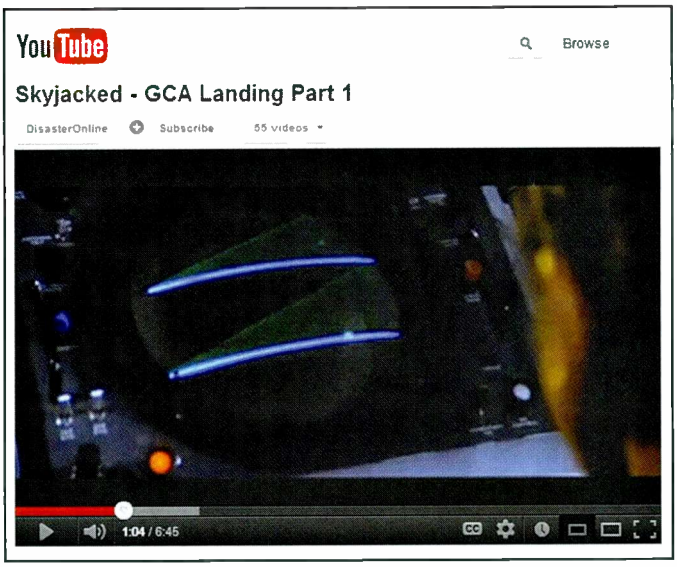


Photo F. "I made my case some 10 years ago as to how inaccurate the movie "Skyjacked" is in its portrayal of air traffic control, but the PAR scope is realistic," writes KPC4KGC. A video of the harrowing landing is on YouTube at <http://bit.ly/SA5jRx>. *(Internet screen grab)*

Not only do you get the "blip" showing the main fuselage, you get a second "blip" from the horizontal stabilizer on top of the tail. The stabilizer is 68 feet, 9 inches wide. That's bigger than many business aircraft.

For an example, the Beechcraft King Air 90 isn't even 46 feet wide. *That's amazing.*

No. 2: This one is from my assignment at Patrick AFB. Approach controls, civilian and military, have their radar and procedures checked out periodically by a "flight check" bird. Some are obvious with their callsigns, such as Flight Check 35. Some are not.

In late 1973, an Air Force Lockheed C-130 Hercules came in to do a flight check. I was on PAR at the time. The pilot invariably ignores the PAR controller headings. He would be coming in a little left or right of course and my responsibility would be to give him vectors to the final approach course. The pilot ignored my headings.

I had to initiate a "no-gyro" approach. I would tell him when to turn, which way to turn, and then to stop. My first words to him were:

"Air Force 12345, this will be a no-gyro approach. Make half-standard turns while on final. Acknowledge." Make note that a standard turn is 3 degrees every second — a full 360-degree turn in two minutes. Therefore, a half standard would be one-and-a-half degrees a second.

He did half standard to the left, but a full standard to the right. It took a couple turns to catch him, but I did. I cut my time in half, put him on final and he rolled out on Runway 20 centerline.

He said: *"You caught me, didn't you?"* I said that I had.

He asked to talk to my crew chief. When the crew chief got on the radio he asked the pilot if I'd done anything wrong. The pilot said I was one of the few who saw what he was doing and as a reward I got to fly in the flight check aircraft for the remainder of his time at Patrick. *I was happy.*

Next month – Air Traffic Control Centers! – KPC4KGC

Orlando Approach: A View of Airspace On Paper

The two maps here are of the Orlando Approach (F11) in Central Florida.

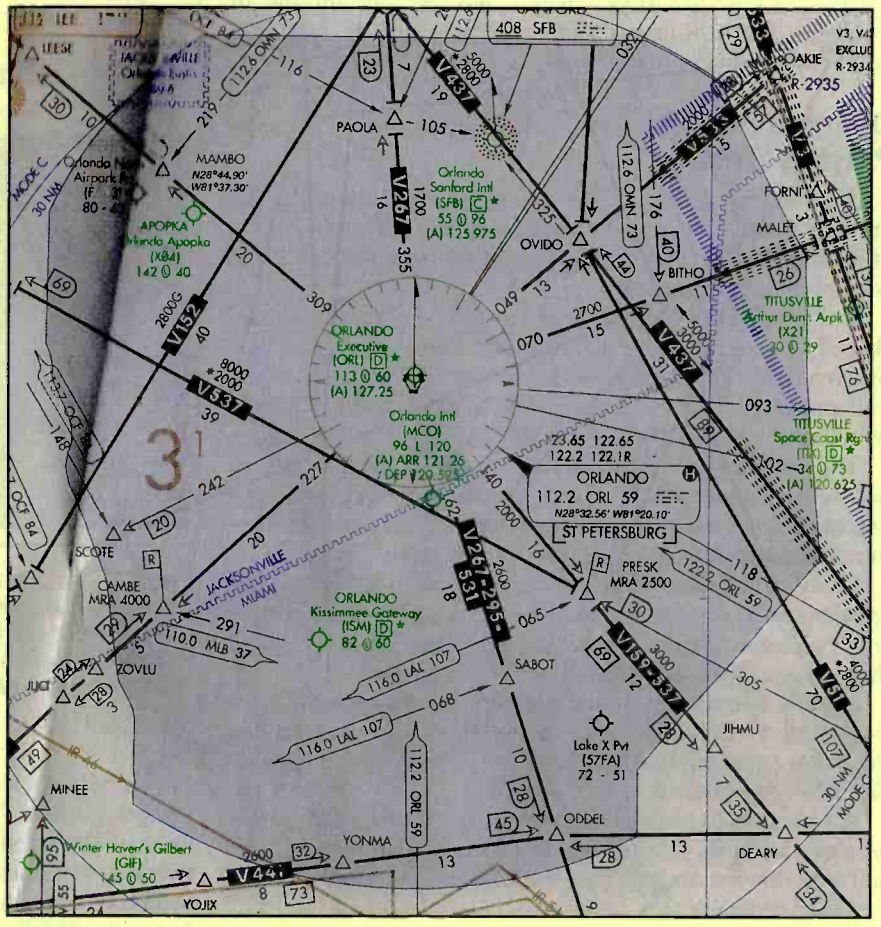
Map 1: The enroute map is from the IFR ENROUTE LOW ALTITUDE — US chart L-23. This map is used by pilots on instrument flight plans from the surface up 17,000 feet. Those from 18,000-60,000 feet (flight levels 180 to 600) utilize the upper altitude maps that do not depict approach controls. As you can see, the airspace is roughly centered on the Orlando VORTAC with most of the airways crossing over the VORTAC. You see that a handful of the airways remain both east and west of the VORTAC. Pilots flying on VFR flight plans, or no flight plans, would not normally use this map as there are few, if any, points of reference on the ground.

Map 2: The more colorful map is the JACKSONVILLE SECTIONAL. This sectional chart covers south Georgia and north Florida. It is the primary map used by those flying but not under IFR (Instrument Flight Rules) control.

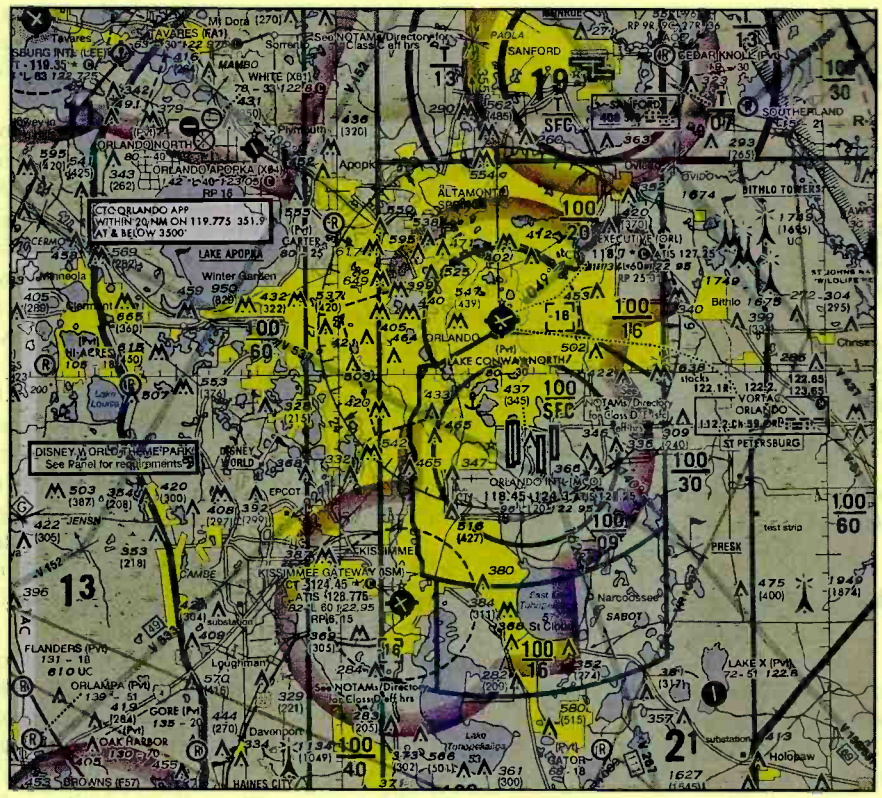
You'll notice that just north of the map layout for Orlando International Airport (MCO) is something that looks a fraction. It's 100/SFC. What this means is the approach control has full control of aircraft from the surface up to and including 10,000 feet MSL. To the southeast you'll see 100/09 showing control for those from 900 feet up to 10,000. Around the map you'll notice the lower numbers changing from 09 to 60, or from 900 feet to 6,000 feet being the base of the airspace.

Looking at the darker blue line delineating the airspace, you'll see as well that the airspace is not perfectly round and the boundary even follows roads.

Look at the western edge running from Clermont down US 27 to Haines City. Now looking at this may seem confusing, but if you think of it in a three-dimensional sense, and you slice through it vertically, it looks like an upside down wedding cake. – *KPC4KGC*



Map 1



Map 2

2013: My Loopy New Year's Resolution

by Kirk Kleinschmidt, NTØZ, KPCØZZZ
<kirk@cloudnet.com>

"I merely have to look at my logbook for verification that the Loop Skywire is the best single-wire antenna I have ever used for multi-band operation"

If you're reading this after the New Year, it probably means that we have survived the apocalyptic hijinx from any prophesied "end of the Mayan Calendar" events — or the Holiday season in general. So at this point we're stuck with the usual non-glamorous New Year's Resolutions that deal with weight loss, exercise, and finally learning Morse code.

But even the usual reflections — Mayan prophesies aside — helped along by a healthy dose of seasonal nostalgia, got me thinking about the best advice I could give beginning hams.

In any endeavor, ham radio included, if you stay with it long enough you come away with a set of "best recommendations" that you wish you would have known (or heeded) much sooner than you finally did. With the benefit of hindsight it's much easier to see how a few simple things made huge differences — how just a simple twist on an otherwise established standard or practice can turn failure into success, or frustration into satisfaction.

Learning the piano as a kid is one of those things that offers universal benefits throughout life — especially after the initial learning phase! I wasn't fortunate enough to have done this — or forced to do this — and I can now appreciate the loss more than ever.

There are many such distinctions in life, but to stay on topic, let's stick to ham radio. And in this case, SWLs benefit just as much. Once operating skills are addressed, the single most important thing that affects your success on HF is your antenna. And it's here that a simple "twist" on the most popular beginner's HF antenna can make a huge difference in performance and success.

Because they're in every antenna book, they're the foundation of most beam antennas and they're so easy to build and get working, most beginners start with dipole antennas, and stay with them, despite the fact that another simple wire antenna is just as easy to build and offers greatly improved performance, especially when used on multiple bands: *The horizontal loop,* **Photo A.**

A Twist of Good Fortune

Switching from a wire dipole to a wire horizontal loop is one of those "twists" that can make all the difference on the HF ham and SWL bands. *(**NOTE:** It's just like having learned the piano at*

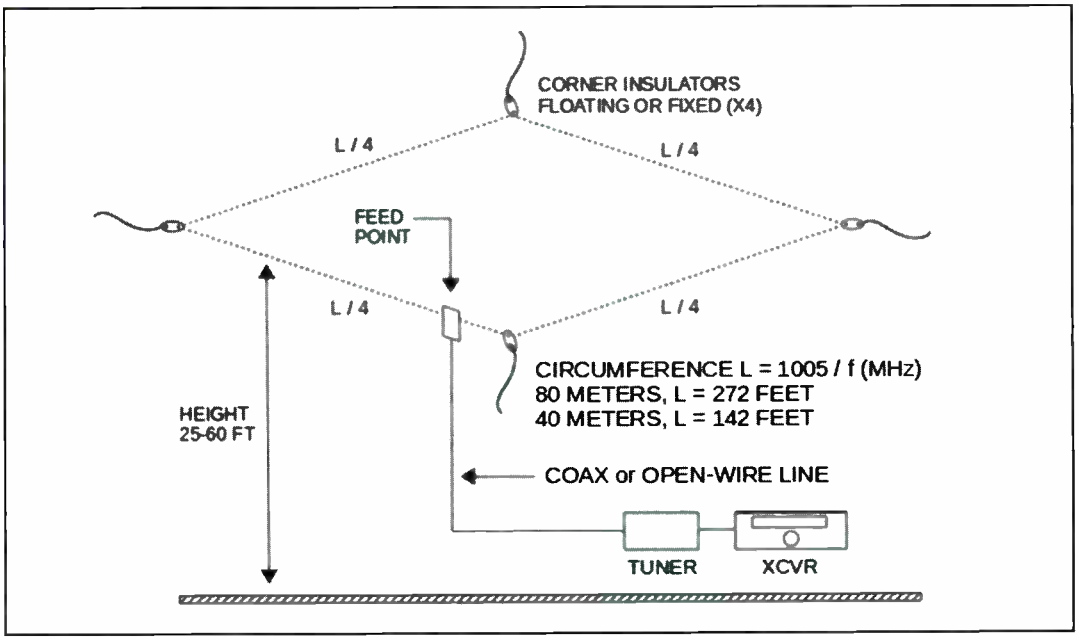
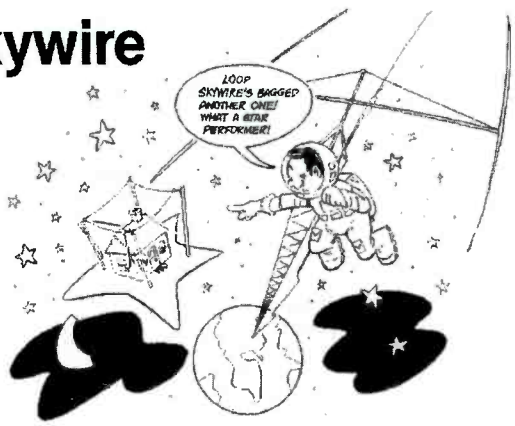


Photo A. For such a high-performance, single-wire, multi-band antenna, building a HF horizontal loop couldn't be much simpler. Put up as much wire as you can, keep it as square or as "loopy" as you can and feed it with an antenna tuner on all bands at or above the design frequency! *See text. (Courtesy of KPCØZZZ)*

The Loop Skywire

Looking for an all-band HF antenna that is easy to construct, costs nearly nothing and works great DX? Try this one!

By Dave Fischer, WØMHS
P.O. Box 888578
Atlanta, GA 30338



There is one wire antenna that performs exceptionally well on the HF bands, but relatively few amateurs know about it or use it. The purpose of this article is to present what one user has described as the "best kept secret in the amateur circle."

The Loop Skywire antenna is simple and easy to construct, costs nearly nothing, and eliminates the need for multiple antennas [illegible] the HF bands. It is made of only has not been fully studied, analyzed and researched. Those who are able and curious should investigate the polarization of this one. This article does not offer a technical explanation of its performance or operation. Rather, it is a description of the antenna accompanied by construction hints and actual user comments. Take some time to erect the Skywire and decide for yourself whether it works.

Novices and Extras take note: Here is a [illegible] problems can [illegible] Dipole

Given any length of wire, the maximum possible area the antenna can enclose will be with the wire in the shape of a circle. Since it takes an infinite number of skyhooks to hang a circular loop, the square loop (four skyhooks) is the most practical. Reducing the area enclosed by the wire loop further brings the antenna closer to the properties of the folded dipole and both harmonic impedance and feed-line

Photo B. "My introduction to the horizontal full-wave loop antenna came in the article, 'The Loop Skywire,' By Dave Fischer, then WØMHS, now W7FB, in the November 1985 issue of *QST*," writes NTØZ. The full article can be read by ARRL members on the organization's website in *QST's* print archive.
(Reprinted with permission of the ARRL, <http://www.ARRL.org>)

a young age — only better, because you didn't really have to learn the piano! – KPCØZZZ)

My introduction to the horizontal full-wave loop antenna came in the article, "The Loop Skywire," By Dave Fischer, then WØMHS, now W7FB, in the November 1985 issue of *QST*, **Photo B**. From 1977 to 1995, all of my loops were vertically oriented and I used a wide variety of quads, quad loops, and suspended delta loops. I was an experienced looper who had a lot of results-based faith in the full-wave loop. When I saw that Dave was advocating "laying the loop on its side," I was intrigued, and immediately strung one between reasonably appropriate tree limbs. The entire thing was 20-30 feet above ground and not terribly symmetrical. Seeing that, I was unprepared for how magnificently it worked!

Having used these things for nearly 30 years now, I have heard all kinds of gruff from hams who have never used them telling me why horizontal loops are only good for short-range (NVIS) communications, how they have ridiculously high-angle radiation patterns, and so on. There are plenty of charts, graphs, and simulation plots — both online and in magazines

— that support their negative claims. I think that's *just great,* because I merely have to look at my logbook for verification that the Loop Skywire is the best single-wire antenna I have ever used for multi-band operation.

Somebody Say, 'Amen!'

Every ham I've ever known who has bothered to put up a horizontal loop has become a believer. A few have even sold their rotatable beams (or didn't bother putting them up after moving to a new QTH) after experimenting with big horizontal loops.

As mentioned, antenna performance is a key success determiner in amateur radio. You can have a pair of $10,000 transceivers, each with matching legal-limit amplifiers, but if you don't have a good antenna you'll wind up in a classic Defense Secretary Donald Rumsfeld scenario: never knowing what you've been missing: "There are known knowns . . . known unknowns . . . and unknown unknowns." *(WATCH: Secretary Rumsfeld explaining knowns and unknowns, <http://bit.ly/RiBQgR>. – KPCØZZZ)*

If you already have a massive antenna farm or have already shelled out for some "heavy aluminum," you may not need to investigate the amazing performance of a simple horizontal loop antenna. But if you're like most of us and can have only a single wire antenna on a small suburban lot, the "sideways loop" may very well put you on the path to Five-Band DXCC — or ragchew quality QSOs at will.

To be specific, I'm not saying that dipoles, end-fed wires or vertical antennas can't be made to work well, or even very well, especially on one or two bands. But when it comes to making a single wire antenna perform well over a wide frequency range, the horizontal loop is the clear champion.

Loop Skywire Benefits

A horizontal loop is a quad loop that's laying on its side. Compared to traditional vertically oriented loops and other wire antennas, it offers some tremendous advantages.

Even — or especially — when mounted "too close" to the ground, horizontal loops completely outperform dipole-type antennas. Most beginners don't know that dipoles and inverted Vs don't perform anywhere near their full potential unless they're at least a half-wavelength above RF ground. That's roughly 60 feet at 40 meters and a whopping 120 feet on 80. The same goes for Yagi-type beam antennas, which are really "dipoles on a boom."

Horizontal loops aren't immune to height-above-ground limitations, and no immutable laws of physics have been broken, but there's no mistaking that when you turn the full-wave loop on its side, close-to-the-ground performance exceeds that of dipole-type antennas.

Loops — horizontal and otherwise — are quiet on receive and usually suffer less from static and man-made noise when compared to dipole- and vertical-type antennas. If fed with balanced or open-wire feed lines they can also exhibit impressive immunity from locally generated noise — even pesky noise from your shack computer.

Horizontal loops tune up easily on all bands at or above their fundamental frequencies, and can be made to work well on lower frequencies if fed with open-wire feed lines or via antenna-mounted autocouplers. Dipoles and vertical loops can't do that. They only work well at certain harmonics of their fundamental frequencies. And even if they could, the impedance matching required is much more complex. These factors alone make the horizontal loop the easiest single-wire antenna for use on multiple bands. The awesome performance is just icing on the cake!

Horizontal loops work well for close-in rag chews and faraway DX pileups.

Ironically, the fact that they do everything well is also their greatest potential weakness! Because these loops receive well in every direction, copying weaker DX stations through throngs of strong stateside stations can be frustrating. Of course, the fact that you can actually hear and work the DX stations — which you often can't do with a dipole — helps calm you down.

I've been mostly talking up horizontal loops in amateur radio applications but, for all of the reasons I've mentioned so far, SWLs get all of the benefits as well, with one interesting caveat: If you're using an entry level SWL receiver, be sure to use an attenuator to decrease the received signal. Without even trying, large loops can overload a receiver's front end, resulting in images, birdies, distortion, and a host of other unwanted side effects. Ah, the luxury of having too much signal.

