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JUNE 2013

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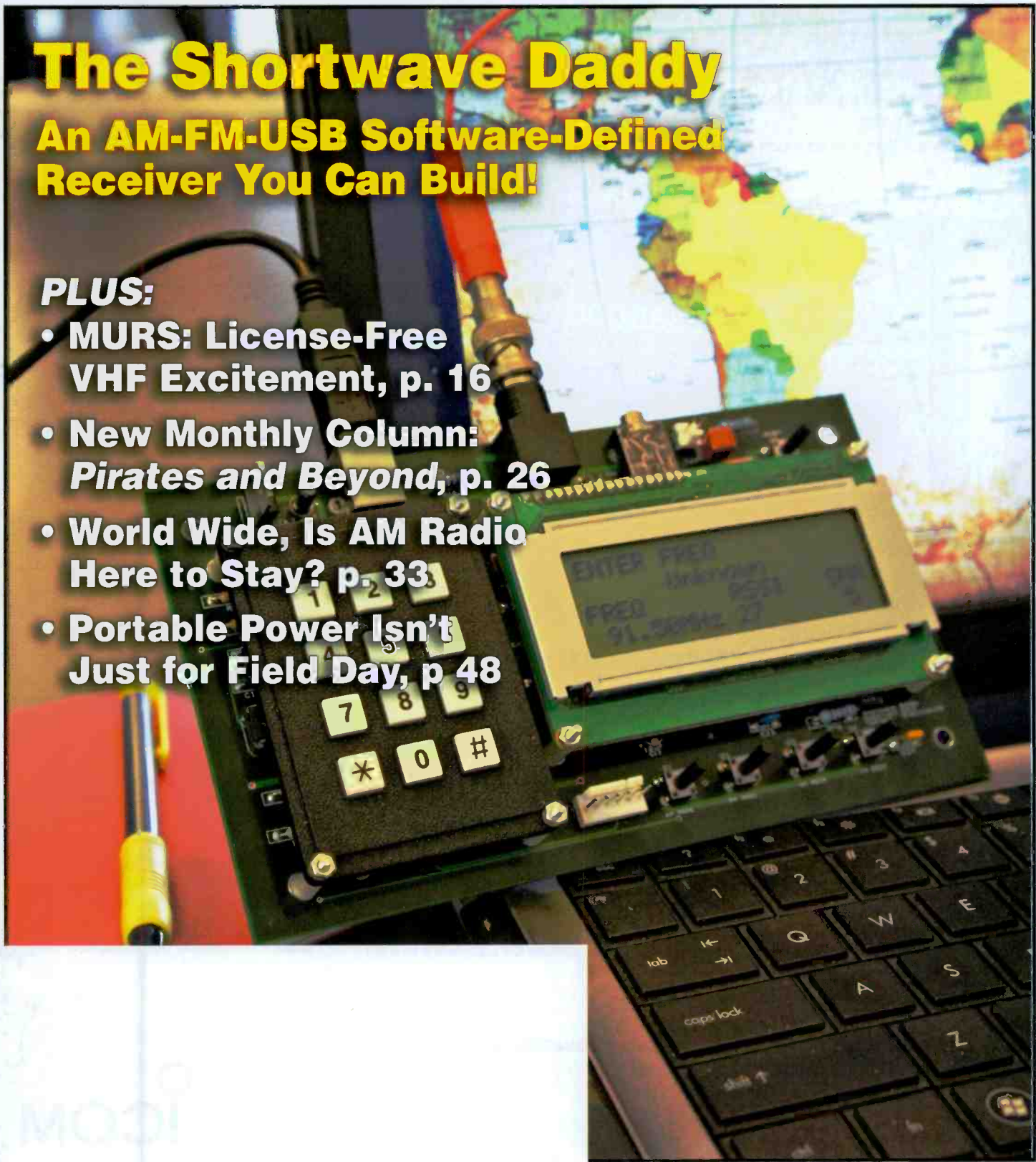

The Shortwave Daddy

An AM-FM-USB Software-Defined Receiver You Can Build!

PLUS:

- MURS: License-Free VHF Excitement, p. 16
- New Monthly Column: *Pirates and Beyond*, p. 26
- World Wide, Is AM Radio Here to Stay? p. 33
- Portable Power Isn't Just for Field Day, p 48

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*Frequency specs may vary. Refer to owner's manual for exact frequency specs. [1]Optional CT-17 required. [2]Optional CS-RX7 required.

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JUNE 2013
VOLUME 31, NUMBER 10

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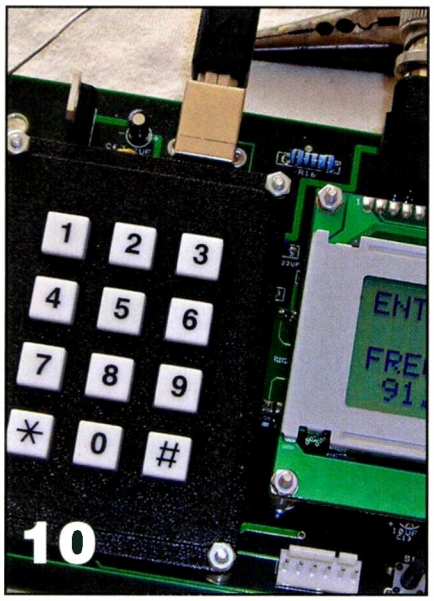
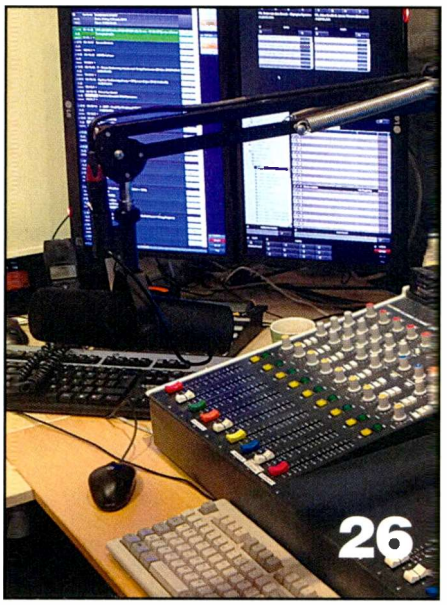




FEATURES

FEATURED COLUMNS

ON THE COVER

The Tablerock Instruments "Shortwave Daddy" software-defined radio kit puts the AM and FM broadcast bands and shortwaves at the listener's fingertips. All it takes is a few hours at the workbench and a laptop computer. Covering worldwide FM (64 to 108 MHz), worldwide AM (520 to 1710 kHz) and the shortwaves (2.3 to 26.1 MHz), the "Shortwave Daddy" attaches to your computer via a standard A/B USB cable, providing both power and audio for the receiver. Plug it in and you're ready to go. But tuning the airwaves with this great receiver is only half the fun. The kit is easy to assemble. For complete details, see page 10. *(Cover photography by John Fisher, KPC6JF.)*

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 *Multi-Reader*™ into your shortwave receiver's earphone jack.

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

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.

N-female connector. Tripod screw-mount. Wall and desk/shelf mounts. Use vertically/horizontally. 18Wx2¾Hx1¼D inches. 2.9 ounces.

MFJ-5606SR, $24.95. Cable connects MFJ-1800/WiFi antennas to computer. Reverse-SMA male to N-male, 6 ft. RG-174.

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

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

MFJ-1020C **$99.95**

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

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

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**

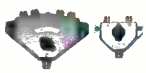
This MFJ *ClearTone*™ restores the broadcast quality sound of shortwave listening. Makes copying easier, enhances speech, improves intelligibility, reduces noise, static, hum. 3 in. speaker handles 8 Watts. 8 Ohm impedance. 6 foot cord.

MFJ All Band Doublet

MFJ-1777 **$59.95**

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

MFJ 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!

MFJ 24/12 Hour Station Clock

MFJ-108B, $21.95. Dual 24/12 hour clock. Read UTC/local time *at-a-glance.* High-contrast 5/8" LCD, brushed aluminum frame. Batteries included. 4½Wx1Dx2H inches.

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A publication of
CQ Communications, Inc.
25 Newbridge Road
Hicksville, NY 11801-2953 USA

Popular Communications (ISSN-0733-3315), Vol. 31, No. 10 published monthly by CQ Communications, Inc., 25 Newbridge Road, Hicksville, NY 11801. Telephone (516) 681-2922. FAX (516) 681-2926. Web Site:<http://www.popular-communications.com/> Periodicals Postage Paid at Hicksville, NY and at additional mailing offices. Subscription prices (payable in U.S. dollars): Domestic—one year $34.95, two years $62.95, three years $91.95. Canada/Mexico—one year $44.95, two years $82.95, three years $121.95. Foreign Air Post—one year $54.95, two years $102.95, three years $151.95.

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Printed in U.S.A.

Postmaster: Please send change of address to: Popular Communications, 25 Newbridge Rd., Hicksville, NY 11801

EDITORIAL
Tuning In

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

Pop'Comm @ 30: The Good Fight to Protect Our Turf

It seems the communications hobbyist's never-ending battle to fend off threats to our spectrum is just that — *never ending.*

I was struck by a piece Gordon West, WB6NOA, wrote in the June 1983 edition of *Pop'Comm* under the headline *"Are Cordless Phones a Wrong Number for Hams?"*

Thirty years ago this month Gordo was beating the drum on a familiar theme: "New technology" was posing a threat to frequencies used by communications hobbyists. In this case, the cordless telephone, and the havoc it was wreaking on radio amateurs.

- Cordless phone handsets at 49 MHz were "a mere 110 kHz away" from the bottom end of 6 meters — where amateur radio weak signal CW work begins.
- Cordless phone base set transponders were assigned frequencies that included 1.705 MHz (in today's AM broadcast band), and 1.825 MHz, "directly atop the weak signal slot for world-wide DX CW reception" on the Top Band — the radio amateurs' 160 meters.

A moon bounce operator in Arizona complained to Gordo his neighbor's cordless phone "completely wipes out my station . . . I don't care what frequency they are on — they are slopping over on our 6-meter band."

Down on 160 meters, Bill Alber, WA6CAX, noted that "some idiot making a garbled phone call" busted a European DX QSO he had attempted a few evenings before. "The dialing pulses were so strong, they completely clobbered the bottom half of the band," he said from San Francisco.

Gordo railed about modifications that were being made to cordless phones and leaned on manufacturers who sold equipment and antennas enabling users to cross the legal line.

Fortunately, *Pop'Comm* columnists such as Gordon West have through the years added their voices to those raised against intrusions to the spectrum in which we hobbyists ply our trade.

In our 30th year, we give a tip of the hat to those at *Pop'Comm* who over the last three decades have done their duty in what proves to be our *never-ending* battle.

Results: February's *Pop'Comm* Reader Survey

Here are February's questions and responses tabulated from reader mail-in cards:

There is a high level of concern in the amateur radio community about the need for attracting young people to become hams. Should there be a similar concern in the monitoring community?

Yes	76%
No	14
I'm not sure	11

If there were a *Recruit the Youth* initiative in the monitoring community, what areas do you believe would be most useful in attracting young people? (Choose all that apply.)

Shortwave listening	78
Public Service scanning (police, fire, ambulance, and so on)	78
Civil aviation monitoring	22
Commercial aviation monitoring	32
Military aviation and installation monitoring	24
Utility station monitoring	27
Online SWLing via streaming audio	35
Online monitoring via remote software-defined radio	19
Amateur radio monitoring (HF, VHF, UHF+ bands)	51
Monitoring via smartphone and similar applications	27
AM and FM DXing	43
Monitoring digital communications	2
VLF monitoring, including aircraft beacon DXing	14

Which format of *Pop'Comm* do you think would be most attractive to young readers?

Print edition only	11
Digital edition only	5
Both print and digital	78

The February survey has an online component, as well. The results are posted at <http://www.popcommmagazine.blogspot.com>.

Pop'Comm-WRO Live Online Chat, June 30: *Field Day After-Party!*

The Pop'Comm-WRO Live Online Chat will be Sunday, June 30 at 8 p.m. Eastern time. It's the *Field Day After-Party!* You don't want to miss it! Visit the *WorldRadio Online* blog at <http://www.WorldRadioOnline.blogspot.com> and click on the *Cover It Live* box. See you there!

The Weirder Side of Wireless, and Beyond

Compiled by Richard Fisher, KPC6PC

Numbers Station Hits the Big Screen

There are some people on this planet who actually find numbers stations boring. After all, what's to get excited about a woman's voice reciting groups of five numbers over the shortwaves? *In monotone.*

Well, there is a lot more excitement in those numbers than you think. Enough excitement, in fact, for a full-length motion picture called, not coincidentally, *"The Numbers Station,"* <http://imdb.to/Z00etL>, **Photo A**.

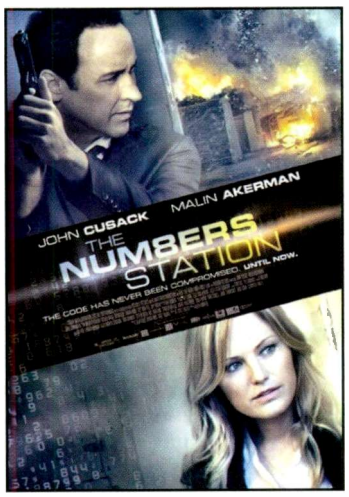

Photo A. John Cusak and Malin Akerman star in the spy-thriller, "The Numbers Station." Get ready: "The code has never been compromised . . . until now!" *(Internet screen grab <http://imdb.to/Z00etL>)*

ASSIGNMENT: Watch the movie trailer on YouTube and then let's gather back here for discussion: <http://bit.ly/128B7SE>.

DISCUSSION: OK. A lovely woman reads numbers over the radio. A handsome agent is armed to the hilt. Explosions. Fire. Noise. Any questions?

ANSWERS: For everything *you'd ever want to know* about Clandestine, Opposition, Pirate and Spy — including Numbers — stations, read Steve Handler's new monthly *Pop'Comm COPS* column on page 26. *(You're very welcome.)*

Breakthrough: Morse Code from a Smoke Detector

Luther Banks, KD8NCL, of Bucyrus, Ohio, decided he'd like his smoke detector to send Morse code. We're not sure why. But he did. "The things hams will do with downtime in their shack, right?" he said. *Right.*

Anyhow, to capture the historic significance of this event, Luther recorded the whole thing on video, posting it to YouTube, <http://bit.ly/11d4RyT>, **Photo B**.

Smoke Detector Performing Morse Code (CW)

Photo B. With an assist from an Arduino electronics prototyping platform, Luther Banks, KD8NCL, gets a smoke detector to send his amateur radio callsign in Morse code. *(Internet screen grab <http://bit.ly/11d4RyT>.)*

He called upon the wizardry of Arduino, "an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software," its developers note. "It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments."

A Morse code-sending smoke detector certainly qualified in 'NCL's mind. "I programmed the Arduino with a sketch I found online by KB5NJD," Luther said. Please take a moment to watch the video, which reveals that Arduino is a lot easier to get working than Luther's smoke detector. *(**MORE:** Follow other KD8NCL adventures on Facebook <http://on.fb.me/X91JT7>. – KPC6PC)*

The Hazards of Antenna Theft from WSGS

We hope Daisy Duke averted her eyes when this happened. A Hazard, Kentucky man pleaded guilty to receiving parts stolen from a Buffalo Mountain antenna belonging to WSGS, <http://bit.ly/128jsu6>.

Hazard Herald Editor Cris Ritchie reported that Hank B. Baker, 33, appeared in Perry Circuit Court where he admitted to receiving stolen property over $500. He faces up to two years in prison.

Deputies with the Perry County Sheriff's Office arrested Baker only days after the theft was discovered, after he was alleged to have tried to sell the antenna pieces to a local scrapyard, Ritchie reported.

"In addition to a two-year sentence, Baker will be required to pay $15,000 in restitution to WSGS, and stay away from Buffalo Mountain," Ritchie wrote.

By the way: We are aware CBS's *"The Dukes of Hazzard"* took place in fictional Hazzard, Georgia — but it was based on Hazard, Kentucky, where J.D. "Boss" Hogg could have done well to put the kibosh on antenna theft.

*(**IN DEPTH:** Read the full Hazard Herald story at <http://bit.ly/YZzXvI>. – KPC6PC)*

. . . And You Think *You've* Had a Bad Day?

"Radio DJ Confessions: Stories About the Radio Industry" is a website full of anonymously-submitted horror stories highlighting lots of people's worst day ever.

"I'm considered to be clumsy by just about everyone," a DJ wrote recently. "One day we received word that a local shop was sending over free pizza for lunch . . . They brought a lot more pizza than we all had expected. I was on the air so . . . I grabbed an entire pie and took it to the studio," intending to leave the leftovers for anyone who wanted them.

"I walked into the studio and tripped over a cord . . . The pizza flew, landing all over the board and the touch-screen computer.

"As I was falling, my face caught the edge of the studio desk. My nose had opened up in a bloody mess . . . I sat there for about five minutes and finally the engineer happened to walk in," the DJ wrote. "He seemed a lot more concerned about the controls than he did me. They let me go to the hospital for stitches.

"The next day there was a sign: *No Food Or Drink Allowed in The Studio."*

Cliffhanger: Who got the leftover pizza? *(**VISIT:** Radio DJ Confessions at <http://bit.ly/ZY9ifI>. – KPC6PC)*

Communications News, Trends and Short Takes

Compiled by
Richard Fisher, KPC6PC

AM Radio on the Way Out in the UK

A government report in the United Kingdom indicates an intention to abandon AM broadcast radio for emergency communications and to phase-out AM broadcasting beginning in 2016.

*(**MORE:** What does it all mean? See WPC1CAT's Broadcast Technology this month on page 35. – KPC6PC)*

As reported by *Southgate ARC News*, the UK's "Impact of a Radio Switchover on the Government's Emergency Communications Policy" says:

"The coverage of AM services are near universal across the UK, delivered by a small number of transmitters which could more easily be restored in the event of a national disaster. However, . . . the number of households which both have access to and choose to access such services is on the decline . . . The declining value of the AM platform is best displayed in the case of the National Attack Warning System (NAWS).

"The use of the BBC Radio 4 LW frequency to broadcast emergency information nationally in the case of a nuclear attack or similar disaster was formalized through the NAWS arrangements between the BBC and the Cabinet Office. However, as a result of the limitations of this system in the present day, from the falling numbers of LW receivers in homes, to the delay incurred from having to restore transmitters following an attack, the Cabinet Office has since cancelled their NAWS arrangements with the BBC . . . While a radio switchover will result in the closure of AM services, the diminishing value of this platform means it is increasingly less relevant. . ."

*(**IN DEPTH:** Read the full document at <http://bit.ly/XR7S3w>. For details on the timetable, read the "Switchover Communications Plan" at <http://bit.ly/14GOnlS>. The "Digital Radio Action Plan" can be accessed at <http://bit.ly/YancvS>. – KPC6PC) (Source: Southgate ARC News)*

Australian MW AM Broadcaster Heard in Scandinavia

ABC Adelaide reports that its medium-wave, 1161-kHz AM transmitter was heard by a listener in Finland. Kimmo Vuorela received the Australian AM broadcaster using a Perseus type communications receiver and an array of 3,000-foot-long antennas, one of which was pointing toward the station.

*(**IN DEPTH:** Read full details on the signal reception at <http://bit.ly/X6PiXR>. – KPC6PC)*

Boom Microphone Donated to National VOA Museum

A boom microphone and footswitch have been donated to the West Chester Amateur Radio Association (WCARA) at the National Voice of America Museum of Broadcasting in West Chester, Ohio, by Bob Heil, K9EID, of Heil Sound, Ltd.

The microphone is just the beginning of WCARA's efforts to build several 1,500-watt amateur radio stations at the former VOA-Bethany station in West Chester, according to published reports.

WCARA will need about $50,000 to $100,000 to install new antennas, radios, and support equipment to complete building the new WC8VOA stations. To learn more about the group or to join, visit <http://www.wc8voa.org>. For information on other VOA museums, visit <http://www.voamuseum.org>. *(Source: Published reports)*

Thailand Plans for Digital Radio

Thailand's National Broadcasting and Telecommunications Commission has indicated it will likely use Australia's digital radio system as a model to shift from analog, according to the *Bangkok Post*.

"The chairman of the NBTC's broadcasting committee, Col. Natee Sukonrat, said the regulator is studying the digital radio transition in Australia, which according to the Post, is the country that is viewed as the most successful in implementing the scheme. Nevertheless, the NBTC has not chosen its digital radio standard. Options include DAB+ (which is used in Australia), DRM, or iBiquity's HD Radio system," according to *Southgate ARC News*.

Natee said the launch of digital radio in Thailand "would provide choices to consumers as it would be available in parallel with the existing analog system. There will be no shutdown of the analog system."

He also indicated that NBTC expects to allot unused VHF spectrum for digital radio and will begin licensing next year, likely first in the major provinces. *(Source: Southgate ARC News)*

Broadcast Group Condemns China Over Radio Jamming

The Australia Network reports that an international broadcast association has condemned the deliberate jamming of shortwave broadcasts, including those from the ABC's Radio Australia service, into Asia. *(**LISTEN:** To the jamming at <http://bit.ly/YMjPeg>. – KPC6PC)*

The Association for International Broadcasting (AIB) says English-language broadcasts from Radio Australia, the BBC World Service, and the Voice of America are being jammed.

Chief Executive Simon Spanswick told Radio Australia's Connect Asia program research has indicated the jamming signals appear to be coming from within China. "It appears to be quite wide," he said.

"We've been talking to some monitors who keep ears on the shortwave bands around Asia and they say that it's certainly audible well outside China.

"So, one imagines, even with the geographic scale of China itself, that this is right across the region."

*(**IN DEPTH:** Read the Australia Network article at <http://bit.ly/16qmigC>. – KPC6PC)*

Capitol Hill And FCC Actions Affecting Communications

Compiled by Richard Fisher, KPC6PC

Chairman Genachowski Announces Departure From FCC

Julius Genachowski announced that he would be resigning his chairmanship of the FCC. Named to the Commission in 2009 by President Obama, Genachowski has focused on improving morale within the Commission and promoting the rapid growth of high-speed broadband Internet. He also has been very supportive of amateur radio and even visited the Dayton Hamvention® in 2011.

Genachowski made his announcement at an FCC staff meeting. He did not say why he decided not to complete his five-year term. Commissioner Robert McDowell announced earlier that he would be stepping down, as well. *(Source: CQ Newsroom <http://bit.ly/Xm5xTo>)*

Commission to Allocate FM Allotments for Native Americans

The FCC has set aside the first two FM allotments under its Tribal Radio Priority for the Hualapai Tribe in northwestern Arizona and Navajo Technical College in northwestern New Mexico. The tribe and the college, owned by the Navajo Nation, are now waiting for the FCC to open a filing window so they can secure construction permits and build their stations.

"Radio will give them a tremendous community outlook," Fred Hannel, a consultant for the Hualapai Tribe told the *Associated Press*. "They can rally the whole community around a radio station, give them a sense of identity."

American Indian tribes hold less than 1 percent of the roughly 15,200 radio station licenses issued by the Federal Communications Commission, a figure the commission has been trying to boost through a rule it approved in 2010 to give federally recognized tribes priority in the application process, and help preserve language and culture.

"Telling one's own story, broadcasting in one's own voice, in an exercise of self-determination and self-reliance, is so important a goal of so many broadcasters in tribal communities that its value cannot be overstated," the FCC said in its 2012 annual report. *(Source: The Associated Press)*

FCC Yanks Oklahoma Non-Profit's FM License

An Enid, Oklahoma radio station — licensed to broadcast non-commercail educational programming from an antenna height of 33 meters (108 feet) — has had its ticket pulled by the FCC for allegedly distributing advertising rate cards and transmitting from an antenna height of 62 meters (203 feet).

"KEIF-LP, or 104.7 The Rocket, lost the grant for renewal of its license following fines in 2010 for selling advertisements and broadcasting from an antenna nearly two times the legal height," according to a report posted on *EnidNews.com*. "Its license has been declared expired and its call letters deleted from FCC databases."

According to a 2010 FCC report, KEIF was distributing advertising rate cards to local businesses and broadcasting promotional advertisements on its station. The rate card stated The Rocket's "classic rock" format offers "great result(s) for your advertising dollar."

*(**IN DEPTH:** Read the full EnidNews.com story at <http://bit.ly/14zXILR>. (Source: EnidNews.com)*

Commissioner Asks for *CQ Communications'* Aid in Soliciting 'Sandy' Comments

FCC Commissioner Jessica Rosenworcel has asked *CQ, CQ VHF, Popular Communications, and WorldRadio Online* to encourage readers to file written comments on the role of amateur radio in providing communications in large-scale disasters as part of its ongoing inquiry into "network resilience and reliability" in the wake of superstorm Sandy.

The first hearing as part of that inquiry was held on February 5 in New York City and New Jersey. A second hearing was held in California on February 28.

The docket number is 11-60, titled "Notice of Inquiry into Network Continuity and Reliability." Comments may be filed via the FCC's Electronic Comment Filing System (ECFS), which may be accessed at <http://apps.fcc.gov/ecfs>.

Additional pictures and information from the hearing are posted in the *CQ Photo Gallery* at <http://bit.ly/XiDtge>. *(Source: CQ Newsroom <http://bit.ly/Xm5xTo>)*

FCC Offers Guidance on Obtaining Licenses for Small Satellites

Licensing of spectrum for use by small satellites, including pico- and nano-satellites and cubesats, is the focus of an FCC Public Notice written in the face of decreasing launch costs and a growing number of organizations directly launching satellites.

The FCC's rules set forth three different procedures for licensing satellites. The Commission's Part 25 rules are primary for satellite licensing, and are used for regulating a wide range of satellite operations, including commercial communication and remote sensing satellites. The Commission's Part 5 rules cover experimental operations. The Commission's Part 97 rules cover amateur radio service satellite operations.

"Currently, many small satellite missions involve experimental operations such as scientific and research missions including those conducted under government contract, and many operate in amateur frequency bands," reported Bruce Tennant, K6PZW, on *Amateur Radio Newsline*. "These satellites are licensed under Parts 5 or 97 of FCC rules." *(**IN DEPTH:** Read the full text of the FCC's "Guidance On Obtaining Licenses for Small Satellites" at <http://fcc.us/10hw6qr>. – KPC6PC) (Source AR Newsline)*

Your Dashboard: The Changing Face of Car Radio

By Rob de Santos, K8RKD
email: <commhorizons@gmail.com>
Twitter: <@shuttleman58>

"More than likely, the AM/FM (car) radio, as we know it, will evolve, rather than simply disappear."

For all but the oldest readers of *Popular Communications,* we cannot remember a time when the dashboard of the automobile did not have a radio. Since the 1970s this almost always meant an AM and an FM radio, and sometimes some other device — CD, cassette, and before that, 8-track tape player.

Recently, there was quite a furor in the broadcast radio business in the U.S. when a report came out of a conference that radio would disappear from at least two major car lines in the next five years.

While subsequently it became clear the initial report misquoted some of the participants, the debate continues. Reactions have ranged across the spectrum. The issue however, is a real one. Let's back up, though and start where any good study should start — with some definitions.

What Do We Mean By Radio?

The disconnect in understanding this simple term *radio* became apparent as the reactions came in after the initial report. I suspect what radio means to everyone isn't exactly the same. For most *Pop'Comm* readers, and to the broadcast industry, the meaning of radio is a receiver with a tuning circuit, capable of receiving electromagnetic waves transmitted from a tower to the receiver and tuned via some control that allows adjustment of the tuned frequency.

It may also refer to the industry producing the transmissions or the transmission itself.

However, if I polled a statistically significant number of people under 30 years old, what definition would they give? My guess is that for many of them, it would mean simply the sounds produced in a studio and sent to their device of choice. That device may not have any "tuner" present — just menus. It may receive the information via devices connected to the Internet. The addition of tuners, amps, and antennas would be optional or superfluous.

Use of electromagnetic waves to get it to the device is optional and would not require any frequency adjustment by the user nor would the user necessarily have any idea of what frequencies are used.

Subtle, Significant Change

The change in view of what *radio* is may be a sign that the ground has indeed shifted beneath the very area that we, as industry people and hobbyists, follow. It also points us toward the future. Ask five of your friends — even ones your own age or older — if they carry a radio around with them. My bet is that the majority will say *no.* You know better; that in fact, they do. They carry a mobile (cellular) telephone, which as radio aficionados we know is a radio, just not a radio in their definition of the word.