Inexpensive and Easy to Build

The horizontal loop is simply a full-wavelength loop that's "lying on its side," supported at various points some 15 to 60 feet above the ground. Mathematically, loops are circular, but putting up a horizontal loop that's perfectly circular is needlessly tedious.

Four strategically-placed supports gives us a "square loop," which is an ideal shape.

Three supports, on the other hand, provide a "triangle loop," the limit of what you can get away with.

A slightly rectangular shape is okay, as is an irregular but generally square shape, but an elongated rectangular shape starts to lose its loop-like qualities.

Published in antenna books for years, the standard equation for determining the size of a loop antenna is 1005 divided by the frequency (in megahertz). That's 1005/f. Eighty-meter loops have a circumference of about 287 feet, or about 72 feet on each "side." A 40-meter loop is about 144 feet, making 20 meters about 72 feet.

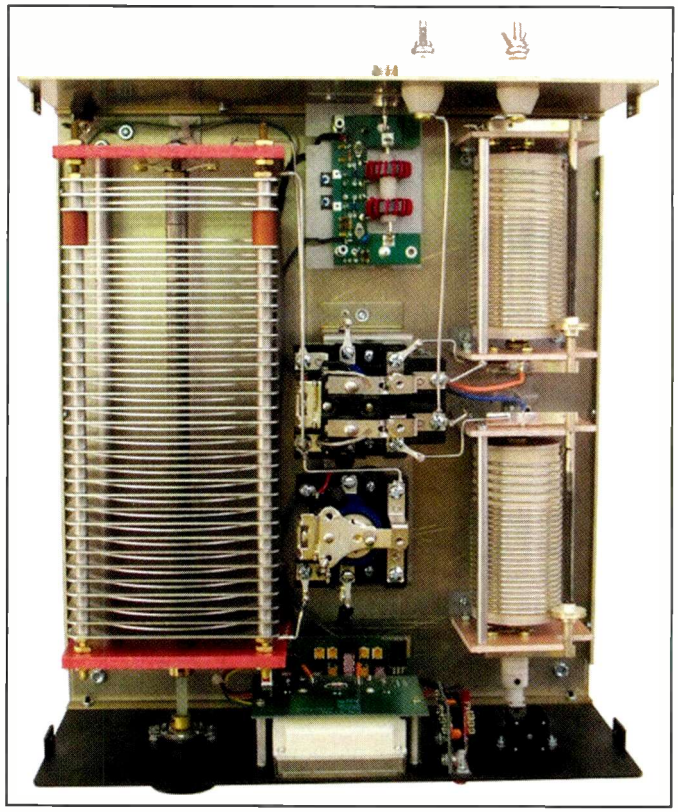


Photo C. If you want even better performance from your horizontal loop antenna, or if you want to use it on frequencies below its design frequency, feed it with open wire line and a balanced antenna tuner such as this Palstar BT1500A. Unlike most tuners, this heavy-duty model is rated for full legal power, although it's perfectly comfortable at QRP levels, too. *(Courtesy of KPCØZZZ and Palstar <http://www.palstar.com>)*

These "reference lengths" are just that. In practice, simply put up as much wire as possible — keeping it as circular or as square as possible — and let your antenna tuner handle the impedance tweaking, while shooting for a 40-meter loop size or larger, if possible.

Feed it with 50- or 75-ohm coax through a standard antenna tuner and use your new Loop Skywire on all bands at or above the loop's resonant frequency. Feed the loop anywhere along its circumference, corner or side.

For improved flexibility and performance — especially on bands below the design frequency — replace your conventional shack-mounted antenna tuner with an auto-coupler mounted at the loop's feed point. This will give you lightning-fast band changes and low SWR on the coax that runs from the auto-coupler to your radio.

If an auto-coupler is out of the question, consider replacing your coax with 600-ohm, open wire line and a balanced antenna tuner such as those sold by MFJ Enterprises, Palstar, **Photo C**, or even an old Johnson Matchbox.

Don't worry about the Loop Skywire's ultimate shape, height or even how you feed it. Just put one up and give it a try. It's a real "twist" that can make all the difference, and I'm betting that you'll soon agree that it's your new favorite HF antenna.

Travel 'Comm Light', and Stay in Touch

Tales of European Odysseys, and a Radio Mystery Solved

By Dan Srebnick, K2DLS
<k2dls.rfbits at gmail.com>

"No trip these days is complete without a portable radio receiver, a radio communications device, a mobile phone, and some type of device to go online"

Radio is a great hobby. For some, radio is even a lifestyle. Add travel to the mix and you're in for a whole lot of fun.

From the late 1980s until the middle part of the last decade, I tried to fit in one or two European trips each year. Radio was always a part of these trips and I cannot tell you what a thrill it was to disembark from an overnight flight to Amsterdam in 1987, turn on my portable AM radio, and hear the sounds of legendary pirates Radio Caroline <http://bit.ly/RI8DK8> and Laser Radio from the North Sea — all before getting through immigration and customs. There was also my 1983 overnight train trip from Barcelona to Nice which introduced me to a mysterious song, finally identified the same week 29 years later!

Various commitments and the dismal value of the U.S. dollar vs. the Euro discouraged my international wanderlust for a while. Last spring I decided it was again time to pay Europe a visit. My plan was to head over to Cologne in Germany to see an old radio friend, then to the Netherlands for the decennial Floriade <http://www.floriade.com/> horticultural exhibit, **Photo A**, and then finally to Amsterdam <http://bit.ly/Tcb71J> to help the Queen celebrate her birthday.

You *Can* Take It With You

No trip these days is complete without a portable radio receiver, a radio communications device, a mobile phone, and some type of device to go online.

For the portable receiver category, I have been downsizing over the years. I used to lug a Panasonic RF-2800, **Photo B**, with me on over-

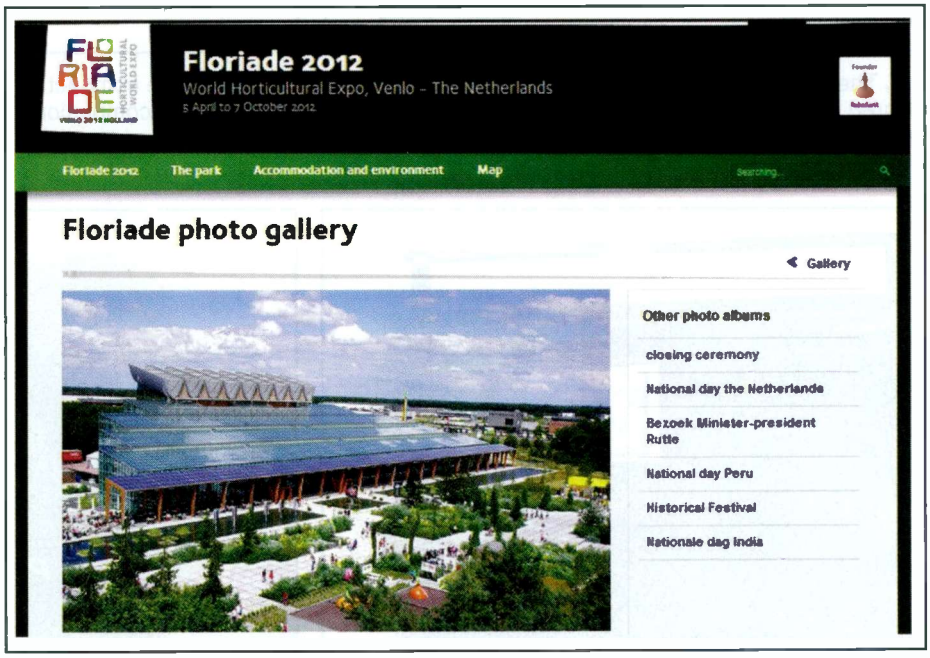


Photo A. "My plan was to head over to Cologne in Germany to see an old radio friend," writes KPC2DLS, "then to the Netherlands for the decennial Floriade horticultural exhibit, and then finally to Amsterdam to help the Queen celebrate her birthday."
(Internet screen grab, <http://www.floriade.com/>)

seas trips along with a portable cassette recorder. I found over time that I was enjoying myself too much on vacation to record very much.

I then discovered the Sangean 818CS, **Photo C**, with the integrated cassette recorder back in the early '90s. After using the 818CS for a few years, I downsized further to a DX-398 around the turn of the millennium. More recently, I downsized further to a Grundig G3 Globe Traveler — which is just about right for me at this point.

The G3, **Photo D**, is very compact, has a somewhat rugged rubberized case, and features SSB and AM synchronous detection as well as FM RDS (Radio Data System). It is roughly 6.5 by 4 by 1 inches in size and weighs a little more than 12 ounces without the four AA batteries installed. For me it is the perfect form factor and capable enough for casual vacation listening, without weighing me down.

For my radio communications device, I took along the Puxing PX-2R. This tiny, Chinese-made UHF HT, **Photo E**, covers 400 to 470 MHz. It goes for about $30 plus shipping on eBay and free programming software can be downloaded from the company's website. The software itself is a little challenging. It is very limited and defaults to a Chinese font, requiring some rote navigation to a menu that will change the text to English.

The radio will fit in a purse or a pocket easily, uses a Nokia cell phone battery, and puts out 2 watts of power. I programmed the radio for some repeaters in Germany and The Netherlands that were in areas that I was likely to visit. I also programmed in the PMR 446 frequencies. PMR 446 <http://bit.ly/QHU2Pk> is the European version of the Family Radio Service (FRS).

Mobile phone service in Europe is widespread and fairly reliable, especially in the cities. Europe and most of the world out-

Photo B. The Panasonic RF-2800 was an early PLL portable that featured digital frequency readout at an affordable price. *(Courtesy of RigReference.com <http://bit.ly/VqVrcO>)*

Photo D. The compact Grundig G3 makes a perfect, lightweight travel companion. *(Courtesy of Universal Radio, Inc. <http://www.universal-radio.com>)*

Photo C. The Sangean AT-818CS was once the ideal portable radio, featuring a built-in cassette recorder. *(Courtesy of DXing.com <http://dxing.com/>)*

Photo E. The Puxing PX2R is tiny and the perfect UHF transceiver for the traveling ham. *(To the PX2R in action at <http://bit.ly/TCTHli>.) (YouTube screen grab)*

side of the USA uses the UMTS/GSM standard, while in the USA both UMTS/GSM and CDMA are used. I am a T-Mobile customer and know from past experience that a T-Mobile phone with a U.S. SIM card would work in Europe, but that I would have to pay high roaming charges. I therefore planned to get an unlock code for a phone and to use a European SIM card to see if I could get both voice and data at a lower cost.

Roaming With an Android and an Apple

I decided to use an older T-Mobile G1 Android phone that had been unlocked and found a low cost voice/data plan from Telestial <http://bit.ly/ThVE4p>. It markets a SIM card from Ekit <http://bit.ly/SyauBm> that has both a UK and a U.S. phone number and offers free incoming calls on the UK number along with a 50-cent-per-megabyte data plan — not bad for roaming purposes.

The phone service itself is a bit of an oddball, in that all calls are made on a call-back basis. The customer dials the desired number, the SIM card causes the phone to hang up, and then your phone starts ringing when the call is ringing at the remote end. This is a bit unusual and is no doubt part of the methodology that Ekit and Telestial use to provide international service at a low cost. The company also provides a URL which can be used as your online travel diary, using GPS to show where you've visited.

Finally, I brought along an Apple iPad for my online device. I loaded it up with Zinio <http://www.zinio.com/> so I could read *Popular Communications*, use Skype for IM and voice, enjoy the Sirius XM app to listen to radio from home, and access some other necessities such as Facebook and Linkedin. The iPad was not capable of connecting to the European GSM networks, but I knew that at least the hotel in Germany offered free Wi-Fi in the guestrooms. The connectivity situation in Amsterdam proved to be more expensive.

Lessons Learned

So how did I make out with this mix of radio and portable computing devices? Not bad, but I learned a few lessons.

The Grundig G3 turned out to be just the right form factor for travel. It was great on FM and having RDS to help identify stations is very nice when you travel. I received a couple of the high-powered, long-wave stations while in Germany. AM and shortwave were less useful to me in the interference-laden, solid brick, downtown areas of both Cologne and Amsterdam. In the hotel room in Cologne, I used a portable Sangean reel antenna that I connected to a drapery rod and found I was still drowning in noise. Today's urban world is a hostile one for medium and high frequencies.

Before I left for Europe, I used Google to help find some likely repeater frequencies for Cologne, Amsterdam, and Venlo, where the Floriade exposition was held. I also researched the operating rules and found that as an Amateur Extra licensee in the U.S., I can operate in many countries under the CEPT <http://bit.ly/QHUwox> rules. You are required to have in your possession your FCC issued license, proof of U.S. citizenship, and a copy of the FCC CEPT public notice <http://bit.ly/VIaHrD>. The CEPT notice is conveniently translated into French and German in addition to English. So I was legal.

Using my tiny PX2R, I had no luck raising a machine or a QSO in Cologne and Venlo. Online repeater lists vary in quality, depending on the dedication of the maintainers and the goodwill of volunteer contributors. One pleasant Amsterdam evening, by chance, I had a great QSO.

I was standing alongside the Singel canal, just near my hotel. I keyed up the 2-watt handheld with its tiny antenna and cellphone battery. The courtesy tone of a 70-cm repeater promptly answered me. With that feeling that only the excitement of a new radio experience can provide, I identified myself as "PA/K2DLS visiting Amsterdam and looking for a contact."

I had picked a machine atop one of the tallest buildings in the city and Rob Keijzer, PA3CNT, came right back to me in perfect English. On that warm spring evening, as I stood alongside a scenic canal in one of the most beautiful cities in the world, we had a great QSO. I wanted to be certain that I was identifying properly and we both agreed that prepending Papa Alpha Stroke to my U.S.-issued callsign seemed to be the way to go. PA3CNT is a real radio devotee, SWL, former teenage FM pirate, broadcast engineer, commercial photographer, and radio amateur, so he is an interesting guy to talk to. He must have strong legs and be in good physical condition because he rides to work from Amsterdam to Hilversum and back on a recumbent cycle.

The mobile phone situation was good, overall. My G1 handset worked as expected and I had Web browsing and Facebook at my fingertips. I tried to use Wi-Fi for data connectivity as much as I could because even at the reasonable Telestial rates, data charges would add up. So I'd wait to upload my Facebook photos when I was back in Wi-Fi range.

Communication Breakdown

On Queen's Day, I observed the complete breakdown of the mobile telephone system in Amsterdam. The Queen's Day celebration is not actually celebrated on the birthday of the current Queen. Rather, it is celebrated on the birthday of Queen Juliana, mother of the current Queen. It is a festival to behold.

Millions of people stream into Amsterdam on that day, everyone wears orange to celebrate the House of Oranje, streets close down, and the entire city becomes a free market of beer, food, and music. There were so many people in

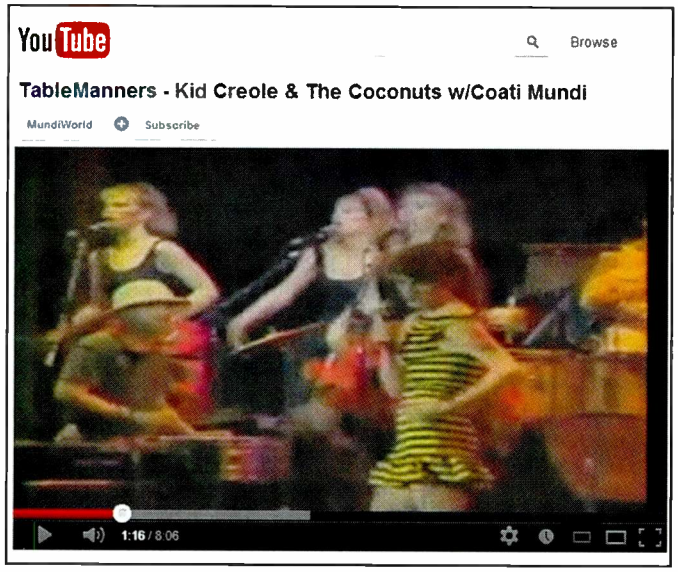


Photo F. Some wee-hours Web browsing on YouTube by KPC2DLS unearthed a video of King Creole and The Coconuts' *"Table Manners,"* a catchy, high-energy song with an adult theme and words that would keep it from being broadcast unedited on U.S. radio stations. *(Internet screen grab)*

Amsterdam on April 30th, that the mobile system broke down under the load. My phone would show five bars of signal strength and still was rejected from connecting to the network. At first I thought I was having phone trouble but when the issue started clearing up as people headed home in the evening it was clear that over-subscription was the problem.

The iPad proved handy for Web surfing and reading. It was great to be able to relax with a *Pop'Comm* article or even demonstrate the Sirius XM app to my German friend. He had been trying to subscribe for the free Sirius XM Internet demo but found that he could not do so without an American address.

I found that overall I used the phone more than the iPad. However, without a mobile data plan, the iPad was only useful where there was Wi-Fi connectivity. In Amsterdam, the hotel Wi-Fi came at a high price, which I declined to pay, so the G1 smartphone got more use. Fortunately, both McDonald's and Burger King downtown offered free Wi-Fi and they did not seem to care whether I purchased any food.

And a New Android Friend Is Made

The greatest communication technology revelation of this trip, however, was that it introduced me to my new smart phone of choice. At the Schipol airport lounge, I encountered the then not-yet-released Samsung Galaxy Note, which has a 5-inch screen, dual core CPU, 4G, Wi-Fi, runs on the T-Mobile network, and has a stylus for handwriting recognition! It is a little bigger than other smart phones and a bit smaller than a tablet. For me, it is the perfect phone and since August has been my new toy.

I loaded up this gadget with lots of radio-related software, including TuneIn, Echolink, and RepeaterBook <http://www.repeaterbook.com>, which is a new-to-me application that uses GPS to find nearby repeaters. On a recent trip to six-land it found a good local repeater very quickly. I think that a radio fan must have designed this smartphone. A docking base is available that functions as a charger and provides a 3.5-mm line level audio output.

Place the Galaxy Note into the dock and it knows that it has been docked. It displays a prompt asking whether I want to go into either clock or radio mode! My phone is a bedside clock radio! I plug the audio output into the auxiliary input of the Sangean ATS-909X that I keep on my night table and I now have a bedside Internet radio, computer, and phone at my disposal. I could as well use a small powered speaker or headphones. According to Samsung's specifications, the radio is supposed to contain an FM RDS chip, however I could find no evidence of this and it is not documented on the T-Mobile website. Even so, the Galaxy Note is a keeper.

The Mystery Song

That 1983 train ride I mentioned, from Nice to Barcelona, was sort of a disaster. It was a long overnight trip and my travel partner and I missed a connecting train at Cerbere, on the France/Spain border. Her watch was running slowly. It was a lovely town and the missed train was the last one of the day. We had to stay overnight, but as poor, young backpackers, we didn't want to pay the unexpected and overpriced rate for a room. We slept in the waiting room of the rail station until early the next morning when the first train bound for Nice arrived.

Needless to say, we did not sleep well. We were happy to get on the train the next morning and for much of the ride I listened to whatever local FM station I could hear on my Sony FM Walkman SRF-30W, the high-tech personal media device of choice in 1983. At one point on the trip along the French coast, I heard this wacky song about table manners. The lyrics were unusual, the riff was funky, it was sung in English, and was nothing like what I was hearing in New York at the time. "Where's your table manners?" the song inquired.

Throughout the remainder of the trip, I inquired whether anyone knew what band put together this unusual funky, satirical masterpiece about table manners *(**NOTE:** They weren't actually talking about food. – KPC2DLS).* No one that I spoke to knew. When I arrived in Germany, I asked a friend who had authored a book on European top 40 radio charts. He did not know either. My question went unanswered for more than half a lifetime. In recent years, I occasionally searched the Internet for an answer and had not found one.

But 29 years to the week since I first heard that song, I found it again, thanks to YouTube. I could not sleep one night in early July, so I got out of bed and did some Web surfing and found some *Tables Manners* videos, **Photo F**. If you want to watch the video, be forewarned: The adult lyrics contain themes and expletives that would not be allowed on U.S. broadcast radio. It turned out that the band behind the song was from New York — Kid Creole and the Coconuts <http://bit.ly/XYpsE0>.

They used to play at a club called The Ritz on East 11th Street in New York City. Back in the day I went there to dance and see bands like Joan Jett and Squeeze. Somehow I missed Kid Creole and the Coconuts. They seem to have been more popular in Europe than at home. But I'm glad to have finally found them — thanks to YouTube — and catch up on all the fun I somehow missed.

Have you used YouTube to identify media content that you once saw or heard? What communications gadgets do you take on your trips? Let me know via email to <k2dls.rfbits@gmail.com>. – 73 de KPC2DLS.

Pop'Comm's Visit to 'Ham Radio Now'

WPCØCWE Watched, and Just Had to Join Our Listening Community

Compiled by
Richard Fisher, KPC6PC

"With thanks to host Gary Pearce, KN4AQ, here's what some of the new members to our monitoring community are writing about."

When a Morse operator gets in front of a microphone, you never know what might happen.

In August, *Pop'Comm* was really fortunate to have been invited to appear on the Internet-based program *Ham Radio Now* during the Huntsville Hamfest in Alabama. With the code key aside, host Gary Pearce, KN4AQ, and I spent more than a half hour chatting about the history of *Pop'Comm*, the state of SWLing today and about the *Pop'Comm Monitoring Station* program, **Photo A**.

I've heard from a whole lot of people who saw the show. What great exposure for *Pop'Comm*, our growing monitoring community and the pure joy of listening — whether it's on the high frequencies, VHF, UHF, or beyond.

As you'll see, Melvyn Whitten caught the show from Bridgeton, Missouri, and just had to come onboard. He's now *Pop'Comm Monitoring Station* WPCØCWE. How great is that?

Jason Feldman, WPC2COD, Director of *Pop'Comm Monitoring Station* Registration, tells us the emails continue flowing in with station ID requests. While our community is getting bigger, it's getting better, as well.

With thanks to *Ham Radio Now*, here's what some of the new members to our monitoring community are writing about.

What a great way to start 2013!

Melvyn Whitten, WPCØCWE, Bridgeton, Missouri

I just finished watching the interview *Ham Radio Now's* Gary Pearce, KN4AQ, did with *Pop'Comm* Editor Richard Fisher, KPC6PC/KI6SN at the Huntsville Hamfest and found it very interesting. It was about the magazine's 30th anniversary and the *Pop'Comm Monitoring Station* program. After seeing it, I just had to apply for an identification sign.

I have been an active SWL and amateur radio operator — licensed as KØPFX — for more than 54 years.

In August 1962, I was issued a *Popular Electronics Short Wave Monitor* certificate with WPEØCWE identification sign. It is still proudly hanging on my ham shack wall. Having a parallel ID sign in the *Pop'Comm* program is great.

*(**WATCH:** Ham Radio Now Episode 25 from the Huntsville Hamfest with Gary Pearce, KN4AQ, and Richard Fisher, KPC6PC, at <http://bit.ly/TkLr7m>. – KPC6PC)*

Paul Judd, VAPC7XQ, Maple Ridge, British Columbia, Canada

I've been primarily a scanning enthusiast since picking up my first issue of *Pop'Comm* in June 1984. My interest in scanning and short-

Photo A. *Ham Radio Now's* Gary Pearce, right, KN4AQ, interviews *Pop'Comm* Editor Richard Fisher, KPC6PC, in August about the magazine's 30th anniversary issue, contemporary SWLing and the *Pop'Comm Monitoring Station* program. Watch the video at <http://bit.ly/TkLr7m>. *(Internet screen grab)*

wave radio led me to amateur radio and then public safety communications as a vocation.

I've since moved on to a different career, but still stay active in the monitoring hobby. I particularly enjoy searching for distant stations to monitor. I am very happy to have been issued VAPC3XQ because I like callsigns with X and Q in them!

Thanks for reviving the monitoring station registry program. The *Pop'Comm Monitoring Station* program has obviously struck a chord with many radio hobbyists.

Christopher Miller, WPC9RKD, Towanda, Illinois

My first interest in the radio hobby is listening. I worked to get a ham ticket and really view it as a credential to my monitoring ability. I am very happy to receive a *Pop'Comm Monitoring Station* identification sign similar to my ham call of N9RKD — a way to honor the monitoring aspect of the items I do. Thanks for issuing me WPC9RKD.

Mark Schmit, WPC1COD, Mashpee, Massachusetts

Ever since my grandfather gave me an old RCA shortwave tabletop radio, I've been hooked on SWLing. I now have more than 100 shortwave radios — from handheld to floor models. I live on Cape Cod and the reason I requested COD as my *Pop'Comm Monitoring Station* identification sign suffix!

William Miller, WPC2RTC, Queens, New York

On September 14, I started in the Navy at (RTC) Recruit Training Command and I'm happy to have the opportunity to join the *Pop'Comm Monitoring Station Program* on this anniversary.

Michael Korn, WPC9KRN, Combined Locks, Wisconsin

What a great idea!! I have been a fan of Shortwave Listening (off and on) since the early seventies. I was fascinated by the voices from far off lands and the magic of being able to hear them in my home.

Ron Ackerman, WPC8WWR, Bridgman, Michigan

I was an SWL before I became a ham. In 1967 I got my Novice amateur radio license with the callsign WN8WWR. A school buddy of mine thought of a good phrase to go with WWR: *World-Wide Radio*. Isn't that what shortwave listening is all about?

Henry Piel, KPC1HWP, South Grafton, Massachusetts

I've been collecting AM broadcast radios since I was 8 years old. As an avid SWLer, I became interested in CB SSB radio in the early 1980s. I served in the U.S. Navy as a Radioman Second Class Petty Officer (Surface Warfare) in the Technical Control Facility.

After my service, I worked as the civilian COMSEC Custodian at Naval Air Station South Weymouth until its closing.

I became an amateur radio operator in '05 with the callsign KQ1V. But I still enjoy SWLing, scanning, as well as two-way communications!

KPC9UTQ, Wisconsin Rapids, Wisconsin

Please send us a photograph of your listening post and tell us about your monitoring experience. We'd be happy to feature you as a Pop'Comm Monitor of the Month. Write to Pop'Comm Monitor of the Month at: <PopCommMonitor@gmail.com>. – *Richard Fisher, KPC6PC*

By Gene Santoski, KPC9UTQ

Over the past 55 years or so, I have not lost my enthusiasm for long-wave and shortwave monitoring

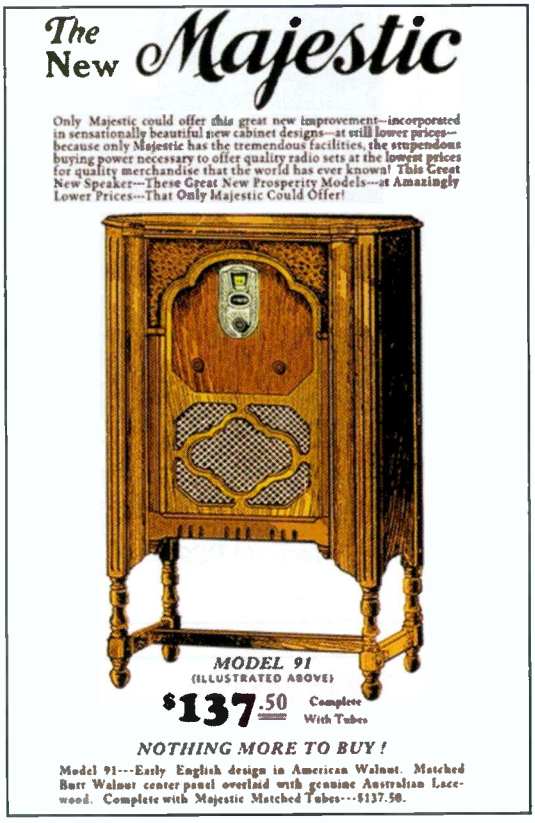


Photo A. The 1930 Grisgy-Grunow Majestic Model 91 floor model radio had nine 27s in its tube lineup. ***(LISTEN:** To Majestic Might Monarch of the Air's Master of Mystery "Phantom Spoilers Part 1" from December 30, 1933 <http://bit.ly/Te7zfk>.) (Internet screen grab <http://bit.ly/ULR5kU>.)*

WOW! It sure is great to see the *Pop'Comm Monitoring Program!* My congratulations for all the hard work that went into — and still goes into — this program! It is nice to see it growing more each month.

I was first licensed in 1959 as KN9UTQ in Wisconsin Rapids, Wisconsin. I started SWLing on an old Majestic floor model radio, **Photo A**, that covered the 40- and 20-meter bands on shortwave and, of course, the entire AM band.

Later I progressed to a Heath AR-3, **Photo B**, then on to a Hallicrafters SX-100, **Photo C** — which I still have! Until I became a licensed ham, I used various end-fed wires for antennas.

Over the past 55 years or so, I have not lost my enthusiasm for long-wave and shortwave monitoring. I have managed to collect QSL cards from many AM/SW stations around the country, as well as overseas.

My main receivers currently are an ICOM IC-R71A and a Collins 51S-1 as seen in the accompanying pictures, **Photos D** and **E**. Note also my original *Popular Electronics* Monitoring Certificate — WPE9BPH — issued July 14, 1960! **Photo F**.

By the way — I have *every* issue of *Popular Electronics* and *Popular Communications* in my library!

Photo B. A Heath AR-3 shortwave receiver was among the first radios used by KPC9UTQ. ***(WATCH and LISTEN:** To a Heath AR-3 in action <http://bit.ly/SmEy4D>. – KPC6PC) (Internet screen grab)*

Photo C. The third radio in KPC9UTQ's journey through the shortwaves was a Hallicrafters SX-100, which he still has. It was very popular with both SWLers and radio amateurs. ***(WATCH and LISTEN:*** *To a Hallicrafters SX-100 tune in Cross Radio, Pohnpei, Micronesia on 4755kHz, <http://bit.ly/Rk9gM0>.) (Internet screen grab)*

Photo E. From his Wisconsin listening post, KPC9UTQ's "main receivers currently are an ICOM IC-R71A and a Collins 51S-1." *(Courtesy of KPC9UTQ)*

Photo D. "I have managed to collect QSL cards from many AM/SW stations around the country," writes KPC9UTQ, "as well as overseas." *(Courtesy of KPC9UTQ)*

Photo F. KPC9UTQ's original *Popular Electronics Short Wave Monitor* certificate with station ID sign WPE9BPH, circa 1960, remains framed and displayed at his listening post. *(Courtesy of KPC9UTQ)*

Is HF Propagation Reciprocal?*

(*In Other Words: 'Can You Hear Me Now?')

by Tomas Hood, NW7US, WPC7USA
<nw7us@arrl.net>

"I know from experience that sometimes my ham radio contacts cannot hear me, although I can hear them . . . It's time to investigate this phenomenon."

How often do you find that while using your cell phone, you discover that you have "no bars" of signal? Those bars, signifying your little radio's (yes, a cell phone is a glorified hand held transceiver) signal meter, help us determine whether or not we have "enough signal" to make a phone call.

When we're far enough away from the nearest cell tower, the signal drops and the service is lost. If the cell phone was still using analog instead of digital encoding of our voice, we probably could hear the person we're calling under such low signal strength. We might be frustrated at the quality, but we might be able to still make the call.

Then again, how many times have we heard the other end, but they could not hear us? And, now that the cell phone industry has moved to digital, it is even worse. As amateur radio operators, we should be able to figure out why one side could hear the other better than the other.

Cell-phone frequencies typically are in the 850- and 1900-MHz spectrum in the United States, and although I am no cell-phone expert, the principles should be the same as those we use in amateur radio.

Obviously, the antenna gain of my little handheld is less than that of the big directional antennas on the cell towers. And their transmit power must certainly be higher than mine. Hmmm . . . maybe if I just move around, or hold my phone at a different angle. *"Can you hear me now?"*

It seems clear that the two sides of a cell-phone circuit are not the same. All that made me wonder about HF radio reception. I know from experience that sometimes my ham radio contacts cannot hear me, although I can hear them quite well. It's time to investigate this interesting phenomenon.

HF Signal Reciprocity

One would think that ionospheric radio propagation would be reciprocal. That is, the signal strength in one direction should be the same as in the reverse, or reciprocal, direction. In HF ray-trace theory, the distance is the same and the ionospheric control points — the points where the wave is reflected (or more properly, refracted) back to the ground — should be the same. I decided to run some test circuits using ACE-HF System Simulation & Visualization software to see if signal predictions *were* the same in both directions.

ACE-HF <http://hfradio.org/ace-hf> permits one to predict both Signal Strength and Signal-to-Noise Ratio (SNR), and I started with signal strength. I set up a couple of sample circuits from various locations, using North-South and East-West directions. I used default isotropic antennas with +6 dBi gain at each end, set the transmit power at 1,000 watts (we all own amplifiers and isotropic antennas, right?) and assumed the use of single-sideband (SSB) communications with a "Required SNR" (RSN) of 48 dB-Hz and a 50 percent "Required Reliability." The *Normal* absorption model setting was selected (we'll look more into these concepts in an up-coming edition of this column).

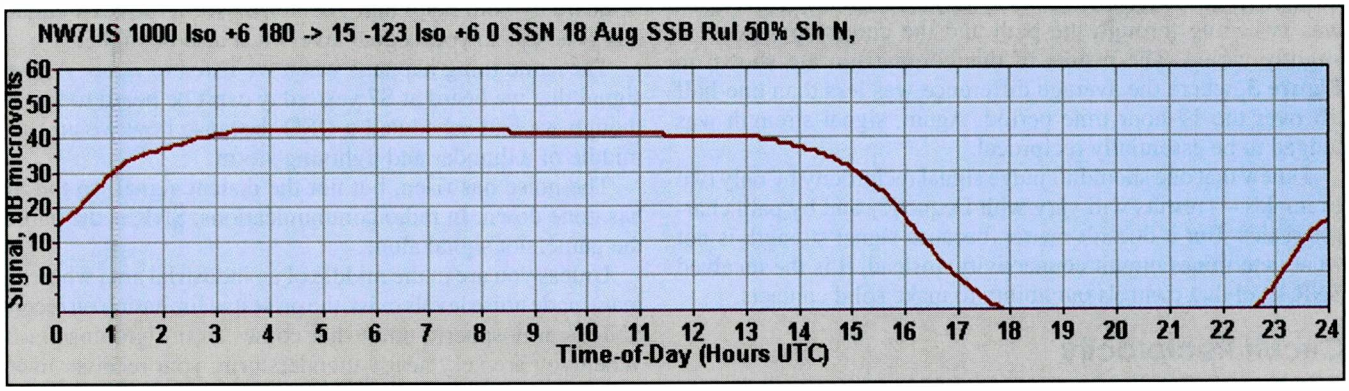


Figure 1. Here's a sample 40-meter signal strength plot for a circuit to the South from the Pacific Northwest. *(Courtesy of WPC7USA using ACE-HF Pro software <http://hfradio.org/ace-hf>)*

Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	AVG
N to S Sig.	15	30	37	41	42	42	42	42	42	41	41	41	40	40	37	31	17	
S to N Sig.	15	31	37	42	43	42	42	42	41	41	40	40	39	39	37	31	18	
Difference	0	1	0	1	1	0	0	0	-1	0	-1	-1	-1	-1	0	0	1	-0.6

Figure 2. Here are reciprocal 40-meter signal strengths for N-S and S-N paths.

Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	AVG
W to E Sig.	28	31	33	34	36	37	40	42	40	39	43	39	31	23	6	-5	-18	
E to W Sig.	27	30	33	34	36	37	40	42	43	42	42	39	31	24	6	-4	-17	
Difference	-1	-1	0	0	0	0	0	0	3	3	-1	0	0	1	0	1	1	-0.4

Figure 3. These are reciprocal 40-meter signal strengths for W-E and E-W paths.

I used the month of August for the analysis because in the Northern Hemisphere summertime atmospheric noise is higher. After quickly reviewing several ham-band predictions, I settled on 40 meters for this analysis. Man-made noise was set at the default *Rural* level for all the tests.

For a sample North-South path, I specified a 3,634-km circuit from the Pacific Northwest to a maritime station at 15-degrees N latitude, south of the chosen location. **Figure 1** shows the predicted signal strength. As expected, the signal is highest at night and decreases as daylight approaches.

By using the ACE-HF "User Mode" switch, I then changed from the *Ham* mode to the *Shortwave Listener* mode, which simply reversed the circuit so that the station in the North became the receiver. I then repeated the prediction and found the chart to be nearly the same. To be sure, though, I used the ACE-HF *Bands* display to find exact hourly values, as shown in **Figure 2**. These values show agreement within 1 dB as the direction of transmission was changed, so I concluded that for this circuit, 40-meter signal propagation was indeed reciprocal — and the differences were probably round-off errors.

Now I tried a circuit from the same Pacific Northwest location, to Bathurst, New Brunswick — a city at about the same latitude as that of the Pacific Northwest station. This East-West path was expected to show signal strength differences with direction, because at most times-of-day the terminator in August was sweeping through the path and the control points were slightly varied. The results of this comparison are shown in **Figure 3**, where the average difference was less than one-half dB over the 17-hour time period. Again, signal strength was judged to be essentially reciprocal.

I knew that one shouldn't judge signal reciprocity by only two examples — results will vary with frequency and by path characteristics. But it doesn't matter, because signal strength is not what determines circuit connectivity. Instead, it is the received SNR level that controls our ability to make solid contacts.

Circuit Reciprocity

Think of it this way: Imagine sitting in a crowded hall waiting for the concert to start. You can easily hear a conversation between people a few rows behind you and you can speak to your neighbor in a whisper. The ambient noise in the hall is very low.

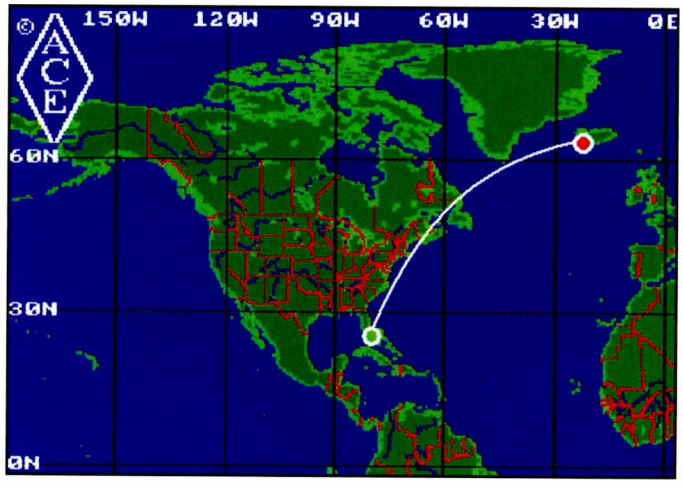


Figure 4. This is a graphic example of the Keflavik to Miami propagation circuit. *(Courtesy of WPC7USA using ACE-HF Pro software <http://hfradio.org/ace-hf>)*

But now the curtain rises, the conductor appears and the audience begins to applaud — the noise level has risen considerably. You must raise your voice — raise your signal level — to be heard by your neighbor. The noise part of the SNR equation has gone up, so your signal level must also be higher.

The same thing happens when we listen to radio. A distant signal that we heard at S7 yesterday can't be heard today even though we had scheduled a QSO, because now we are in the middle of a thunder and lightning storm.

The noise has risen, but not the distant signal, so the SNR has gone down. In radio communications, SNR is the name of the game, not signal alone.

Unless you are in the middle of an industrial area where high man-made noise levels exist, the principal limitation on received SNR is atmospheric noise that comes from lightning flashes. When you are very near a thunderstorm, your receiver may be almost blocked by interference from lightning.

We can illustrate this by again using ACE-HF to simulate a circuit. This time, I specified a circuit from a ham in Keflavik, Iceland to a station in Miami, Florida, **Figure 4**.