The furor over the future of radio in cars has calmed down for now but the debate is not over. Cars have never been the best platforms for reception and the fact that so many do as well as they do is a tribute to the designers of the radios placed in vehicles. If, for example, I can save to a preset a given station and I hear what I expect when I press the button for that preset, do I as a consumer care how the transmission gets to me?

You and I might care, but I suspect most car owners would not care. In that scenario, suppose the dashboard device picks the best way to get the signal to me. The device does so without my intervention. Wherever I am, I can listen to "96.7." I probably wouldn't care that last night it used frequencies in the FM range and a tuner and today it switched to an Internet feed via a cell tower because I was out of transmitter range. Or that tomorrow it switches to a satellite signal when I am out of cellular range.

Dashing Ahead

What's the horizon, then, for radios in cars? More than likely, the AM/FM radio, as we know it, will evolve rather than simply disappear. The distinctions we make on what constitutes a *radio* will get blurred and no longer matter. The transition may happen with a whimper rather than a bang.

For the next couple of years not much will seem to change but more and more Internet capability will be added to vehicles. One day, the dashboard radio will have been absorbed into the entertainment complex on the car, and most drivers won't have really thought much about it or how the signals get to them.

How would you define radio? Does it matter to you how the programs get to you? Does it matter to your spouse, children, or even grandchildren? Send a signal my way and share your views and topics you would like to see covered in this column. I look forward to hearing from you. – K8RKD.

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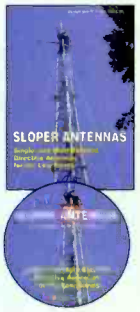

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Build the Shortwave Daddy: A DIY USB-AM-FM-SWL SDR

With a Computer and Antenna, Put the Radio World at Your Fingertips

By Richard Fisher, KPC6PC

The analog part of the radio hobbyist's brain can sometimes find it hard to process "home built" and "software-defined radio" in the same sentence. After all, any receiver coupled to a computer has to be extremely complicated in both design and applica-

"The Shortwave Daddy is an SDR designed for the homebrewer and listener with 'big spectrum' in mind."

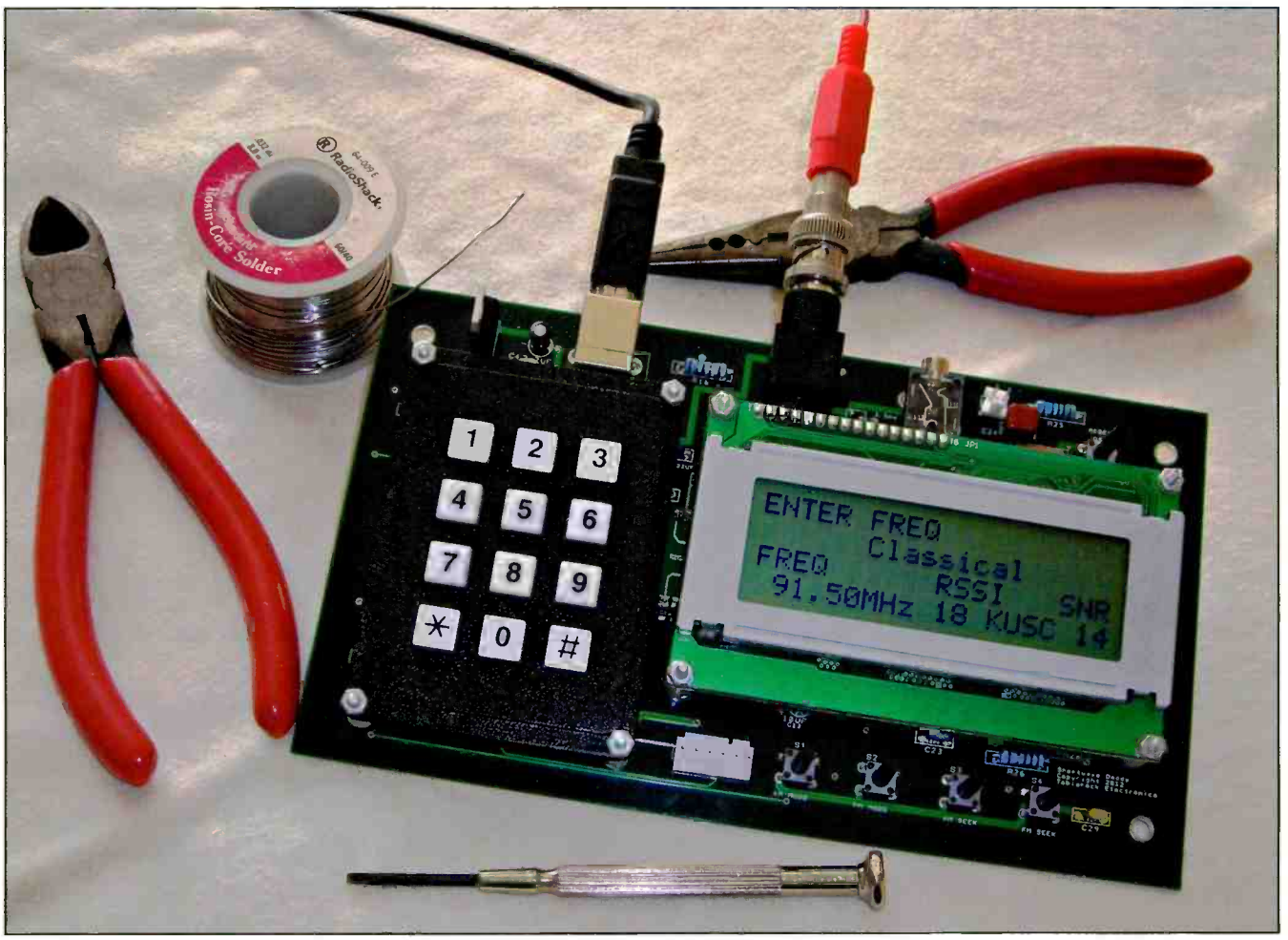

Photo A. The Tablerock Instruments Shortwave Daddy is a wide-spectrum, software-defined radio kit that was designed with the AM/FM and shortwave listener in mind. It's packed with lots of useful and interesting features. *(Photography courtesy of KPC6PC)*

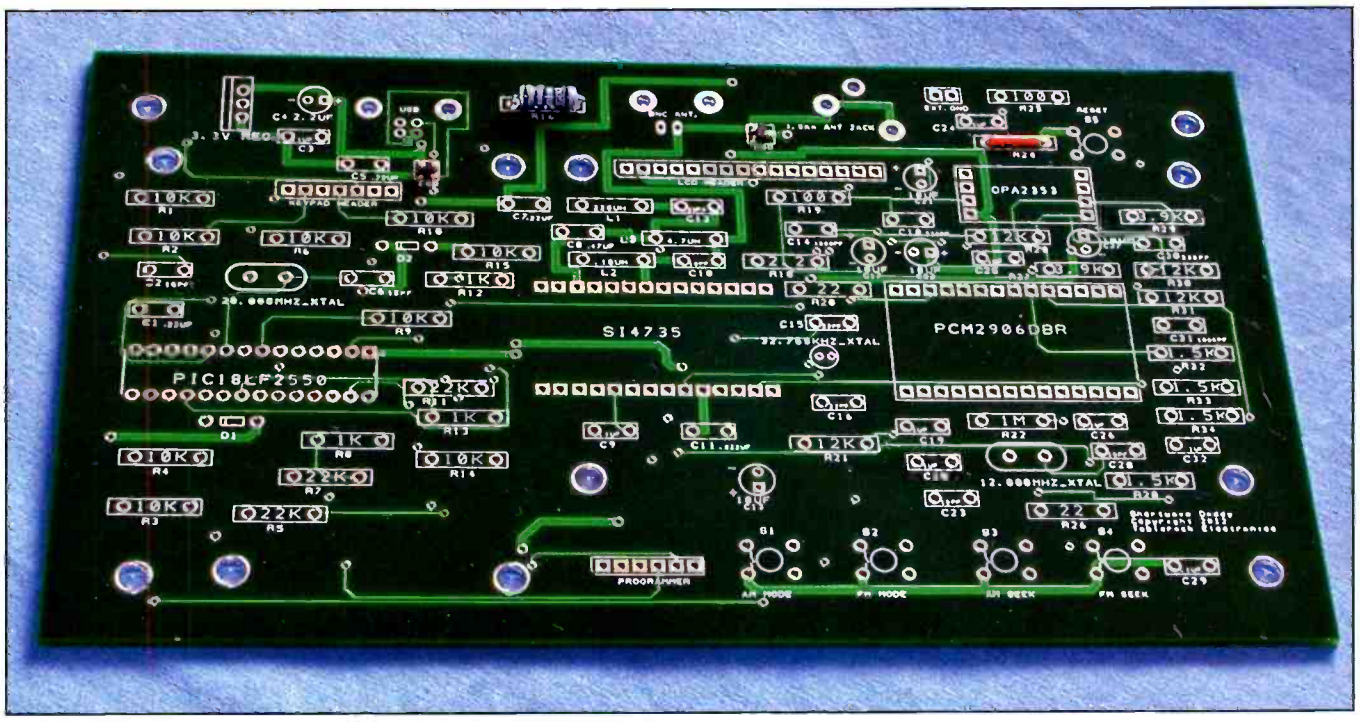

Photo B. Parts placement is made easy with the SDR's silk-screened printed circuit board (PCB). Each component is outlined and annotated with its number and value. For example, R7, 22K.

tion — with lots of surface-mount components, software necessary to get the radio and computer to shake hands, and so on. And for the monitor who chases all manner of DX, it most likely covers only a sliver of the spectrum that's relevant.

Well, the Shortwave Daddy USB-AM-FM-Shortwave SDR kit by Rancho Cordova, California-based Tablerock Instruments Co. blows those notions right out of the ether, **Photo A**.

What You Get

First, consider the kit:

- Features through-hole components on a high-quality, silk-screened printed circuit board (PCB), **Photo B**. All surface-mount components come already mounted.
- Is connected to your computer via its USB port. No muss, no fuss.
- Requires no software download. The Shortwave Daddy is plug-and-play from your computer's start up. Just add an antenna.
- The radio's power and audio are derived from the computer.

Now, consider the Shortwave Daddy:

- Covers the worldwide AM broadcast band, 520 to 1710 kHz.
- Tunes shortwave continuously from 2.3 to 26.1 MHz.
- Covers worldwide FM broadcast frequencies from 64 to 108 MHz.
- Is digitally tuned and displays station information on its own PCB-mounted LCD screen.
- Has seven easily selectable AM/FM BCB and shortwave filters: 1, 1.8, 2, and 2.5 kHz, with gradual roll-off; 3, 4, and 6 kHz.
- Digitally displays frequency, mode, RSSI (Received Signal Strength Indicator), and SNR (signal-to-noise ratio).
- On FM, features an RDS/RDBS processor displaying the format of the station being received — Classical, Rock, Country, and so on. *(**NOTE:** RDS stands for "Radio Data System-Europe," while RDBS is "Radio Data Broadcast System-North America." – KPC6PC)*

The Shortwave Daddy is an SDR designed for the homebrewer and listener with "big spectrum" in mind.

Building the Shortwave Daddy

This kit is not difficult to assemble, but it would be a challenge for those who have never before built electronic equipment or held a soldering iron.

Photo C. Shortwave Daddy kit components are individually packaged and labeled, making parts organization easy, and kit construction efficient.

Tablerock Instruments painstakingly packages component groups in separate plastic bags, **Photo C** — 330-pF capacitors parsed in one baggie; 12-K-ohm resistors in another, for example. They're each labeled by component quantity, as well. Getting those baggies organized makes construction move quickly.

No special tools are necessary, but you'll need to take care to prevent electrostatic-discharge (ESD) when mounting the Shortwave Daddy's ICs (integrated circuits). For example, if you're building on a day when the humidity is low, be careful not to shuffle across a rug and "discharge" yourself near the Shortwave Daddy's PIC18F2550 IC microprocessor. Programming will be lost and you'll end up with a non-functioning SDR. Once the chip is mounted on the board, though, ESD is pretty much a non-issue.

The kit has a 38-page construction and operation manual on CD that is beautifully illustrated and comes with the kit. The document can be downloaded, as well, at <http://bit.ly/10fpI2b>. Pictures and narrative guide the builder every step of the way. The instructions do not, however, reach the detail of the classic Heathkit manuals.

For example, with the Shortwave Daddy, you're directed to "insert all resistors, capacitors, inductors, and diodes into their locations on the PCB in accordance with the values printed on the PCB next to the number of the component." If you're expecting *Heath-esque* handholding — such as "insert resistor No. 123 into holes D and F" — you'll not find it with this kit. That said, the manual and annotated PCB make component mounting almost foolproof.

Tablerock recommends the builder first insert all resistors, capacitors, inductors, etc. on the top of the PCB, then flip the board over and solder them. For many builders — especially those new to the game — this can lead to a lot of trouble.

Following a *one-component-at-a-time* soldering regimen allows builders to check for poor connections, solder bridges, and other problems as they go, **Photos D** and **E**. Finding an error after mounting components en masse can cause massive headaches.

Sub-Assemblies

In addition to the discrete on-board components, there are three sub-assemblies that are home to presoldered surface mount chips. They are on three separate PCBs that are soldered to the main PCB, just as the resistors and capacitors were. Through-hole pins, **Photo F**, are first soldered to each sub-assembly PCB. Then each sub-assembly PCB is mounted to the main PCB using those through-hole strips, **Photo G**.

With highly-sensitive SI4735, PCM-2906C, and OPA2353 multipin surface-mount ICs, these sub-assemblies must be

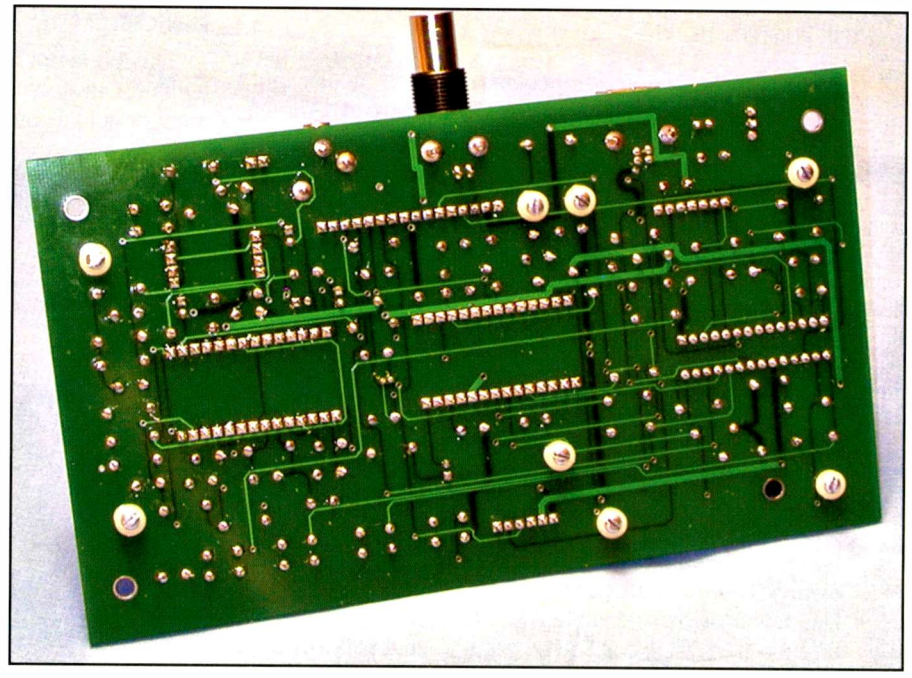

Photo D. The high-quality PCB features through-hole component soldering. The kit's few surface-mount components come already soldered to their circuit boards.

handled with the same ESD care as the PIC18F2550 microprocessor.

Function Buttons, Key Pad and LCD Screen

There are five PCB-mounted push buttons allowing the listener to toggle between several of the Shortwave Daddy's functions, **Photo H**:

- AM Mode
- FM Mode
- AM Seek (scan)
- FM Seek (scan)
- Reset (return to start-up condition)

In addition, a 12-button keypad is used for frequency and filter selections. When punched in, the digits appear on an easy-to-read 4 x 20 character LCD screen and can be entered into the receiver's system with the push of the pound (#) button.

Putting the 'Daddy' On the Air

After carefully checking the assembly and taking a moment for prayer, it was time at KPC6PC to connect the Shortwave Daddy to my Hewlett-Packard garden-variety, several-year-old Pavilion dm4 laptop and antenna for the *USB-AM-FM-Shortwave Smoke Test.*

A standard A/B USB cord — like the kind between your computer and printer — connects the SDR and computer. *(**NOTE:** This patch cord is not now included with the kit, but may be in the future. – KPC6PC)*

It's recommended that the computer be shutdown on initial start-up. A male BNC connector with a 10-foot-long piece of hook-up wire was used as the antenna for our test.

First: A deep breath and a push of the computer's ON button. Immediately, the SDR's LCD lit up with: *WELCOME!!!! SHORTWAVE DADDY REV1, COPYRIGHT 2012, TABLEROCK INSTR. CO.*

There was no smoke. The computer reacted normally. *So far, life is good.*

In a few seconds, the LCD shifts to a screen asking the user to: ENTER 5 DIGIT FREQ. But first, a mode must be selected. We touched the FM Mode button, and the LCD indicated: CHANGING TO FM MODE.

Next, we entered the frequency of KUCR, the radio station at the University of California, Riverside (88.3 FM) just a few miles from the "Daddy." Since the SDR requires five-digit frequency entry, we pressed 08830#, and *bingo.* The LCD displayed:

The RDS/RDBS designator: College
Frequency: 88.30 MHz
RSSI: 48 (strong signal)
SNR: 31 (signal-to-noise ratio)

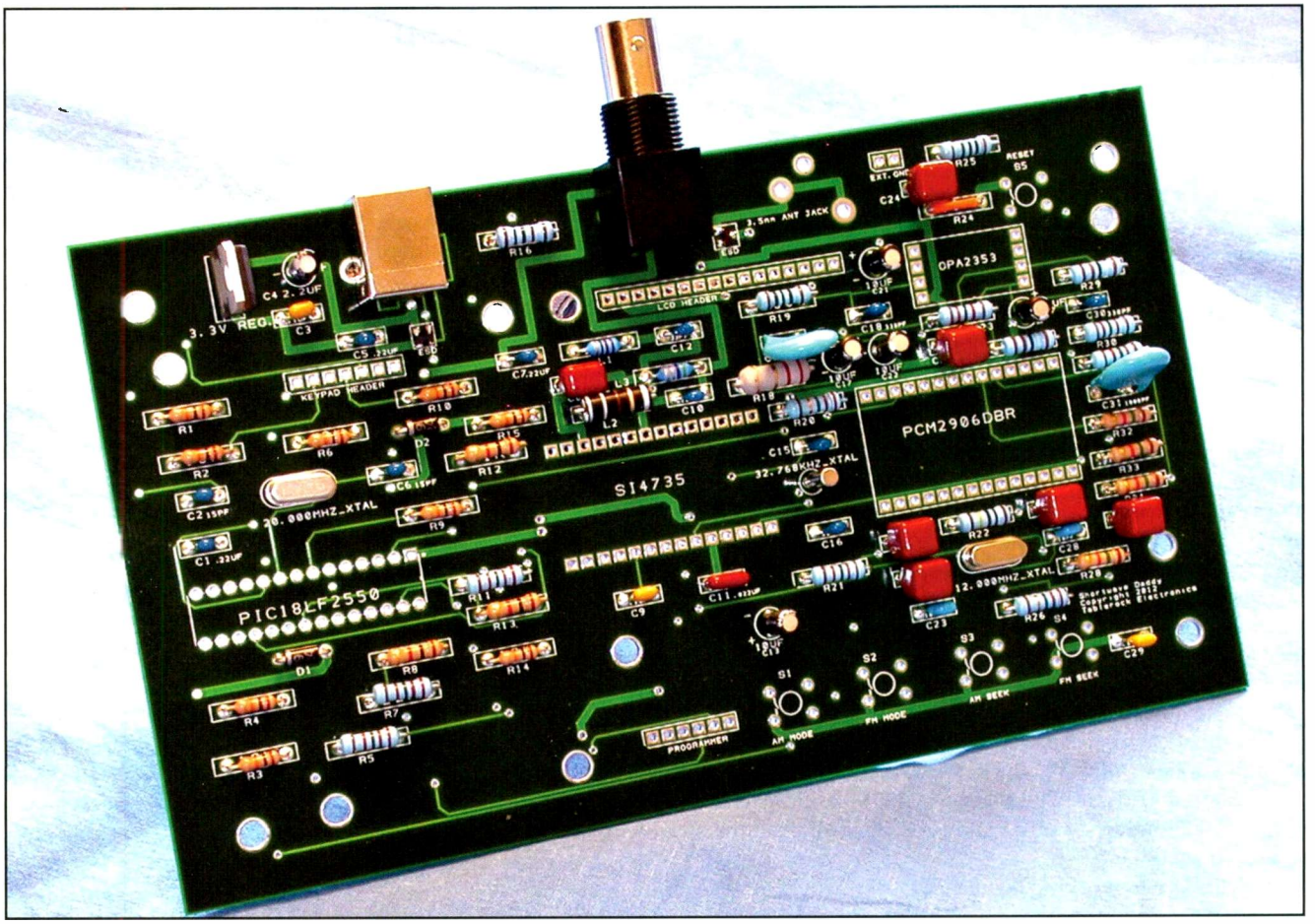

Photo E. Once all the resistors, capacitors, diodes, voltage regulator, inductors, and some hardware have been assembled, take a moment to catch your breath, then admire and check your work. Sub-assembly installation is next, perhaps the most challenging part of Shortwave Daddy construction.

Photo F. Strips of through-hole pins are first soldered to the underside of the SDR's three sub-assemblies. →

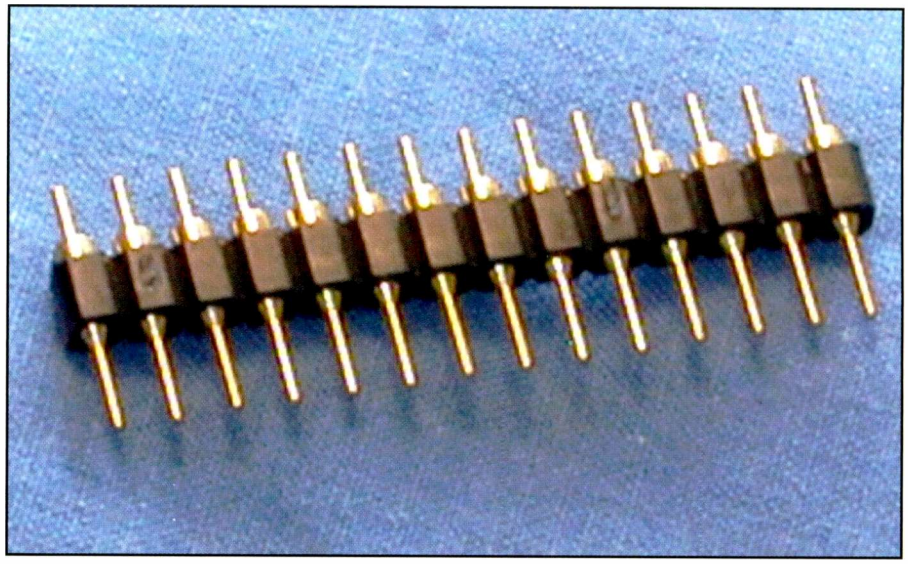

Photo G. Once the pins have been soldered to the sub-assemblies, the small boards are then soldered through-hole to the main PCB. The Shortwave Daddy manual goes into fine detail on this process. ↓

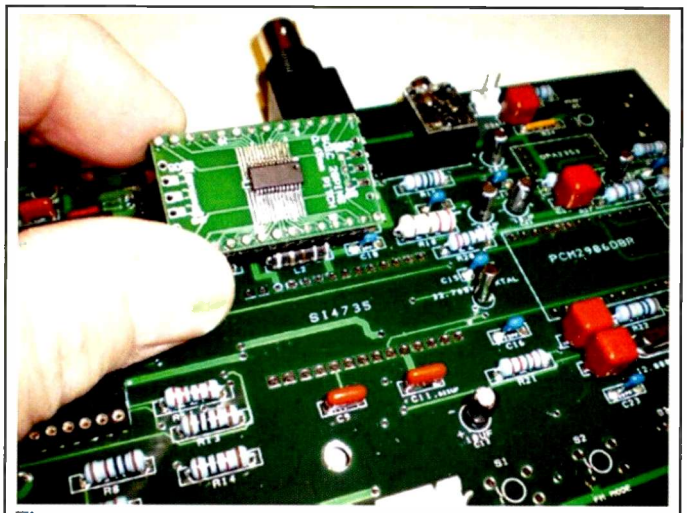

Figure 12

5. While observing proper ESD procedures insert the PCM2906C PCB sub-assembly on the main PCB. The PCM2906C sub-assembly is oriented

Fantastic. But where was the audio? The computer's volume was up, but we couldn't hear KUCR. A trip into the *Hardware and Sound* portion of the laptop's *Control Panel* quickly fixed that. It was a matter of clicking an option here and there. "In some cases, minor adjustments need to be made to the audio configuration of your computer," Tablerock Instruments President Daniel Conley said. "But we haven't failed yet to get the Shortwave Daddy and a computer working together. It just takes a tweak here and there."

Toggling into AM Mode, the "Daddy" was programmed for the AM broadcast band and KPRO-AM, whose antennas are only a few miles away. Via the keypad, the five-digit frequency was entered: 01570#. The station, at 1570 kHz, flashed onto the screen with an RSSI of 67 and SNR 25 — a big-time signal, as expected.

Everything was working beautifully.

Now for a 'Real' Antenna and Some Fun

Continuing the smoke test, that 10-foot-long indoor wire wasn't going to be of much help on the shortwaves. So the

Having Fun with the Shortwave Daddy SDR

Logged by frequency, station, strength, SNR and location

Shortwave DXing: A 15-Minute Sprint

FREQ - kHz	STATION	RSSI	SNR	LOCATION
2500	WWV	55	17	Wellington, CO
3185	WWRB	58	13	Morrison, TN
3330	CHU	47	0	Ontario, Canada
3875	75 Meter AM	42	21	Western U.S. Hams
5000	WWV	53	16	Ft. Collins, CO
7365	R. Marti	58	1	Miami, FL
7385	WHRI	73	11	Cypress Creek, SC
7490	WBCQ	53	10	Monticello, ME
9790	China R. Intl.	81	25	Havana, Cuba
10000	WWV	65	15	Ft. Collins, CO
11840	R. Havana	57	13	Havana, Cuba
11850	R. Romania	53	16	Bucharest, Romania
11870	Catholic R.	42	21	Vandiver, AL

Figure 1.

AM Broadcast DXing: A 15-Minute Sprint

FREQ - kHz	STATION	RSSI	SNR	LOCATION
540	KLAC	60	25	Los Angeles, CA
610	KEAR	48	10	Oakland, CA
660	KTNN	44	15	Window Rock, AZ
740	KCBS	68	25	San Francisco, CA
770	KKOB	46	11	Albuquerque, NM
780	Unknown	47	19	Mexico
810	KGO	56	21	San Francisco, CA
850	KOA	39	2	Denver, CO
910	KKSF	49	8	Oakland, CA
1020	Unknown	60	25	Mexico
1070	KNX	65	15	Los Angeles, CA
1350	KTDD	67	23	Riverside, CA
1510	KSPA	47	19	Ontario, CA

Figure 2.