Optimum Working Frequencies (MHz) - For January 2013 - Flux = 140, Created by NW7US

UTC TO/FROM US WEST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	22	18	14	13	12	12	12	11	11	11	11	10	10	10	15	20	22	24	24	25	25	25	24	24
NORTHERN SOUTH AMERICA	31	28	24	18	17	16	16	15	15	14	14	14	14	14	15	26	29	31	33	34	34	34	33	32
CENTRAL SOUTH AMERICA	30	27	22	18	17	16	16	15	15	15	14	14	14	14	19	27	30	32	33	34	34	34	33	32
SOUTHERN SOUTH AMERICA	32	30	27	19	18	17	16	16	15	15	15	14	14	14	14	25	29	31	32	33	34	34	35	34
WESTERN EUROPE	10	10	10	10	10	9	9	9	9	9	10	10	9	9	9	13	15	15	14	13	11	10	10	10
EASTERN EUROPE	10	10	10	10	9	9	9	9	9	10	10	9	9	9	9	9	13	12	11	11	11	10	10	10
EASTERN NORTH AMERICA	24	21	15	14	14	13	13	13	12	12	12	12	12	12	16	22	24	26	27	27	27	27	26	25
CENTRAL NORTH AMERICA	14	13	11	8	8	8	7	7	7	7	7	7	6	6	6	10	12	13	14	15	15	15	15	14
WESTERN NORTH AMERICA	7	7	6	5	4	4	4	4	3	3	3	3	3	3	3	3	6	7	7	8	8	8	8	8
SOUTHERN NORTH AMERICA	24	22	19	14	13	13	12	12	11	11	11	11	11	11	11	18	22	23	25	25	26	26	25	25
HAWAII	22	22	21	19	17	12	12	11	11	10	10	10	9	9	9	9	9	15	18	20	21	22	22	22
NORTHERN AFRICA	11	10	10	10	10	10	10	10	10	10	10	10	10	9	9	14	16	18	18	16	12	12	11	11
CENTRAL AFRICA	13	12	11	11	11	10	10	10	10	10	10	10	9	9	9	13	16	17	18	15	15	14	13	13
SOUTH AFRICA	21	18	14	14	13	13	12	12	12	12	11	11	11	11	16	21	23	24	25	25	25	25	24	23
MIDDLE EAST	10	10	10	10	10	10	10	10	10	10	10	10	9	9	9	9	13	14	12	11	11	11	10	10
JAPAN	20	20	19	18	16	12	11	11	11	10	10	10	10	10	10	10	9	9	10	10	10	13	18	19
CENTRAL ASIA	20	20	19	18	16	12	11	11	11	10	10	10	10	10	10	10	10	9	12	12	12	12	12	20
INDIA	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
THAILAND	19	19	18	17	15	12	11	11	10	10	10	10	10	10	10	10	9	9	13	12	12	12	12	12
AUSTRALIA	29	30	32	30	26	19	18	17	16	16	15	15	14	14	14	14	14	19	18	17	19	22	25	27
CHINA	17	18	18	16	14	11	11	11	10	10	10	10	10	10	10	10	9	9	10	10	10	10	10	12
SOUTH PACIFIC	32	33	32	29	25	18	18	17	16	15	15	15	14	14	14	14	14	18	19	23	25	27	29	31

UTC TO/FROM US MIDWEST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	24	19	15	15	14	13	13	13	12	12	12	12	12	18	24	26	28	29	29	30	29	29	28	26
NORTHERN SOUTH AMERICA	27	23	18	17	16	15	15	14	14	13	13	13	13	17	25	28	30	31	32	32	32	32	31	29
CENTRAL SOUTH AMERICA	28	22	18	17	16	16	15	15	15	14	14	14	14	23	28	30	32	33	34	35	35	34	33	31
SOUTHERN SOUTH AMERICA	31	28	21	19	18	17	17	16	15	15	15	14	14	14	26	28	29	31	32	33	34	34	35	33
WESTERN EUROPE	10	10	10	10	10	9	9	9	9	9	9	9	9	12	16	18	18	17	17	15	13	11	11	10
EASTERN EUROPE	10	10	10	9	9	9	9	9	9	10	10	9	9	9	14	16	15	14	13	11	10	10	10	10
EASTERN NORTH AMERICA	16	13	11	10	10	10	9	9	9	9	9	9	8	8	15	17	19	20	20	20	20	20	19	18
CENTRAL NORTH AMERICA	8	7	5	5	4	4	4	4	4	4	4	4	4	4	5	7	8	9	9	9	9	9	9	8
WESTERN NORTH AMERICA	14	13	11	8	8	8	7	7	7	7	7	7	7	7	6	10	12	14	14	15	15	15	15	15
SOUTHERN NORTH AMERICA	16	15	11	10	9	9	8	8	8	8	8	8	8	7	12	15	16	17	18	18	18	18	18	17
HAWAII	25	24	22	19	14	13	13	12	12	12	11	11	11	11	11	11	11	19	23	25	26	26	26	26
NORTHERN AFRICA	13	12	11	11	11	10	10	10	10	10	10	10	9	15	18	19	20	21	21	21	15	15	14	13
CENTRAL AFRICA	13	12	11	11	11	10	10	10	10	10	10	10	9	15	17	19	20	21	21	16	15	14	14	13
SOUTH AFRICA	23	18	17	16	16	15	15	15	14	14	14	14	14	25	29	31	32	33	33	33	33	32	29	26
MIDDLE EAST	10	10	10	10	10	10	10	10	10	10	10	10	9	11	16	18	19	17	12	12	11	11	11	10
JAPAN	19	18	16	13	12	11	11	10	10	10	10	10	10	10	10	9	10	10	10	10	10	11	17	19
CENTRAL ASIA	19	18	16	12	11	11	11	10	10	10	10	10	10	10	9	9	13	12	12	12	12	12	12	19
INDIA	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
THAILAND	18	16	14	11	11	11	10	10	10	10	10	10	10	10	9	9	13	13	13	12	12	12	12	12
AUSTRALIA	29	31	29	24	18	17	16	16	15	15	15	14	14	14	14	14	20	19	18	17	20	23	25	27
CHINA	15	16	14	11	11	11	10	10	10	10	10	10	10	9	9	9	10	10	10	10	10	10	10	9
SOUTH PACIFIC	32	31	29	23	18	17	17	16	15	15	15	14	14	14	14	20	19	19	21	24	26	28	30	31

UTC TO/FROM US EAST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	18	13	13	12	11	11	11	10	10	10	10	10	12	18	21	22	23	24	24	24	24	23	22	21
NORTHERN SOUTH AMERICA	24	20	18	17	16	15	14	13	13	12	12	12	14	20	24	26	27	29	29	29	29	28	27	26
CENTRAL SOUTH AMERICA	25	22	21	19	18	17	16	16	15	15	14	14	23	26	29	30	32	33	34	35	35	34	32	30
SOUTHERN SOUTH AMERICA	29	24	23	21	20	18	17	17	16	15	15	15	19	24	26	28	30	31	32	33	34	34	34	32
WESTERN EUROPE	10	10	9	9	9	9	9	9	9	9	9	9	16	18	19	19	19	18	18	16	14	11	11	10
EASTERN EUROPE	10	9	9	9	9	9	9	9	9	9	9	9	14	15	15	15	14	14	13	10	10	10	10	10
EASTERN NORTH AMERICA	7	5	5	5	4	4	4	4	4	4	4	4	4	7	8	9	9	10	10	10	10	9	9	8
CENTRAL NORTH AMERICA	17	13	11	11	10	10	10	9	9	9	9	9	9	9	16	18	20	21	21	21	21	21	20	19
WESTERN NORTH AMERICA	24	21	15	15	14	13	13	13	12	12	12	12	12	12	17	22	24	26	27	27	28	27	27	26
SOUTHERN NORTH AMERICA	19	16	12	12	11	11	10	10	10	10	10	9	9	13	18	20	22	22	23	23	23	23	22	21
HAWAII	25	22	16	15	14	14	13	13	12	12	12	12	12	12	12	12	12	22	25	27	28	28	28	27
NORTHERN AFRICA	13	13	13	12	12	12	12	12	12	12	12	17	22	25	26	27	28	27	25	23	16	15	14	14
CENTRAL AFRICA	13	13	12	12	12	12	12	12	12	12	12	17	22	25	26	27	28	26	24	18	16	15	14	14
SOUTH AFRICA	18	17	17	16	15	15	15	14	14	14	14	22	28	31	33	34	34	35	35	34	33	32	29	23
MIDDLE EAST	12	11	11	11	10	10	10	10	10	10	10	11	17	19	20	21	22	22	17	15	14	14	13	12
JAPAN	17	12	12	11	11	10	10	10	10	10	10	10	10	9	10	10	10	10	10	10	10	9	15	18
CENTRAL ASIA	15	12	11	11	11	10	10	10	10	10	10	10	9	9	14	13	13	12	12	12	12	12	12	17
INDIA	10	10	10	10	9	9	9	9	9	9	9	9	9	15	15	13	12	12	11	11	11	10	10	10
THAILAND	12	11	11	11	10	10	10	10	10	10	10	9	9	14	15	14	14	13	13	13	12	12	12	12
AUSTRALIA	29	27	19	18	17	16	16	15	15	14	14	14	14	14	22	21	20	19	18	17	20	23	26	28
CHINA	12	11	11	11	10	10	10	10	10	10	10	10	9	11	11	10	10	10	10	10	10	10	10	9
SOUTH PACIFIC	31	27	20	19	18	17	16	16	15	15	14	14	14	14	22	20	19	20	23	26	28	30	31	32

I chose this circuit deliberately because August thunderstorms concentrate in the Caribbean and central North and South America. Thus, as the circuit approaches the Polar Regions atmospheric noise levels diminish and noise at Keflavik should be lower than at Miami.

Let's see what ACE-HF has to say about reciprocal SNR predictions. **Figures 5** and **6** show comparative SNR vs. time-of-day charts for this circuit. The first is for the transmitter at Keflavik and the second reverses the circuit.

Reception at Miami is marginal, but when the circuit is reversed, a significant SNR increase is predicted. The only thing we have changed is the receiver's location. The better SNR is due to the lower atmospheric noise level at Keflavik.

To quantify this effect, we will again use a table, **Figure 7**. The SNR difference is striking! For the 13 hours examined, where the predicted SNR was above the "red" chart areas, the average SNR difference at Keflavik was nearly 15 dB. To put this in perspective, to achieve a comparable SNR at Miami would require raising the Keflavik transmit power from 1,000 to about 32,000 watts! The effect of atmospheric noise on connectivity is indeed powerful. And, for this circuit at least, connectivity is certainly *not reciprocal!*

Of course, not all HF circuits have such large reciprocity differences. Those where their terminals are in equivalent noise regions would enjoy similar SNR levels, other conditions being equal. To examine this effect more completely, I set up an ACE-HF Circuit Group chart, **Figure 8**.

The Circuit Group chart permits one to see simultaneous predictions for as many as 18 circuits and is a favored ACE-HF tool for use in contesting and DXing. For example, to achieve one's *Worked All Countries* award, you might set up 18 circuits from your station to the missing areas. ACE-HF will then compute all 18 circuits for all 10 ham bands and all 24 times-of-day. You can then watch the chart — it advances automatically every hour — to see when various bands will be open. Or, you can advance the time setting in order to plan your next call.

In our case, however, I wanted to test SNR reciprocity, so I used the chart to specify nine circuits from the PNW station. Then for each circuit, I used the ACE-HF Ham/SWL user mode to reverse each circuit. The results for each station are shown one after the other in the chart.

To get uniform results around my QTH, I first ran ACE-HF area coverage maps to find the best hour for uniform coverage on 40 meters around the PNW station. That coverage at 0800 UTC is shown in **Figure 9**.

Returning to **Figure 8**, the Circuit Group chart shows the SNR values for the nine circuit pairs. The green cells show SNRs that are above the RSN, the yellow cells are for values within 10 dB of RSN, and the red cells show SNRs below that level. The best frequencies for each circuit are shown by the blue-colored cells.

Focusing on the 40-meter values, the circuit to Bathurst is reciprocal within about 2 dB as expected. But the circuit to Barrow on the north coast of Alaska shows a difference of 10 dB! Honolulu is quieter than the station chosen in the PNW, by 4 dB, which is to be expected — because the Pacific Ocean is more "peaceful," I suppose.

Comparing the other circuit pairs reveals other reciprocity differences that can be explained by the expected location of thunderstorm centers around the world. At 0800 UTC it is nighttime over North and South America and that is when thunderstorms usually occur. For example, reception at Caracas, Venezuela is expected to be noisy, and the chart shows the 40-meter predicted SNR is 8 dB worse than in the PWN station location, at that time.

System Factors Affecting HF Reception

There are many system factors that affect HF reception, and all must be understood and evaluated if we are to make accurate simulations. As we have seen, software such as ACE-HF will sort out the signal strength and SNR predictions automatically, but it is up to us to properly specify the system if our predictions are to match our on-air experiences.

A brief checklist of system factors that affect reception include local sources of interference (that pesky plasma TV, the neighbor's electrical fence, arcing power lines, the local industrial park with all the machinery), the antenna used (a loop antenna is more quiet than, say, a dipole antenna), local electrical storms, your transmit power level, and so on.

As you review your list, think of how you can determine those factors for both ends of your circuits. Of course, you can most easily characterize your own station. Distant terminals represent unknowns, so it's good if you can at least ask your frequent contacts about their transmit power and antenna gains.

As a radio amateur, when you simply call CQ, simulating the system is more difficult. For simulating the unknown stations, which I do when I make ACE-HF area coverage maps, I usually specify isotropic antennas at the receive stations, and to be conservative I assume their transmit powers to be 100 watts or less.

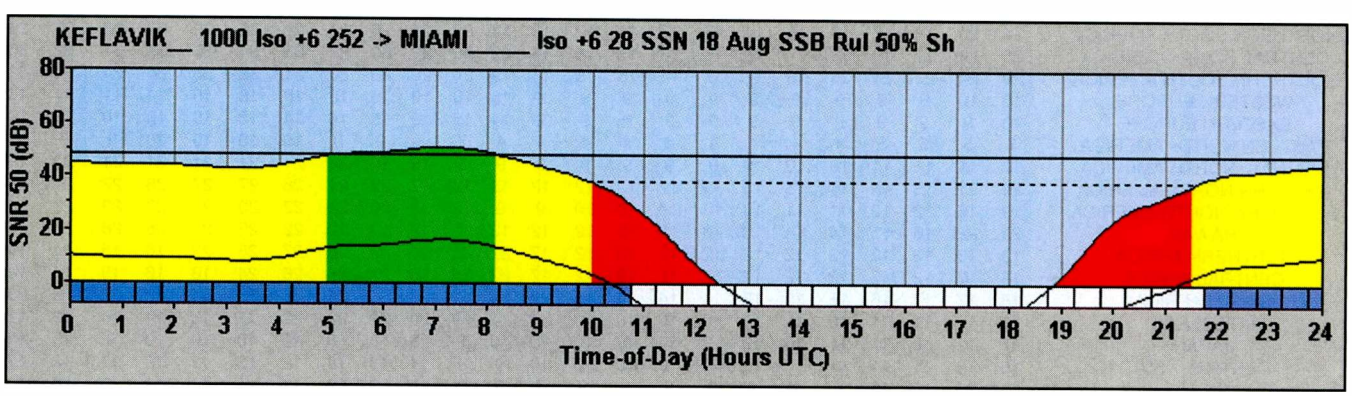


Figure 5. Here is the Keflavik to Miami 40-meter Signal-to-Noise (SNR) vs. Time-of-Day (TOD).
(Courtesy of WPC7USA using ACE-HF Pro software <http://hfradio.org/ace-hf>)

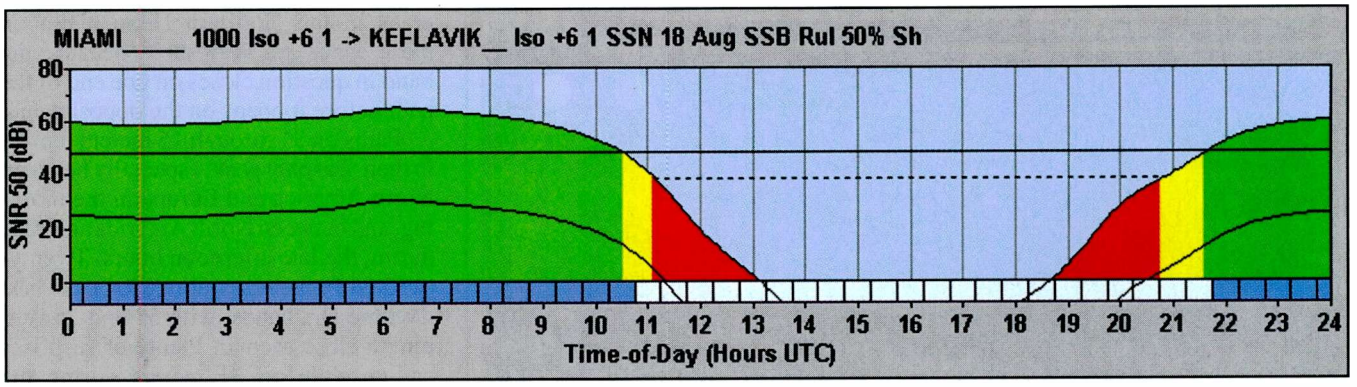


Figure 6. This is Miami to Keflavik 40-meter SNR vs. TOD. *(Courtesy of WPC7USA using ACE-HF Pro software <http://hfradio.org/ace-hf>)*

Hour	1	2	3	4	5	6	7	8	9	10	-	22	23	24	AVG
SNR at Miami	44	44	43	44	48	49	51	49	44	38		41	43	45	
SNR at Keflavik	59	59	60	61	62	65	64	62	59	53		52	58	60	
Difference	15	15	17	17	14	16	13	13	15	15		11	15	15	14.7

Figure 7. The 40-meter SNR for Keflavik and Miami reception is illustrated in this table.

Given all these constraints, we are almost assured of having different conditions at each end of the circuit. So is HF reciprocal? *Almost definitely not.*

Every station will have a different set of equipment and different antennas depending on their interests and pocketbooks. And as we have seen, even one's location and the weather close to the station will affect reception — and we sure can't control the weather!

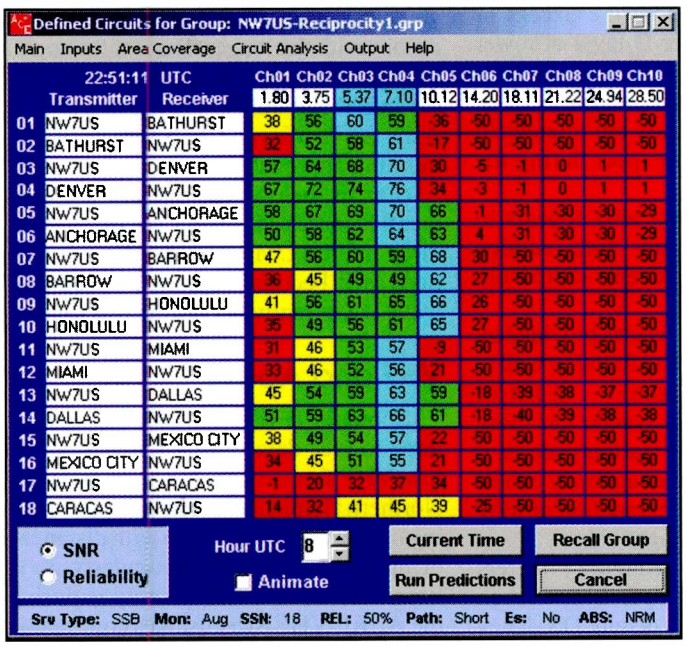


Figure 8. Here is a circuit SNR for reciprocity test group at 0800 UTC. *(Courtesy of WPC7USA using ACE-HF Pro software <http://hfradio.org/ace-hf>)*

But that doesn't mean that ham radio operation is impossible or even difficult. System simulation models like ACE-HF help us to sort out the differences and keep us from becoming discouraged when we hear a cool station but he can't hear us. Remember the cell-phone experience.

Amateur radio and shortwave listening is really the same thing, and once we understand that each circuit is likely to be different, we can work smarter and optimize our time on the air.

You can hear me now!

High-Frequency Propagation

We are in the heart of the winter season, with very short daylight hours. Average daily MUFs are at their seasonal lowest, but so are noise levels. During the winter months the maximum usable frequencies (MUF) are generally higher during the daylight hours than during the summer daylight hours. This provides short but strong openings on higher shortwave bands during the winter day. Then, at night, the MUF dips down much lower than what would be seen during the summer nights. Summertime MUFs are generally higher during the night hours than during the winter nights, due in part because the ionosphere stays energized through the short nights. Winter nights are longer, so recombination of the ionosphere (which results in a lowering of the MUF) is more complete.

This also means that the D layer of the ionosphere is less ionized during the winter, allowing medium wave and shortwave frequencies to propagate through the D layer and off of the E and F layers. Finally, the seasonal decrease in weather-related noise makes it easier to hear the weaker DX signals on lower frequencies. With thunderstorms few and far between, storm-related static and noise is greatly reduced.

Seasonally, the geomagnetic activity tends to quiet down during the winter months. The most active geomagnetic seasons

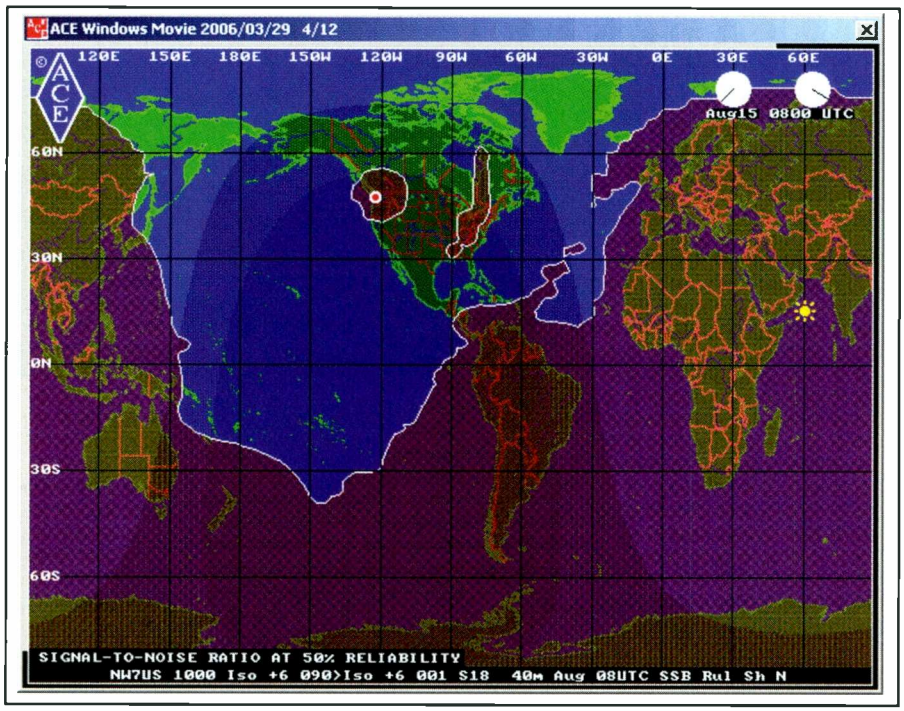


Figure 9. This is an example 40-meter propagation coverage map at 0800 UTC. *(Courtesy of WPC7USA using ACE-HF Pro software <http://hfradio.org/ace-hf>)*

are centered on the two equinoxes, in the spring and autumn. We're far enough away from these, that the geomagnetic conditions should be favorable, though there might still be occasional geomagnetic storms caused by solar weather (coronal mass ejections and the like). This results in more stable and reliable propagation on the shortwave spectrum, especially on the lower frequencies, this month.