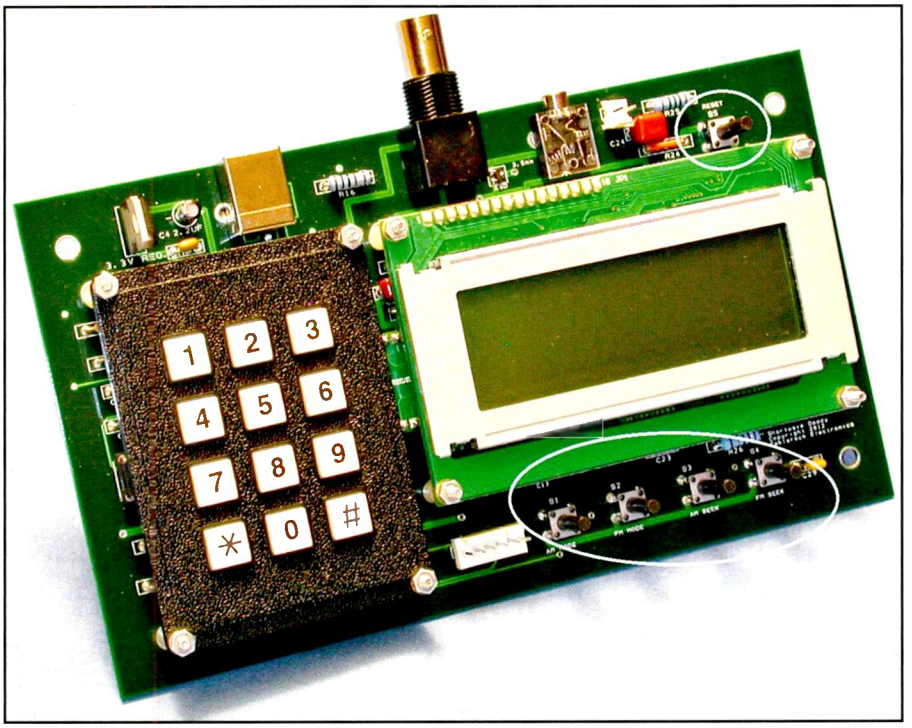

Photo H. Four small push buttons along the bottom-right of the PCB are function switches for AM and FM modes and seek, or scanning. On the upper-right of the board is the Shortwave Daddy's Reset button. The USB connection jack and antenna jacks — a BNC and a 3.5mm — protrude from the top of the board.

"Daddy" was connected to a 100-foot outdoor long wire sloping 55 feet to the top of a palm tree. *Now we're talking.*

After hitting Reset, the SDR was toggled to AM. Next, 02300# was entered (2.3 MHz) and after pressing AM Seek, the "Daddy" went searching the shortwaves. It was just after sunset in Southern California. We gave ourselves a 15-minute time limit to hear what the SDR might typically pick up on a weeknight evening. **Figure 1** shows AM scan results for the lower shortwave frequencies — the areas of spectrum you'd expect to be active after dark. We logged only the loudest signals. Imagine what a good pair of headphones, some free time, and SWLing patience might yield. *I can hardly wait.*

We hit Reset and programmed the "Daddy" to scan the AM broadcast band. In 15 minutes we went from one end of the BCB to the other. The SDR stopped on virtually every AM frequency. **Figure 2** shows those highlights. *Amazing.*

Earlier in the day we'd scanned the FM broadcast band and, again, the "Daddy" stopped at every available frequency from the bottom to the top of the band. Southern California is a rich FM target, and this SDR took it all in.

Impressions

Right out of the box, Tablerock's Shortwave Daddy is a fun project.

- Building instructions — both written and pictorial — are thorough and clear.
- The Shortwave Daddy's parts and PCB are top quality. All pieces were present and accounted for.
- The SDR performs as advertised, indeed, exceeding expectations.
- Its functions are easy to learn and quickly become intuitive. Set it, and you won't forget it.

Filter options give the listener the option to select the most pleasant and efficient bandwidth for any mode and propagation condition. Again, the settings are easy to understand and become second nature in no time.

If you prefer listening through headphones, simply plug them into your computer and you're in business. When you're on the road, use the speaker in your laptop. At home, plug in high-fidelity amplified speakers and fill the room with beautiful FM, a big shortwave signal, or even an AM broadcast station "on the fringe." They each sound great.

Tablerock Instruments customer support is excellent. If you have a question, pick up the phone and you'll be in contact with someone who can help you.

With its excellent sensitivity, selectivity and fidelity, the Shortwave Daddy can just as easily be put to work as a DX-chasing machine on AM-FM broadcast and the shortwaves, or as a monitoring receiver at the workbench or home office.

Although an enclosure is not provided with the Shortwave Daddy, for the use you're likely to give it, a handsome, protective case could be your next homebrew project.

Once you've had a chance to take this SDR "around the block," why not experiment with different antenna configurations? Or add an antenna tuner? Can you imagine what you might hear with a high-gain Yagi for FM on a mast with a rotor?

As you can see, getting the Shortwave Daddy working is just the start of the fun.

*(**INFORMATION:** For details on availability, pricing, shipping and so on, visit the Tablerock Instruments Shortwave Daddy website <http://www.shortwavedaddy.com>. – KPC6PC)*

What's Next?

With last month's Receiver Reviews, Part I, featuring the Hendricks QRP Kits Scout Regenerative Shortwave Receiver, and this month's Shortwave Daddy SDR, we wrap up our mini-series on the "retro" and "now-tro" of cool kits for the radio monitor. *(**SEE:** May Pop'Comm's "A Dial Twister's Delight: The Hendricks 'Scout Regen' is a Throwback to Radios of a Bygone Era," page 10. – KPC6PC)*

As noted, there is plenty of room for experimentation with both of these great kits. In coming editions of *Pop'Comm* we'll highlight homebrew projects and concepts that can make good radios even better, so please stand by.

Meantime, if you're building either the Scout Regen or Shortwave Daddy, we'd like to hear how things are going and how you like them. And if you're working on a receiver project apart from these, let us know about that, too.

Happy building — *and listening* — to you!

– Richard Fisher, KPC6PC

What is License-Free, VHF, 2 Watts, and 5 Channels?

(Answer: MURS, One of the Best-Kept Secrets in the Radio Game)

By Gordon West, WB6NOA

Why risk unlicensed business radio operation when 5 channels on VHF are FCC designated "license free?" The equipment is inexpensive, allow external antennas, and with CTCSS, this could be like your own private communications network.

It's called MURS, or Multi-Use Radio Service, and authorized under FCC rule 95.1301, subpart j. These five channels are just waiting for you:

Channel	Frequency	Bandwidth
1	151.820 MHz	11.25 kHz
2	151.880 MHz	11.25 kHz
3	151.940 MHz	11.25 kHz
4	154.570 MHz	20.00 kHz
5	154.600 MHz	20.00 kHz

"With a gain antenna and low-loss feed line, your little 2-watt MURS radio can sound like 150 watts — a signal that will be heard all over town."

A Bit of MURS History

Before 2000, land mobile VHF channels were spaced 30 kHz apart. At the turn of the century, 15-kHz channel spacing was allowed, with interstitial low-power 7.5 kHz squeezed between the 15 kHz higher-power land mobile radio channels. *(**NOTE:** "Interstitial" is a word you'll often see in discussions of radio services sharing spectrum. It pertains to "intervening space." – WPC6NOA)*

In 2000, the Federal Communications Commission developed the Part 95 MURS with three of the five channels, narrow band, on exclusive frequencies between more powerful transmitters, and two additional MURS channels at center frequency of congested low-power "blue dot" and low-power "green dot" business band channels, currently in use by fast food restaurants, as well as theme parks.

Listening to MURS in Action

While the top two 154-MHz channels are relatively active in downtown areas, the three interstitial 151-MHz channels are nearly unused. Here in Southern California, I monitor all day, and seldom does my scanner stop to listen to activity. Here's why: the MURS market is so small, it gets overlooked for Part 95 radio equipment radio certification. FCC Rule 95.655 (d)

Photo A. The Dakota Alert MURS 2-watt base station runs off 12 VDC with an AC adapter. Notice the BNC connector on the unit's side. It's got a telescoping vertical antenna. But that can be replaced with low-loss coaxial feed line leading to a gain antenna at up to 60 feet high. Conceivably, your 2 watts can sound like 150 watts with a high-quality antenna system. *(Courtesy of WPC6NOA)*

prohibits MURS certification *except* on a radio that can *only* tune in the 5 MURS channels.

Except for pre-2000 land mobile Part 90 handhelds, any *new* imported MURS radio can only come in with *only* 5 MURS channels. Even the big Chinese radio importer Powerwerx says it has no plans to offer a 5-channel Wouxun MURS radio.

There *are* Part 95 type accepted MURS radios out there, so keep reading!

Getting the Most Out of MURS

MURS handheld and base station radios — including those you might convert to mobile operation at 12-volts DC — may put out 2 watts of power, **Photos A** and **B**. These 2 watts are then permitted to travel up to a base station antenna system up to 60 feet above ground level, or 20 feet above a rooftop.

If you run top-quality LMR-400 coax, you might lose 1.5 dB of power into the antenna, but if your antenna is a big marine radio or land mobile radio collinear array with 10-dB gain, your little 2 watts out now sounds like 150 watts up to a maximum of 60 feet. That's the type of antenna gain that will certainly get you all over town!

That's a pretty big deal. Think about it: no external antenna restrictions other than maximum elevation over ground, and logical antenna restrictions on top of a tall building, **Photo C**.

Menus of Modes and Uses

MURS stations may be used for telemetry and telecommand, too, using digital tones.

FCC Designator	Emission Type
A1D	Amplitude Modulation, data, telemetry, and telecommand
A2B	Amplitude modulation of digital tones
A2D	Amplitude modulation, data
A3E	Amplitude modulation, voice
F2B	FM with digital modulation
F1D	FM, on and off keying
F2D	FM, telemetry, and telecommand
F3E	FM voice (*used commonly*)
G3E	Phase modulation, voice (*used commonly*)

These digital modes may be used to telecommand equipment functions, from turning on a porch light to opening a gate. They would also allow for telemetry, acting as zone alarms, high water alarm, air pressure, or just about any data you wish to monitor.

Rules do not permit the MURS station to transmit this data continuously — they are permitted to come in bursts. In other words: no continuous carrier allowed.

Think of the MURS possibilities:

- Two-way voice radio system
- Wireless PA system
- Burglar alarm and zone protection, **Photo D**
- Callbox for voice and gate activation
- Driveway and intrusion alarms over long range
- Handheld-to-handheld communication, plus handheld-to-powerful base station

Best of all, the MURS equipment, at 2 watts output, offers miles of range over the mere couple-of-hundred feet that you might expect from the common low-power home sensors.

So, who makes Part 95 FCC certified MURS equipment? You might find some old used Motorola or old Kenwood land mobile radios that might satisfy the rules. Chances are they are just voice handhelds — not suitable for many of the alarm features just described for telemetry or telecommand.

Source for Gear

MURS "callbox" systems are available at **Intercoms Online** <http://www.intercomsonline.com>. The company calls its MURS wireless system "the best kept secret in unlicensed two-way radio and wireless intercoms, to improve your home or business communication." I agree. Check out the website.

The company I am most familiar with, specializing in MURS long-range security systems, MURS long-range paging and alert systems, and MURS long-range intercoms, is **Dakota Alert** <http://www.dakotaalert.com>, (605) 356-2772.

Dakota Alert is usually at the Consumer Electronics Show in Las Vegas every year. It has the widest selection of MURS products. Sales representatives allow you to wander their booth without getting collared for a sales pitch. It's a family business, and the MURS products sell themselves.

"We offer a MURS handheld, the Dakota Alert M538-HT, which has all five channels and 38 CTCSS subaudible tones for two-way communications, plus paging," Dakota Alert noted. "The transceiver is powered by six included rechargeable batteries, loud speaker output, a detachable antenna system, and 2 watts of R.F. output." It is priced under $120.

There is also the Dakota Alert base station, model M-38BS, with all five channels, 38 CTCSS tones, and paging alert. It comes with an AC adapter and sells for $100.

"Our base station is equipped with a removable BNC telescopic whip, which allows for an external antenna to increase range dramatically," Dakota Alerts said.

I saw this equipment in operation in a Christian camp in the California Sierra Nevada mountains. Their Phelps Dodge 10-dB gain land mobile major base station antenna could be heard full quieting 30 miles away, line-of-sight, in downtown Redding.

Another source to check out is murs-radio.com <http://shop.murs-radio.com>, which specializes in MURS two-way radio and security equipment.

Photo B. This MURS handheld transceiver runs 2 watts with a bank of AA batteries. *(Courtesy of WPC6NOA)*

Photo C. This VHF collinear array will give the MURS operator 9 dB of gain at a base station — a considerable advantage over 2 watts going into a small whip antenna. *(Courtesy of WPC6NOA)*

Photo D. Watch and listen to MURS in action in this video demonstrating how the system can be used for intrusion sensoring. *(Internet screen grab <http://bit.ly/YCcttM>)*

Photo E. Monitors can listen to MURS channels using various receivers. This marine radio handheld is tuned to MURS Channel 2. *(Courtesy of WPC6NOA)*

Other Features

These MURS units also incorporate four separate call tones that may be used to page individual users, before starting a conversation. The handheld offers an alert signal when the MURS Alert Transmitter specifically pages it.

The handhelds also come with a power-save mode. After more than a minute of no triggering reception of the decode CTCSS or squelch circuit, it goes into battery save. There is also a lock button to keep the handheld locked in to the correct channel and modes.

Dakota Alert also offers MURS alarm systems, including a motion detector (PIR) that will detect people or vehicles. They also have a probe that will detect vehicles driving by.

Now that many fast food enterprises have abandoned their VHF color-dot radio systems, MURS channels are now under-utilized, and ready for occupancy, **Photo E**.

MURS is Waiting for You

If you're looking for no-license, long(er)-range voice and digital communications, check out Multi-Use-Radio-Service gear. – Gordo, WPC6NOA

Getting Started With the Two-Way Radio Experience

By Cory G.B. Sickles,
WPC2CB/WA3UVV
<wa3uvv@gmail.com>

"Citizens Band represents an inexpensive way to communicate with others and learn some technical things along the way."

If you're the person who's thinking about trying CB and other forms of two-way communication, this month's column is for you.

Listening to broadcast AM, shortwave, and scanner transmissions is one way that many of us were first exposed to radio monitoring as a hobby. Some folks are satisfied with just listening, while others want something more. I bet you fall into the latter category.

Even better, if you're inflicted, like me, with something called *The Knack,* you're way ahead in the game. *(**SEE:** The sidebar "The Adventures of Little Cory and 'The Knack,'" – WA3UVV)*

Three Flavors of Citizens Band Stations

Citizens Band represents an inexpensive way to communicate with others and learn some technical things along the way, **Photo A**. CB typically comes in three flavors. All have four important things in common: transceiver, microphone, power supply, and antenna system — which includes a feedline.

Flavor 1: The first type is portable, as in handheld. This is basically a walkie-talkie of some sort. The transceiver, antenna, and power supply (batteries) are self-contained in one simple package, thus internalizing the microphone and feed line. Pricing starts at about $50, plus batteries. The downside of a walkie-talkie is the range. With of a less-than-optimum length antenna and the lack of ground, you don't normally get too far. Adding a counterpoise wire to the case will "balance out" the antenna system, **Photo B**.

You can drag the wire while you walk or just roll it out when standing still, like at a table or checkpoint during a public service event. Just be

Photo A. Here's a small selection of the used 23- and 40-channel transceivers you may find with a careful eye. All came with microphones. They've been removed so as not to clutter up the picture. The radios range from *basic* to *all sorts of extra features. (Photography courtesy of WA3UVV)*

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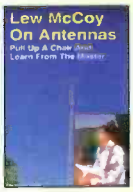
McCoy on Antennas



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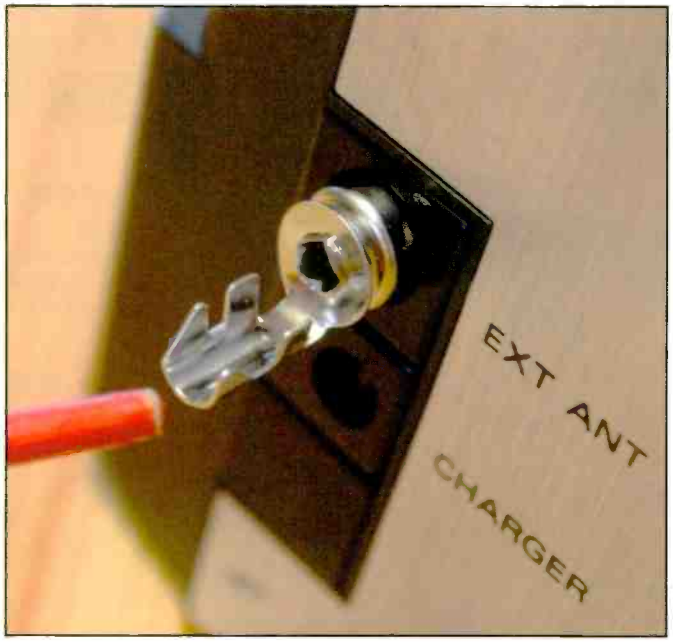


Photo B. Many portables have an external antenna connector. In this case, it's a phono connector. Add a 9-foot-long wire to the ground tab, but leave the center pin alone. If your radio doesn't have a suitable jack, then attaching the wire to a case screw can work as an alternative.

sure to keep it away from people who could trip over it. You'll be amazed at the difference a good counterpoise can make, even at VHF (MURS) frequencies.

Flavor 2: The second type of station is mobile, as in your car. (We'll leave the details of a bicycle, motorcycle, and boat installation for a later time.)

You can find mobile rigs (including microphone) starting at about $40. You'll need some means to get power. The easiest, though not the best, place is the power outlet — formerly known as the cigarette lighter socket. If needed, plugs are commonly found for $2.

Last, a magnetic mount antenna can be found for as little at $10, but those are typically a waste of money, due to extremely poor efficiency. A decent one will probably be priced in the $30 to $40 range.

Routing the power cable back to the battery properly and keeping the antenna cable neat is the best way to go, but at least you can get started with a new setup for well under $100. ***(SAFETY NOTE:*** *if you don't mount the radio somewhere, make sure it won't fly around loose if you have to stop the vehicle suddenly. – WA3UVV)*

Flavor 3: A home-based station represents the third type — a fixed location. Here, the radio may be the same, although it's possible to spend $400 or more on a "base unit." Try to purchase a base unit that includes a power supply because if you need to purchase one, it will cost an additional $35 or more. An antenna with a cable will probably set you back another $100

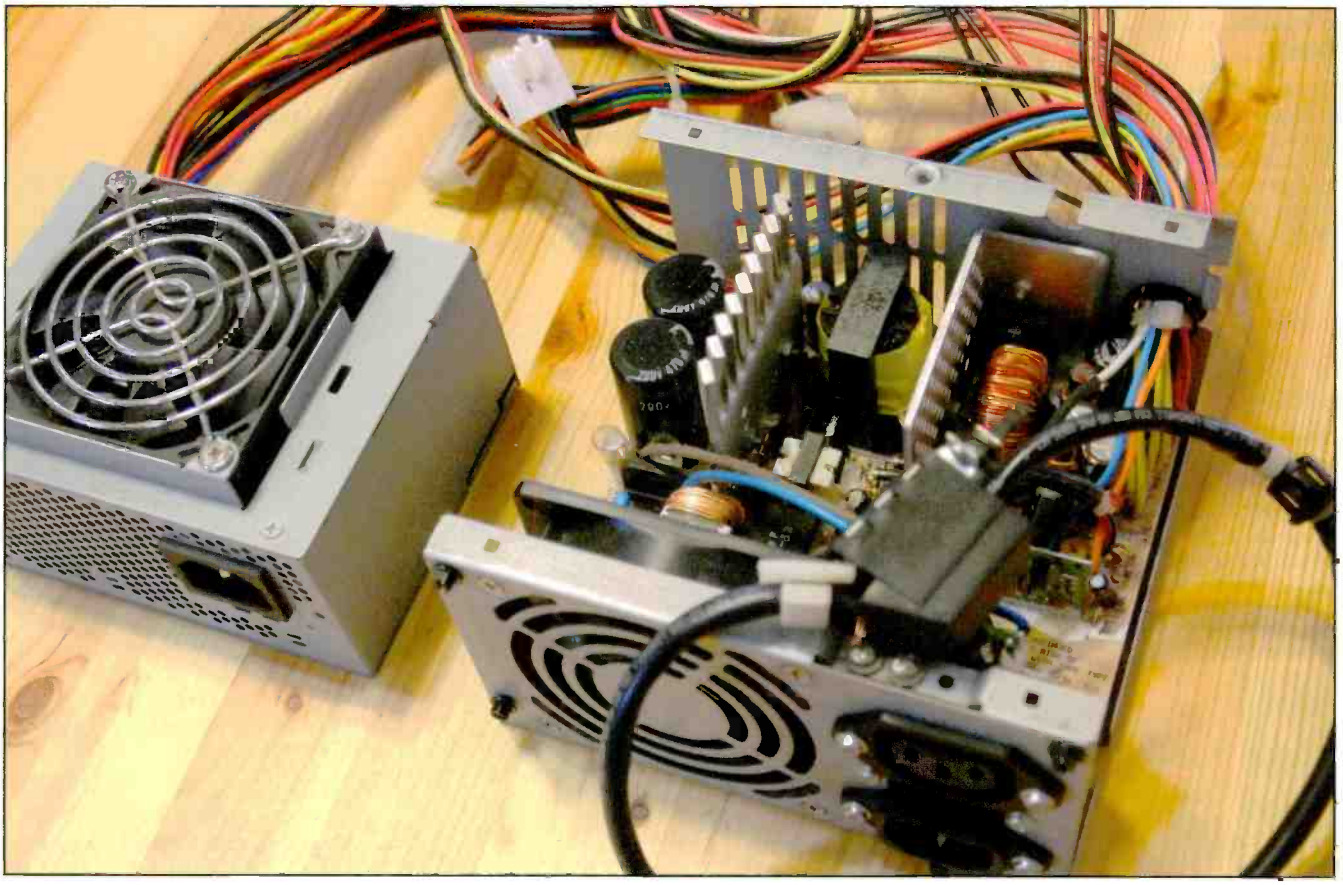


Photo C. Here is a pair of typical switching power supplies pulled from old computers. Units with external power switches are easier to convert. Note: when the case is off, don't assume the heat sinks are at ground potential. Some designs place high voltage on them, so be careful!

to $150, depending on what type you choose and how it will be mounted to the building.

That means a "typical" base station will be at least $175 for a "beginners" station. Well, what if you were willing to start out with used equipment, some patience, technical know-how and a bit of creativity?

A used mobile can be found at many thrift stores for $5 or $10. The 40-channel rigs are normally priced higher than the 23-channel versions, but not by much. Make sure they include a microphone, as you don't want to have to go hunting for this.

A quick trip to your local independent computer store can yield you a PC power supply for another $5 or $10. These are known as switching power supplies, or "switchers," **Photos C** and **D**.

They may generate a bit of RF hash, but placing them away from the radio can minimize that, somewhat. Typically the yellow wire carries 12 volts at more than enough current to run the transceiver. The black wire is the return (ground). Most power supplies will not turn on until a load is present, so having the radio's power switch set accordingly before you turn on the supply will take care of that, **Photo C**.

While you're in the computer store, ask if they have any RG-58 coaxial cable left over from years ago when networking was accomplished using "10 Base-2" cabling — a 50-ohm coax connection scheme that predates the popularity of "10 Base-T." You may be able to get the amount of cable you'll need to run between the radio and the antenna for just pennies on the dollar vs. the cost of new. I've picked up 100-foot rolls (with BNC connectors) for $8, just for asking.

A "push on" PL-259 connector can be secured at your local RadioShack®. While you're there, see if anyone knows of a store with a ham on staff. This guy or gal can be a wonderful resource of technical knowledge and guidelines to help you along the way. Just let them know what you're up to and see how quickly they'll offer advice. You want to be a communicator, so communicate!

The final piece of the puzzle is the antenna. What you can make quickly and cheaply is a vertical dipole, supported by a nearby tree, **Figure 1**. Some hookup wire — No. 18 or thicker — with plastic or white PVC insulators and a weight or ground screw at the bottom will round it all out. I've put together several of these for shut-ins and each station has typically cost no more than $40! That's an affordable range for just about anyone.

Photo D. This close-up image points to the location of the voltage adjustment in this switching supply.

Signing Off for Now

OK, that's it for this month. While you start looking for the elements to make up your first station, take a look around your library for books on antennas. Next month we'll talk about what to talk about when you get on the air, plus how you should talk when you talk. Confused? You won't be by the time it's all been explained.

– 73, de WA3UVV <WA3UVV@gmail.com>

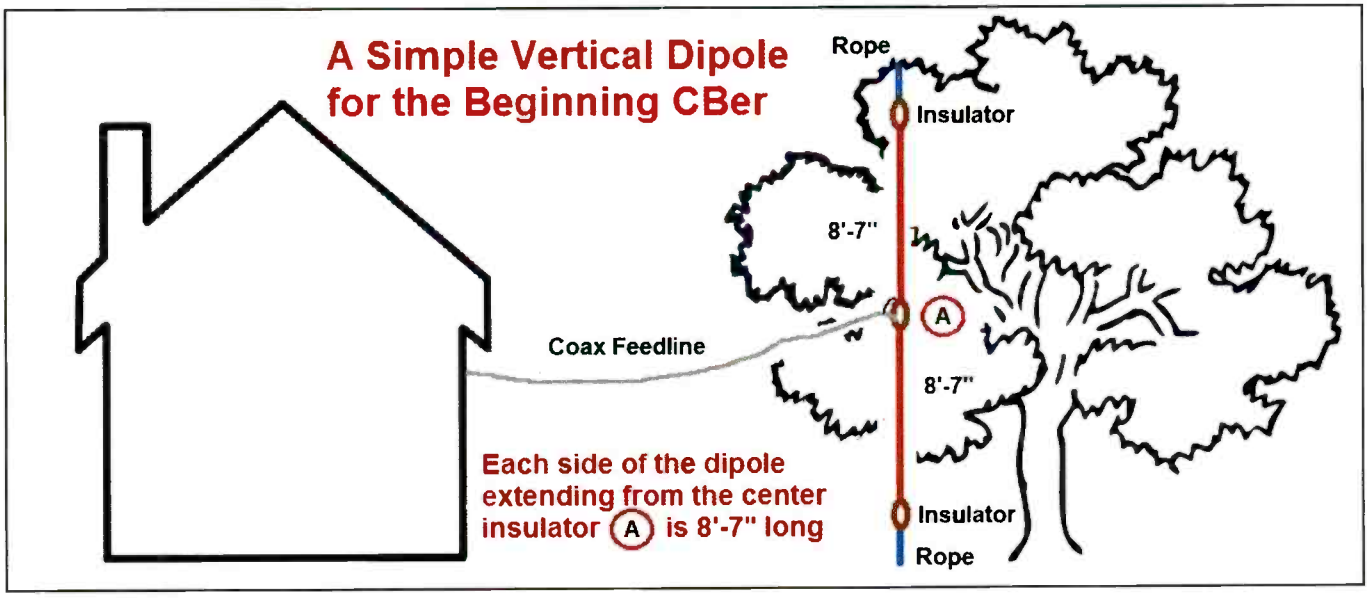


Figure 1. Dipoles represent the simplest type of wire antenna. While there are more effective antennas, they are certainly easy to assemble and inexpensive make. The one shown here is in a vertical configuration — which should yield many contacts with handheld, base, and mobile CB stations. Rope anchors the antenna to both the top of the tree and the ground, via a weight or ground screw. *(Courtesy of KPC6PC)*

The Adventures of Little Cory and *'The Knack'*

By Cory GB Sickles, WPC3CS/WA3UVV

As a little boy, all things electronic fascinated me. My first memorable experience with electricity involved an electric shock, due to my little fingers holding onto the prongs of a plug when inserting it in a wall socket. I can still feel the *OUCH,* 50-some years later.

I liked listening to AM radio and thought the glow of the tubes inside was some sort of magic. Looking back, it was also obvious that I was destined to explore transmitting, as well. Even as a little kid, I liked talking to other people — people I didn't know — a foreshadowing of my CB and ham radio interests.

In the early 1960s it was a big deal to have a second phone in the house. The Bell System even ran TV spots encouraging people to have "an extension" for convenience. The company also wanted the extra monthly revenue for said extension. The upstairs extension also meant *opportunity* for me, when my mom was downstairs.

'Operator, Please'

Somewhere along the line, I picked up on the idea that you could take the handset off the hook, dial "0" — yes, Virginia, this was the age of rotary telephones — and an operator would answer. Different operators, mind you. You never knew for certain just who it would be.

Of course, if you called enough times, you learned their names. I'm not sure how many weeks/months this went on, but finally one day, the supervisor of the ladies I'd been talking to called the house to let my mother know what I'd been up to. They said I was very polite and was surprised at how well spoken I was for a preschooler. They also commented on my conversational skills and other compliments were given. However, the point of the conversation was clear — the operators in the central office had jobs to do and I really shouldn't be calling to chat on such a regular basis. Perhaps a different "hobby" was in order . . .

Little Cory and *'The Knack'*

Bill Meara, N2CQR, presents a podcast called Solder Smoke <http://bit.ly/16TF1T5> that is enjoyed by hams who like to build and discuss technical topics. Bill often refers to *The Knack* — an innate ability to be curious and understand technical things. From what my parents and sister told me, I certainly displayed signs of *The Knack* from the moment I could crawl. *(**WATCH and LISTEN:** To an explanation of 'The Knack,' compliments of Dilbert <http://bit.ly/11RYzU2>. – WA3UVV)*

Whenever we went shopping downtown at a certain department store — way before malls — at a certain department store, I found things to keep me interested. The elevators of the time were operated manually by women with a rotary control, not unlike a huge potentiometer with a big handle. Moving the control clockwise made the elevator go up. Counterclockwise lowered it. The distance from "center" controlled speed. With some training, you learned to park it level with the floor. *(**WATCH and LISTEN:** To vintage elevator technology in a manually operated Otis lift in the Robert E. Lee Building in downtown Lexington, Virginia, <http://bit.ly/10FIPV3>. – WA3UVV)*

Well, you guessed it. I was such a charmer that I got one of them to teach me how to operate the elevator and did so sometimes while my mom did that boring thing called *shopping*. It's not that she was a "hands off" parent, in fact, quite the opposite. Initially she used to panic — *seriously* — when I disappeared, but eventually learned she could find me running the elevator. The surprising thing was that other customers seemed to be cool with it, too. It was a simpler time.

Photo E. The PBX operator "would answer the telephone, find out where to direct the call, then select and pull up a cable — red or white — to patch into the board." *(Courtesy of Wikimedia Commons)*

Working the PBX on the Third Floor

If I wasn't in the elevator, then there was one other place I could be found — the billing department on the top floor. Here,

Photo F. This classic PBX switchboard shows the color-coded cables, used by its operator to keep track of which calls were going where. *(Courtesy of Wikimedia Commons)*

I would be sitting on the lap of the woman (yes, I charmed and got along with women at an early age) who ran the PBX, **Photo E**. She would answer the telephone, find out where to direct the call, then select and pull up a cable (red or white) to patch into the board. When the call was complete, a light went out and she pulled the cable, allowing it to go back to its resting place, **Photo F**.

I picked up on this quickly and while listening to her voice, knew what cable to grab and where to put it — except for the top row, as I couldn't reach it. Somewhere in all this, I'd gone from calling and talking to operators to actually doing their job — again, while sitting on the pretty lady's lap. Still not in kindergarten, mind you.

Do You Have *'The Knack?'*

If you have exhibited such tendencies, or maybe liked taking things apart or starting up conversations with strangers at an early age, you may have *The Knack* as well. If so, then two-way radio in some form holds a certain fascination.

Pirates and Beyond, 'My Beat is the World of Shadows and Intrigue . . .'

By Steven Handler, WPC9JXK
<stevenhandler-popcomm@yahoo.com>

"In these pages you will find information, frequencies, and more to open a world for you to enjoy these fascinating shortwave broadcasters"

Welcome to *Pop'Comm's* new, monthly Clandestine, Opposition, Pirate and Spy Broadcast Report — a mouthful we refer to as COPS.

My beat is the world of shadows and intrigue. In these pages you will find information, frequencies, and more to open a world for you to enjoy these fascinating shortwave broadcasters.

First, though, just what is this mysterious subculture of wireless?

Clandestine and Opposition: Open Defiance. Defining clandestine or opposition radio is not easy. The dictionary describes clandestine as *something marked by, held in, or conducted surreptitiously,* or in secret. Clandestine and Opposition stations usually want to bring about broad or specific political or social changes within a specific target country or region. This can be as benign as providing unbiased news to countries without a free press or as drastic as inciting revolution leading to the overthrow or removal of the existing government.

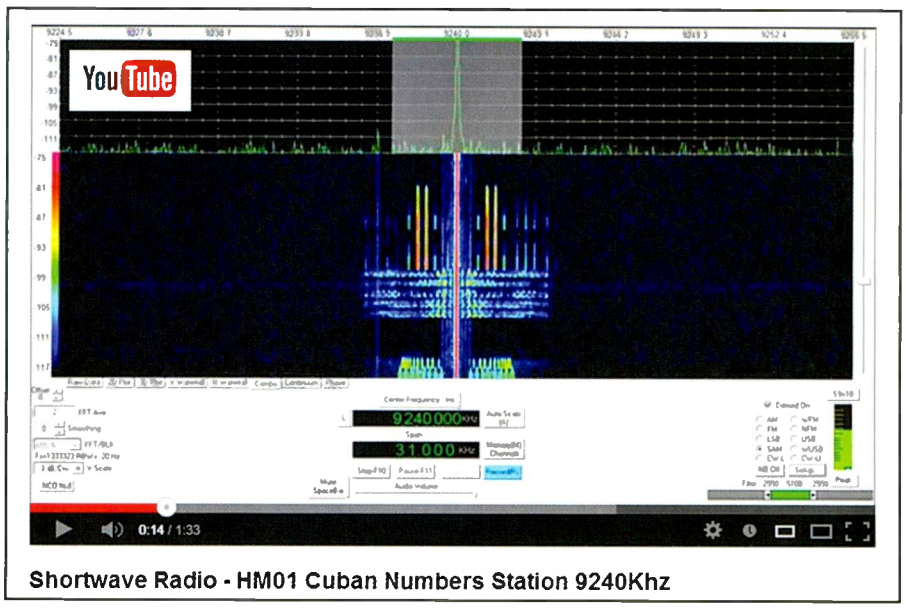
Their programming may be factual or rank propaganda, or anywhere in between. These stations exist until their goals have been accomplished or until their source of funding ends.

Clandestine and Opposition stations are often operated or funded by governments, governments in exile, and groups in opposition to a current government. During the cloak and dagger days of the Cold War, the true identity and location of many clandestine and opposition stations was kept secret. Today, most clandestine and opposition stations operate more openly and their transmitter sites are often publicly known.

Pirates: Aarghhhh, and Ahoy! Pirate radio stations broadcast without a license. On the shortwave bands, most radio pirate stations operate from either North America or Europe. The European stations are commonly called *Euro Pirates.* But don't let geography fool you. Pirate radio broadcasts can take place from almost anywhere in the world.

Spy Stations: By the Numbers. Spy stations, also called "Numbers Stations," are used by intelligence agencies to transmit messages to their spies (agents). This is done by broadcasting a coded message as a series of numbers, which are then decoded by their spies. These broadcasts can be found throughout the shortwave band.

They can be by voice, Morse code, or in a data mode and can be in almost any language. The most commonly encountered Numbers Stations broadcast groups of four- or five-digit number sets in English or Spanish. *(**WATCH and LIS-***



Shortwave Radio - HM01 Cuban Numbers Station 9240Khz

Photo A. Watch and listen to a YouTube video as a female voice recites groups of numbers in Spanish followed by data transmission on Numbers Station HM-01 — a signal thought to be broadcast from a spy station in Cuba.
Visit: <*http://bit.ly/XecNzN*>
(Internet screen grab)

*TEN: To video of mysterious Numbers Station HM-01 from Cuba. It was recorded in January, <http://bit.ly/XecNzN>, **Photo A**. – WPC9JXK)*

Since these broadcasts are one way — there is no reply from the agents in the field — there is no possibility of using direction finding to locate the agents receiving the broadcast.

Now that you know all about COPS, let's get into our inaugural report.

Pirate Close Up: From Outlaw to International SW Broadcaster

As a child, Eric van Willegen remembers his father bringing home a microphone, plugging it into an old Philips radio, and talking. "The next day I switched on the old radio again and discovered MW (medium wave) and heard stations like Radio London and [Radio] Caroline, since then I was listening to offshore Pirate Radio, later, of course, to RNI, Veronica, Atlantis, Mi Amigo, Capital Radio, Delmare, Monique, Radio 819, Laser 558, etc.," he said. And so began Eric's odyssey, which took him from pirate broadcasting in Holland to operating a major international shortwave broadcasting station.

Eric's curiosity didn't stop with just listening. In 1974, the Dutch government set about to close down all offshore pirate radio stations on August 31. "Radio stations were so popular in those days, you can't imagine how sad it was when your favorite station had to close down," Eric said. Radio Caroline survived the Dutch closure by moving back to the English coast. Mi Amigo survived, as well, and had perhaps several million listeners in those days.

Eric's response to the closing of the pirate radio ships was to hoist the Jolly Roger himself, setting sail into the world of Pirate Radio, **Photos B** and **C**. At 14, he built his first pirate transmitter, operating on the FM band, and was powered by a 9-volt battery. Unable to afford a microphone, instead he used a small speaker to capture his voice. Even though his station had a range of a less than a half mile, Eric was thrilled. "Just the idea that we could talk over the FM radio with two small transmitters was very exciting. I still remember that evening very well," he said.

After a few years of FM pirate radio, Eric, then 16, wanted a signal that covered a much wider area — and capturing a much larger audience. He built an AM transmitter using an 807 vacuum tube and made the switch to MW.

Photo B. Pirate broadcaster Eric van Willegen sits at the helm of his AM and shortwave station in this 1980s-vintage photograph. *(Courtesy of Eric van Willegen)*

Soon he constructed a more powerful AM transmitter allowing his pirate station to be heard all over Holland. Unlike many North American pirate stations of today, Eric's AM station sought out and found advertisers for his broadcasts. Sponsors included a car garage, fast food restaurant, a grocery store, and even an escort service.

In addition to operating his pirate station, Eric was a freelance DJ, making some shortwave shows for Radio Milano and Radio Time in Florence. He also had a syndicated show on FM107 and Magic FM in Belgium.

Although Eric loved his AM broadcast-band pirate station, he was fascinated with the greater distances available by using shortwave — and his high-frequency pirate days were in their infancy. Unlike his first home-built FM and medium-wave AM transmitters, Eric turned to commercial shortwave transmitters. His favorite was a small 100-watt transceiver, made by Phillips. He also used vacuum tube radios and an older and bulkier Siemens transmitter.

Business was booming in those early days. His pirate station became both popular and profitable. He found an old building whose landlord allowed him to use an apartment and part of the roof for free.

Photo C. Here's a peek into the Mighty KBC's weekday studio, where live shows were broadcast on 6095 kHz. *(Courtesy of the Mighty KBC)*

The fact that the building was located directly across from the local police station might have deterred others, but not Eric. "Just imagine you are a radio pirate, if you look to the right you see a police station and if you look to the left you see your pirate station," Eric said. "Result: *Big Smile!*" Perhaps such a broadcast location was not the best idea. The authorities took a dim view of Eric's activities and closed him down.

Eric sought out tall buildings for his transmitter sites. Once, while Eric was visiting potential advertisers, the audio from his pirate station abruptly ceased. Thinking it was a technical problem, he drove to the apartment that housed the pirate transmitter. To his surprise he saw a stranger looking out of the window. *Trouble!*

By this time, Eric's operations had become more sophisticated and he had separated his studios from his unmanned transmitter site by using a studio-to-transmitter downlink. In the event of a raid, although the transmitter would be lost, he thought the studio would be safe.

So, Eric abandoned his effort to enter the transmitter site and drove to the studio. Upon arriving, he was tipped off to awaiting danger when he noticed a car loaded with his pirate station's record collection. Although surprised, he, like any good radio pirate, knew when to batten down the hatches, and set off to find a new studio and transmitter site.

Pirate broadcasting was not without its risks, and by now the authorities were hot on Eric's trail. Besides closing down the pirate stations and seizing the transmitters, he often was fined. By Eric's estimate, there were about 20 raids and monetary penalties. He had stays in local police stations, as well.

Although the authorities never sought to hang Eric from the local yardarm or make him walk the plank, they did eventually ask a judge to sentence him to 14 days in jail. However, being sympathetic, the judge fined him only 500 guilders — several hundred dollars — and gave him three weeks of conditional discharge — or probation.

Eric also looked for other opportunities to work in pirate radio. His stints included presenting "WMR Goes DX" on Radio Caroline's shortwave service. He went by the name Tom de Wit on those broadcasts. He also did behind-the-scenes work for the Dutch station Radio 819, which broadcast to the Netherlands and Belgium from the Radio Caroline's ship, the "Ross Revenge."

In early 1989 he was offered the position of program director for Radio 819. Rather than accept the position, he decided to go out on his own and into the corporate world. It was a good choice, because in August 1989, the Dutch government raided and closed down Radio Caroline.

In the world of corporate business, Eric found himself dealing with the Dutch government and the Telecom Agency. He decided to again head into broadcasting, this time with a legal radio station.

His first shortwave station was K-PO. Eric's equipment company, KBC Import/Export, which is a separate business from the broadcasting company, continues to sell communications products such as CB radios, shortwave radios, and accessories — using the K-PO brand name.

Eric changed the broadcasting company's name from K-PO to KBC, and thus the Mighty KBC was born. Eric had discovered that many truckers in Europe listen to MW on the road. So in October 2007, Eric started a show targeting truckers. It was broadcast on the "Big L," a MW station located in Holland, operating on 1395 kHz. As soon as it got dark, and sometimes even during the day, the Mighty KBC's broadcast could be heard

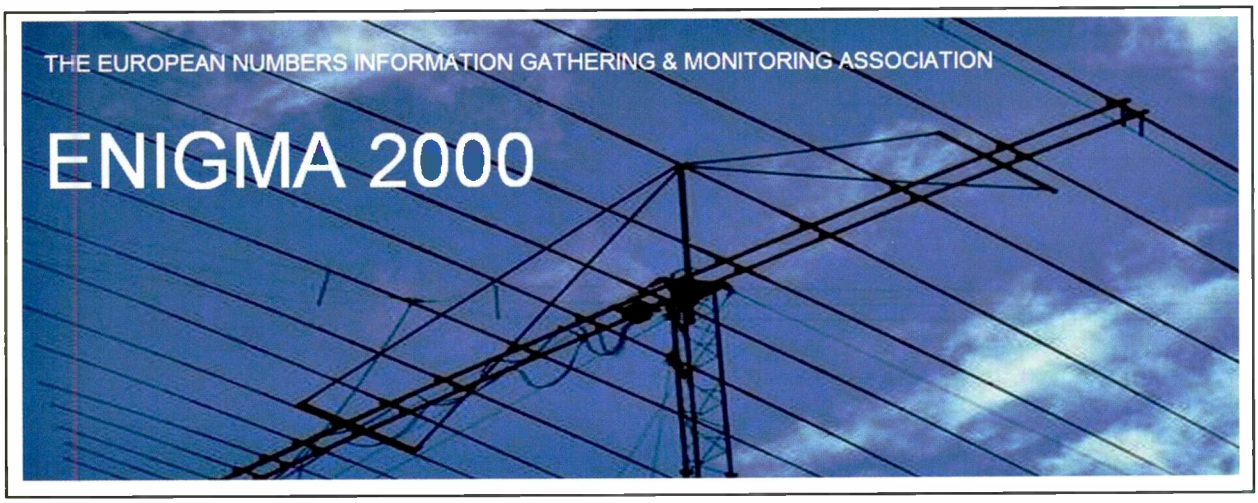


Photo D. The hobbyist monitoring group Enigma 2000 is credited with naming the new Cuban spy broadcaster "HM-01." The HM stands for hybrid mode because the station broadcasts via both voice and data. Visit the group's website at <http://bit.ly/14tpjyE>. *(Internet screen grab)*

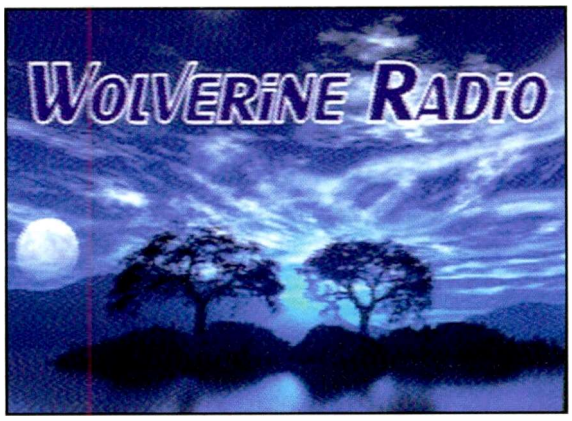


Photo E. This Wolverine Radio SSTV image was received from 0307-0310 GMT on 6935 kHz. *(Courtesy of WPC9JXK)*

throughout Europe. "What a sensational signal that was," Eric recalled.

Now that the Mighty KBC had a stable MW audience, it decided to expand to shortwave. It was a short-lived venture. Toward the end of 2009, Eric made the decision to close down the shortwave operations and concentrate on their MW broadcasts on 1395 kHz. The Mighty KBC leased the MW transmitters for the nighttime hours, but the transmitter owner was unable to lease sufficient daytime hours. This made operating the transmitter fiscally undesirable. So, the Mighty KBC began looking for a new transmitter site.

Their first stop was a 10-kilowatt MW transmitter in Burg, Germany, operating on 531 kHz. For 100 Euros — about $150 — they received a test license from the German government. However, 531 kHz had a major problem. Radio Algeria was using the same frequency during the night. But unlike the Mighty KBC's 10-kilowatt output, Algeria was using 300 kilowatts. It was the Mighty KBC as *David,* vs. Radio Algeria as *Goliath.* This time, Goliath won. Although the Mighty KBC had a strong signal in Sweden, and it could be heard in Holland, it was weak in the United Kingdom.

It was time for the Mighty KBC to switch back to shortwave. Its new nighttime home became 6095 kHz, leasing airtime on a transmitter in Wertachtal, Germany. This worked out well, reaching the truckers in Europe. Later, KBC added a second frequency, 9450 kHz, using leased transmitters in Kostinbrod, Bulgaria. The second frequency allowed DJs of the Mighty KBC to regularly reach North America.

In March 2013, the Mighty KBC switched frequencies from 9450 kHz to 7375 kHz, and at the same time, changed transmitters from Bulgaria to a leased 125-kilowatt transmitter in Nauen, Germany.

While Eric van Willegen began with an FM pirate radio station that covered no more than a half mile, his journey through radio broadcasting has taken him to many places and stations covering vast distances.

From that humble pirate broadcasting beginning, Eric has become the operator of a legitimate and successful international broadcasting station that covers more than half the world. If Eric's past is any indicator, you can be sure shortwave listeners will be hearing much more from him in the future.

And now for a trip around the COPS dial . . .

North American Pirates

Since this is my first column, you haven't had a chance to send me your loggings, (HINT), so I am using some of my own. All times are GMT and all frequencies are in kHz.

6925 USB **Wolverine Radio** 0048 song in progress, 0050 another song, audio lost for about 10-15 seconds then back, more songs at 0054, 0056, 0059, 0105, and 0109.

6925 USB **Wolverine Radio** 0229 song in progress, 0230 Wolverine Radio ID by male, 0230 version of the Star Spangled Banner, 0233, 0237, and 0243 songs. At 0246 ID by male announcer followed by a song. 0246, 0249, 0253 songs, and 0255 ID by man, followed by a song.

6925 USB **SDF1 Radio** 2342-2356 s/off with IDs and email address at 2358 and 2352. Show dedicated to the **Voice of Alix**.

6935 USB **Wolverine Radio** 0206-0310 songs played today all had the word "Sky" in them including Blue Sky's, *Lucy in the Sky*, and *Ghost Riders in the Sky*. IDs for Wolverine Radio by a male announcer at 0213 and 0224. Between 0307 and 0310 they broadcast an SSTV image that I was able to receive. SSTV broadcasts are common at the end of Wolverine Radio's broadcasts, **Photo E**.

6940 AM **Radio Casablanca** 2233-2250 with songs from the swing era as well as audio clips from the movie Casablanca. Gave ID and email address.

Please send your Clandestine, Opposition, Pirate and Number's Station loggings to be considered for publication in this column. I can be reached at <stevenhandler-popcomm@yahoo.com>. – WPC9JXK

Euro Pirates

For monitors in North America wanting to hear the European Pirates, **Borderhunter Radio** may provide an opportunity. It seems to favor weekend operation. Past broadcasts include 6300 kHz between 0030-0300, 15515 between 1500-1600, 15500 between 1600-1730, and 21520 between 1400-1500. The times are GMT and, like most Pirates, times and frequencies vary. Listen for station IDs including: "You are listening to the secret sound of Borderhunter Radio" or "This is Borderhunter Radio with super sounds."

Borderhunter Radio has responded to some reception reports with a color, two-sided QSL card. On the front is a picture of a man dressed in black sitting with his back to the camera in front of a control panel. The reverse has the slogan *"Hunting across the borders of Europe"* and includes the listener's name, as well as the date, time, frequency, and mode of reception. The card has the printed signature of "Frans." Addresses on the card are P.O. Box 2702, NL-6049 ZG Herten, Netherlands and an email address <borderhunterradio@hotmail.com>.

Good hunting and let me know if you catch one of their broadcasts. – WPC9JXK

Clandestine/Opposition Broadcasting

Imagine seeing a police car screeching to a halt in front of a house. Are they searching for a killer, an armed robber or a master thief? No, they are in search of the local citizenry's shortwave radios! Earlier this year the Zimbabwe police began a campaign to seize shortwave radios. *Why?* I believe it's because the government doesn't want the people to know the truth.

Zimbabwe is located in Southern Africa and is bordered by Zambia, Botswana, South Africa, and Mozambique. Although the official language is English, most of the population speaks Shona. According to the U.S. State Department, "Zimbabwe has an unstable political environment because of the different political ideologies subscribed to by the current ruling and the opposition parties." So it shouldn't surprise anyone that in addition to seizing shortwave radios, the Zimbabwe government has a history of jamming certain shortwave stations.

Broadcasting daily, **Radio Voice of the People (VOP)** is trying to fill the information gap with a 1-hour shortwave program to Zimbabwe. *"The People Are Talking,"* covers news and current affairs. Topics range widely and include coverage of the political situation, the economy, and social life in Zimbabwe. The program is multilingual using Shona, Ndebele, and English.

VOP seeks to be known as the independent source of news and information for the people of Zimbabwe. They also want to change the Zimbabwean government so that it respects citizens' rights to freely exchange ideas, knowledge, and make informed choices. Their choice of shortwave apparently was, in part, because the station has been unable to obtain a license for FM in Zimbabwe. Despite applications in 2005, 2011, and 2012, a license was never issued. Station authorities are currently pursuing the matter in court but, without a domestic broadcasting platform, VOP relies on shortwave to reach the people.

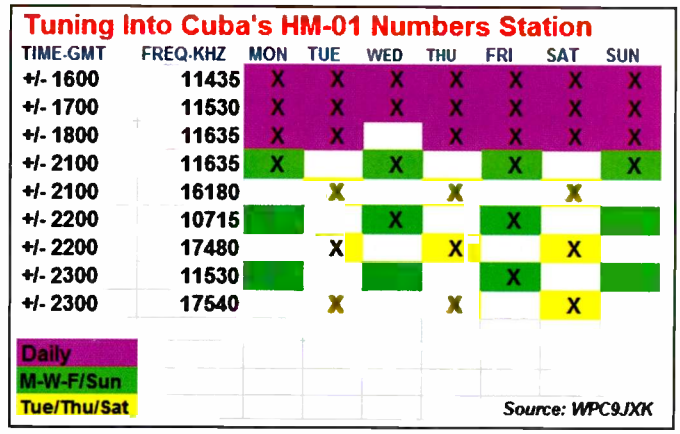


Figure 1

The station's current shortwave broadcast is aired from 1800 to 1900 GMT, which is mid-evening in Zimbabwe, on 9345 kHz from Talata-Volondry, Madagascar. Remember that with opposition broadcasters, frequencies and times are always subject to change. I suggest you consult VOP's website for up-to-the-minute broadcasting times and frequencies <http://www.radiovop.com>. Remember that unless otherwise noted, times listed on the website are Zimbabwe local time, so to convert that into GMT, subtract two hours.

Spy Stations: A New Technology in Cuba

Every day, Cuba's spies sit by their shortwave radios awaiting coded instructions. These so-called Numbers Station broadcasts originate in the Dirección de Inteligencia, Cuba's secret intelligence services, **Figure 1**.

They are directed to spies — also known as agents — in the United States and elsewhere. These broadcasts are one way. With no reply from the agent, direction finding can't be used by counter-intelligence agencies to locate the spies. Although the spies' locations remain secret, the source of the broadcasts is easily traceable to Cuba.

In the past, Cuba's Number Stations broadcast their coded messages using three modes:

- Morse code
- Data transmissions
- By voice in Spanish, using a robotic-sounding synthesized voice

Each was broadcasted separately, but each transmitted the coded messages as groups of numbers. In the fall of 2012, Cuban spy/numbers broadcasts changed their *modus operandi*, using a combination of voice *and* data. Apparently this new combined broadcast is fast replacing Cuba's older single mode broadcasts.

Enigma 2000, a hobby group that keeps track of spy and numbers stations, **Photo D**, has assigned this new Cuban broadcast the designator "HM-01." *(**NOTE:** HM stands for hybrid mode because it uses voice and data during the same broadcast. – WPC9JXK)*

The HM-01 broadcasts use AM with the data portion being a differential phase shift keying called "Redundant Digital File Transfer," or RDFT. It was one of the early data modes used by amateur radio operators. Newer and more popular data modes such as PSK31 have almost eliminated RDFT's use on the ham bands.

I have monitored many of the new Cuban broadcasts. Some of their frequencies are adjacent to, or within, the shortwave

broadcast bands and amateur radio bands. Each HM-01 broadcast lasts about 57 minutes. During that time, the message is repeated twice with a three-minute period of silence between. Each message begins with a preamble that lasts about three minutes. It consists of a mechanically-generated Spanish language voice broadcasting a series of five-digit number sets.

Although it is not certain, it is possible that some of the five-digit number sets broadcasted during the preamble may be an identifier for the particular spy or spies to whom the message is directed.

After the preamble, the remaining 24 minutes consists of a series of RDFT data transmissions separated by a five-digit number. This is followed by about three minutes of audio silence. Then the process starts over, repeating the same message transmitted during the first 27 minutes of the broadcast.

Spy trade-craft for these Cuban broadcasts has been unprofessional. It is far from the precision that Cuban intelligence displayed in the Cold War days. For example, common are broadcasts starting early or late, broadcasting on the wrong frequency and even the mixing of other Cuban shortwave broadcasts with the numbers messages. Although I have never deciphered any of these messages, I find it interesting to search out and listen to these broadcasts. I hope you will also find it interesting.

Fortunately for the shortwave listener, HM-01 broadcasts are on a fairly regular schedule. Using the results of my monitoring, I compiled a partial schedule, which is included in this issue.

Remember: tune in early, because often their broadcasts start early — several minutes before the top of the hour. It's not unusual for broadcasts to begin on an erroneous frequency, quickly — or sometimes *not so quickly* — switching to the intended frequency.

Cuba is one of several countries that broadcasts messages to its spies on shortwave. In future columns, I will spotlight some of the other foreign intelligence services using the shortwave broadcasts to reach their agents.

Calling all *Pop'Comm* Readers

Please send me your Clandestine, Opposition, Pirate, and Number's Station loggings to be considered for publication in this column. I can be reached at <stevenhandler-popcomm@yahoo.com>. Until next month, please stay in touch. – WPC9JXK.

Pop'Comm June 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.

Did you attend the Dayton Hamvention® the weekend of May 17-19?

Yes 1
No 2

What prompted you to go on the annual hobby communications pilgrimage? (Choose all that apply.)

The vendor exhibits 3
The seminars, demonstrations, dinners, after-hours social gatherings . . 4
The outdoor flea market 5
The food 6
Being awash in a sea of communications hobbyists 7
I couldn't go, ☹! 8
I had no desire to go, ☺! 9

Primarily an amateur radio event, do you feel the interests of SWLers, Cbers, and scanner monitors are adequately served at Dayton?