The Winter Anomaly

The only exception to this winter propagation is "the winter anomaly." There are actually two different winter anomalies. First, there is a small winter anomaly that appears in connection with ionization at relatively low latitudes in the bottom of the D layer of the ionosphere. There, the electron densities in the winter happen to be less than should be expected. Second, the better known classic winter anomaly is present when the upper D layer, again at relatively low latitudes, has more ionization than should be expected during the winter, <http://bit.ly/RKVFv9>.

Both of these effects are due to the slant compression of the geomagnetic field produced by the solar wind in the winter season. The standard winter anomaly is caused by the influx of a super solar wind that penetrates into the Earth's polar atmosphere down to E layer heights.

There, it is concentrated through a funneling action at the winter pole of the distorted geomagnetic field, slowing down the winter polar vortex. An equator-ward motion of the polar air with its content of nitric oxide brings about the excess of ionization in the upper D layer at lower latitudes. The end result of this winter anomaly is that the MW and lower frequency shortwave bands are attenuated much like you would expect during the summer season.

This winter anomaly also appears to happen in relationship with sudden stratospheric warming events <http://bit.ly/TiQ3uG>.

The Space Weather reports provided by WWV and NOAA — and found as well at <http://sunspotwatch.com> — a list of stratospheric warming events. On those days with stratospheric warming alerts, it is possible that the winter anomaly condition exists, causing a degradation of MW and low HF-band propagation.

Nineteen meters through 11 meters will have occasional openings, though short lived for the most distant DX. They will close shortly after sunset, to open again just before sunrise. But 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.

Paths on 31 through 15 meters remain in their seasonal peak, especially between North America and Europe in the morning, and between North America and Asia during the late afternoon hours. Twenty-two and 19 meters continue to be the best daytime DX bands, with 31 and 25 running a close second. Plenty of surprises are possible on 31 meters during the morning and evening hours, and well into the hours of darkness. North/south paths on 25 through 15 meters will be reliable and open for most of the daylight hours, especially where paths terminate in the Southern Hemisphere. Nighttime conditions on these higher frequencies remain short and weak, with mostly north/south path openings since the Southern Hemisphere has longer daylight hours.

Signals are strong on 90 through 41 meters this year, and seasonally they are at their nighttime peak. 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.

Seventy-five through 120 meters continue to remain stable, with very low noise levels. Some high noise may occur during regional snowstorms, but on average you can expect great nighttime DX conditions with the longer hours of darkness. Look for Europe and Africa around sunset until the middle of the night, and then Asia, the Pacific, and the South Pacific as morning approaches.

Signals below 120 meters are also greatly improved, unless we experience those intense CME events, where conditions will become degraded. Medium-wave DX is really hot during this season.

VHF and Above

Sporadic-E (E_s) activity can appear three to four days during January on the low VHF frequencies for stations in the Northern Hemisphere. The average opening may last an hour or two with distances of up to 1,000 km. A particularly good time to monitor for E_s activity is during the ARRL VHF Sweepstakes contest this month. A surprise one- or two-hour opening has been known to occur during the contest period in the past and this has led

to increased multiplier counts for contest efforts. This contest is on 50 MHz and higher amateur radio bands.

The Quantrantids is the major meteor shower for January and it can appear any time during the first week of the month. This can sometimes be quite intense, so it may be a good idea for setting up some 2 and 6 meter schedules. Morning meteor openings may be the best bet during this month.

Current Solar Cycle 24 Progress

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 123.2 for September 2012, up from 115.7 in August. The 12-month smoothed 10.7-cm flux centered on March 2012 is 126.8, about the same as for February. The predicted smoothed 10.7-cm solar flux for January 2013 is about 140, give or take about 9 points.

The Royal Observatory of Belgium reports that the mean monthly observed sunspot number for September 2012 is 61.5. The lowest daily sunspot value during September was 34 on September 14. The highest daily sunspot count for September was 112 on September 3. The 12-month running smoothed sunspot number centered on March 2012 is 66.8, about the same for February. A smoothed sunspot count of 82 is expected for January 2012, give or take about 8 points.

The observed monthly mean planetary A-Index (A_p) for September 2012 was 8. The 12-month smoothed A_p index centered on March 2012 is 8.1, about the same as February. Expect the overall geomagnetic activity to be quiet to stormy during January. Refer to the Last Minute Forecast published in *CQ Amateur Radio* or on the author's website <http://sunspotwatch.com> for the outlook on what days that this might occur.

I'd Like To Hear From You

I welcome your thoughts, questions, and experiences regarding this fascinating science of propagation. You may email me, write me a letter, or catch me on the HF amateur bands. On Twitter, please follow <@NW7US> (and if you wish to have an hourly automated update on space weather conditions and other radio propagation-related updates, follow <@hfradio-spacewx>).

I invite you to visit my online propagation resource at <http://sunspotwatch.com/>, where you can get the latest space data, forecasts, and more, all in an organized manner. If you are on Facebook, check out <http://www.facebook.com/spacewx.hfradio> and <http://www.facebook.com/NW7US>.

Speaking of Facebook: check out the *Popular Communications* fan page at <http://www.facebook.com/PopComm>. This is a great place for the magazine's community to participate and share information, tips, DX spots, and photos of your antennas, radios, or your excursions into the field with your radio gear for that DX hunting trip.

Until next month,

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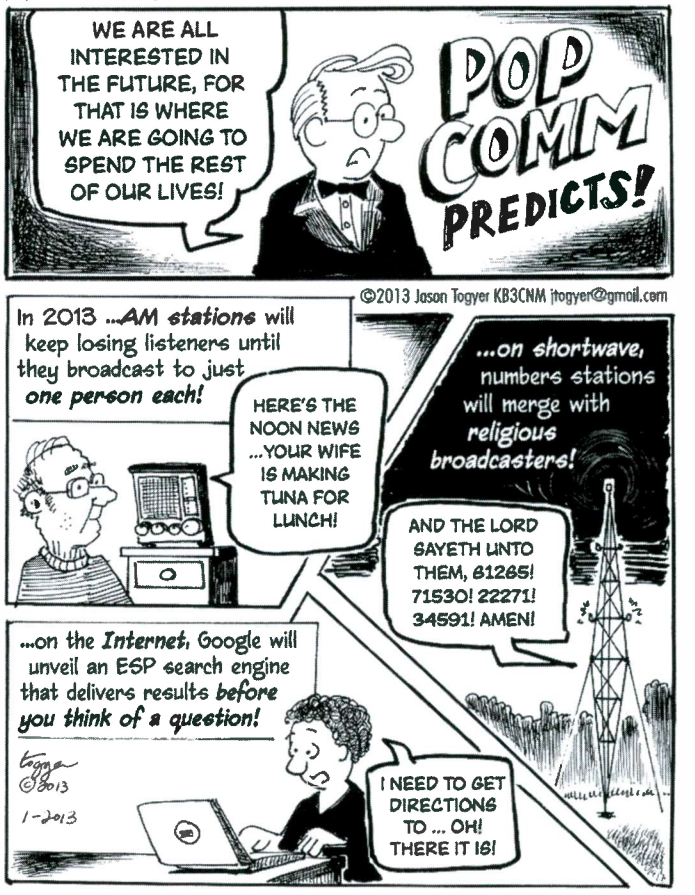
SPURIOUS SIGNALS By Jason Togyer KB3CNM
popcommcomic.blogspot.com



Follow the Bouncing Broadcasts: Tune in Bangladesh Betar

by Gerry L. Dexter,
WPC9GLD
<gdex@wi.rr.com>

"Nearly 500 shortwave broadcast logs from GIG reporters were processed to compile this month's Global Information Guide."

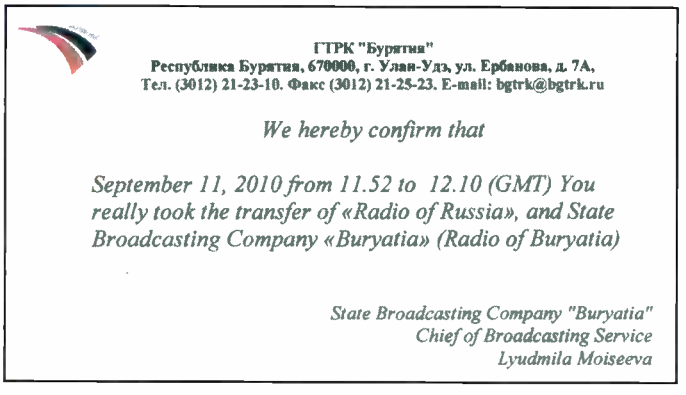
The rather strange combination of logs on Bangladesh Betar lately has been partially explained by the release of its programming schedule.

The station now reports it as active on 15105 in English from 1200-1300 and in Nepali at 1315. Then it moves to 15505 for Urdu at 1400-1430 and Hindi at 1515-1545. The next showing is on 7250 for Arabic at 1630-1700, from 1630-1730 in Bengala, and 1745-1900 in English and 1915-2000 in Bangla. What they do with those open segments is something someone else will have to figure out.

Some 'Rarely Heard' SW Targets to Chase

This month brings yet another group of stations that are usually not heard very often, but seem to be showing up for some DXers. Representatives are:

- Radio Tele Gandip, Bunia, Congo on 5066 in evenings around 0300.
- Radio Caiari, on 4785 from Sao Paulo, around 0900.
- MND Radio from Myanmar, now on 4925 around dawn.
- Radio Oriental, Ecuador on 4781 around sunset.
- Radio Fana, Ethiopia on 6110 with a sign on around 0300.
- Radio Vision, Chiclayo, Peru on 4790 (which seems to have cleared up some of its audio problems).



ГТРК "Бурятия"
Республика Бурятия, 670000, г. Улан-Удэ, ул. Ербанова, д. 7А,
Тел. (3012) 21-23-10. Факс (3012) 21-25-23. E-mail: bgtrk@bgtrk.ru

We hereby confirm that

September 11, 2010 from 11.52 to 12.10 (GMT) You really took the transfer of «Radio of Russia», and State Broadcasting Company «Buryatia» (Radio of Buryatia)

State Broadcasting Company "Buryatia"
Chief of Broadcasting Service
Lyudmila Moiseeva

Bob Brossell got a rare QSL from Radio Ulan Ude.

- Radio Ondas del Suriente, Quillabama on 5120 in late afternoons.

Now *there* are some interesting targets to go after.

A 50th Milestone for the VOA

While poking around on the Web, I ran across this item that serves to remind just how time *truly* flies:

It was 50 years ago — 1963 — that North Carolina played a key role in striking a deal that brought a Voice of America transmitter site to Greenville — "the most powerful international broadcaster in the world," according to the website *Shortwave and the Voice of America*, <http://bit.ly/Xfomob>.

"The transmitting complex had three sites forming a triangle around the city of Greenville," the Web notation said. "Each of the sites housed nine transmitters — three of 500,000 watts, three of 250,000 watts, and three of 50,000 watts.

"The sites covered 6,193 acres and employed 100 people working around the clock. That doubled the VOA's total transmitter power. The main target areas for the Greenville shortwave broadcasts were Latin America, Cuba, the Caribbean, and Africa."

Talk about talk power!

NPR On the Shortwaves

If the purity of FM broadcasting troubles you, how about listening to National Public Radio on shortwave? You'll get all the atmospherics and propagation challenges you can handle.

The Armed Forces Network carries a few hours of NPR Worldwide each day. Via upper sideband from its Key West, Florida site, it is carried on 12133.5u and 5446.5u. From Guam (Barrigada) it's on 13362u daytime and 5765u at night. Its Diego Garcia site broadcasts on 12579u, daytime; and 4319u, night. From Keflavik, Iceland, and Pearl Harbor, HI, tune to 10320u, daytime; and 6350u after dark.

Counting On You . . .

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 its 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, stations' schedule, 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? It's your turn to grace these pages!

For Your Listening Pleasure

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

ALASKA—KNLS, Anchor Point, 7355 at 1254 closing the *Creation Moments* pgm with ID, sked for EE. Also, 9655 at 1502 with M/W and pgm line-up, then a Christian pop song. (Sellers, BC)

ALGERIA—Radio Algerienne, 7295 via France at *0400 with short NA f/by AA talk, 9375 via France at 2045-2145 with traditional Middle Eastern-style music and AA talk, //7495. (Alexander, PA)

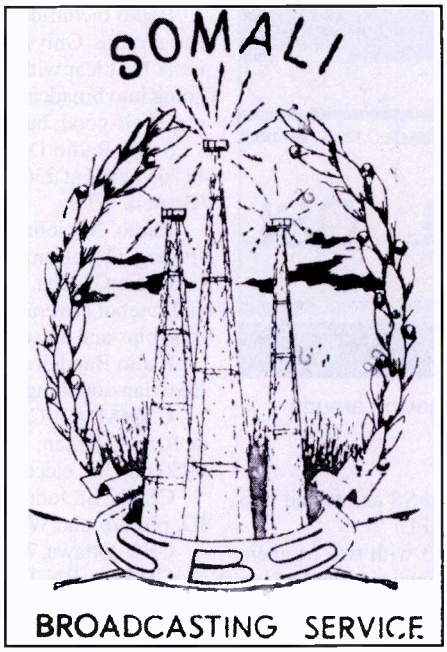
ANGUILLA—Caribbean Beacon, 6090 at 0614 with W and M, group singing and talk about Jesus. (MacKenzie, CA) 11775 at 1920 and into Pastor Scott. (Maxant, WV)

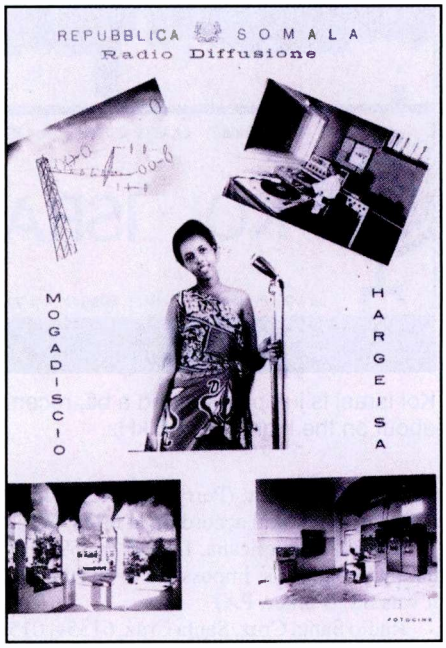
ARGENTINA—Radio Nacional/Radiodifusora Argentina al Exterior, 11710 at 0158 with IS f/by opening of EE service with long opening announcements, music. News at 0213. (D'Angelo, PA) 0158 with IDs, time pips at 0200 and EE opening. (Sellers, BC) 15345 in SS at 2140-2200 with GG talk, IDs, local SS ballads, into SS pgm at 2200. (Alexander, PA) 2330. (MacKenzie, CA)

Unidentified Argentina feeder, 13363.5u at 2340-0115 with SS talk. Time pips at 0000 and 0100 during football coverage. Still there at 0415-0430. (Alexander, PA)

ASCENSION ISLAND—BBC South Atlantic Relay Station, English Bay, 5875 on Syria at 0515. (Parker, PA) 6145 at 0310 with comments on world events and 7375 at 0233 with vocals. (MacKenzie, CA) 9915 at 2237 on Interpol and drug problems. (Fraser, ME)

AUSTRALIA—Radio Australia, 6020-Shepparton with news at 1100, 9580 at 0923 on Australia's role in the United Nations. (Harden, GA) 1200 with world news. Also 21740 with news. (Maxant, WV) 6080-Shepparton at 1158 on Australian soldiers in World War II and 11945-Shepparton at 1144. (Brossell, WI) 9855 via UAE at 2332 Queensland University studies. (Coady, ON) 15160 at 0411 with sports news. (Parker, PA) 17795-Shepparton at 1844 and 21740-Shepparton with news and weather at 2115 with a call-in show. (Sellers, BC) 2248. (MacKenzie, CA) 0020 on China-Russia relations. (Maxant, WV)





Radio Hargeyasa, Somalia, is a hot target these days, as it was when WPC9GLD confirmed it 25 years ago.

ABC Northern Territory Service: 2325-Tennant Creek at 1040 for the first time this season. Also, 4835 at 1127 through with severe CODAR QRM. (Rippel, VA) 1130 with Radio Australia theme music. And 2485-Katherine at 0900-1050. (Wilkner, FL) 1050 at reproducible levels, // with 2325. (Rippel, VA) 4835-Alice Springs at 0950-0957. (Wilkner, FL) 1312 with *Nightlife* pgm hosted by Ted Delroy. (Sellers, BC)

HCJB Australia, 15340 at 1157 with talks in Indonesian and EE ID. (Brossell, WI) 15525 in CC at 2322. (MacKenzie, CA)

AUSTRIA—Radio Austria International, 6155-Moosbrunn in GG at 0613 with possible news headlines. (Sellers, BC)

BAHRAIN—Radio Bahrain, 9745 at 2357-0020 just audible after Romania signs off at 2357. Traditional local music, local and some Western pops. (Alexander, PA)

BANGLADESH—Bangladesh Betar, (p) 15105 at 1229 with instrumental music opening, f/by W in (p) EE. Very poor reception. (D'Angelo, PA) 1243 with EE news, sub-continental music, then news documentary, old pop song and sign off anmts by W ancr in AA, a couple of tones after the pgm close. (Rippel, VA) 1514 with time pips and W sign on, several mentions of "Hindi." News at 1517. Recheck at 1544 found W doing close down and off at 1545. (Sellers, BC) 15505 at *1513-1545 with a test tone, IS and into (I) Hindi and 15505 at 1425-1430* with sub-continental music and anmts in listed Urdu. (Alexander, PA)

BOLIVIA—Radio Mosoj Chaski, Cochabama, 3310, good at 1025 and as early as 0950. (Wilkner, FL) 0950 with nice plucked guitar and charango music, W singing huaynos, 1012 into high-voiced W in Quechua, possibly a sermon. (Perry, IL)

Radio Santa Ana, Santa Ana de Yacuma, at 1240 with M chat. Gone by 0000. (Wilkner, FL)

Radio Yura, Yura, 4716.7, weak in SS at 0105, also various mornings at 1000+. (Perry, IL) 0140 (p) in SS with Latin music, M ancr. (Sellers, BC) Excellent music at 0920 to 0950 fade out. (Wilkner, FL)

Radio San Miguel, Riberalta, 4700 at

Help Wanted

We believe the *Global Information Guide* — month after month — offers more logs than any other monthly SW column. (Nearly 500 shortwave broadcast logs were processed this month!) Why not join the fun and add your name to the list of GIG reporters? Send your logs to Gerry Dexter, WPC9GLD, Global Information Guide, 213 Forest St., Lake Geneva, WI 53147, or email to <gdex@wi.rr.com>. See the column text for formatting suggestions.

**Not all logs submitted are used. There are usually a few which are obviously inaccurate, unclear or lack a time or frequency. Also discounted are unidentified, duplicate items (same broadcaster, same frequency, same site) and questionable logs. – WPC9GLD*

Kol Israel is jumping around a bit, recently moving around about on the high end of 6 kHz.