Absolutely 10
Somewhat 11
Not really 12
Not at all 13
Don't know, never been 14

What communications gear did you buy, or *want to buy* at Dayton? (Please 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.popcommmagazine.blogspot.com/> and click the link to the *Pop'Comm June 2013 Reader Survey.* It's quick and easy.

The Envelope, Please . . .

For participating in the *Pop'Comm Readership Survey,* the winner of a free *Pop'Comm* subscription or extension is **Bob Schultz, KCØFBB**, of **St. Louis Park, Minnesota**, who writes that he likes stories about Citizens Band radio. "Let's see more of them!" he said. *Pop'Comm's* new monthly column *CB and More* should hit the spot! *Congratulations, Bob, thanks and please keep us posted on your monitoring activities. – KPC6PC*

AM Radio Around the World: Fading Away or Here to Stay?

By Bruce A. Conti, WPC1CAT

"If this global survey of AM radio activity is any indication, 'Antique Modulation' won't be going away anytime soon"

There's been plenty of discussion lately about the demise of AM radio. Does AM have a future, or is it an anachronism? Perhaps a survey of the state of AM radio around the world will provide some insight.

DAB in the UK

The United Kingdom plans to phase out AM radio in 2016, switching to FM and DAB (Digital Audio Broadcasting) terrestrial broadcasting <http://bit.ly/YCP5Jg>. Test trials have already taken place over the past year in which AM radio stations were shutdown, some temporarily, to determine whether or not FM and DAB coverage is adequate, and to develop a switchover plan especially in terms of how to inform the public.

The Vatican Radio transmitter site is located in the densely populated Rome metro area, as viewed here from the top of St. Peter's. Authorities allege that increased rates of cancer for those living in close proximity to the antennas are due to RF exposure from the site. *(Courtesy of Gaius Cornelius via Wikimedia Commons)*

The "MW trials" involved Radio Essex, Radio Hereford & Worcester, Radio Nottingham, and Radio Kent. A repeating message was broadcast in place of regular programs advising listeners to tune into FM.

The latest switchover communications plan submitted in February by the UK government's Department for Culture, Media, and Sport (DCMS) outlines some of the details still to be worked out as the switch to DAB proceeds.

Many AM broadcasters are already simulcasting on DAB. "On DAB digital radio, and 1089 and 1053 AM, TalkSport," for example is the announcement heard at the top of every hour on the TalkSport network stations. The 2013 Digital Radio Action Plan reports are available online at <http://bit.ly/YancvS>.

Vatican RF Debate

The Vatican terminated 600-kilowatt AM radio transmissions on 1530 kHz last year, but it wasn't because of declining AM listenership. Italy has adopted the strictest RF pollution regulations in Europe, citing cancer concerns from long-term exposure.

The Vatican Radio transmitter site is located in the densely populated Rome metro area. Increased rates of cancer for those living in close proximity to the antennas are claimed to have been due to RF exposure from the site. It was last July when Vatican Radio announced the suspension of medium and shortwave services after 80 years of broadcasting. Services have been replaced by FM, DAB, and the "Vatican Player" online. It's worth noting that in a press release announcing new communications strategies <http://bit.ly/MvdYVH>, there is no mention of the RF exposure issue.

In addition to 1530, in March of this year the Vatican closed what was Europe's only station on 1611 kHz. Vatican Radio continues to broadcast on AM at 585 and 1260 kHz with 5 kilowatts of power.

Italy is in the process of closing its AM operations as well. The Rai Radiouno network has been systematically decommissioning AM trans-

"Infraestructura de Estaciones de Radio FM" at <http://bit.ly/ZPwbBo> has a complete listing of AM stations and their FM assignments. Don't expect co-channel U.S. border stations to be able to increase power or to be reassigned to the open frequencies as Mexican stations disappear from the AM dial. *(Courtesy of EfrenValenciaC via Wikimedia Commons)*

mitter sites. Stations on 567 and 657 kHz were most recently closed earlier this year.

AM Austerity Continues Worldwide

2012 was another tough year for AM radio around the world. Nations continued to disappear from the AM broadcast band.

The end of 2012 marked the end for NRK transmissions on 675 kHz in Norway, leaving 1485 kHz with only 1 kilowatt as the last Nordic station still alive on the AM broadcast band. The megawatt transmitter at 1314 kHz from Norway was once a prime indicator of high latitude reception conditions until it was shut down for good in 2011. NRK finally completed dismantling of the 1314 transmitter site with the antenna towers dynamited last year, ending any glimmer of hope for its return. *(SEE: a video of the toppling towers reported by Aftenposten at <http://bit.ly/YanQtl>. — K8RKD)*

A 250-kilowatt signal on 1062 kHz from Denmark, the lone Danish signal on the AM broadcast band, used to be another beacon for high-latitude propagation until it was silenced in 2011. This was after the operating schedule was significantly reduced in 2007, consisting primarily of cycling the transmitter on for brief periods to broadcast navigational weather reports and news. The transmitter site was dismantled in June 2012, leaving no doubt as to the fate of AM radio in Denmark.

The disappearance of Scandinavia from AM radio first became apparent in 2010 when Sweden ceased all broadcasting on 1179 kHz and shortwave. Radio Sweden's international broadcasting moved entirely to the Internet. The loss of the 600-kilowatt signal on 1179 kHz removed Sweden from the shrinking list of AM radio countries.

Also at the end of last year the Voice of Russia terminated relays from Germany on 630, 1323, and 1431 kHz. Only the 693-kHz Voice of Russia relay from Berlin remains active. In the meantime, Russian broadcaster Radio Mayak has been in the process of moving to FM. It announced the closure of all of its AM transmissions in March, with the exception of 828 Kyzyl and 918 Makhachkala. Some of the more widely received frequencies such as 999 and 1143 kHz are being kept alive with Voice of Russia broadcasts, but for how much longer?

The 300-kilowatt YFR transmission on 1557 kHz from Taiwan fell victim of Family Radio budget cuts, presumed the reckoning of faulty 2012 Armageddon predictions by leader Harold Camping. It's not the end of the world for 1557 though, as Radio Taiwan International has taken over the frequency for now. 1557 is a beacon of trans-Pacific reception conditions.

St. Helena became the latest nation to be deleted from the list of AM radio countries with the closure of 1548 kHz last December. It was resurrected as Saint FM on 93.1, 95.1, and 106.7 MHz in March of this year by a group of radio enthusiasts eager to restore private broadcasting to the island, independent of the government, but the AM station is gone forever.

Other nations once commonly received in the U.S. that have since dropped off the AM radio map (key frequencies in parenthesis) include Austria (1476 kHz), Belize (1530 and 1580 kHz), Cayman Islands (1205 and 1555 kHz), French Guiana (1070 kHz), Greenland (810 and 900 kHz), Jamaica (560, 700, and 750 kHz), Senegal (765 kHz), Switzerland (765 kHz), St. Pierre (1375 kHz), and St. Vincent (705 kHz).

Some of these frequencies will undoubtedly bring back memories of the good ol' days when AM stations didn't operate 24/7 and the band wasn't so crowded.

Mexico Moving to FM

The transition from AM to FM is currently underway in Mexico. The SCT (Mexican equivalent of the FCC) began the process of allocating FM frequencies to AM broadcasters in 2009 with the expectation that AM stations would simulcast on FM for one year minimum and start closing down within five years.

The original plan was more ambitious with AM stations forecasted to close in 2011. Most AM stations are now simulcasting on FM. In most cases AM stations with an XE prefix callsign have been assigned an FM frequency with an XH callsign that carries the same suffix as the AM. For example, XEWGR AM 780 is assigned XHWGR FM 101.1, XERF AM 1570 is assigned XHRF FM 103.9, and so on.

In some cases where an XH callsign already existed with the same suffix as an AM station, an XHE prefix is assigned to the new FM station. For example, XETOR AM is given XHETOR FM.

"Infraestructura de Estaciones de Radio FM" at <http://bit.ly/ZPwbBo> is a complete listing of AM stations and their FM assignments. As Mexican stations disappear from the AM dial, don't expect co-channel U.S. border stations to be able to increase power or to be reassigned to the open frequencies. International agreements will remain in place

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which leaves the door open for possible new Mexican AM stations in the future.

AM on FM in the U.S.

In 2009 the FCC revised its rules for FM translators (low-power FM relay stations) to allow simulcasting of AM radio broadcasts. FM translators were originally intended for rebroadcast of an FM signal to fill in dead spots not adequately covered by an FM station's primary coverage area.

Unlike a booster or synchronous transmitter, an FM translator is assigned a different frequency from the station being relayed. An FM translator is not allowed to broadcast separate programming from the station being relayed except in case of emergency. An FM translator is assigned an alphanumeric call-sign beginning with a K or W followed by the FM channel number and a two-letter suffix. For example, 630 WEJL AM Scranton, Pennsylvania, is relayed by FM translators W241AZ and W241BB at 96.1 MHz (channel 241), and W263AL at 100.5 MHz (channel 263).

These translators fill in some of the coverage area lost when WEJL AM must reduce power at night. Hundreds of AM radio stations have taken advantage of the new translator rules to acquire lucrative FM frequencies, and are heavily promoting their FM dial positions.

While some will identify with both AM and FM frequencies like "News Radio 1190 and 102.3 KEX" in Portland, Oregon, relayed by K272EL, others identify almost exclusively by the FM frequency such as 1520 WSVX AM which uses the "Giant 96" moniker in reference to translator 96.5 W243CL in Shelbyville, Indiana, and "The Golden Great 98" 1400 WLTN AM on 98.5 W235AY in Littleton, New Hampshire.

AM stations without FM translators have hooked up with FM sister stations via secondary HD digital channels. Up to four channels can be carried by an FM HD digital signal. 1060 KYW AM is also heard on co-owned 94.1 WIP-FM HD2 in Philadelphia, 1070 KNX AM Los Angeles on 97.1 KAMP FM HD2, and 1200 WXKS AM on 94.5 WJMN HD2 in Boston, just to name a few.

The FCC also relaxed the rules for AM/FM simulcasts on co-owned stations serving the same communities. Co-owned AM and FM stations were previously not allowed to duplicate programming except on a temporary basis.

Restrictions were placed on AM/FM simulcasts in 1964 because it was thought that the practice was slowing the growth of FM radio. The current rules change has given AM radio stations yet a third option to get onboard the FM train. Many legacy 50-kilowatt, clear-channel stations have added FM simulcasts to boost sagging ratings. 750 WSB AM in Atlanta took over co-owned 95.5 WBTS FM, changing it to WSB-FM in 2010, 780 WBBM AM Chicago began simulcasting on 105.9 WCFS FM in 2011, and in New York City 660 WFAN AM bought 101.9 WRXP FM and changed it to WFAN-FM in 2012. Such simulcasts are expected to continue through the foreseeable future as broadcasters are reluctant to give up the multi-state coverage area of a 50-kilowatt, clear-channel AM signal in exchange for FM.

This Month in Broadcast History

75 Years Ago (1938): Philco introduced a new line of Transitone radios for the home, the name brand formerly associated exclusively for automobile radios. Philco bought the Transitone Automobile Radio Corporation in 1930. Transitone model TH-1 was actually based on a design by the Simplex Radio Corporation, a company Philco bought in 1937.

50 Years Ago (1963): "It's My Party" by Leslie Gore took command of the Authentic Top 40 on 4BC Queensland, Australia. *(**WATCH and LISTEN:** To a live performance of "It's My Party" in Australia in 1989 at <http://bit.ly/14jbYsg> **Photo A**. – WPC1CAT)*

Photo A. Leslie Gore reprises her 1963 mega-hit "It's My Party (And I'll Cry If I Want To)" on a tour in Australia circa 1989. *(Internet screen grab <http://bit.ly/14jbYsg>)*

It's My Party ~~~ Leslie Gore ~~~ Melbourne 1989

25 Years Ago (1988): The U.S. Supreme Court decided not to review an appeals court ruling that the FCC "must carry rule" for cable TV was unconstitutional.

Considering Expanding FM's Spectrum

Another hot talking point has been a proposal to expand the lower end of the FM broadcast band into spectrum formerly held by analog TV channels five and six. Most of the analog TV stations in the low VHF band (channels two to six) were reassigned to UHF channels with the switch from analog to DTV, even though they may still identify themselves at low "virtual" channel numbers.

The FM expanded band would accommodate radio broadcasters willing to give up their AM facilities for a full-power FM assignment. This is just in the preliminary discussion stage though, not even close to being formalized.

Has the Train Left the Station?

Are all the changes to boost AM radio listenership too little too late? It might be that both AM and FM are in need of resuscitation. According to a stinging report by Eric Rhodes, publisher of *Radio Ink* magazine, a panel of automotive industry representatives claimed that AM/FM radio will be eliminated from the dash of two car companies in the next two years, and eliminated from all cars in five years.

Shown here is the base of the former 1062-kHz antenna in Kalundborg, Denmark, with the two 153-kHz longwave towers in the background. *(Courtesy of SkyscraperCity.com)*

Young people are choosing alternative Internet and wireless platforms over conventional radio, and the car companies are ready to comply.

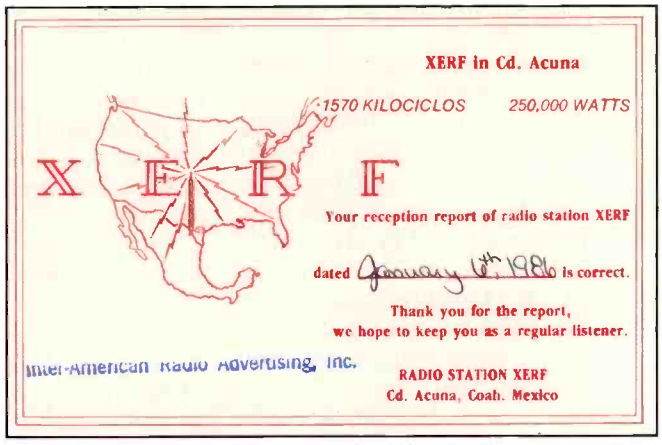
Replacing the AM/FM radio with wireless apps like iHeart would put local radio broadcasters in direct competition with hundreds of radio stations while on the road. Rhodes called this the most important "unofficial" announcement in history regarding the future of broadcast radio. Don't believe it? Read the full story at <http://bit.ly/ZPyBzZ>.

AM on the Rebound

Not all the news is *bad* for AM worldwide. Although AM radio has been experiencing a slow decline in the **Czech Republic**, new AM licenses have been granted for Radio Impulse on 981 kHz and Radio Dechovka on 1224 kHz. The last major round of government closures was in 2004 when Cesky rozhlas (Czech radio) stations at 1071, 1233, and 1287 kHz were shutdown. Cesky rozhlas continues to broadcast at 639, 954, and 1332 kHz, while Country Radio can still be found at 1062 kHz.

The UR1 network of AM radio stations scheduled to shutdown in **Ukraine** have been given a reprieve by the prime minister, reactivated at 657, 711, 837, 972, and 1044 kHz. Their status remains tenuous as Ukraine Radio has been going through these on-again/off-again cycles rather frequently in the past few years. UR1 stations were last silenced for a brief period in May 2012.

Spirit Radio reactivated the AM dial in **Ireland** on 549 kHz with its Christian programming. The frequency was formerly known for pirate radio station Irish/United Christian Broadcasters until it was taken off the air in 2006. After much speculation about possible reactivation of former RTE network facilities, instead Spirit Radio signed on 549 kHz last August.



1570 XERF is voluntarily exchanging its historic super-power AM station for an FM assignment at 103.9 as XHRF, part of the major transition from AM to FM underway in Mexico.

Spirit Radio is a relatively new Irish broadcaster, first signing on FM in January 2011. Government broadcaster RTE dropped AM in 2008 with the closure of transmitters at 567 and 729 kHz, after 612 kHz went dark in 2004.

The Caribbean nation of **St. Kitts and Nevis** returned to the airwaves at 555 kHz with 5 kilowatts in February after nearly a year off the air. 555 stands alone as the only remaining "split" frequency signal of what were once numerous stations broadcasting between the standard 10-kHz channels in the Caribbean and Latin America. Additionally, Radio Paradise on 840 kHz and Voice of Nevis on 860 kHz ensure that St. Kitts will remain heard on AM for at least the near future.

Cuba remains the most radio-active nation in the Caribbean with stations popping up and changing frequencies almost at will. Radio Bayamo has been logged on 1620 kHz along with two or more co-channel Radio Rebelde signals. New Radio Progreso and Radio Rebelde outlets have been heard on 1210 and 1550 kHz. Radio Cadena Agramonte, Radio Musical, Radio Rebelde, and Radio Surco have all been heard on the very active frequency of 1140 kHz, perhaps an effort to block reception of co-channel Radio Univision América broadcasts from WQBA in Miami.

Twenty transmitter sites are listed for Radio Rebelde on 1180 kHz alone, obviously designed to block reception of VOA Radio Martí broadcasts beamed to Cuba on the same frequency from the Florida Keys.

India is making a substantial investment in DRM digital broadcasting on AM radio, reported by industry insiders as the world's largest digital radio deployment. All India Radio (AIR) recently purchased six new Nautel 300-kilowatt transmitters configured for DRM transmissions as part of an aggressive plan to upgrade facilities nationwide. Meanwhile, a new megawatt AM transmitter is in operation at 1071 kHz from Rajkot broadcasting AIR to Pakistan.

The Broadcasting Board of Governors (the U.S. government agency that oversees all international broadcasting including the Voice of America) continues to invest in AM for the **Middle East**. Radio Free Afghanistan on 1296 kHz, Radio Free Iraq on 1593 kHz, Radio Farda on 1575 kHz, and Radio Sawa on 1170, 1431, and 1548 kHz are all located within this volatile region with high-power transmissions often received well beyond their intended audience.

Libya has returned to AM after operations became intermittent during the Arab Spring uprising. The newly formed Radio Free Libya fully restored AM service on 675, 1053, 1125, and 1449 kHz, although transmissions aren't always exactly on frequency. Measurable offsets at 1053.1 and 1126.507 kHz are listed in the latest mwoffsets data <http://bit.ly/10cLFyz>. Another significant offset signal from Libya has been noted at 690.9 kHz. For DXers these unique offsets can make station identification possible just by accurate frequency measurement without hearing audio.

ZIZ has returned to the AM airwaves at 555 kHz, the last of the split frequency signals that were once common throughout the Caribbean and Latin America.

1520 WSVX AM identifies as Giant 96, relayed by FM translator W243CL on 96.5 MHz in Shelbyville, Indiana.

Cape Town, South Africa boasts a new AM radio station. Afrikaans-language station Radio Kansel is in its first year of broadcasting on 729 kHz <http://www.radiokansel.co.za>. Radio Veritas is another new station that's been on the air for over a year now at 576 kHz, reactivating the former Radio Metro facilities.

TransWorld Radio is reported to be expanding services to South Sudan, which may include new AM operations. TransWorld Radio currently transmits from two key sites in Africa; 1170 Swaziland and 1566 Benin <http://bit.ly/WR2aRU>. The activation of AM radio in South Sudan would create a new AM radio country.

Closer to home, while the overall transition from AM to FM continues in **Canada**, the *mega city* markets of Montreal, Toronto, and Windsor-Detroit are bucking the trend. This year 540 CBEF Windsor and 990 CKGM Montreal completed moves to 1550 and 690 respectively, reactivating clear-channel frequencies previously vacated by the CBC.

Montreal has been especially active with changes to the AM dial. 600, 940, 990, and 1410 kHz in Montreal are expected to be back on the air soon. The CRTC (Canadian agency equivalent of the FCC) has approved a new English news/talk station on 600 along with a French counterpart on 940 kHz.

Radio Fierté, another new station, will serve Montreal's gay community on 990 kHz. Meanwhile the move of CJWI from 1610 to 1410 kHz, the frequency formerly occupied by CFMB, is underway. The WI in the callsign stands for "West Indies" as the station broadcasts primarily Haitian programs. Multicultural CFMB moved to 1280 kHz way back in 1997, replacing French-language CJMS which since returned on 1040 kHz.

Concurrently, it's unfortunate that Quebec City has earned the distinction of largest city in Canada without an AM radio station after 800 CHRC signed off last September. However, Prince Edward Island is currently the only Canadian province without an AM radio station, although the silent three-tower array of 630 CFCY still stands in Charlottetown.

Not Dead Yet

The U.S. isn't the only country where the AM dial remains congested with stations contrary to the dire prognosis by pessimistic industry analysts. AM radio stations are prolific in Asian-Pacific nations such as China, Japan, Philippines, and Thailand, while signals also continue to hold their own from Down Under, and in Latin America countries including Argentina, Brazil, Colombia, and Peru maintain a huge presence.

Still, the poor health of AM radio can't be ignored. The Arbitron ratings service has reported that nearly three out of four radio listeners in the U.S. never tune into AM, and at any given time some 80 percent of radio listeners are tuned to FM. Yet if this global survey of AM radio activity is any indication, "Antique Modulation" won't be going away anytime soon.

– 73 and Good DX – WPC1CAT

660 WFAN in New York City can now be heard on 101.9 WFAN-FM, one of many legacy clear-channel AM stations across the U.S. taking advantage of FCC deregulation of AM/FM simulcast rules.

By Jason Feldman, WPC2COD

ICOM's Newest VHF Marine Transceivers Unveiled

ICOM has introduced its newest iteration of its marine VHF handhelds. The M73 Series, **Photo A**, builds upon ICOM's existing M72 radio platform and includes a "PLUS" version and a basic model.

The M73 Series is IPX8 submersible, transmits 6 watts of high power and retains its predecessor's slim "form factor" design and compact body.

"The M73 handheld's audio can be heard loud and clear in most marine environments—even over loud engine noise," said ICOM America National Marine & Avionics Sales Manager David McLain. "With the M73 PLUS version's built-in 'rewind' feature, replay recorded messages and never miss a call again."

The new M73 Series features 700-mW audio output with additional voice enhancements available in the M73 PLUS version. "Last Call" voice recording/playback automatically saves an incoming call for one minute and can initiate recording manually. The "Bass Boost" function processes low-pitched voice frequency through the radio's speaker, providing a rich bass sound. Active noise canceling improves audio on incoming and outgoing calls by reducing background noise up to 90 percent, according to ICOM.

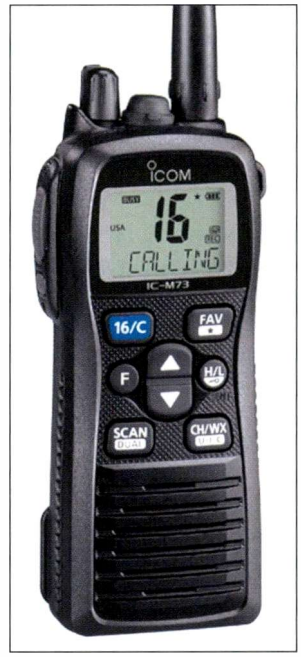


Photo A. The new M73 series of marine VHF handhelds from ICOM feature an hour-glass shaped body and side grips intended for one-hand operation. *(Courtesy of ICOM America)*

The M73 Series utilizes a new interface design with large directional buttons, offering easy access to menu settings and functions. The radios' hourglass body shape and comfortable side grips, coupled with a bright LCD and wide viewing angle, promote one-handed and user-friendly operation. The M73 Series was rigorously tested under extreme environmental factors, meeting MIL-STD 810 specifications. Handhelds can be submersed in 1.5 meters of water for 30 minutes and drains water from the speaker grill with the AquaQuake™ function.

Other features include dual/tri-watch function, favorite channel and tag scanning, and a Li-ion battery supporting 18 hours of typical operation. The M73 Series is compatible with most M72 handheld accessories and includes new accessories such as a 12-volt adapter and different antennas (depending on version). ICOM said the MSRP for the M73 Series starts at $249.99 and will be available with a 3-year waterproof warranty. *(SEE: More information at ICOM's website: <http://www.icomamerica.com>)*

Magnetyze Magnetic Case Now Available for Galaxy S4

BuQu Tech has extended its Magnetyze <http://www.magnetyze.com> line of magnetic-enabled smartphone cases and charging accessories to include the newly introduced Samsung Galaxy S4 smartphone.

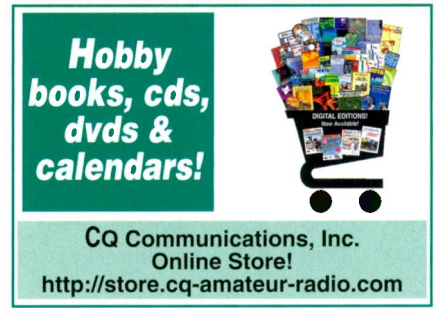
Designed to reflect the sleek look of the Samsung Galaxy S4, the two-part Magnetyze Protective Charging Case provides protection against nicks, bumps and everyday wear and tear.

Like other Magnetyze protective cases, users attach the phone case to the charging desk stand, car charger, or wall charger. The magnetic connection holds the phone in place, eliminating the need for cables, and its 360-degree rotation enables users to continue to charge their phone while it rotates to horizontal or vertical alignment.

The company said it also would offer the Magnetyze Extended Battery Case for the Samsung Galaxy S4, an upgrade that will provide protection while "virtually doubling the phone's battery life."

In addition to offering the same features as other Magnetyze cases, the Magnetyze Extended Battery Case will feature an automatic charging function that eliminates the need for an on/off switch.

Magnetyze by BuQu Tech also eliminates the need for new charging accessories with every smartphone upgrade. When it is time to upgrade to a new smartphone, only the Magnetyze protective case needs to be replaced. The desk stand, car charger, wall charger, magnetic charging cable and other Magnetyze-branded accessories will continue to work with any available Magnetyze smartphone case — Android or iPhone.



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	7205	CPBS, China	CC
0000	4825	Radio Cancao Nova, Brazil	PP
0000	4885	Radio Clube do Para, Brazil	PP
0000	5860	Radio Farda, USA to Iran	Farsi
0000	5580	Radio San Jose, Bolivia	SS
0000	7290	Voice of Russia	
0100	7460	Aap ki Dunyaa/VOA, via Sri Lanka	Urdu
0100	7445	BBC, England	
0100	6160	CKZN, Canada	
0100	5970	Radio Itatiaia, Brazil	PP
0100	9820	Radio 9 de Julho, Brazil	PP
0100	7325	Radio Romania International	
0200	4815	Radio El Buen Pastor, Ecuador	SS
0200	5025	Radio Rebelde, Cuba	SS
0200	6050	HCJB, Ecuador	QQ
0200	7200	Radio Omdurman, Sudan	AA
0200	5952	Radio Pio Doce, Bolivia	SS
0200	5035	Radio Aparecida, Brazil	PP
0200	11710	Radio Argentina al Exterior	SS,
0200	3375	Radio Cultura, Brazil	PP
0200	3350	Radio Exterior de Espana, Costa Rica Relay	SS
0200	7305	Vatican Radio	
0200	5110	WBCQ, Maine	
0300	7240	Adventist World Radio, via Germany	Bengali
0300	12070	BBC, Ascension Is.Relay	
0300	6040	BBC, Cyprus Relay	AA
0300	7435	BBC, Seychelles Relay	
0300	685	Galei Zahal, Israel	HH
0300	6010	La Voz de su Concencia, Colombia	SS
0300	4780	Radio Djibouti	AA
0300	6185	Radio Educacion, Mexico	SS
0300	6165	Radio Nacional Tchadienne, Chad	FF
0300	332o	Radio Sondergrense, South Africa	Afrikaans
0300	4055	Radio Verdad, Gutemala	SS
0300	4915	Radiodifusora Macapa, Brazil	PP
0300	4890	Rado Vision, Peru	SS
0300	4775	TWR, Swaziland	
0300	4930	VOA Relay, Botswana	
0300	13570	WINB, Pennsylvania	
0400	12015	BBC, via Souh Africa	
0400	4990	Radio Apinte, Suriname	Dutrch, local
0400	6090	Radio Amhara, Ethiopia	Amharic
0400	5865	Radio Algerienne, via France	AA
0400	5010	Radio Madagasikara, Madagascar	Malagassy
0400	11780	Radio Nacioanal Amazonia, Brazil	PP
0400	4950	Radio Nacional, Angola	PP
0400	11690	Radio Okapi, Congo, via South Africa	
0400	7240	Voice of Turkey	
0400	5085	WTWW, Tennessee	
0500	5910	Al Caravan Radio, Colombia	SS
0500	9800	Deutsche Welle, Germany, Rwanda Relay	
0500	5005	Radio Nacional, Equatorial Guinea	SS
0500	11605	Radio France Intl, via South Africa	
0500	7320	Radio Rossii, Russia	RR
0500	7175	Voice of Greece	Greek
0600	11725	Radio New Zealand International	
0600	4895	Radio Novo Termpo, Brazil	PP
0600	5040	Radio Havana Cuba	SS
0600	5995	Radio TV Malienne, Mali	vernacular
0900	4826	Radio Sicuani, Peru	SS
0900	4805	Radio Difusora Amazonas, Brazil	PP
z-0900	4790	Radio Lipez, Bolivia	SS
1000	3380	Centro Radio. Ecuador	SS
1000	4824	La Voz de la Selva, Peru	SS
1000	3330	Ondas del Huallaga, Peru	SS
1000	4955	Radio Cultural Amuata, Peru	SS
1000	4747	Radio Huanta 2000, Peru	SS
1000	5040	Radio Libertad, Peru	SS
1000	4810	Radio Logos, Peru	SS
1000	3310	Radio Mosoj Chaski, Bolivia	SS
1000	6105	Radio Panamericana, Bolivia	SS
1000	4700	Radio San Miguel, Bolivia	SS
1000	4461	Radio Santa Ana, Bolivia	SS
1000	4775	Radio Tarma, Peru	SS
1000	4747	Radio Yura, Bolivia	SS
1000	6135	Radio Santa Cruz, Bolivia	SS
1000	6170	Voice of Korea, North Korea	
1000	2085	Voice of Mongolia	CC

UTC	Freq.	Station/Country	Notes
1000	4985	Voz Cristiana, Peru	SS
1100	4750	Bangladesh Betar	Bengali
1100	6173	Radio Tawantinsuyo, Peru	SS
1100	4781	Radio Oriental, Ecuador	SS
1100	5155	Radio Fides, Bolivia	SS
1100	4750	RRI Makassar, Indonesia	II
1100	5020	Solomon Is. Broadcastiong Corp.	
1100	4750	The Cross, Microneisa	
1100	2485	VL8K, Australia	
1100	2325	VL8T, Australia	
1200	3925	Radio Nikkei, Japan	JJ
1200	9920	Far East Broadcasting, Phillipines	unid
1200	15190	NHK/Radio Japan	
1200	9580	Radio Australia	
1200	5740	Radio Marti, USA	
1200	11570	Radio Pakistan	CC
1200	7110	Thazin Radio, Myanmar	Burmese
1200	5900	Voice of Russia	
1200	4840	Voice of the Strait, China	
1200	7220	Voice of Vietnam	RR
1200	5060	Xinjiang PBS, China	CC
1300	13530	Firedrake jammer, China	
1300	11520	Firedrake jammer, Chnia	
1300	9950	Fursato no Kaze, Taiwan to North Korea	JJ
1300	15150	Islamic Republic of Iran Broadcasting	
1300	15575	KBS World Radio, South Korea	
1300	6130	Lao National Radio	Lao
1300	9920	T8WH, Palau	
1300	15675	Trans World Radio, Guam	Khmer
1300	4835	VL8A, Australia	
1300	11710	Voice of Korea, North Korea	
1300	11550	WEWN, Alabama	SS
1400	9870	All India Radio	Hindi
1400	11685	BBC, Singapore Relay	
1400	17615	BSKSA, Saudi Arabia	AA
1400	11510	Denge Kurdistani	
1400	9850	KCBS, North Korea	KK
1400	9615	KNLS, Alaska	Mandarin
1400	11945	Radio Australia	
1400	11720	Radio Belarus	RR
1400	17595	Radio Exterior Espana, Spain	SS
1400	15385	Radio Exterior Espana, Spain	SS
1400	15436	Radio Nacional Arcangel, Antarctica	SS
1400	17675	Radio New Zealand	
1400	15170	Radio Romnia International	Romanian
1400	11915	Radio Veritas Asia, Philippines	Bengali
1400	15560	Radio Sultanate of Oman	
1400	9975	Trans World Radio, Guam	Mandarin
1500	15190	Radio Africa, Equatorial Guinea	
1500	9345	Far East Broadcasting, Philippines	Mandarin
1500	15850	Galei Zahal, Israel	HH
1500	15340	HCJB Global, Australia	
1500	15525	Islamic Republic of Iran Broadcasting	
1500	11595	Kol Israel	Farsi
1500	15320	Radio Veritas Asia, Philippines	AA
1500	9579	Radio Medi Un, Morocco	FF
1500	15120	Voice of Nigeria	
1500	99445	Voice of America, Sri Lanka Relay	
1600	15205	BSKSA, Saudi Arabia	AA
1600	15345	Radio Cairo, Egypt	
1600	15535	Radio Dabanga, via Vatican	AA
1600	13725	Radio Free Asia, Northern Marianas Relay	Mandarin
1600	9835	The Mighty KBC, Netherlands, via Bulgaria	
1600	12015	Voice of Korea, North Korea	FF
1600	11680	Voice of Turkey	Dari
1700	15225	BSKSA, Saudi Arabia	AA
1700	15235	Channel Africa, South Africa	
1700	9690	Radio Romania International	FF
1700	11600	Radio Libye, Libya	FF
1800	11955	Radio Algerienne, via France	AA
1800	11615	Radio Damal/V of Somali People, via England	Somali
1800	15540	Radio Kuwait	
1800	11730	Voice of Turkey	
1900	11670	All India Radio	
1900	9395	Radio Algerienne, Algeria, via France	AA
1900	15190	Radio Inconfidencia, Brazil	PP
1900	9805	Radio Taiwan Intl, via UAE	FF
1900	9755	Vatican Radio	
1900	15580	VOA Relay, Botswana	
1900	9400	Voice of Russia	FF
2000	11735	Radio Tanzania, Zanzibar	Swahili
2100	11670	All India Radio	
2100	9800	Deutsche Welle, Germany, Rwanda Relay	
2100	7290	Radio PMR, Moldova	
2100	7465	Radio Tirana, Albania	
2100	9645	Voice of Germany, Rwanda Relay	
2200	4319u	AFN/AFRTS, Diego Garcia	
2200	9580	Africa No. One, Gabon	FF
2200	9910	All India Radio	
2200	7550	All India Radio	
2200	11620	All India Radio	
2200	9915	BBC, Ascension Is. Relay	
2200	11820	BSKSA, Saudi Arabia	AA
2200	6100	International Radio of Serbia	
2200	3955	KBS World Radio, South Korea, via England	
2200	11855	Radio Aparecida, Brazil	PP
2200	15440	Radio Taiwan International, via Florida	
2200	7580	Sound of Hope, Taiwan, via Uzbekistan	Mandarin
2200	9450	Sound of Hope, Taiwan	Mandarin
2200	11765	Super Radio Deus e Amor, Brazil	PP
2200	4976	UBC Radio, Uganda	
2200	7255	Voice of Nigeria	
2200	11830	Voice of Russia	
2200	9395	Voice of Russia, via Armenia	
2200	9665	Voz Missionaria, Brazil	PP
2230	4985	Radio Brazil Central	PP
2300	4409	Radio Eco, Bolivia	SS
2300	9645	Radio Banderientes, Brazil	PP
2300	7450	Radio Makedonas, Greece	Greek
2300	9720	Radio Veritas Asia, Philippines	Burmese

High Expectations: Scanning for Those Aircraft 'At Altitude'

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

In the last 110 years of aviation, we've seen how flight has progressed from short, dangerous, low-level excursions to upper-altitude, high-speed travel — from navigation using bonfires, following railroad tracks, and primitive radio beacons, to global positioning systems.

As noted in previous installments of *Plane Sense* — and it's really a *no brainer* — paper maps are *still critical* in aviation navigation and, by association, *communication.*

This month we focus on aviation maps for upper-altitude flying, **Photo A**. These flights are

"Paper maps are still critical in aviation navigation, and by association, communication. Having them on hand will help you to understand what you're hearing "

Photo A. In some parts of the world, high-altitude flight can account for some pretty crowded skies. This photograph was taken near Frankfurt, Germany, showing the high volume of traffic in the region. *(Courtesy of Prashanta via Wikimedia Commons)*

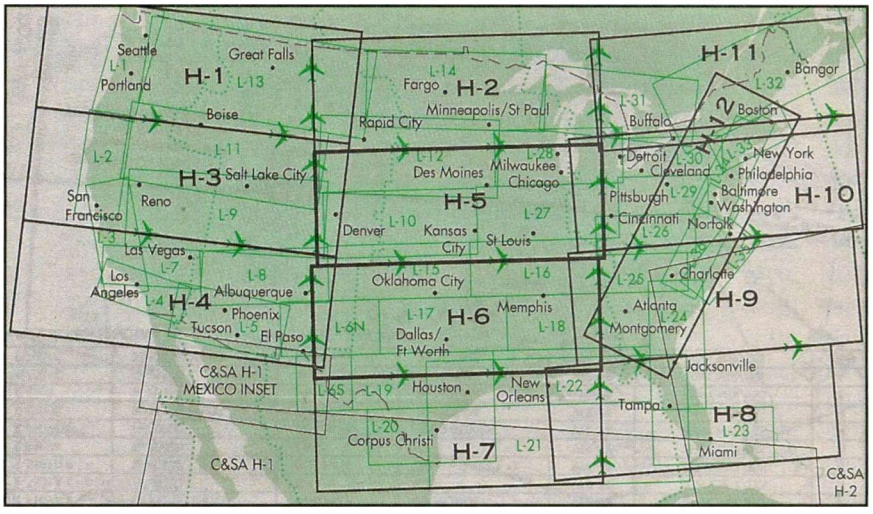


Figure 1

at and above 18,000 feet (flight level 180), and up-to-and-including 60,000 feet (flight level 600). They use *IFR Enroute High Altitude* charts, **Figure 1**.

These are for pilots flying under instrument flight rules (IFR) only. No visual flight rule flying is allowed. All pilots must be under total control of air traffic. And since the flying is above 18,000 feet, the air traffic controllers involved are from the various centers throughout the country.

Blanket Coverage

Like *IFR Enroute Low Altitude* charts the high-altitude charts cover the entire country. But unlike the low altitude, all the upper level charts (save one — H12) are of the same scale — 1 inch to 20 nautical miles. So, like the sectional charts, these charts can be taped together to make one of the whole country.

Again, you'd need one large wall — about six by 12 feet. If you decide to tape a couple maps together, on the edges are what appear to be green silhouettes of jet aircraft. They mysteriously seem to line up on adjacent maps. *Hmmmmmm.*

Because of the scale of the charts, normally one is all you'd need if your area of monitoring is the upper altitudes. Again you'll need two or more if you live near an edge of one of the maps, say near Denver or Chicago. But again, they are all the same scale.

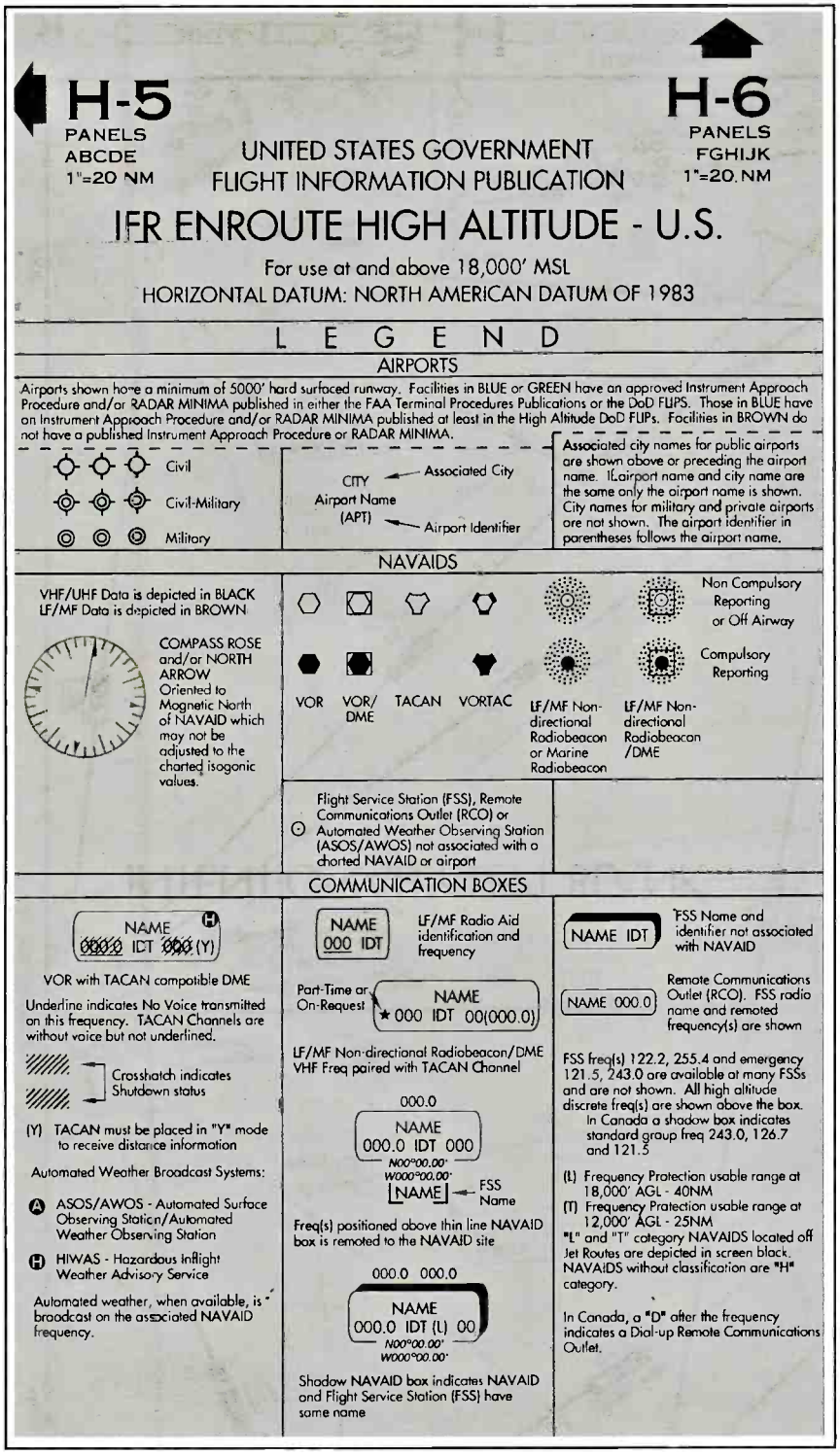


Figure 2

VHF High-Altitude Monitoring Frequencies

Because these charts are all enroute and not terminal charts, they don't display a whole lot of frequencies — but there are a few. On the bottom portion of **Figure 2** under the banner COMMUNICATIONS BOXES is the legend for the frequencies and how to read them.

*(**NOTE:** The upper two-thirds of **Figure 2** is almost identical to the IFR En-route Low Altitude charts discussed in April's "Plane Sense" — including the interpretation of the airport information and NAVAIDs. Please see "Monitor the Bouncing Flight Path — IFR in the L Region" on page 49 in April's Pop'Comm for more details. – KPC4KGC)*

As noted, the flight-service frequencies 122.2 and 255.4 MHz, as well as emergency frequencies 121.5 and 243.0 MHz are not published on the maps. Likewise, the Canadian frequencies, if applicable, of 126.7, 121.5, and 243.0 MHz are not published if there is a shadow box around the name of the remote communications outlet.

Any Flight Watch frequencies for high-altitude aircraft are published in a portion of the legend. In the case of the H5 and H6 charts in our example — which cover Wyoming to Texas on the west to Wisconsin to Florida on the east — the frequencies associated with the ARTCCs (Air Route Traffic Control Centers) are given. There is only one frequency per center, **Figure 3**.

Twelve centers are associated with these two particular charts: Albuquerque, Atlanta, Chicago, Cleveland, Denver, Fort Worth, Houston, Indianapolis, Jacksonville, Kansas City, Memphis, and Minneapolis. Please do not be alarmed

HIGH ALTITUDE ENROUTE FLIGHT ADVISORY SERVICE - FLIGHT WATCH

ARTCC	IDENT	HA-EFAS	ARTCC	IDENT	HA-EFAS	ARTCC	IDENT	HA-EFAS	ARTCC	IDENT	HA-EFAS
Albuquerque	ZAB	127.625	Cleveland	ZOB	135.425	Houston	ZHU	126.625	Kansas City	ZKC	123.625
Atlanta	ZTL	135.475	Denver	ZDV	124.675	Indianapolis	ZID	134.825	Memphis	ZME	133.675
Chicago	ZAU	134.875	Fort Worth	ZFW	133.775	Jacksonville	ZJX	134.175	Minneapolis	ZMP	135.675

Figure 3

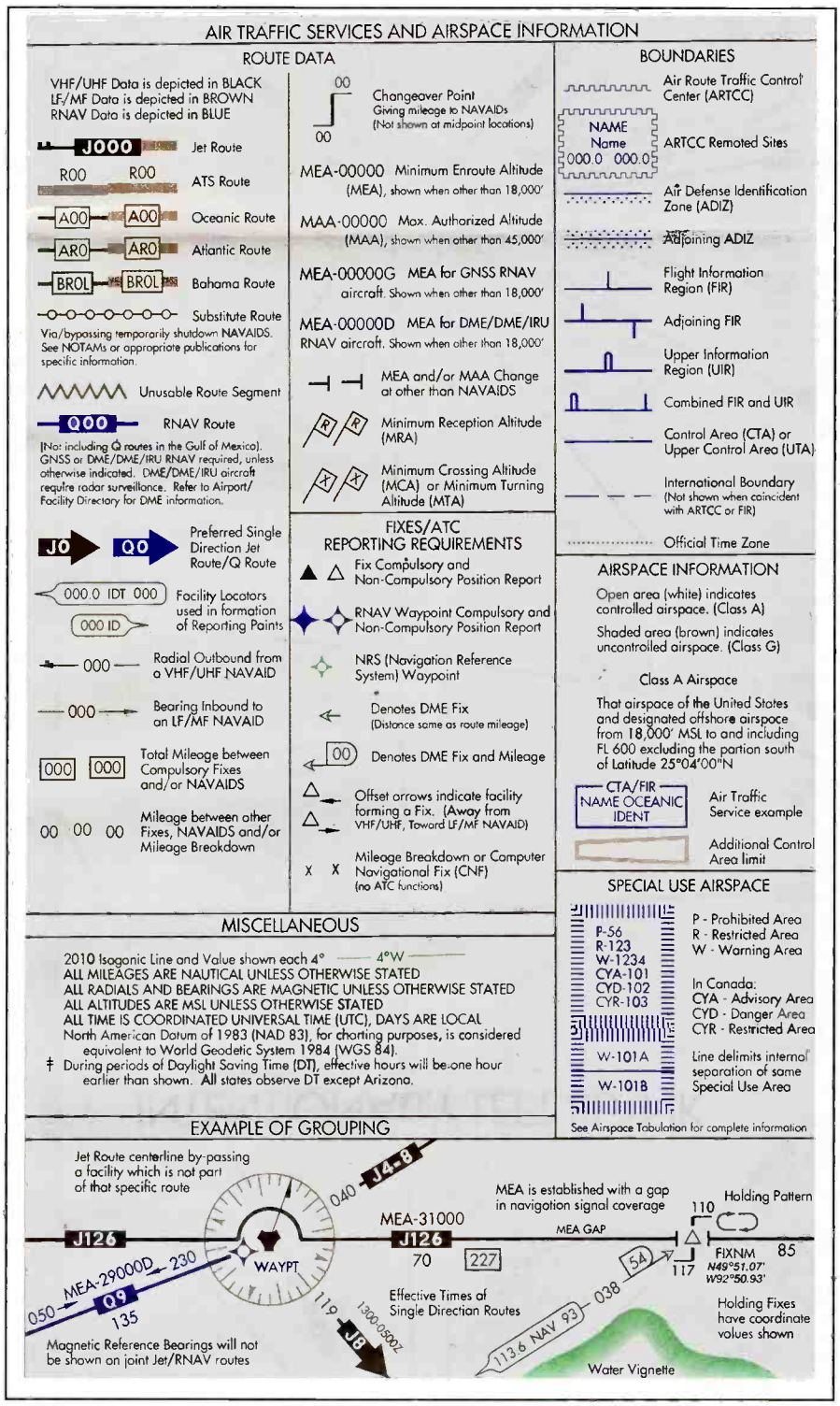


Figure 4

that other center Flight Watch frequencies aren't there. After all, you wouldn't expect Boston center frequencies on the Seattle charts, would you?

Focus on the Pertinent Information

Don't worry about trying to understand all you see on the map. **Figure 4** gives you the codes on how to determine the airway route structure.

One thing to note in the EXAMPLE OF GROUPING segment at the bottom of **Figure 4**, you'll notice jet airway J126 looks like it does an arc to the north around the VORTAC (VHF Omnidirectional Range Station with Tactical Air Navigation) named "WAYPT."

Actually, there is no arc the pilot flies. This is an indication that while the airway appears to fly over the NAVAID, it in fact does not and is just to say to the pilot, "stay on the airway and fly straight. The NAVAID doesn't concern you and just ignore it."

You'll also notice two primary routes at altitude in **Figure 5** — J and Q. J routes, which you'd assume would stand for jet routes — *which they do* — are not pronounced JET or the ICAO (International Civial Aviation Organization) pronunciation JULIET. It is pronounced JAY. You may hear pilots refer to the route in the example as "JET ONE TWO SIX," but it's really "JAY ONE TWO SIX." Jet routes utilize the VORs (VHF Omnidirectional Range navigation), TACANs (Tactical Air Navigation), and VORTACs primarily for navigation, though some pilots will ignore the ground based transmitters and substitute the use of GPS.

The Q routes use GPS/GNSS (Global Navigation Satellite) systems. *(**NOTE:** I won't be going into the GNSS system at this time. This Russian operated system is very similar to the GPS. – KPC4KGC)*

Diving Into Some Map Details

Q (pronounced *CUE*, as in cueball) routes are shown in blue and rarely use

F-4 Phantom Blue Angels & Thunderbirds

Photo B. In this vintage footage, watch the U.S. Air Force Thunderbirds and U.S. Navy Blue Angels flight demonstration teams in action using the F-4 Phantom jet fighter <http://bit.ly/16VThuv>. *(Internet screen grab)*

the same fixes as the regular J routes. A rare example where this occurs is found in **Figure 5**. There you see the Pueblo (PUB) VORTAC with J28 running east/west.

You also notice Q128 running almost parallel to J28 and actually crossing at the FLOOD intersection some 32 nautical miles almost due west of PUB on the 262 radial. The map can be deceiving at this point as Q128 runs due east (magnetically) from FLOOD (090 degrees) and bends ever-so-slightly west of FLOOD (268 degrees). FLOOD is on J28 with a bearing (magnetically) of 082 degrees to PUB.

Continue north of PUB on J17 north through the spaghetti routes in the Denver area and you'll see it flies over the Falcon (FQF) VORTAC and joins J13 there. They both continue north over the areas of the Denver (DEN) VOR/DME and Mile High (DVV) VORTAC. These airways do not use DEN or DVV, but bypass both, using the mini arc described earlier around DVV.

Looking at the blocks around Denver, **Figure 6** — which appear as little blue castle walls — you can see the frequencies for Denver ARTCC (KZDV). If a pilot misses a frequency change, a quick glance of the map shows a frequency he or she would probably be on. At the very least, the pilot could contact the center on these frequencies to get the correct one. Southwest of Denver are the frequencies of 126.5 and 371.85 MHz.

In Summary

As you can see, maps like this can be a boon if your interest is in aircraft flying at what controllers call "altitude." I hope that these last few articles give you an idea what valuable information can be at your fingertips to enhance your aviation scanning.

Humor: A One-Jet Airshow, 30+ Years Ago

For a long time, I've enjoyed going to air shows. I've seen the U.S. Air Force Thunderbirds with the F-4 Phantom, T-38 Talon, and the F-16 Falcon. I've seen the U.S. Navy Blue Angles with their F-4 Phantom, A-4 Skyhawk, and the F-18 Hornet. And I'll date myself by saying I remember the Blue Angels F-11 Tiger.

During the gas "crisis" of the 1970's the Air Force decided to keep the T-Bird demonstration team flying but had to save a few bucks. Instead of the F-4, they opted for the more fuel conservative T-38.

In my opinion, it was a mistake. While the T-38 is a supersonic trainer, it was that — a trainer. It didn't have the size, much less the charisma, of the F-4 Phantom, **Photo B**.

In 1976 the Thunderbirds were doing their aerial show with the T-38s. Good

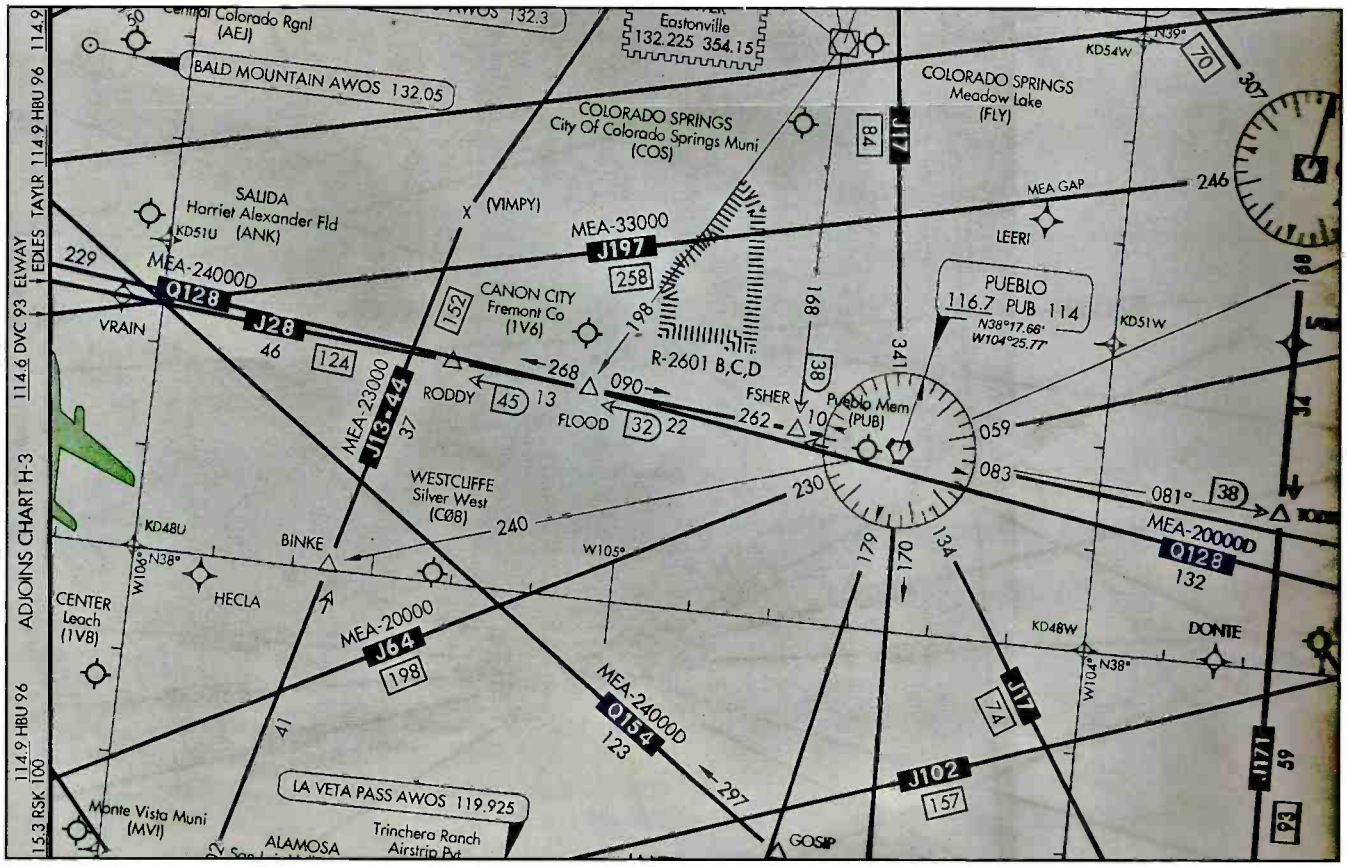


Figure 5

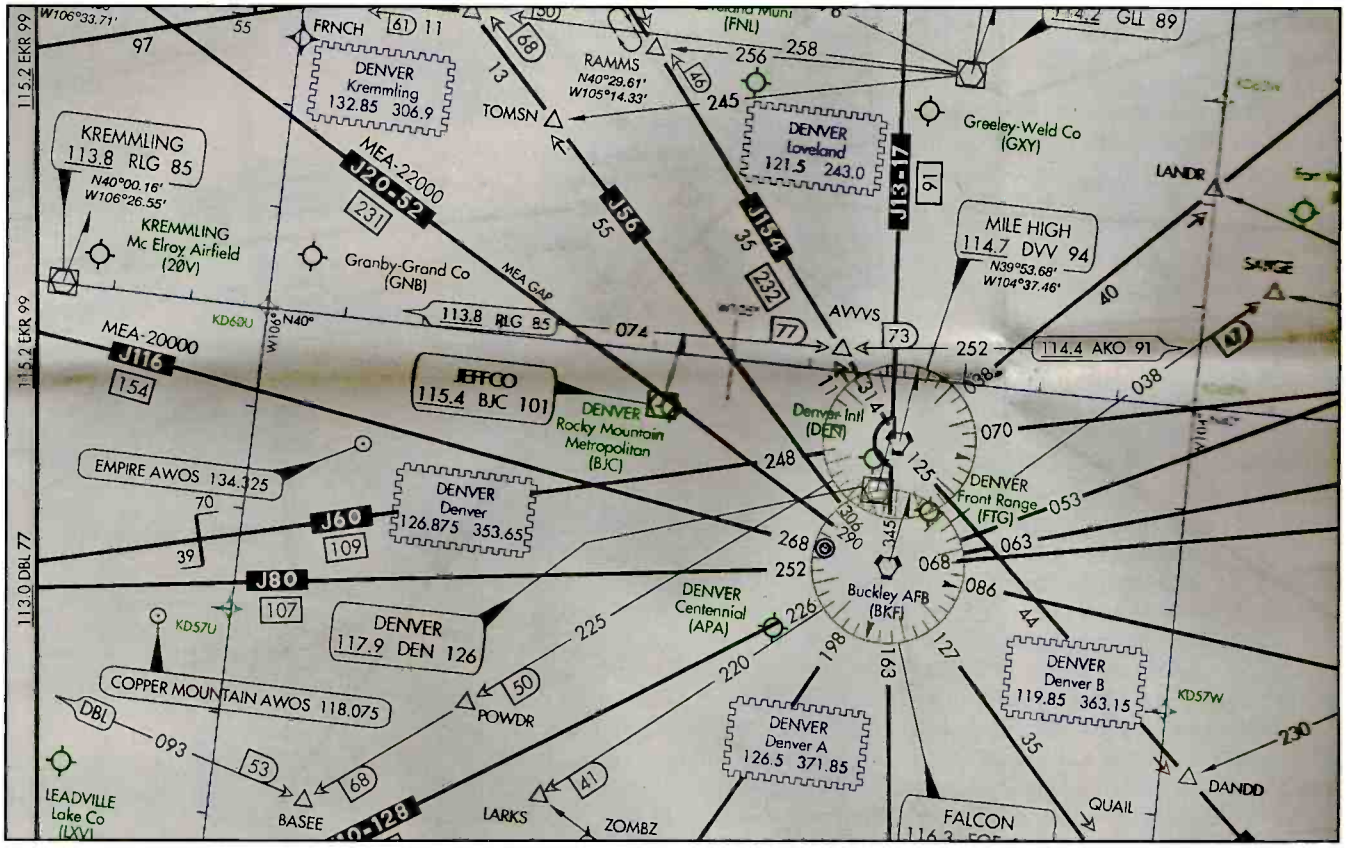


Figure 6

flying, but not impressive flying. Face it — the Talon is just *too small* to be seen. And it sure doesn't sound like an F-4.