0910-1000 fade out. (Perry, IL) 0922 with M and SS anmts and into Bolivian guitar and accordion at 0925. (Wilkner, FL)

Radio Panamericana, La Paz (p) 5970 at 0333 with two M ancrs taking phone calls, impossible to be sure of the language, but believe it was SS. (Parker, PA)

Radio Santa Cruz, Santa Cruz, 6135v, 0150 with LA music, recorded anmt including ID, then back to music. (Sellers, BC) 0215 with SS anmts and ballads, some local things and IDs. (Alexander, PA) 0247 with W ancr giving sports scores and into LA music. (Rippel, VA) 0950 with huge signal. M giving time check f/by burst of CP folkloric music, more anmts and finally into music. (Perry, IL)

Radio Fides, La Paz, 6155 at 1013 with Bolivian huayno-flavored ballads, W with time check at 1014, orchestral fanfare and W with ID. Fading by 1027. (Perry, IL)

BONAIRE—Radio Nederland Relay, 6175 in SS at 0308. (MacKenzie, CA)

BOTSWANA—VOA Relay-Mopeng Hill, 4930 at 0343 with W hosting several people on various issues. (D'Angelo, PA)

BRAZIL—(All in PP – gld)

Radio Municipal, Sao Gabriel da Cachoeira, good with music at 0935. (Wilkner, FL)

Radio Imaculada Conceicao, (t) Campo Grande, 4754.8 heard in the 2315-2330 slot with two M and "commentario de futebol." (Perry, IL) 2350 to W with time check and M with comments. (Wilkner, FL)

Radio Cairai, Porto Velho, 4785 at 0950 with vocals. (Wilkner, FL)

Radio Verdes Florestes, Cruzeiro del Sul, 4865, with big signal at 0943 with light pops, M vocals with a small combo. Into a live religious pgm after ID at 0945. (Perry, IL)

Radio Roraima, Boa Vista, 4877.5 at 0225-0411* with a mix of lyric oldies and M ancr ID and s/off anmt at 0356 f/by choral anthem. Carrier remained on for another 15 minutes after that ended. (D'Angelo, PA) 0300 with distorted signal. (Wilkner, FL) 0430-0403* with music and talk, off with anthem at 0359. (Alexander, PA) 0905 with mainly PP ballads. A later re-check and morning news show with two M in discussion. (Perry, IL)

Radio Clube do Para, Belem, 4885 at 0457 with M phone interview and heavy reverb. (Parker, PA)

Radio Novo Tempo, Campo Grande, 4895 with music under CODAR at 0000. (Wilkner, FL)

Radio Difusora, Macapa, 4915 at 0348 with talks. (Brossell, WI) 0453 with EZL pops. (Parker, PA)

Radio Educacao Rural, Tefe at 0035 with preacher and religious music. (Alexander, PA)

Radio Brazil Central, Goiania, 4985 at 2321 with M hosting Brazilian pop vocals, IDs and ads. Poor, but //11815 was good. (D'Angelo, PA)

Voz Missionaria, Camboriu, 9556 at 0435 with religious talk and inspirational music. (Alexander, PA)

Radio Itataia, Belo Horizonte (t), 5970 at 0351 audible after Japan leaves. M with phone callers, occasionally over a background of soft music. (Parker, PA)

Radio Inconfidencia, Belo Horizonte, 6010 at 2300-2320 with station promos. Only a threshold signal on //15191. (Alexander, PA) 2310 weak but clear with soccer promos. (Perry, IL) 15190 at 0001 with M going into broadcast sked. (Rippel, VA) 2234-2305 with talk, ads, jingles. Fair-good, but weak on //6010. (Alexander, PA)

Super Radio Deus e Amor, 6060 at 0805 with religious talk, also 11765 heard at 2300 with talks and freqs. No QSL after three reports. (Brosell, WI)

Radio Nacional Amazonia, Brasilia, 11780 at 0008 with ID, singing. (MacKenzie, CA) 2305 with talks. (Brossell, WI)

Radio Gaucha, Porto Alegre, 11915 at 0139 with several M ancrs and futebol coverage. Nice ID and freq anmt after the match at 0159, time pips and an ad string at 0200. (D'Angelo, PA)

Radio Bandeirantes, Sao Paulo, 11945 a 0442 with a pgm of very Peruvian-sounding campo. (Parker, PA)

CANADA—CFRX, Toronto, 6070 with *Friendly Fire* pgm and ID at 1010. (Harden, GA) 0533 with ID and comedy pgm. (Wood, TN) 0030 on U.S. elections. (Maxant, WV)

CKZN, St. John's Newfoundland, 6160 at 0159 with CBC Network ID, promos and W with news at 0200. (D'Angelo, PA)

CHU, Ottawa, 7850 at 2210 with time and WX anmts. (Maxant, WV)

CHAD—RN Tchadienne, 6165 at 0452 in abrupt sign on with FF talk, Afropops and choral music, weak and poor under Japan, but by 0455 was covering Japan. Abrupt sign on also noted at 0436 and 0505. (Alexander, PA)

CHINA—China Radio International, 5990 at 2320 on the bond market in China and 7285 at 2140 on education and technology. (Harden, GA) 9440-Kashi in Mandarin at 1207, 9540-Beijing in (l) Cantonese at 1139, 9630-Beijing in CC at 1138, 9785-Kashi in (l) Laotian at 1143, 12070 at 1152 in (l) Tagalog, 15435 in RR at 0347, and 17575-Shijiazhuang in RR at 1205. (Brossell, WI) 9490 at 2250-2257 with mostly pops and closing talk in SS. Also 9490 at 2250 with music and SS over music at 2257 close, 11915-Baoji at 1044 with M in Mandarin and W talk to time pips at 1100. In the clear until Family Radio opened. (D'Angelo, PA) 9570 via Albania at 0033 on worldwide China exports, 9800 in SS at 0045, 11670 in CC at 2353, 11895 in CC at 1819, 13780 in CC at 1830, 15125 on repair of imported cars, 17495 in CC at 0040, and 17890 in CC at 0030. (MacKenzie, CA) 13640 in JJ at 2215. (Barton, AZ)

CPBS/China National Radio 11630-Lingshi in Mandarin at 2257 and Nei Menggu PBS, 9520 in CC at 1135. (Brossell, WI) 15380 in CC at 2237. (MacKenzie, CA) Xizang PBS, 4905 under RTTY at 1120 and 4920 at 2330-2337. (Wilkner, FL)

Voice of the Strait, Xingcheng, 4940 in (l) Mandarin at 1112. (Brossell, WI)

Firedrake jammer, 12230 banging away at 1130. No parallel transmissions noted at this time. (Barton, AZ)

COLOMBIA—Alcaravan Radio, Puerto Lleras, 5910 at 0510 with ballads in SS. (Wood, TN) 0520 with highlife-type music in SS. (Parker, PA) 1040 with nice pops and ballads, usual musical time check at 1045. (Perry, IL)

La Voz de su Concencia, Puerto Lleras, 6010 at 0404 with M ancr in SS f/by soft vocals and guitar. Several IDs at 0416. (D'Angelo, PA) 0435 with light instls and SS inspirational, ID at 0442. (Alexander, PA)

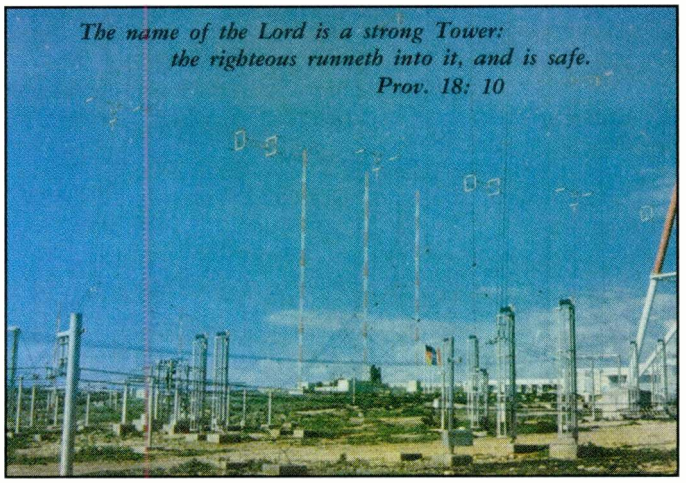
Salem Estereo, 14950.7 at 0000 with ranchero-style vocals and M with ID. Usual UTE QRM. (Rippel, VA) SS religious music at 2215. Weak but readable and fair on peaks. (Alexander, PA)

CONGO (D.R.)—Radio Okapi, 11690 via Meyerton at 0415 in FF with periodic jingle IDs. (D'Angelo, PA)

CROATIA—Croatian Radio, Deanovic, 3985 at 0357. Fanfare and M in Croatian at 0400, W followed with news and a radio play, then more music. (D'Angelo, PA)

CUBA—Radio Havana Cuba, 6000 at 0332, 6010 at 0600, 6120 in SS at 0318, 6180 in SS at 0010, 9810 in SS at 2325, 11840 in SS at 2215, 13650 in CC at 2304, 15370 in SS at 2304, 17705 in SS at 2257, and 17750 in SS a 2243. (MacKenzie, CA) 6125 at 0552 on the superiority of Cuban agricultural practices. (Wood, TN) 9540 in SS at 1158 and 15370 in listed Creole at 2304 (Brossell, WI)

Radio Rebelde, 5025 in SS at 0523 (Wood, TN)



Adventist World Radio has replayed over DW's Cyclops, Malta relay.

Another old European-style radio is featured on the QSL card from Radio Slovakia International.

CYPRUS—Cyprus Broadcasting Corp. 9760 at *2214-2244* sign on with usual theme music and Greek talk, //7229 was good and //5925 was fair. This is Fri., Sat., Sun. only. (Alexander, PA)

DIEGO CARCIA—AFN/AFTRS, 4319u good at 2310 with UTE QRM. (Wilkner, FL)

DJBOUTI—Radio Djibouti, 4780 at *0300 sign on with national anthem, talk at 0301 and local chants at 0303. (Alexander, PA)

ECUADOR—Radio Oriental, Tena, 4781.7 with a 1058 or 1100 sign on, quick "Radio Oriental" ID at 1100. SS anmts, canned ads, and some regional news. Goes downhill rapidly. (Perry, IL) Very strong at 2350. (Wilkner, FL)

Radio El Buen Pastor (t), Saraguro, 4814.9 at 1052 tune-by with choral due with country-style guitar, bass-voiced DJ in SS. It was nearly gone by 1100. (Perry, IL)

EGYPT—Radio Cairo, 9305 in AA at 0425. (MacKenzie, CA) 9315 at 0128 in EE with very low modulation. (Sellers, BC) 0300 with news. (Miller, GA) 0302 with rap vocal, "Radio Cairo presents 'Only in Egypt'" and discussion by two W. The usual poor modulation. (D'Angelo, PA) 9965 with Egyptian music, but very low modulation. (Maxant, WV)

ENGLAND—BBC, 6145 via South Africa with *Newsday* at 0314. (Coady, ON) 6195 (p) Cyprus Relay on mineworker violence. (Parker, PA) 9425 in AA with news features. IDs at 0325 and 0350. 9500-Woofertin with news and features in Farsi to 0330* closedown. (D'Angelo, PA) 15310 BBC Eastern Relay, Oman with sports at 1437. (Sellers, BC) 17715-Wooferton in FF at 1214. (Brossell, WI)

Far East Broadcasting Association, 9750 via UAE at 0200 sign on in (l) Urdu with Baluchi at 0215-0230 to shutdown at 0230. (Sellers, BC)

EQUITORIAL GUINEA—Radio Nacional, Bata, 505 at 0525 with SS talk, African choral and light instrumentals. (Alexander, PA)

Radio Africa, Bata, 15190 at 0715 with EE religious pgm. Also at 2000-2025 close. (Alexander, PA) 1432 with EE preacher. (Sellers, BC) 1921 with EE preacher. (D'Angelo, PA) 1930 with preacher Jack Weeks. (Miller, GA) 1931 with sermon (Brossell, WI)

ERITREA—Voice of the Broad Masses, 7185 airing Program One at 0310 with HOA music and vernacular talk. Also 9705 at 0257-0305 with Program Two and vernacular talk and HOA music. Covered by Ethiopia at 0330 sign on. 7190 at *0256 with IS, vernacular talk, HOA music. 9715 at *0255 with IS, vernacular talk and HOA music, //7185. (Alexander, PA)

ETHIOPIA—Radio Fana, 6110 at 0328 with HOA music and M talking beneath. (Rippel, VA)

FRENCH GUIANA—Radio France International, 21690 at 1702 with news in FF, //15300 and 17850. (Sellers, BC)

GERMANY—Deutsche Welle, 5925 via Rwanda at 0325 in Swahili with tribal singing (Parker, PA) 11800 Rwanda at 2133 with EE pgm on a variety of topics, //11865. (Sellers, BC)

GUAM—Adventist World Radio, 11750 at 2141 in CC with hymn and M preaching. (Sellers, BC)

TransWorld Radio/KTWR, 9875 with IS, ID at 1358. (Barton, AZ)

GUATEMALA—Radio Verdad, Chiquimula, 4055 in EE at 0508 reading from Exodus. (Parker, PA)

INDIA—All India Radio, 4840-Mumbai at 1430 with regional news in EE, then back to Hindi. (Sellers, BC) 7360 possibly in Hindi at 0345. (MacKenzie, CA) 9870-Bangaluru with the Vividh Bhurati service W in Hindi with Hindi songs at 1257. (Sellers, BC) 11620-Delhi at 1342 with EE comments on the Middle East and ID for the G.O.S., and 11670-Bangaluru with EE ID at 1910. (Maxant, WV) 2109 in EE with ID and pgm lineup, //11620. (Sellers, BC) 11985-Bangaluru at 0234 in (l) Kannada news at 0250, b/by W with ID and close down anmts. (D'Angelo, PA) 17705-Bengaluru in (l) Mandarin at 1212. (Brossell, WI)

TWR India, 11685 via Russia with preacher and an interpreter translating it into Urdu. 11725 via Uzbekistan in EE about the Apostle Paul translated into (l) Punjabi. (Sellers, BC)

Athmeeya Yatra Radio, 15350 via Wertachtal in (l) Koya at 1255, ID at 1300 and into (l) Bengali. (Brossell, WI)

INDONESIA—Radio Republik Indonesia, Makassar (Sulawesi), 4750 at 1305 with usual Tuesday "Kang Guru Indonesia" ending at 1332 with an invitation to listen again. (Sellers, BC)

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 or other prize. 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 **Mark Taylor**, who takes home a 2013 copy of the *World Radio-TV Handbook*. You need this excellent guide to the shortwave bands nearly as badly as you require an antenna on your radio. Personally, I buy two copies every year: One for the shack and another for my office upstairs! – *WPC9GLD*

In Times Past

Young Sebring, Ohio SWLer David Bush reports in June 1983's GIG about hearing "four-digit numbers on 9000 kHz at 2200 UTC being read by a woman in Spanish — very clear . . . then five-digit numbers between 9180 and 9200 kHz at 0200 UTC being read by a woman in German — very weak."

IRAN—Islamic Republic of Iran Broadcasting, 1945 at 1528, EE sign on, chorus, ID again, schedule and an Islamic devotional. (Sellers, BC) 13650-Sirjan at 0416 on the Chinese economy. (Parker, PA)

IRELAND—RTE Radio One, 17685 via Skeleton at 1604 with coverage of the All Ireland Football finals with post game coverage, news, weather, ads, and several IDs. (D'Angelo, PA)

Italian Radio Relay Service, 9510 via Romania at 0808 with *Free Speech Radio News,* website, off with ID and address at 0859. (Alexander, PA)

ISRAEL—Galei Zahal, 6973 at 0140 with back-to-back western pops and HH anmts by a W. (Rippel, PA) 0301 with M in HH pop pgm from 0304. (D'Angelo, PA) 0227 with local pops and M in HH talks. (Coady, ON) 2245 with local pops, HH anmts and SFX. (Alexander, PA) 15850 at 0321 in HH intro'ing songs. (Sellers, BC) 6886(nf), (ex 6973), at 0135 with Israeli pops and HH anmts. (Alexander, PA)

JAPAN—NHK World Radio, 5960 via Canada in JJ at 0335, 7395 in Swahili at 0326, 9835 in JJ at 1758, 15265 in JJ at 2330, 13640 in JJ at 2225. (MacKenzie, CA) 5975 via Wooferton with *Focus* pgm at 0525. (Parker, PA) 6120 via Canada on disputed islands in the South China Sea. (Maxant, WV) 1223 with EE/JJ lesson. (Fraser, ME) 6165 via Lithuania at *0249 with opening theme and ID in RR, 11970 via France at *0458 with O/C, time pips at 0500 and opening music, M with ID and M/W in EE. (D'Angelo, PA) 9575 (t) with light music and talk in JJ. (Harden, GA) 15720 via Madagascar at 0808 with *Focus.* (Sellers, BC)

Radio Nikkei, 3925 in JJ at 0754, //6055 and 9595. (Sellers, BC) 9595 in JJ at 1128. (Brossell, WI)

KUWAIT—Radio Kuwait, 11650 at 1405 with Islamic prayers. (Barton, AZ) 15540 at 1802 in EE with *Under the Call of Islam.* (Sellers, BC) 1905 on Mohammed. (Maxant, WV)

MADAGASCAR—Radio Madagasikara, 5010 with music and vocals to 0359, M with news in Malagasy at 0300. (D'Angelo, PA)

MALAYSIA—Asyik FM/Salam FM, 6050 at 1440 in Malay with Malayan pops, W hosting and taking listener calls, 1500 time pips, "Salam FM" ID and into Islamic pgm. (Sellers, BC)

Radio Klasik, 5964.7 at 1340 and W DJ hosting soft Malaysian pops, many mentions of R-T-M and mention of their new name, "Radio Klasik" (ex-Radio Klaski Nasional"). Then ruined by CRI sign on at 1358. (Sellers, BC)

Sarawak FM, 7295 at 1506 in EE with news and sports, then into pops at 1510. (Sellers, BC)

MALI—Radio TV Malienne, 5995 at 2350-0004 with Afropops, FF anmts and off with anthem. Also at *0559 with flute IS and opening FF anmts and a wide variety of local tribal music, indigenous vocals and Afropops at 0600, 9635 at *0802 abrupt sign on with vernacular talk (Alexander, PA)

MEXICO—Radio Educacion, Mexico City, 6185 in SS with M/W and news. Poor with heavy splatter from Brazil. (Sellers, BC) 0310 with some sort of radio play, non-stop vocals from 0317. Slop from Brazil-6180. (D'Angelo, PA) 0315-0507* with ranchero-style music and SS anmts. (Alexander, PA) Missing for several months, XEPPM found back with an enormous, but slightly muffled signal around 0020 with cultural and historical commentary. (Perry, IL)

MICRONESIA—The Cross Radio, 4755 at 0735 with Christian songs and M in EE. Very poor reception. (Sellers, BC) Fair level at 0950-1000. (Wilkner, FL)

MOLDOVA—Radio PMR, 9665 at 2230 with time pips and M with ID, then into news and features. (Sellers, BC) 2231 on 22nd anniversary of the Pridnestrovian Moldovan entity. (Fraser, ME)

MOROCCO—Radio Medi Un, 9575 with FF interviews and M in AA with interview answers, 2358 ending pgm and into M.E. instrumentals. CRI's sign on at 1259 on 9570 messed it up. (Coady, ON)

RTV Marocaine, 15350 in AA at 1935. (Brossell, WI)

MYANMAR—Myanmar Radio, Yangon, 5985.8 in Burmese at 1454 with traditional songs to 1510 when W anmt and then into more modern pop and EZL things. I couldn't tell whether they went into scheduled EE at 1530. (Sellers, BC)

Thazin Radio, 7110 pinning the meter at 1201 with W ancr and local Burmese "cover" songs. Very nice until 1215. (Perry, IL) 1206 with U.S. pops. (Brossell, WI)

NETHERLANDS—Radio Nederland, 6195 via Japan in SS at 0430. (MacKenzie, CA)

NEW ZEALAND—Radio New Zealand, 9655 advising on a late winter storm affecting the south island. (Maxant, WV) 15720 at 0042 on government cases going to court. (MacKenzie, CA) 0300 with time pips, ID and *Pacific Regional News.* (Rippel, VA) 9655 with Pacific region news at 1139. (Brossell, WI) 11725 NFL football and the Green Bay Packers. (Wood, TN) 0500 on a helicopter crash near Wellington. (Maxant, WV)

NICARAGUA—Pescado Preacher, 8989u under murderous RTTY at 2345. (Wilkner, FL)

NIGER—La Voix du Sahel, 9705 at 2230 with Europops, light instls, F and vernacular anmts. IS on and off with NA at 2258. (Alexander, PA)

NIGERIA—Radio Nigeria, Kaduna, at 2140 with local tribal music, talked in listed Hausa, covered by Anguilla at its 2206 sign on. (Alexander, PA)

Voice of Nigeria, 7255 in FF with comments and off at 2300. (MacKenzie, CA) 9690 at *0758 sign on with IS of drums and local instruments. Talk in (l) Hausa at 0800. 15120 at *0446 sign on with IS of local intls, occasional EE ID, NA at 0455. (Alexander, PA) 0451 with opening music, M with EE ID, news at 0500. (D'Angelo, PA) 1547 with ID and into a piece on African economics. (Sellers, BC) 7255 at 1945 with EE news. Ending EE abruptly at 1957. On again in FF at 2000. Also 15120 at *0466 sign on with IS, IDs, NA, EE ID anmts at 0456 and pgm preview, into news at 0502. (Alexander, PA) 0445 with ID "This is VON, Lagos." (Maxant, WV)