When the show was over, all the static display aircraft were departing — including a KC-135, B-52, and others. There was one F-4 Phantom.

Most of the local civilians had left the base while some of us stragglers watched the aircraft leave. We believe it was a squadron commander flying his F-4 home, but when he left he requested a full-burn, max-performance climb from the runway up to flight level 240. It was approved.

When he departed, he went *full afterburner* and released his brakes. As soon as he got airspeed he pulled the nose up ever so slightly, folded his gear, went down the runway about 10 feet off the asphalt, got to the end of runway 31C pulled the nose up to full vertical and barrel-rolled the jet straight up to 24,000 feet. It was well worth the wait to see one jet outdo the entire Thunderbird show. I'm smiling as I write this.

Coming Up

Next month we go into the mailbag to discuss many of the questions, observations, and suggestion you've relayed about Plane Sense. I'm sorry I haven't answered anyone individually, but we'll try to catch up in July's edition. Until then, keep your feet on the ground, and your scanner on the sky.

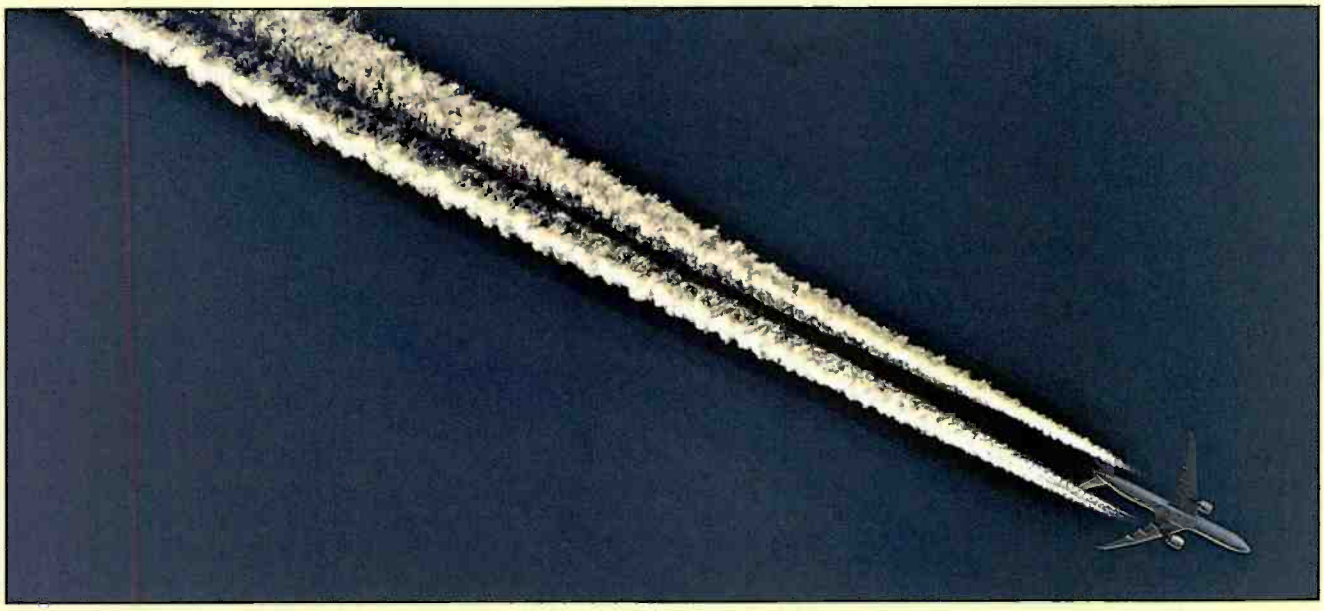


Photo C. It's often easy to know whether high-altitude aircraft are in your scanning area. *Simply look up.* Contrails are certainly a good indicator. *(Courtesy of Berit of Redhill / Surrey UK via Wikimedia Commons)*

Grab Your Scanner and Listen 'Up!'

While we're getting into *what* you'll likely be hearing, here's a little tutorial on *where* to listen.

To find aviation frequencies specific to your local airport you'll need a scanner that covers from 118.0 to 135.975 MHz.

If you'd rather listen online, you're in luck. There are many websites from which to choose. Here are a couple to get you going: <http://www.liveatc.net> and <http://www.radioreference.com>.

Often, you'll need to know the ARTCC (Air Route Traffic Control Center) code for the airport you're interested monitoring. A comprehensive list of codes for facilities around the world can be found at <http://bit.ly/MGUk8P>. Use the IATA Code (International Air Transport Association) search function to find the ARTCC code for the airport you're seeking.

Here are some basic frequencies in MHz to keep handy:

- 121.5 – Emergency (Pilot voice communications and emergency locator beacons)
- 122.750 MHz – General aviation air-to-air communications
- 123.025 MHz – Helicopter air-to-air communications
- 123.450 MHz – Airlines air-to-air communications
- Scan 122.0-123.65 – Unicom (uncontrolled airports) and air-to-air communications
- Scan 128.825-132.000 – For call-ahead frequencies for airlines, corporate aviation, and general aviation for fuel, parking, and other requests

An excellent source for local scanning is the FAA publication *Airport/Facility Directory (A/FD).* There are seven published by the FAA covering the lower 48 states, Puerto Rico, and the U.S. Virgin Islands. There are two orange books, as well: One for Alaska and another for Hawaii.

They are published every eight weeks and while each edition updates its frequencies, there's really no need to get each one as printed. Each one currently sells for $5.30. You can get them at most airports that have pilot training. Larger airports, such as Atlanta Hartsfield, Denver International, John F. Kennedy International, and so on, don't carry them. – *KPC4KGC*

Portable Power: It's Not Just for Field Day!

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

"'Field power' skills and techniques are directly applicable to any power outage, and the benefits go well beyond a weekend of fun and camaraderie."

It is somewhat hard to believe that the impact of last fall's Hurricane Sandy is still being felt by thousands of beleaguered East Coast residents. With a 1,100-mile diameter and 100-mile-an-hour winds, Sandy killed hundreds of people and did billions of dollars in damage. As we could sadly see after the storm's immediate effects, destroyed infrastructure and protracted power outages were widespread.

As always, ham radio operators responded immediately and provided emergency communications and volunteer rescue labor as necessary. It's what many of us train for, and it is part of the reason amateur radio exists in the first place. Ham radio's big annual emergency-preparedness event, ARRL Field Day — June 22-23 this year, and annually the fourth full weekend of June — is a fun, friendly, competitive way to test our "away from home" operating skills and learn about "field ops," a large part of which is emergency power. These "field power" skills and techniques are directly applicable to any power outage, local, regional or national, and the benefit to family, friends, and neighbors goes well beyond an annual weekend of fun and camaraderie.

This Yamaha EF1000iS inverter generator represents modern, high-quality portable power solutions. Rated at 900-watts continuous (1-kilowatt maximum), the little Yamaha (about $799) outputs clean, on-frequency AC power, runs for up to 12 hours without refueling and, when running, can barely be heard from only a few feet away. Not bad for a 27-pound unit! *(Courtesy of Yamaha Motor Corporation, USA)*

Over the past 10 years — much like ham gear — portable generators have become tiny, lightweight, powerful, portable, reliable, and relatively inexpensive. Through the use of inverter technology they can provide silky-smooth AC, which you'll really appreciate, especially if you've ever fried delicate electronics because your generator was putting out a 150-volt, 50-Hz "modified sine wave."

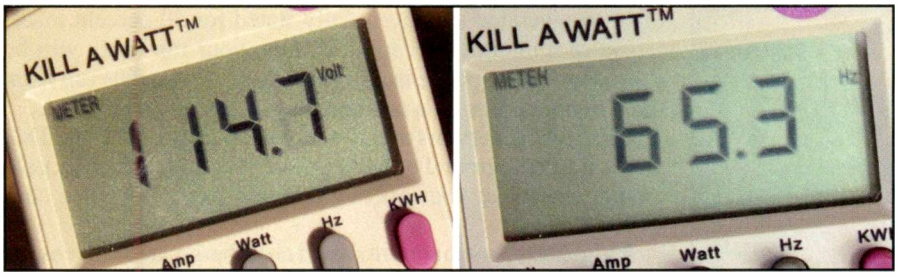
Modern Generators

Conventional generators are basically motors that are operating "backward." When you apply electricity to a motor, the motor shaft turns, allowing it to do work. If you need more torque, add more electricity or wind bigger motor coils.

If you take the same motor and physically rotate its shaft, it generates electricity. Turn the shaft faster or slower and the voltage increases and decreases proportionally. All motors are generators and all generators are motors. Because production units are optimized for specific applications, however, motors aren't efficient generators, and vice versa, but the principles still apply.

Conventional portable generators use small gas-powered engines to turn AC alternators — like those in cars — the voltage and frequency of which depends on rotational speed. If the engine is running at the correct speed, the voltage and frequency of the AC output will be a 120-volt AC sine wave with a frequency of 60 Hz — just like the power company. Most small units use two-pole armatures that run at 3,600 RPM to produce a 60-Hz sine wave. Diesel- or tractor-powered generators, with more torque, often run at 1,800 RPM.

Stabilizing voltage and frequency can be a challenge, because conventional generators must turn at a specific RPM to maintain output regulation. So when more AC power is drawn from the generator, the engine must immediately supply more torque — it can't simply spin faster to supply the extra energy. To accommodate this need, most low-cost units use mechanical or vacuum "governors" to keep the generator shaft turning at the correct speed. More sophisticated models use electronic automatic voltage regulation (AVR) systems that use microprocessors and dedicated windings in the generator core to help regulate out-

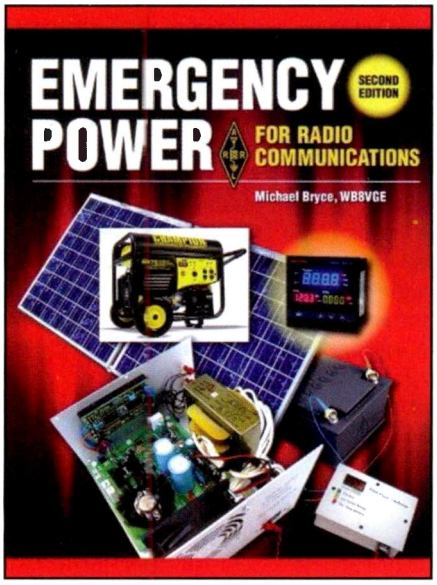


When powering a 500-watt halogen work light, my 15-year-old AVR-style generator puts out 114.7 volts at 65.3 Hz! This summer, when the weather warms up, I plan to see if those numbers can be brought up to specifications with a little judicious wrenching. The P3 KILL A WATT meter shown here costs less than $20 <http://www.meritline.com>. It's great for testing generators and for measuring the power consumption of computers, appliances, and other household devices. *(Courtesy of KPCØZZZ)*

put. AVR generators, once top of the line, are mostly used in RVs or other large devices that can't practically use inverters to maintain regulation.

So Many Choices

Arguably, the best generators for powering expensive computers and ham rigs are modern "inverter generators," now available in 1- to 5-kilowatt sizes. In addition to mechanical governors, these newer units use a built-in AC-DC-AC inverter system that produces clean 60-Hz sine waves at 120-volts AC, with a spectacular 1 to 2 percent tolerance, even under varying load conditions. ***(NOTE:*** *My power company can't even do that! – KPCØZZZ)*



Now in its second edition, *Emergency Power for Radio Communications,* by Michael Bryce, WB8VGE, provides an in-depth look at inverter generators and other power-generation systems — wind, solar, and water — that are practical for hams seeking Field Day power, emergency backup, or complete energy freedom. Bryce, a long-time ham, has years of experience with alternative power systems, and writes for DIY readers, not industry engineers. *(Courtesy of KPCØZZZ)*

Instead of using the usual two windings in the generator core, inverter designs use 24 or more windings, each paired with multiple rare-earth magnets, to produce high-frequency AC, up to 20 kHz. A solid-state inverter module converts the high-frequency AC to smooth DC, which is in turn converted back to clean, tightly regulated 120-volt AC power — the kind your delicate, expensive hardware will really appreciate!

Without proper constraints, however, high-frequency AC can cause a lot of RF noise — commonly referred to as *hash* — in radio applications, and some inverter units are noisy, especially at HF. What's worse, some HF transceivers are especially susceptible to AC hash/ripple on their DC power inputs, making troubleshooting between makes and models sometimes difficult.

Models that seem perfectly quiet to some users sound like spark-gap transmitters to others. And significant variations in RF/AC noise characteristics between different units of the same model have also been observed. The same goes for transceivers. In the end, the only way to be sure is to do your own tests with your own gear.

When I was in the market, I took my radios to a local store to test various generators. Luckily, I didn't have any AC noise issues with my gear on any of the units I powered up, but it was nice to know that I could return or exchange any particular unit if it became an issue. Local vendors will be much more likely to accommodate this than online sellers.

Possible noise issues aside, inverter generators are compact, lightweight, and amazingly quiet, and once you've used them you'll find it difficult or impossible to switch back. The smallest handheld units put out a kilowatt of perfect AC power at sound levels no louder than that of a normal conversation. You no longer have to hide your generator in a faraway ravine or behind a plywood sound shield.

Insider Tips

Inexpensive, non-inverter generators are intended to power lights, saws, drills, and stuff that can reliably be run on "junk power." You risk destroying your expensive equipment if you power it directly from this type of generator! Home improvement stores sell these *little wonders,* claiming that they put out 750 watts of AC power, weigh about as much as a gallon of milk and cost as little as $99. *Danger!*

If you must use these *chainsaw engine mini gens* — and can tolerate the considerable noise — find one that has a high-amperage, 13.8-volt DC output for charging batteries. Bring two deep-cycle batteries to your Field Day site and use one while charging the other, swapping batteries as necessary, that way your precious radio gear will escape unscathed.

Managing the Load

To safely power all of your devices, choose a unit that provides at least 30 percent more power than you need. Electric motors take a lot more power to start than they do to run. A 500-watt motor may take 1,500 watts to start. Think: RV air conditioners. Don't run your genset (an electric generator located near the end user) at maximum capacity for extended periods.

Inexpensive generators are usually powered by low-quality, lawnmower-style engines that are noisy, need frequent servicing, and often die young. Better models have overhead-valve (OHV) or overhead-cam (OHC) engines, pressure lubrication, low-oil shutdown, cast-iron cylinder sleeves, oil filters, and electronic ignition systems. They cost more, but usually last much longer.

Although smaller units have small gas tanks, they don't necessarily need more frequent refueling. Some small generators are super-efficient and may run for half a day or more while powering small loads.

Caveat Emptor

Marketing being what it is, the run times listed for a particular model are

Gasoline-powered generators come in all shapes and sizes. Be sure to do your homework before using one to assure that it meets your power and purity requirements to safely power your radio gear cleanly and quietly. *(Courtesy of en:User:Gbleem via Wikimedia Commons)*

often exaggerated and are usually stated for 50 percent loads. If you're running closer to maximum, your run times will be degraded. The opposite is also true. Typically models run from three to nine hours on a full tank of gas at a 50 percent load.

Old-style generators are always *too loud.* If your Field Day site is at a campground or other public space, non-inverter generators can make your operation sound like a high-rise construction site.

RV gensets, in sound-dampened chambers, can be much quieter than typical "outside" models, but they're expensive, heavy, use more fuel and often don't have regulation specifications on par with inverter models — which you may not even notice unless you see them in operation.

Adding a computer-style uninterruptable power supply (UPS) to the output of your old-style generator to add high-quality regulation almost never works. Most UPSs can't handle the wide variations in frequency and voltage when powered by conventional generators and constantly switch in and out of battery-power mode. Some don't ever switch back to AC power. When the UPS battery dies — or the unit fries from constant load switching — the UPS shuts off. Just buy an inverter generator and be done with it, but if you're determined to try a UPS, test it at home before heading to the field.

Some generators have 12-volt DC outputs for charging batteries. Be sure to test these outputs for voltage stability under load, and ripple. Car batteries aren't too fussy about a little ripple, but your radio might not like it at all. Be safe, not sorry.

Safety First

- Before firing up your new generator — inverter or otherwise — read the user manual carefully. Make sure the engine has oil. Many of them are shipped dry and expect users to add oil before starting the engine.
- Make sure you understand how the unit operates and how to use the receptacles, circuit breakers, and connectors.
- Never use your generator indoors, in closed spaces, inside passenger vans, or in covered pickup beds. If rain is a possibility, set up a canopy or other outdoor protective structure. Keep power cords clean and dry. Stay away from buildings and keep the gas can at a safe distance.
- Don't touch hot engines or mufflers! When refueling, shut down the generator and let things cool off for a few minutes. Don't smoke, and don't spill gasoline onto hot engine parts. Keep a fire extinguisher nearby.
- Before starting or restarting the engine, disconnect all electrical loads. Starting the unit while loads are connected may damage the generator and any attached solid-state devices, including your expensive radios.

Know What You're Being Dealt

To be safe, test your generator's output voltage and frequency before connecting loads. P3 International's popular KILL-A-WATT AC power meter, often available for less than $20 from <http://www.meritline.com> and other online sources, is inexpensive and handy for measuring AC frequency, voltage, and the power consumed by downstream devices. Be sure to test your generator under load — I use high-wattage halogen lights — as outputs typically vary between loaded and unloaded conditions.

Today's inverter generators are quiet, pocket-sized marvels that are on par with contemporary pocket-sized radios. Do your homework and get one that's right for your needs. You won't be sorry!

A Tribute to His Military Unit in Iraq

For WPC9FST, This Pop'Comm Monitoring ID Is a Salute

By Richard Fisher, KPC6PC

"In joining the Pop'Comm Monitoring Station community, you're sharing great remembrances of first or early listening experiences, monitoring interests, goals, and aspirations"

Shortwave listeners, AM and FM broadcast band DXers, and scanner monitors from around the world are continuing to line up to get onboard the *Pop'Comm Monitoring Station* program.

PCMS Director of Registration and Associate *Pop'Comm* Editor Jason Feldman, WPC2COD, processes your ID requests and collects your recollections describing what brought, or brings you to the fascinating world of monitoring. As always, we're impressed and amazed.

For example, this month, we heard from Scott Young, WPC9FST, who has a warm place in his heart for the 912th Forward Surgical Team — his military unit in Iraq.

If you haven't done so already, we encourage you to share your stories and pictures with us. Then, we'd like nothing more than to share them with *Pop'Comm* readers around the world. Please write: <PopCommMonitor@gmail.com>. We'll take it from there.

Here's a sampling of your memories for June:

Scott Young, WPC9FST, Bellingham, Massachusetts

I was hooked on monitoring when operating a1960-era Hammarlund HQ-180 my uncle had lent me <http://bit.ly/YfLt3w>. I had put an old piece of telephone wire out of the window and up an apple tree in my backyard. Here in Massachusetts that night I pulled in Wisconsin, North Carolina, and Arizona. I was immediately hooked, **Photo A**. With a real antenna, I can only imagine what I could hear.

My *Pop'Comm Monitoring Station* identification sign commemorates my military unit in Iraq: The 912th Forward Surgical Team (FST).

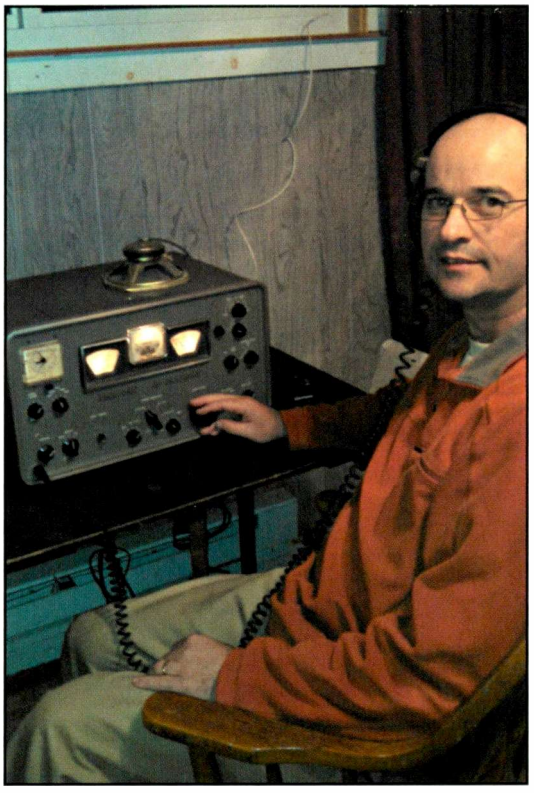


Photo A. Scott Young, WPC9FST, of Bellingham, Massachusetts, has gotten hooked on shortwave listening with a 1960-era Hammarlund HQ-180 receiver. His monitoring station ID sign commemorates Young's military unit in Iraq: The 912th Forward Surgical Team (FST). *(Courtesy of WPC9FST)*

Raymond Vallee, WPC4WBZ, Clayton, North Carolina

I began SWLing as a child, when my Dad would take me over to my grandparents next door to listen to broadcasts in French on their massive RCA radio. In later years, would listen to shortwave broadcasts on Dad's Sears Silvertone radio. Hooked for life! I now SWL with a Grundig Millenium 800. It is a lifelong pursuit.

Daniel Amoroso, WPC3DNC, Media, Pennsylvania

I've really enjoyed reading about the *Pop'Comm Monitoring Station* program. I had the *Popular Electronics* station identification sign WPE3DNC and wondered if I would be able to get WPC3DNC. I am so happy I did!

Even though due to my days as a SWL I became an amateur radio operator, I still enjoy shortwave listening. Instead of using my Lafayette HE-10, **Photo B**, I'm now using an ICOM 756 Pro and WinRadio 313. Things sure have come a long way!

Lafayette HE-10

Photo B. A vintage Lafayette HE-10 receiver — similar to the one used by Daniel Amoroso, WPC3DNC — is put through its paces in this YouTube video <http://bit.ly/10eyOKl>. "Things sure have come a long way!" 'DNC writes. *(Internet screen grab)*

Photo C. From his Media, Pennsylvania listening post, Daniel Amoroso, WPC3DNC, snagged China Radio International and this handsome QSL card. *(Courtesy of WPC3DNC)*

Photo D. WPC3DNC got verification of reception from Radio Taiwan International recently and credits the centerpieces of his listening post for the success — an ICOM 756 Pro and WinRadio 313. *(Courtesy of WPC3DNC)*

I've included a couple of the QSL cards I received recently, **Photos C** and **D**.

Igor Ryumshin, RPC3RMO, Shchigry, Kursk, Russia

As a child I was listening to radio on a homemade receiver. I have many radio observations. RPC3RMO is an ideal *Pop'Comm Monitoring Station* identification sign for me. 73 and good DX!

John Cooper, WPC3JPC, Lebanon, Pennsylvania

I remember as a kid listening to shortwave on my dad's shortwave while we were stationed in Germany. That was in the early 1960s. I am now 61 and in December I started listening to shortwave again on my Grundig 750 which I received for Christmas.

I just started doing QSL requests. I like *Popular Communications* very much. Thanks for assigning me WPC3JPC.

Anthony Sandy, 9ZPC4AJS, Trinidad and Tobago, West Indies

I've been involved in CB and amateur radio since the age of 11 and I love it so much. It has played a major role in my life from *ever since* to present. I hold the ham callsign 9Z4AJS and love the fact that I have the *Pop'Comm Monitoring Station* ID sign 9ZPC4AJS!

Al Rhodes, WPC2SOU, Virginia Beach, Virginia

I started monitoring in the early '60s as a teenager with a Knight Kit R-100A and mainly listened to AM DX and amateur radio. In 1965 I became WN2SOU as a Novice class radio amateur.

With retirement around the corner, I was looking for a hobby. A co-worker challenged me to get my amateur license in 2009. We both passed the Technician and General exams in March 2010. I missed the Extra exam by three questions. So that summer I studied and passed the Extra in September 2010, only missing one question. My amateur callsign is KJ4TDG.

Michael Hayes, WPC6EWY, Lincoln, California

As a kid I was very much into shortwave radio and as a retired adult I find myself drawn into shortwave radio again. I did have a *Popular Electronics Short-*

Wave Monitor identification sign: WPE6EWY. That was *way back when* and would like to replicate that with the *Pop'Comm* program. I never made it as a ham radio operator as a young man, but was able to do that a few years ago and am now KI6NPB.

My first radio was a Silvertone AM-SW wooden table radio I bought at a swap meet for $1. It got me started until I was able to purchase a National NC-105 — not the best radio around, but one I could afford, anyway. Today I have several Hallicrafters radios awaiting restoration and another National NC-105 to put in operating condition, too.