NORTH KOREA—People's Broadcasting Station, Pyongyang, 3320 first time heard at 1100. (Wilkner, FL)

Voice of Korea, 11535 at 1805 in FF, 11910 (MacKenzie, CA) 15180 at 1142 with a march and patriotic and operatic type vocals. Several "La Voix de la Coree" IDs. Then four minutes of dead air until IS, NA and opening of Korean service. (D'Angelo, PA)

OMAN—Radio Sultante of Oman, 15140 at 1402 with western pops, ID, chimes, theme and into EE news at 1431. (Alexander, PA) 1829 with Middle Eastern music and M ancr. (Rippel, VA)

OPPOSITION—Radio Republica (to Cuba via Costa Rica) 5954.2 with W in SS talk at 0057. (Perry, IL)

Sound of Hope (to China from Taiwan), 7280 in (l) Mandarin. (Brossell, WI)

Denge Mesopotamia (to Iran via Ukraine), 11510 at 0257 and 0300 sign on with marching band and choir, song in (p) Kurdish. (Sellers, BC) 0555 in Kurdish. (Sellers, BC) *0300 sign on. Kurdish vocals and indigenous vocals. (Alexander, PA)

Democratic Voice of Burma (to Mayanmar via Armenia), 11595 at *2330 with local music and talk, many mentions of Myanmar. (Alexander, PA)

Radio Biafra London (to Nigeria via Germany), 11870 at *2000 sign on with the African music and opening EE ID and anmts, vernacular talk at 2001 and occasional EE. This is Thursdays and Saturdays only. (Alexander, PA)

Shiokaze/Seabreeze (to North Korea via Japan), 6135 at 1330-1430 with ID and talks about Korea. (Sellers, BC)

Voice of South Sudan Revolutionary Radio (via England), 15725 at 1501 sign on with local tribal music and anmts in AA. (Alexander, PA) 17745 heard at 1645 explaining its leaving SW effective September 26, but expanding on FM. (Sellers, BC) 1627 with local vocals W with ID at 1630 with contact info, pgm highlights and into new at 1631. (Coady, ON)

PAKISTAN—Radio Pakistan, 15265 at 1759 with time pips, ID and into (p) news. (Rippel, VA)

PAPUA NEW GUINEA—Radio West New Britain, New Britain, 3215 at 1125. (Wilkner, FL) Pretty good at 1130 with choral hymns. (Perry, IL)

NBC Manus, Admiralty Is., 3315 at 1403 with choir NA and ending. Very poor. (Sellers, BC)

PERU—Ondas del Huallaga, Huanuco, 3330 with rustic domestic music at 0960. (Wilkner, FL)

Radio Huanta 2000, Huanta 4747 in SS at 1015. Plucked guitar huaynos and yipping vocals. (Perry, IL)

Radio Tarma, Tarma, 4775 at 1009 with the usual brilliant signal and usual folkloric pgm, DJ and quickie time hacks. (Perry, IL)

Radio Vision, Chiclayo, 4790 at 0500 with the usual "loudspeaker preacher." (Parker, PA) 0555 with religious music and SS anmts. (Alexander, PA) Good at 0955, still going at 0430. (Wilkner, FL) Apparently, xmtr problems have been fixed. Blowing in around 0940 with M and SS sermon. (Perry, IL)

Radio Sicuani, Sicuani, (p) 4826.6 on a good Andes morning as early as 0955. Time check at 1000 and huayno. Peaking about 1012. (Perry, IL) 0930 with M ancr, W vocal, back to M. (Wilkner, FL)

Radio Cultural Amuata, Huanta, 4955 at 1038 with inspirational music, M with ID and time check at 1039. One of the best signals from the Andes. (Perry, IL)

Radio Libertad de Junin, Junin, 5039.1 at 1044 noted nearly every morning with time checks and seeming end of national news pgm. (Perry, IL)

Radio Ondas del Surorienta, Quillabama, (p) 5120 with TC at 1047. Seems to sign on about that time. (Perry, IL)

Radio Bolivar, Ciudad Bolivar, 5460 with deep fades around 2345-0100. (Wilkner, FL)

Radio Bethel, Arequipa, 5921 at 2320-0300 with deep fades. (Wilkner, FL)

Radio Twantinsuyo, Cusco, at 2301-2310. Needs very narrow filter. (Wilkner, FL)

PHILIPPINES—Radio Pilipinas, 17700 at 0212 with numerous anmts and music bridges, 0215 with another EE ID and into news. (Sellers, BC)

Radio Veritas Asia, 15280 at 2312 in Urdu. M with comments, choir singing at 2318. (MacKenzie, CA)

Far East Broadcasting, 9400 in CC at 1130. (Brossell, WI)

PIRATES—The Crystal Ship, 6925u at 2245 with '70s pops. Also, 13780 at 2144 with pops, ID, talk. (Alexander, PA)

Radio Casablanca, 6940 at 0016 with ID and email: <radiocasablanca@gmail.com>. (D'Angelo, PA)

Radio Appalachia, 6934.8 at 0100 with old time bluegrass, possibly a rebroadcast of the Grand Ol' Opry, ID as the "free voice of the Ohio Valley from high atop Moundsville, West Virginia" and Three Stooges bit. (Hassig, IL)

Grizzly Bear Radio, 6925u at 0310 with blues and ID. Another time with Irish selections (Alexander, PA)

Cool AM Radio, 6925u at 0133 with pops and blues, IDs, promos and email: <coolamradio@hotmail.com>. (Alexander, PA)

Radio True North, 6934.8 with segued songs and M ancr at 0220. (Rippel, VA)

Radio Ronin, 6925 at 0550 with various songs about pirate radio. Email: <RadioRonin Shortwave@gmail.com>. (Hassig, IL)

Blue Ocean Radio, 6930 at 0528 with eclectic music mix. Closing ID at 0535. "You're listening to Blue Ocean Radio, coming to you from the West Coast of North America." (Sellers, BC)

Captain Morgan Shortwave, 6925 at 0344 with Beatles and Eagles before ID by M/W repeated several times. Carrier cut in mid-song. (D'Angelo, PA)

Red Mercury Labs, 6925u at 0250 with lots of heavy metal, anmts mentioning power. Gone by 0830. (Barton, AZ)

Renegade Radio, 6925u at 0114, "Broadcasting from the Middle of Nowhere" with Dr. Benway. (Rippel, VA) 2215-2307* with Dr. Benway and a radio drama. Email: <UndercoverRadio@gmail.com>. Talk about psychedelic drugs. (Alexander, PA)

Wolverine Radio, 6950u at 0107 with songs with women's names. SSTV, FAX and off at 0250. (Hassig, IL) 0248 with a song, then a FAX xmsn, brief two-way conversation between Grizzly Bear Shortwave and Wolverine Radio and then gone. (Sellers, BC)

Big Boobs Radio, 6924 at 0310 with various pop tunes and email: <BigBoobsRadio@gmail.com>. (D'Angelo, PA)

XFM, 6925 at 0455-0501 with light instls, ID at 0501 sign off. (Alexander, PA) 6940 at 0105 sounding like a pro with excellent audio. (Hassig, IL)

Blue Star Radio (Euro), 15070 at 2140 with pop and email address. (Alexander, PA)

Artem's World Music (Euro), 6240 at 2220 with pops and IDs. Weak but readable. (Alexander, PA)

Trans Europe Radio, 15055 at 2153 with pops, ID. (Alexander, PA)

WMPR, 6924.9 at 2345-2358 with usual techno-pop dance. Also 6955.2 at 2345 with electronic dance music. (Alexander, PA) 6925 at 2300 with electronic ID at 2312. (Wood, TN)

ROMANIA—Radio Romania International, 7435 at 2226 with *The Cooking Show*, //9540. (Fraser, ME) 9590 at 2220 with news f/by *A Challenge to the Future*. (Harden, GA) 11940 at 1745 with mailbag pgm. Ancrs saying they had no plans to go off the air. (Rippel, PA) 21510 with W in SS talk. (Barton, AZ) 11934-Taganesti in AA at 1518-1527* (D'Angelo, PA)

RUSSIA—Voice of Russia, 7350 via Vatican at 0442 with two M and comments, 13775 at 0405 with *Culture Room*. (MacKenzie, CA) 9665 (via Moldiva – gld) on various wood species in Russian forests. (Maxant, WV) 2235 on Moscow's traffic problems. (Fraser, ME) 11965-Moscow in RR at 0436. (Parker, PA) 12040 at 1705 with news by W. (Sellers, BC)

Radio Rossii, 7320 in RR at 0632. Unlisted here at this hour (Sellers, BC) 12070 in RR at 0427. (MacKenzie, CA)

Magadan Radio, 7320 relaying Radio Rossii in RR at 1124. (Brossell, WI)

SAO TOME—Voice of America Relay, Pinheria, 4960 at 0403 with news in EE. (D'Angelo, PA) 0448. (Parker, PA)

SAUDI ARABIA—Broadcasting Service of the Kingdom, 9870 in AA at 2122 with a long Arabic song. (Sellers, BC) 11820 at 2145-2300* with Holy Koran Service, //11930, 11950. (D'Angelo, PA)

SEYCHELLES—BBC Indian Ocean Relay Station, Mahe, 9410 at 2100 with a promo for a feature to follow BBC news. (Coady, ON) 11945 in EE at 0438. (Parker, PA)

SINGAPORE—BBC Far East Relay, 15285 on Olympic gold medals. (Brossell, WI)

SOLOMON ISLANDS—Solomon

I don't think these Koala bears were listening to Radio Australia. –WPC9GLD

Islands Broadcasting Corp., 5020 fair at 1135 with orchestral music but *way too much* splatter from 5025. (Perry, IL)

SOMALILAND—Radio Hargeisa (p) 7120 at *0329 with open carrier before opening with continuous indigenous music pgm. M with anmts at 0335 and again at 0405 in (p) Somali. Very good at tune-in but deteriorating around 0400. (D'Angelo, PA) *0331 with O/C from 0429, on at 0331 with chants, talk at 0337, HOA music at 0344. (Alexander, PA) 1403 in Somali with Somali pops. Into (p) news headlines at 1425, back into music after 1430. (Sellers, BC)

SOUTH AFRICA—Channel Africa, 15235 at 1700 sign on and into *African Digest,* pgm lineup and into news. (Sellers, BC)

TWR-Africa, 15105 via Meyerton in (l) Kirundi with hymn, M preacher, (Sellers, BC)

SOUTH KOREA—KBS World Radio, 9650 via Canada on balloons with leaflets being sent into North Korea. (Maxant, WV)

SPAIN—Radio Exterior de Espana, 5995 Costa Rica Relay at 0007 reading my letter. (Coady, ON) 0200. (Maxant, WV) 0346-0353 with M/W talk until carrier was cut in mid-sentence with slop from Havana. (D'Angelo, PA) 6055-Costa Rica with SS vocals at 0400. (Maxant, WV) 6125-Costa Rica Relay in SS at 0313, //6055, 9620 in SS 0035, 9665 in SS at 1755, 9710 in SS at 2242, 15110 in SS at 2245, 17715 in SS at 1840, and 17795 in SS at 2306. (MacKenzie, CA) 9650 in EE at 2145 with letterbox pgm and offer of a QSL. (Sellers, BC)

SRI LANKA—Sri Lanka Broadcasting Corp., 11905 at *0115 with signature tune, sign on by W ancr and into sub-continental music. (Rippel, VA) 0120 with Hindi music hosted by a W in Hindi, 2+1 time pips at 0130, ID and M with news, f/by music again. (D'Angelo, PA)

SUDAN—Sudan Radio TV, 7200 at *0230-0401* on with Koran and AA talk at 0237, then indigenous vocals. (Alexander, PA)

Miraya FM, 11580 via Ukraine at 0356 in EE, W with African accent, a song and reading comments from a listener. (Sellers, BC)

SWEDEN—Radio Ibrahim/IBRA Radio via Meyerton, 11610 in (p) Somali with M.E. or Asian-sounding music and two M in (p) Somali with a religious message. (Sellers, BC)

SWAZILAND—Trans World Radio, 4775 at 0420 with religious talk in GG, f/by EE pgm start with ID and time check. (D'Angelo, PA)

TAIWAN—Radio Taiwan International, 5950 in CC at 0555. (MacKenzie, CA) 15690 via France at 1718 on different feature stories. (Sellers, BC) 7385 in Mandarin at 1130 and 9735 in (l) JJ at 1150. (Brossell, WI)

TANZANIA—Radio Tansania Zansibar, 11725 with music and women talking. (Maxant, WV) 2030-2108* with M.E. style usic and local pops and Spice FM jingles. Running past its usual 2100 close. (Alexander, PA)

THAILAND—Radio Thailand, 15275 at 0021-0029* with M/W with EE news and frequent IDs, closed in mid-sentence. (D'Angelo, PA) 0204 with EE news with many mentions of Thailand. (Rippel, VA)

TURKEY—Voice of Turkey, 7325 in TT at 0445. (MacKenzie, CA) 11980 at 0415 in TT. (Barton, AZ) 0433 in TT (Parker, PA) 15450 on Syrian refugees being relocated. (Maxant, WV)

TUNISIA—RTV Tunisienne, 7275 in AA with woman vocal. (MacKenzie, CA)

UNITED STATES—Voice of America, 7225-Philippines Relay in KK at 1250 with KK/EE lesson. (Sellers, BC) 9885-Greenville at 0015 in SS (MacKenzie, CA) 11905 via Vatican at 0507 in Kurdish. (Parker, PA) 15250 via Tajikistan in Mandarin at 1155, 15775-Philippine Relay with EE ID and into KK at 1205, and 17770 in (l) Burmese at 1216. (Brossell, WI)

Radio Free Asia, 9325-Northern Marianas Relay, in (l) Laotian at 1137. (Brossell, WI) 9715-Northern Marianas Relay in VV at 1447. (Sellers, BC) 15430-Northern Marianas in CC at 2300 and 15585 in CC at 2315. (MacKenzie, CA)

Radio Marti, 7365-Greenville in SS at 0023, 9565 at 2217, and 11930 in SS at 2217. (MacKenzie, CA) 6030 in SS at 0910. (Harden, GA)

Afir Darfur Radio, 7260-Sao Tome Relay at 0304 with M in AA interview with many mentions of "Darfur" and "Sudan." (Coady, ON)

Radio Free Afghanistan, 17685 via Sri Lanka in (l) Pashto at 1209. (Brossell, WI) 11530-Florida in SS at 2332, //11580. (MacKenzie, CA) 11915 via Taiwan at *1100 with usual theme music. Listen to open in II and very poor. (D'Angelo, PA) 13960 at 1520 with a long talk by Harold Camping. (Barton, AZ)

WWCR, Tennessee, 9280 in Mandarin at 1127, 11830 via 9980 at 2040, 3215 at 0540, 5890 at 0550, 5935 at 0553, 9350 at 2137, 2160 at 1822, and 13845 at 2240. (MacKenzie, CA) 9980 at 2040 with a pgm called *Financial Security.* (Harden, GA)

WTWW, Tennessee, 9480 heard at 2240. (MacKenzie, CA)

WBCQ, Maine, 9330 heard at 0420. (MacKenzie, CA)

WRNO, Louisiana, 7506 at 0228 intro'ing another preacher with brief ID at 0259. Strong carrier but distorted audio. (Sellers, BC)

WEWN, Alabama, 11520 at 1220 and 15620 at 1230. (Maxant, WV)

Pan American Broadcasting, 15205 via Wertachtal ending pgm at 1429 with Halifax and Boston addresses. (Sellers, BC)

Adventist World Radio, 11605 via Wertachtal ending listed AA and instl Christian song. (Sellers, BC)

KJES, New Mexico, 15385 very weak at 1930. (Maxant, WV)

WINB, Pennsylvania, 9265 at 0050 on Islamic religion. (Maxant, WV)

VATICAN—Vatican Radio, 11850 via Uzbekistan at 1549 with Vatican Radio IS to 1550. This would have been the opening of the EE broadcast. (Sellers, BC)

VENEZUELA—Radio Nacional, 13680 via Cuba in SS at 2235. (MacKenzie, CA)

VIETNAM—Voice of Vietnam (p) 5975 and 9635 with the home service from Son Tay at 1404 in VV. Both were poor. Also (t) on 6020-Buron MeTout home service at 1516 with M/W in Asian language, also very poor. (Sellers, BC) 6175 at 0410 in SS. (MacKenzie, CA)

ZAMBIA—Zambia National Broadcasting/Radio Two, 6165 at 0242 with Fish Eagle IS, NA. Covered by Voice o Turkey at its 0256 sign on. (Alexander, PA)

One Africa, 9505 at 2117 with ID, Christian song. (Sellers, BC) 13590 with ID and Christian messages and a rap piece. (Sellers, BC) 1935 with religious music and preaching. (Maxant, WV)

And that's it for this month, except to offer the usual thanks and high fives to the following good guys who did the right thing this month: Brian Alexander, Mechanicsburg, PA; Rich D'Angelo, Wyomissing, PA; Robert Wilkner, Pompano Beach, FL; Richard Parker, Pennsburg, PA; Harold Sellers, Vernon, BC, Canada; Mark Coady, Peterborough, ON, Canada; William Hassig, Mt. Pleasant, IL; Robert Fraser, Belfast, ME; Charles Maxant, Hinton, WV; Richard Parker, Pennsburg, PA; Ralph Perry, Wheaton, IL; and Robert Brossell, Pewaukee, WI.

W***-FM, The Imagination Station — Part I

by Shannon Huniwell, WPC2HUN
<melodyfm@yahoo.com>

*"'Would you entertain the opportunity of being a legendary figure in the glorious swan song of W***-FM?' Dominick offered."*

Not even four decades of distance has given Craig Keller enough cover to "safely" divulge the call letters of a tiny FM outlet where he helped stage a legendary hoax. The northwestern Montana resident and avid DXer admits he's now "thousands of miles and eons away" from the scene of his spring 1973 audio scam, but says he can't risk being associated with a fake event that caused a scandal resulting in the resignation of several college officials.

More of this fascinating 10-watt saga follows a preface inspired by *Pop' Comm* aficionado, Dan Ramos of Huntington Beach, California. He emailed me moments after finishing the September 2012 (30th Anniversary) issue in which some clever antics of the magazine's late founding editor, Tom Kneitel, were revealed.

"I had a ball with the part where Mr. Kneitel invented the fictional writer, Alice Brannigan," Dan chuckled, "and thought about you and your column, *Shannon's Broadcast Classics*."

The loyal subscriber then mused, "Because female writers are rare in electronics magazines, I hope you will continue with your column since I find them fun to read. But, I really hope you are *real* and not some figment of some editor's imagination."

While probably not sufficiently conclusive for conspiracy theorists, I can confirm that all 119 pounds of me are organically authentic. Additional evidence includes that there have been *three* editors at the *Pop' Comm* controls since I began writing for *Pop'Comm* a bit over 10 years ago, each of whom were much too busy to be concocting characters. It is true, that many of my professional writing projects have me "ghosting" or using various nom de plumes. While I can't take an oath regarding when or where my byline is an alias, please be assured that the same real live broadcast history buff *Pop' Comm* readers have come to know in *Shannon's Broadcast Classics* has been lovingly penning the column since its 2002 introduction.

And now to set the stage on Craig Keller's radio caper confession, let's just imagine the venue as a small religious college somewhere in the New England or upstate New York areas. That's as close of a range that Craig would allow me to pinpoint in the journalist/source agreement making this story's publication possible.

Although having arrived on campus in early September with the best of intentions, within a month, Craig felt adrift in the seemingly foreign seas of university life. His assumptions about finding classes to be fascinating and his hope of meeting a pretty girl were dashed on the rocky shores of pontificating professors and tight cliques. The latter often already fully formed by students who came to the school as couples, or in circles of student athletes and their groupies. Craig soon recognized that he'd remain a lonely independent unless something on the picturesque institution's 32 acres could be made to occupy his interest. So, a couple of weeks after Labor Day he decided upon making a science of watching people.

The Station With Pretty Puny Publicity

One of his first projects involved observing some sloppy upperclassman taping a crudely-drawn poster to the side of a dormitory lobby soda machine. The flyer invited students to audition for a timeslot on the college radio station. Its bottom edge had been cut into small strips, each containing the station's minutely-written call letters, dial position, and phone number. He yanked one from the placard and crumpled it into his pocket. Craig had never thought much about radio besides using it to hear the music that most of the other kids he knew seemed to like, too. Even so, in the drizzly mid-afternoon of a boring late October Saturday, the discouraged freshman fished the slip of paper out of his jeans, went to a booth in the Student Union building, and dialed the four digits scribbled on the tear-off.

"Yeah?" someone finally answered in a nasally voice.

"Is this the radio station?" Craig inquired.

"Well it ain't the bus station," the guy replied impatiently and then curtly commanded Craig to "hold on," as he apparently, in order to take care of more urgent business, dropped the receiver on a tabletop. In the background, Craig heard about 10 seconds of the recent pop hit, *American Pie*, and then everything went quiet until the fellow intoned, "That was music by the ever popular singer Don McLean. This is Dominick Dotz, *'Old Dom-O'* your ever-lovin' DJ at 12 minutes now after the hour of three o'clock now. That means

in exactly 48 minutes, it'll be four o'clock on the dot with Dotz! *Heh, heh, heh.*" Even through the benched handset, his delivery clearly sounded affectedly amateurish and insincere. Craig guessed correctly that it belonged to the slob who'd been in charge of posting the station's publicity.

"You still there?" the guy asked after clumsily retrieving the receiver from wherever he had dumped it prior to his professional announcing duties.

"I am," Craig calmly indicated.

"You calling to make a request or dedication?"

"No" Craig stated. "I'm answering the ad on the poster looking for people to volunteer at the radio station."

"You're not some hippie with a collection of albums by some drugged-out band, are you?"

"Actually, I don't own any records and I don't know a whole lot about being on the radio," Craig reported. "But I'm willing to learn."

"Well, that's what everybody says at first," the guy sneered. "Then they fade out of the picture like some VHF-TV skip on channel 2 in June."

"Uh, I don't have a television either," Craig said, not picking up on the fellow's arcane video-DX metaphor.

"Yeah, yeah, whatever . . . Well come on over to the studio and I'll audition you."

"When would be a good time?" Craig asked.

"Who cares?" the DJ replied. "I'm stuck here until sign-off at 11, like I am every night. Hey, I gotta go," he blurted out. "My record is ending."

Before the snippy guy hung up, Craig managed to extricate a couple of phrases from him containing cursory directions to the studio. "I'll stop by the station right after supper," he said with resolve, even though, by that time, the other side of the conversation was only a dial tone.

The dining hall was pretty much as boring as the rest of the day had been thus far. The place was quiet enough for him to recognize audio from a wall-mounted speaker as coming from the school's station. He couldn't help but notice that the music was louder than when the DJ spoke, drowning out whatever perky Top-40 lingo the two-faced announcer attempted to convey. An oddball student whom Craig had seen arguing in the TV Lounge over which *Twilight Zone* episode was the most realistic, pointed at the lopsided slice of chocolate creme pie as he practically goose-stepped past Craig's table. "That crap is lethal," he pronounced. "My friend works in the kitchen and confirms that it's left over from like three weeks ago. Any that's still here after tonight will probably get donated to the bio lab."

Finding *'Dom-O'*

The kid's speculation served to quickly separate Craig from his remaining appetite and started him on his way across campus in search of W***-FM. Within 10 minutes, he found its entrance at the end of a concrete hallway in the faintly musty basement of Robertson Hall. A paper plate emblazoned in angry *Magic Marker* with the FM's call letters delineated which of the corridor's peeling, grey-green doors led to the studio. Through a slight opening in the portal's old fashioned transom, a pair of color-coded wires snaked to a speaker box much smaller and dustier than the ones in the dining hall. Neil Diamond's *Song Sung Blue* did its best to waft from the wooden enclosure. Craig looked up at it momentarily as if the speaker could see him, and then knocked on the door's painted glass.

"Yeah? Just open it! It's not locked."

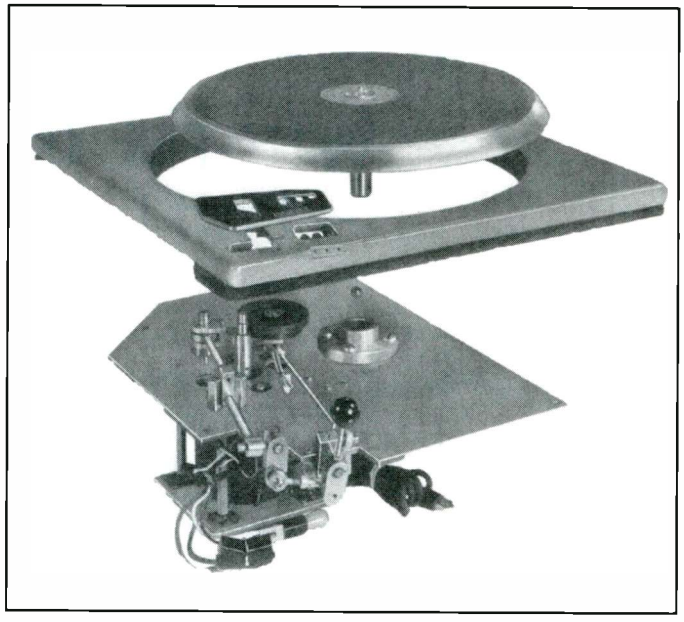


Photo A. Here's an exploded view of a professional turntable from Gates Radio Company, like the only "good" piece of studio gear owned by W***-FM. The model CB-500 spun a 16-inch platter for playing transcription discs (common prior to tape recording), while a smaller version was topped with a 12-inch table perfectly suitable for 45-rpm and 33.3-rpm records. Both also shifted to 78 rpm, a speed that only caused "chipmunk singing" when inadvertently used on the aforementioned *modern speed* recordings. Newbies at scores of college radio outlets equipped with such turntables quickly learned to pop-up the little center spindle 45-rpm spacer whenever spinning a hit single.

Craig turned the grimy knob and walked in cautiously.

"So, you're the kid who wants to be a radio star?" Dominick Dotz asked sarcastically. "Welcome to the Imagination Station."

"I'm not figuring to become famous," Craig replied. "I just wanted something interesting to do. To tell you the truth, I've never even been in a radio station before."

"Even so, I bet even you can perceive that this is more of a dump than a broadcast facility," Dotz began his soliloquy. "Look around . . . Only one legitimate professional turntable, (**Photo A**) probably from before you were born; the other one a refugee from RadioShack® . . . This homemade 3-channel control board that has more buzz in it than a hornets' nest that got hit by a broomstick, and this stinkin' microphone in front of me looks like it came from some 1940s black and white *calling-all-cars* cop movie.

"I call it the *Imagination Station* because the only way to make it seem like something other than a complete waste of time is to use your imagination. Then again," he mused through an anguished grin, "isn't that what great radio is all about — Imagination? The theater of the mind?"

The heavyset DJ was enthroned in a cushioned swivel chair that squeaked whenever he moved. "I found this baby at the curb on garbage day," he complained, noting the stuffing escaping from various sections of its electrical-taped fabric. "Pull up that other seat and park yourself near the so-called *guest mic*," Dominick directed.

Craig repositioned an old wobbly wooden classroom chair that looked like it might have been used in a bar fight. Bolted to the chair's little desktop was a mic stand gripping one of those

cheap plastic stick microphones with a miniscule on/off switch on its back.

"Plug that mic cord into that mini-box next to the control board," the DJ pointed, while he fiddled with a bulbous tape recorder perched on a nearby tray table. "I wanna hear what you'd sound like through a speaker. Read this script."

It was a stodgy public service announcement about how to prepare for violent storms, ironic in that the station appeared to have been the frequent victim of various typhoons and hurricanes. Dominick hit the playback, and even Craig was pleasantly surprised how decent his newly found radio voice sounded. Actually, he didn't have that fake affected announcer voice often the province of broadcast novices. Rather, his delivery possessed a natural authority and friendliness that even impressed Dominick Dotz.

"Not bad, kid. Not bad. A lot better than I can do, and I've been grinding away at this hopeless station since we went FM in 1968." Dotz began to regale Craig with the once bright history of W***. "There's nobody left here now except me."

The Rise & Fall Of A Radio Dream

Dominick Dotz had just turned 15 when W*** captured his imagination. He'd come to the school on a weekend retreat with his church's youth group. The idea was for the kids to listen to a couple of inspirational speakers, hear some folk music concert sponsored by the Sophomore class, taste college life, and get a recruiting tour of the campus.

The tour guide of Dominick's group happened to be one of the founders of W***, then a carrier-current outfit that transmitted 5 watts of AM throughout the college's two dorms. He detailed how the station had big plans "to go FM," as well as how the school's radio club was blessed with important allies in its beloved science professor/club advisor and college president, both interested in expanding the institution's community standing through a broadcast signal that reached beyond the campus. There was also talk about several production studios in which religious programs could be produced on tape for distribution to other educational stations, thus further widening the station's and the licensee's influence and good will.

During the remainder of his high school career, Dominick dreamt of little else than attending the college and being part of W***. He kept in touch with the tour guide who ecstatically wrote back that the Federal Communication Commission had approved the school's application for "10 watts of power in a nice spot on the FM educational band. It may not sound like much," the upperclassman admitted, "but we're all thrilled that we'll finally have an actual broadcast signal capable of getting us out into the legitimate airwaves!

"Besides," he told his happy reader, "our college president says that 10 watts simply represents a foot in the door because once we prove ourselves, there's no reason why we can't apply to the FCC for an upgrade. Maybe to 1,000 watts or more!"

The year Dominick officially arrived on campus was filled with the heady stuff of working with the small, but enthusiastic station crew and its proponents transitioning from carrier current AM to licensed "Class D" frequency modulation. The trustees' initial budget line for this project covered engineering and legal expenses associated with filing the original FM construction permit application, plus $2,000 for a Gates brand transmitter and related "educational ring" antenna, **Photo C**. The lat-

Photo B. An ad for the leading professional tone arm circa 1953-1970. This 1954 publicity shows Gray Research's viscous-dampened model 108-B unit. The Connecticut-based manufacturer indicated that its "new suspension principle damps vertical and horizontal movement of the arm to stop groove jumping and skidding, preventing damage [to the record] if the arm is dropped." Many a Gates turntable — such as the 16-incher still rounding the curves at W***-FM — were fitted with the Gray 108 series and deftly survived clumsy handling endemic to volunteer DJs at a college radio station.

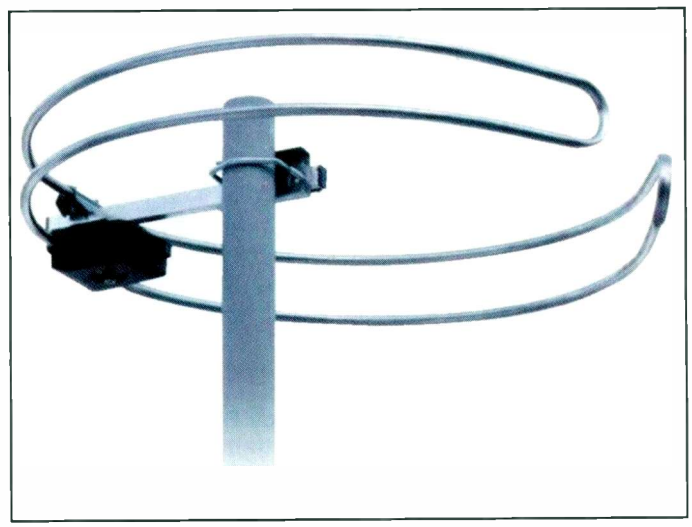


Photo C. Though designed to *receive* FM signals, the Conrad brand piece pictured here is a dead ringer for the circular FM transmit antenna employed by W***-FM. The main difference in appearance is the tubular element, as opposed to a welded metal band of about 350-degrees in circumference on the transmit unit. It produced a horizontally-polarized signal that liked housebound receivers with folded dipoles better than FM car radios and their related whip antennas.

ter got mounted on a heavy-duty TV mast affixed to the top of the precariously-pitched three-story Robertson Hall, **Photo D**. Dominick couldn't resist smiling the first time he spied it majestically peeking over the big building's roof. The little box generating that modest array's coveted RF rested — only a few feet below — on an erstwhile dormitory dresser wedged into what was still labeled *custodial closet*. Maybe not the most technically advanced setup, but one that he took great pride in having helped install. Dominick Dotz called it "the absolute happiest time in his life."

The crew had requested funding that would allow them to replace the hodgepodge aggregate of studio gear scrounged up during the AM era, but were euphemistically told by their fatherly advisor they'd need to make-do until the trustees could better see the benefits of further financial appropriation. No matter, as it was all academic on the morning that W***-FM debuted.

From the idyllic picture Dominick painted, Craig imagined the presently derelict studio as having exuded a brand of caring that kept its loving laborers from seeing the place for what it would become within three years. By that time, the little station's seminal faculty advisor had been tragically killed in a car accident, the friendly college president accepted a similar post at a much better endowed university, and the novelty of having a show on W***-FM had worn-off.

In fact, this seemingly unstoppable ebbing of willing volunteer DJs flowed away in direct proportion to the station's increasing incidences of buzzing audio, broken equipment, and repeated administration edicts that no controversial music selections or questionable content be broadcast over the college's airwaves.

These were conditions set by the school's brass when they'd only narrowly authorized the submission of an application for license renewal in 1970. Then, availability of clean stereo FM signals offering freeform progressive formats from a handful of nearby secular universities in the region siphoned off sufficient local listenership to the point where students leading tours noted W***-FM as a campus joke; if they mentioned it at all. Prospective students who might ask, circa 1971-1972, were simply supplied with the approved quick reply that the station had been cursed with lots of technical problems and that the administration had already notified the FCC it would mercifully let the license expire sometime in 1973.

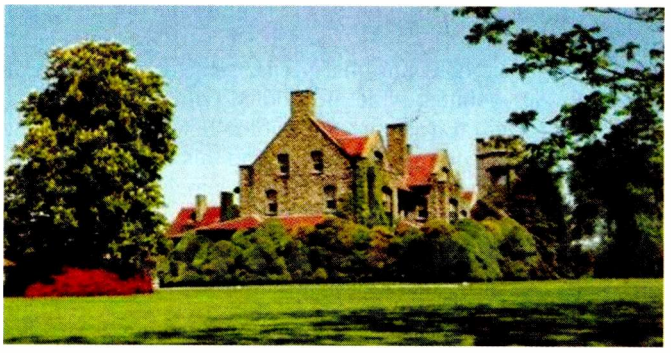


Photo D. After I literally begged him for *something, anything* to illustrate a little visual flavor of W***-FM's studio or transmitter, Craig Keller reluctantly emailed this postcard. "If I *were* to verify that this building is Robertson Hall, home of the ill-fated, 10-watt station — and I won't" he emailed me, "it may or may not be actual fact." When I pressed further, the Montana man verified that the structure is close enough to the place in his memory to give sleuths more graphic detail than he's comfortable revealing — even after an on-air incident that *might have* occurred there some 40 years ago.

Setting Up A Super Pre-Meditated Sign-Off

With the sole exception of Dominick Dotz, the occasional smattering of remaining W***-FM diehards were gone by the May 1972 graduation. He was the surviving captain who planned to go down with the ship sometime before getting his sheepskin in the December '72 cohort of students who'd fallen behind for one reason or another.

"*Or maybe*," Dotz started scheming about a week before putting up the Help Wanted posters, "*Maybe I can find an ensign to assist me in torpedoing the college by remote control after I'm safely out of the picture.*"

"*Yeah!*" Dominick Dotz decided, "*That'd allow me to watch the fireworks from a distance.*"

He envisioned delighting over news of the revenge in delectable morsels of detail from Craig Keller. Old '*Dom-O*' knew, however, the whole thing would all hinge on how well his protege's sense of humor meshed with his sense of justice. "Would you entertain the opportunity of being a legendary figure in the glorious swan song of W***-FM?" Dominick offered.

"Uh, you want me to air a gag recording of birds singing or something?" Craig demonstrated a need for clarity.

"Keller, Keller, Keller," his mentor exclaimed with both arms gesturing upward.

"Looks like I gotta start from square one! Let me see how I can explain this without scaring you away . . . Have you ever heard of WOR Radio personality Jean Shepherd and what he did to the pompous literary crowd at the likes of *The New York Times*, using only a $100 microphone and his imagination?"

To be continued . . .

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My Adventures with Morse . . . Of Course!

by Bill Price, N3AVY
<chrodoc@gmail.com>

"Many Coast Guard radiomen never copy a live SOS . . . I got mine on my third watch."

I still believe that Morse code is the ultimate method of communication, and I doubt that my opinion will ever change. My grandfather and his two brothers were telegraphers of a sort: one in the Navy with a spark gap transmitter, the other two for two different railroads using clicks and sounders.

I was fortunate enough to witness one of them working in the Manayunk station of the Reading Railroad where he explained to me what he was doing, and what the clicks meant.

When I got my first electric bicycle horn one Christmas morning, he showed me how to send the word Philadelphia on it. Learning the code still took many years until I was properly motivated by the threat of becoming a mess-cook at the U.S. Coast Guard Radioman "A" school in Groton, Connecticut — *if I failed to measure up.* I measured up: 20 words-per-minute in six months. Today I have an "app" which sends me caller ID on my smart phone in Morse code — at 20 wpm. *Tradition.*

It's been 46 years since my first patrol in the Coast Guard. I was en route to the Florida Straits during Hurricane Inez. I was on my third "live" radio watch since graduating from Groton, and it was indeed a dark and stormy night, and getting stormier by the minute.

Many Coast Guard radiomen never copy a live SOS. I got mine on my third watch. I followed procedure, notified the watch supervisor, switched my receiver on to the speaker so he could hear, notified the bridge, combat information center, and the skipper, who immediately came into the radio shack, stood behind me with his hands on the back of my chair and read my log over my shoulder as I typed.

I completely forgot that I was *terribly* seasick. I just knew that this was not a drill. The captain asked me if I was sure of the latitude and longitude that I had typed in my log. I was. He called the bridge for an ETA at that position. They gave it immediately. He told me to *"Roger"* the SOS and tell them our ETA.

Now I was really scared. I knew my procedure and I was not to send a message until it was dictated, typed onto an official message blank, and signed by the drafter and the skipper, who was one and the same, and was behind me, with a few years more experience, and a whole lot more rank than I had.

"Aye aye, captain."

I responded using all the proper procedure, then quickly typed the message for him to sign as drafter and as C.O. He did, and left the shack. I stepped out to the rail on the 01 deck, hung on for dear life, and threw up. Repeatedly.

The next day I had the rare privilege of sailing through the worst part of the storm into the eye and experiencing a miraculous calm while our engineers took a small boat and some jumper cables and got the poor tanker's engines started before she drifted ashore in the Gulf of Mexico.

The Caribbean — and later the North Atlantic — tried to kill me several times, but like so many others, I lucked out. I had a damned good time in the Coast Guard and I'm still in touch with my Chief Radioman from my second ship, who is likely reading this column at the same time you are.

If you knew my first chief, you might find out how I plugged my electric guitar into a nice big transmitter and played a sort of rock version of *Semper Paratus* on the Third district AM working frequency — which I still remember as 2670 kilocycles. Hertzes were still rental cars then.

He also reprimanded me for "shooting the breeze" with some of the big tonnage radio operators from ships such as the Queen Mary, the QE1, and a few others whose names I could drop. I should have known that he was listening to his receiver in the chiefs' quarters.

Chief Bob — who reads this column — later had to explain to my second skipper why the ship was about to go to general quarters for a suspected fire at sea because I was burning incense in the ash tray while on the mid-watch.

How was I supposed to know that the smell went through the entire ship's ventilation system? That skipper had *no* sense of humor.

I miss the days of filling my lungs with helium before answering the ship's phone while I was standing the gangway watch while in port.

"Yes, captain, it's Price. How did you know? Yes sir. No more helium."

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- Fast Fourier Transform algorithms
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- An I/Q output port that allows the user to capture up to 1 MHz of bandwidth onto a computer hard drive or external storage device
- An SD memory card port that can be used to store recorded audio
- Analog composite video output connector
- CTCSS and DCS squelch operation
- Two selectable Type N antenna input ports
- Adjustable analog 45 MHz IF output with 15 MHz bandwidth
- Optional AR-I/Q Windows software facilitates the easy storage and playback of transmissions captured within up to 1 MHz bandwidth or, signals can be subjected to further analysis.
- An optional GPS board can be used for an accurate time base and for time stamping digital I/Q data.
- The triple-conversion receiver exhibits excellent sensitivity across its tuning range.
- Powered by 12 volts DC (AC Adapter included), it may be operated as a base or mobile unit.
- Software-driven operating selections include IF bandwidth, frequency, mode, filters, a screen-displayed graphical "S-meter," memory inputs, volume and squelch settings and more
- Professional (government) version is equipped with a standard voice-inversion monitoring feature

**Cellular blocked for US consumer version. Unblocked version available to qualified purchasers with documentation. Specifications subject to change without notice or obligation.*

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- 0.1~1300MHz high-frequency range RX (B band)[1]
- FM/FM-W/FM-N/AM plus SSB/CW receive
- Bar antenna for receiving AM broadcasts
- Special weather channel RX mode
- 435 memory channels, multiple scan functions
- 7.4V 2000mAh lithium-ion battery (std.) for high output[2] and extended operation
- 16-key pad plus multi-scroll key for easy operation
- Built-in charging circuitry for battery recharge while the unit operates from a DC supply
- Tough construction: meets MIL-STD 810 C/D/E standards for resistance to vibration, shock, humidity and light rain
- Large frequency display for single-band use
- Automatic simplex checker
- Wireless remote control function
- Battery indicator • Internal VOX • MCP software

[1]Note that certain frequencies are unavailable. [2]5W output

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