Richard Slover, WPC4RS, Knoxville, Tennessee

Thanks for reviving (a listener identification program) with *Pop'Comm Monitoring Stations*. It is a great way of generating more monitoring activity. I was originally WPE4JUH back in the '70s.

Dean Dalrymple, VAPC3DBD, Stratford, Ontario, Canada

I was given my first scanner when I was a teenager. My interest in radio communications grew and expanded from there, and I am now also a radio amateur — although my scanner is still my primary interest. VAPC3DBD closely matches my ham call letters.

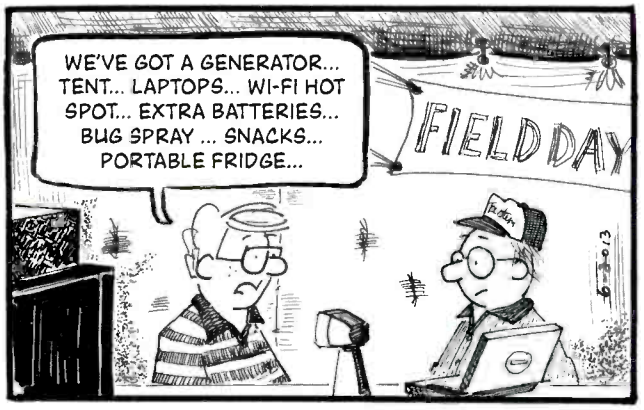
Doug Wilkerson, KPCØDW, Fort Collins, Colorado

I'm ex-WDXØFXV, and what fond memories that brings back of late night listening on my Heathkit GR-64! Those experiences eventually led to my becoming AAØDW as a radio amateur, and I'm as passionate about the radio hobby as ever!

C.M. Alton, KPCØPKO, Derby, Kansas

At the age of nine my father bought a shortwave radio kit at RadioShack® and we built it together. From then on, I have been hooked. I enjoy the old tube-type receivers, but have a lot of the modern gear as well. KPCØPKO was my first choice for a *Pop'Comm* station identification sign because it includes the last three letters of my FCC amateur radio call: KBØPKO.

SPURIOUS SIGNALS By Jason Togyer KB3CNM
popcommcomic.blogspot.com



KPCØDKD, West Des Moines, Iowa

Up Nights, 'Spinning the Knobs for Some Cheap Entertainment'

It's hard to know if a love of radio is in the genes of the Conner Family in Iowa, but a young Bruce Conner fell head-over-heels into the hobby when a relative working for KBUR-AM introduced him to the shortwaves.

Today, KPCØDKD has amassed a fine collection of receivers and likes nothing better than tuning the airwaves deep into the night — spinning the knobs listening for some "cheap entertainment," as he calls it.

"Although I have more than 40 years of familiarity with this hobby, I still feel like I'm just a beginner," Bruce says.

You can be featured as a Pop'Comm Monitor of the Month. Please send us a photograph of your listening post and tell us about your monitoring experience. We'd be happy to feature you in our pages. Write to Pop'Comm Monitor of the Month at: <PopCommMonitor@gmail.com>.

– Richard Fisher, KPC6PC

By Bruce Conner, KPCØDKD

"As a kid, I found the exotic music and foreign languages very intriguing and became immediately hooked on the hobby."

When I was around 6 or 7 years old, I had an aunt who was working for KBUR-AM in Burlington, Iowa introduce me to shortwave listening using an old Grundig tabletop. I found the exotic music and foreign languages very intriguing and immediately became hooked on the hobby.

My interest in radio began in earnest as a shortwave listener in the summer of 1969 when a neighbor gave me a Philco console as a gift. Later I purchased a used Hallicrafters and over the years have purchased many other receivers — including the venerable ICOM R71-A, Drake SPR-4, as well several Sony and Sangean portables.

I still use my Yaesu FRG-7 alongside other tabletops using long wire antennas I have routed through an ANC-1 to monitor international shortwave, utility services, and AM broadcasters.

Currently I'm using a Drake R8B as my main receiver with Cushcraft R5 vertical antenna and a Timewave ANC-4 noise canceller <http://bit.ly/ZYt9eg>.

It gets noisy here in the winter with furnaces emitting static. I wish I had control over that. It's not easy listening in a city, but I do my best.

Photo A. Yaesu FRG-7 <http://bit.ly/11Mcmve> and Drake R8B <http://bit.ly/YEiVQZ> receivers are among the gear Bruce Conner, KPCØDKD, uses at his West Des Moines, Iowa listening post. *(Photography courtesy of KPCØDKD)*

Photo B. Foreign broadcast listening at KPCØDKD is achieved in part with a Grundig Sattelit 700 receiver, with external antenna.

I've tried about every configuration and my current setup is about the best, although I'm thinking of experimenting with a DBX II dynamic range expander /noise reduction system to shape my audio output.

I've been listening to Radio Romania lately on 7325 and 7340 kHz. Coincidentally, Radio Bucharest was one of my first QSLs when I began my SWLing in earnest in 1970. The majority of QSLs I have stem from 1970-1971 when I was still in high school.

Lately the bug is back and I've been staying up these nights just spinning the knobs for some cheap entertainment.

I guess I've gone from chasing DX to just trying to hear some new music I'll like. One of the most interesting broadcasts has been from Zanzibar on 11735 kHz. It was the first time I'd picked-up this one — and I thought I recognized all the shortwave broadcast stations.

I definitely had to get a copy of *Popular Communications* back in November 2012. I had received a signal on 15535 kHz at 1514 UTC, which I had thought was in Arabic. Damascus was mentioned by a male voice, then followed by an ID by female voice right at 1515 UTC.

The only thing my poor ears could hear was what sounded to me like *Radio Cabunga*. It sounded like something Bart Simpson would have said. I didn't have anything in print to figure out what in the world I was listening to. But the music was very hypnotic despite the struggle to hear it.

I am also a radio amateur, operating primarily on 2 and 6 meters as KCØDKD. I use Yaesu equipment and a Cushcraft R5 vertical.

I received my formal education in radio at the Marine Corps Base at 29 Palms, California with a specialization in HF communications-electronics maintenance and repair. This experience led to further interests in general science and computer technology.

After attending an "Introduction to Ham Radio" class sponsored by the Des Moines Amateur Radio Club in 2008, I finally got around to getting my amateur radio license. Although I have more than 40 years of familiarity with this hobby, I still feel like I'm just a beginner. There is always something new to learn!

Photo C. "My interest in radio began in earnest as a shortwave listener in the summer of 1969," writes Bruce Conner, KPCØDKD, "when a neighbor gave me a Philco console as a gift."

Photo D. An "oldie-but-goodie" at KPCØDKD is this vintage Hammarlund HQ-120 receiver.

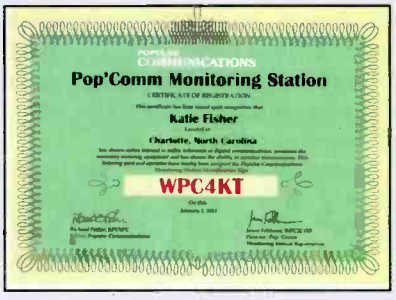
New Members: *Pop'Comm Monitoring Station* Program

Here are the newest station monitors granted a station identification sign, authorized to receive a Certificate of Registration, and welcomed to the *Pop'Comm Monitoring Station* program. They are listed by name, station identification sign, and monitoring station location:

KPC and DX Prefixes

CM Alton, **KPCØPKO**, Derby, KS; Ryan Archer, **KPC6KPH**, Hammarlund, CA; Anthony Sandy, **9ZPC4AJS**, Trinidad and Tobago; Daryl Staehle, **KPC7TAE**, Oso, WA; William Brooks, **KPC4WB**, Drummonds, TN; David Paul, **KPCØPRB**, Scandia, MN; Igor Ryumshin, **RPC3RMO**, Shchigry, Kursk, Russia.

WPC Prefixes



Also: Frank Aden, Jr., **WPC7DXA**, Boise, ID; Lloyd Thompson, **WPC4DBA**, Lake Mary, FL; Steve Grondin, **WPC1SPG**, Boylston, MA; Bob Boehm, **WPC8YS**, West Chester, OH; Dale Long, **WPC6CXQ**, Riverside, CA; Jim Donovan, **WPC3MDE**, Easton, MD; Michael Deeds, **WPC6FTJ**, Vallejo, CA; James Niswander, **WPC4KBD**, Portland, TN; John Cadick, **WPC5JC**, Garland, TX; Paul Dobosz, **WPC8TMP**, Holland, MI; Steven Molnar, **WPC8AFX**, N. Ridgeville, OH; Doyle Simmons, **WPC4DXA**, Taylors, SC; Colin Werner, **WPC1GUH**, Manchester, NH; Tom Delano, **WPC1CC**, Duxbury, MA; Katie Fisher, **WPC4KT**, Charlotte, NC; Jed Levin, **WPC2JKL**, Hastings-on-Hudson, NY; Ray Henderson, **WPC3PRR**, East Brady, PA; Thomas Martin, **WPC1AMD**, Omaha, NE; Michael Penkas, **WPC8CVU**, Grand Rapids, MI; Danielle Kopp, **WPC8DCE**, Cincinnati, OH; Ross Racher, **WPC1AUT**, Norton, OH; Fenton Sawyer, **WPC4BCZ**, Dothan, AL; Richard Pickard, **WPC9RJP**, Battlecreek, MI; John Farmer, **WPC9CQ**, Avon, IN; Darrell Anderson, **WPC7CEA**, Renton, WA; G.E. Revis, **WPC8VN**, Houston, TX; Mike Igo, **WPC4WWV**, Corydon, KY; Chris Raanes, **WPC6CAR**, Portola Valley, CA; Charles Piso, **WPC1CJP**, Franklin, MA; Melvyn Whitten, **WPCØCWE**, Bridgeton, MO; Michael Doyle, **WPC4USN**, Dawsonville, GA; Ron Ackerman, **WPC8WWR**, Bridgman, MI.

For complete information on the Pop'Comm Monitoring Station Program and to join, visit Pop'Comm Monitors On the Web: <http://popcommmonitors.blogspot.com/>.

– Jason Feldman, WPC2COD
Director, PCMS Registration
<PopCommMonitor@gmail.com>

Buzzzzzzzzzzz: It's All About the Noise (Part I)

By Tomas Hood,
WPC7USA/NW7US

"In a pitched battle against noise, your choices for an antenna and a grounding system can make a big difference in whether you're winning or losing."

One of the most frustrating parts of listening to shortwave radio — be it while hunting for military communications, or trying to catch pilots as they are flying over an ocean and communicating with a ground station, or just trying to catch an elusive international shortwave broadcast station — is being plagued by noise.

Can you relate with this scenario? It's early evening, and signals on the shortwave are picking up. However, there's a very strong, consistent noise making reception a pain in the neck — as well as the ears.

You've heard that noise could be manmade, so you try to locate the source. Finally, after turning off and on many appliances around the house, from computer to desk lamps, you turn off the new television unit only to find the noise has stopped.

Well, so you can listen to your odd-sounding shortwave radio, now you have to negotiate with other family members who were watching their favorite show.

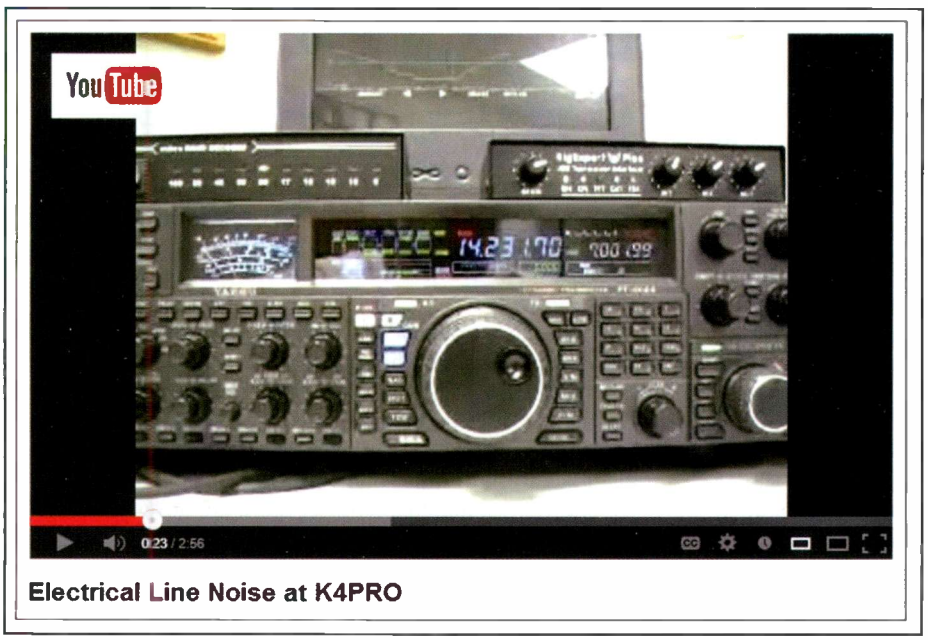
Sleuthing the Source

I've had to get extreme by shutting down the entire house by manually tripping all circuit breakers to test water heaters and space heaters, then turning on each circuit, one by one. Once I found a circuit where most of the noise came back, I started unplugging all the devices on that circuit.

Many devices don't truly turn off, they just go into standby mode. I've found that computer networking devices, cordless phones, power transformers and power supplies, dimmers, fans, and even water heaters are to blame. There have also been places where I've lived that, after turning off everything in the house via circuit breakers, still had noise problems. In those cases, I've found noise coming from the house next door, or other apartments nearby, even streetlights at night, or carport lighting that only turns on at night. Using portable AM radios, I can often track down the streetlight or other source. *(**WATCH and LISTEN:** To video of a Florida radio amateur cursed with noise he believes is being generated by the company that brings power to his neighborhood <http://bit.ly/ZRkMRE>, **Photo A**. ALSO: For tips on dealing effectively and diplomatically with line noise issues, visit <http://bit.ly/YE9pdq>. – WPC7USA)*

Silence Is (Briefly) Golden

When my local area has a complete power outage — which is not that often, unfortunately — the radio spectrum gets much less noisy, if not



Electrical Line Noise at K4PRO

Photo A. Michael Wise, K4PRO, made a YouTube video to illustrate the noise that plagues his amateur radio station in Bradenton, Florida. His demonstration is Exhibit A, as he documents the level of interference at his listening post on all HF bands. *(Internet screen grab <http://bit.ly/ZRkMRE>)*

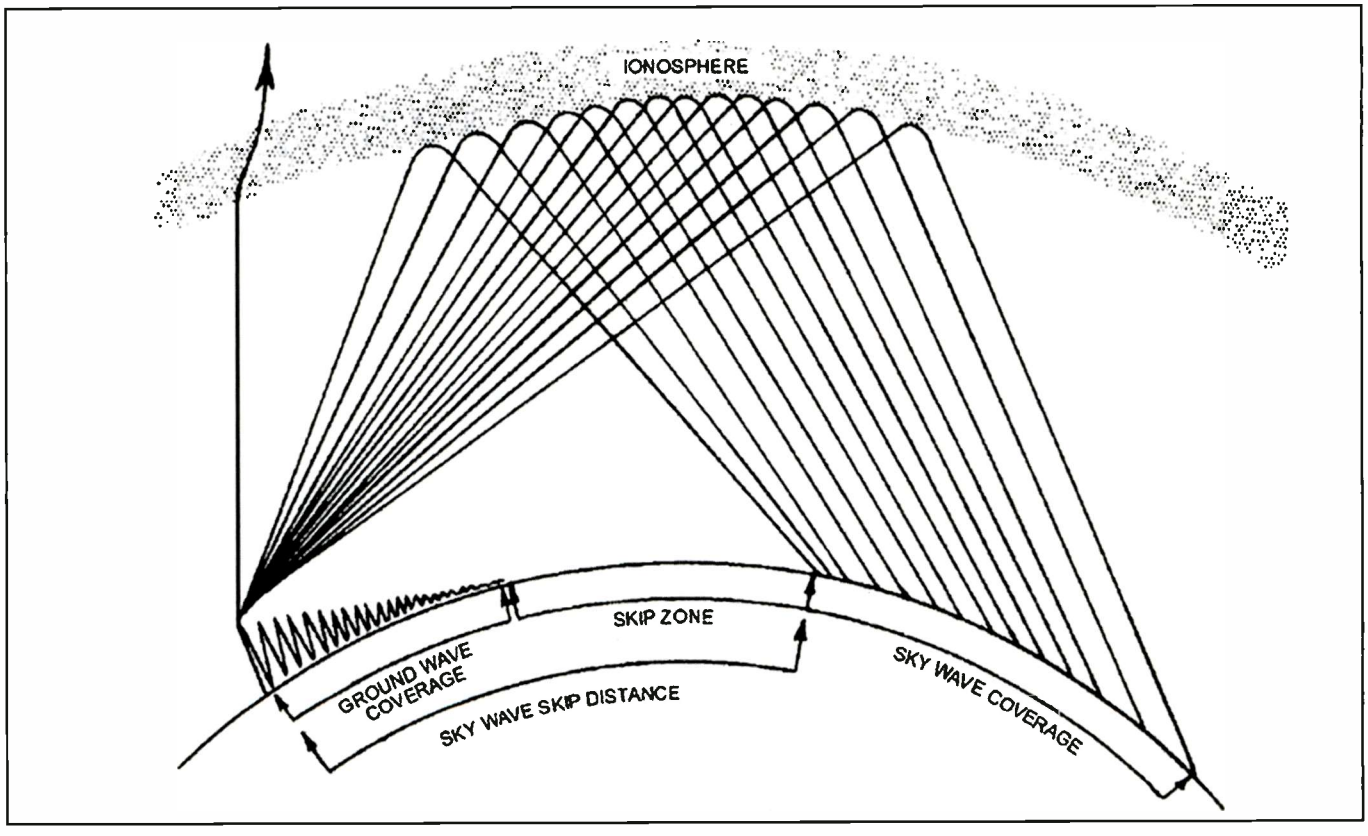


Figure 1. This vintage drawing is indicative of just how long we have been trying to understand the science of propagation. As shown, ground waves hug the Earth, and are quickly absorbed as the radio wave moves away from the transmitting source. On the other hand, when a radio signal is refracted from the ionosphere, known as a skywave, it can "skip" over great distances, reaching far-off locations around the world. *(Provided by WPC7USA)*

amazingly quiet. Those moments are excellent, since the weakest signals are easier to hear. Any noise remaining at this point is that from a more distant source and has been propagated either by *groundwave* or *skywave* propagation, **Figure 1**.

Signals Hugging the Earth's Surface

Groundwave propagation describes how a radio wave travels away from the source (for instance, an electric motor coupled with a long enough wire that is acting as an effective radiator/antenna, or a radio transmitting station), out along the surface of the Earth — in a sense hugging the surface — for great distances. Groundwave propagation is most efficient at lower frequencies, especially in the medium frequency (MF), low frequency (LF, or longwave) bands and below.

Refracted Signals: The Sky's the Limit

Skywave propagation describes how radio signals are reflected (or more accurately, refracted) by the ionosphere back toward the Earth, causing a radio wave to reach very distant areas.

Think of the reflection of a beam from a flashlight off of a reflective surface such as a wall-mounted mirror. When you stand off to the side, and shine the flashlight at an angle toward the mirror, the beam will be reflected at the same, but opposite angle, toward a distant spot in the room.

When shortwave, and sometimes medium wave radio signals spread out away from their source and reach the ionosphere, they are often reflected back toward the Earth. The signals may be bounced back toward the ionosphere by the Earth, repeating this skip several times or more. In this way, skywave propagation allows a signal to reach around the world.

Signal Characteristics

Groundwave tends to lose its energy through the loss it experiences traveling along the surface of the Earth. Skywave, on the other hand, can be absorbed at certain frequencies in the lower regions of the ionosphere but experiences much less attenuation because the majority of its journey is through the atmosphere.

It's a Noisy Day in the Neighborhood

In the case of manmade noise, it is possible to hear the neighbor's arc welder as it generates strong noise that reaches your radio's receiver by way of groundwave propagation. The nearby power transfer station may also be a source of neighborhood radio noise. All of these noise sources present themselves by way of groundwave.

At night, the strongest of manmade noise sources may propagate beyond the reach of groundwave — much like medium wave and shortwave transmissions travel better by skywave. In that case, it could be that the noise you are hearing has been propagated from distant sources such as industrial plants, power transfer stations, or other non-rural areas.

In addition to manmade noise, there are atmospheric noise sources, such as electrical storms, winter storms where static electricity is generated, and so on.

You may have heard the static crashes of a lightning storm,

even though local weather was clear and calm. Such storms, especially during the summer, can raise the overall noise on the shortwave spectrum, as hundreds of these storms might be active at that moment. Skywave propagation is bringing all of that natural noise to your receiver.

Get Grounded to Seek a Solution

More likely, though, your noise is locally generated within your house or neighborhood. How can you reduce that noise?

The choice of antenna and grounding are key components of your radio system in your fight against noise. For instance, the telescoping antenna found on many handheld shortwave receivers are the most susceptible to noise, from local electrical circuits and devices, to signals around the neighborhood.

Dipoles are also notably noisy, as they tend to pick up atmospheric noise and manmade noise more than alternatives like a loop antenna. The quietest antenna might well be the closed-loop antenna, horizontally polarized.

It is also important to look at how you ground your receiver, a critical part of any radio station. Proper grounding can nearly knock out significant noise problems.

Grounding to an electrical ground in your house's electrical circuits does not solve noise problems, but will likely increase them.

You will want to run a large-diameter grounding strap to an 8-foot grounding rod driven into moist soil, for the best ground. That run should be as short as possible. Anything longer than a dozen feet becomes a compromise. *(**WATCH and LISTEN:** To a tutorial on YouTube for building a "water drill" to simplify sinking your ground rods into the soil <http://bit.ly/ZRobQl>, **Photo B**. – WPC7USA)*

Photo B. This video gives tips on turning your ground rod into a "water drill," taking the pain and strain out of driving 8-foot-long copper pipe into the earth. Visit: <http://bit.ly/ZRobQl>. *(Internet screen grab)*

Optimum Working Frequencies (MHz) - For June 2013 - Flux = 131, 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	26	26	26	25	24	22	20	18	17	16	15	14	15	17	19	20	22	23	24	25	25	26	26	26
NORTHERN SOUTH AMERICA	35	34	34	32	29	26	24	22	21	19	18	17	17	20	23	26	28	29	31	32	33	34	34	35
CENTRAL SOUTH AMERICA	32	29	27	24	23	21	20	18	18	17	16	20	20	22	25	27	29	31	32	33	34	35	36	34
SOUTHERN SOUTH AMERICA	27	19	18	17	16	16	15	15	15	14	14	14	14	19	22	25	27	29	30	32	33	34	33	31
WESTERN EUROPE	16	15	14	13	12	12	17	16	15	14	13	14	18	20	22	23	24	24	24	24	23	22	21	19
EASTERN EUROPE	11	11	11	10	15	18	17	15	14	13	13	12	16	19	21	22	23	23	22	21	19	17	12	12
EASTERN NORTH AMERICA	31	31	30	30	29	28	26	24	22	20	19	19	19	22	24	25	27	28	29	29	30	30	31	31
CENTRAL NORTH AMERICA	17	17	17	17	16	16	15	14	13	12	11	11	11	11	13	14	14	15	16	16	16	17	17	17
WESTERN NORTH AMERICA	9	9	9	9	9	9	8	8	7	7	6	6	6	6	6	7	7	8	8	8	9	9	9	9
SOUTHERN NORTH AMERICA	28	28	27	27	27	26	24	22	20	19	17	16	16	16	19	21	22	23	24	25	26	27	27	27
HAWAII	23	23	23	23	23	23	23	22	21	19	17	16	15	14	13	13	14	16	18	19	20	21	21	22
NORTHERN AFRICA	21	19	17	16	15	15	17	16	15	14	13	16	19	20	22	23	24	24	25	25	25	24	24	23
CENTRAL AFRICA	21	20	18	17	17	18	17	16	15	14	13	15	18	20	22	23	24	24	25	25	25	25	25	23
SOUTH AFRICA	18	17	16	16	15	15	17	23	21	21	21	21	22	24	25	26	27	28	28	25	23	21	20	19
MIDDLE EAST	18	17	17	17	19	19	17	15	14	13	13	12	17	19	21	23	23	24	24	24	23	22	21	19
JAPAN	23	24	24	25	25	24	24	23	22	21	19	18	16	16	16	18	17	16	16	17	19	20	22	23
CENTRAL ASIA	24	25	25	25	25	24	24	23	22	20	19	17	16	15	15	18	20	20	19	17	17	18	21	23
INDIA	22	22	22	23	22	21	19	16	15	14	13	12	12	12	11	11	11	10	10	13	17	19	20	21
THAILAND	21	22	24	25	25	24	23	22	21	19	17	16	15	14	15	18	20	21	20	18	17	16	16	18
AUSTRALIA	35	36	36	36	36	36	35	33	31	27	24	23	21	20	18	17	17	16	16	15	20	27	31	33
CHINA	22	23	23	24	24	24	23	22	20	18	16	15	14	13	15	18	20	18	18	18	18	19	20	21
SOUTH PACIFIC	35	35	35	34	33	31	27	19	18	17	16	16	15	15	15	14	14	14	14	24	29	32	33	34

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	30	30	29	29	27	24	22	20	19	17	16	16	17	20	22	24	25	26	27	28	29	29	30	30
NORTHERN SOUTH AMERICA	32	31	31	28	26	24	22	20	19	17	16	16	17	20	22	24	26	27	29	30	30	31	31	32
CENTRAL SOUTH AMERICA	32	29	27	25	23	21	20	19	18	17	16	19	21	24	26	28	30	31	32	33	34	35	35	34
SOUTHERN SOUTH AMERICA	26	19	18	17	16	16	15	15	15	14	14	14	16	21	24	26	28	30	31	33	34	33	33	30
WESTERN EUROPE	19	17	15	14	13	13	15	16	14	14	17	19	20	22	23	23	24	24	25	24	24	23	22	21
EASTERN EUROPE	12	12	11	11	11	17	16	15	14	13	15	18	20	22	23	24	24	24	23	22	21	19	17	13
EASTERN NORTH AMERICA	22	22	22	21	21	19	17	16	15	14	13	13	14	16	17	18	19	20	21	21	22	22	22	22
CENTRAL NORTH AMERICA	10	10	10	10	10	9	9	8	7	7	6	6	6	7	8	8	9	9	9	10	10	10	10	10
WESTERN NORTH AMERICA	17	17	17	17	17	16	16	14	13	12	11	11	11	11	12	13	14	15	16	16	17	17	17	17
SOUTHERN NORTH AMERICA	19	19	19	19	19	18	16	15	13	12	11	11	11	12	14	15	16	17	17	18	18	19	19	19
HAWAII	27	27	27	27	27	27	27	25	22	20	19	17	16	16	15	15	17	19	21	22	23	24	25	26
NORTHERN AFRICA	24	23	21	20	18	18	19	18	18	18	18	20	21	22	23	23	24	24	24	25	25	25	25	24
CENTRAL AFRICA	22	20	18	17	16	16	19	17	17	17	18	20	21	22	23	23	24	24	25	25	25	25	25	24
SOUTH AFRICA	17	16	16	15	15	15	14	24	22	21	21	22	25	28	29	31	32	33	30	24	22	20	19	18
MIDDLE EAST	18	17	16	16	17	18	17	16	14	14	17	19	21	22	23	24	24	25	25	24	24	23	22	20
JAPAN	23	24	24	24	24	23	22	21	19	17	16	15	15	17	19	18	17	17	17	18	20	21	22	23
CENTRAL ASIA	24	25	25	24	24	23	21	20	18	17	15	14	15	18	20	21	22	20	19	18	17	18	21	23
INDIA	15	18	19	20	20	18	16	15	14	13	12	15	18	20	20	19	17	15	12	11	11	11	10	10
THAILAND	20	22	24	24	23	21	20	18	16	15	14	13	15	18	20	22	23	22	20	19	17	16	16	18
AUSTRALIA	35	36	36	36	36	35	34	32	29	25	23	21	20	19	18	17	16	16	15	15	21	28	32	34
CHINA	22	23	24	24	23	21	20	18	16	15	14	13	16	18	20	21	19	17	16	16	16	18	20	21
SOUTH PACIFIC	35	35	35	34	32	30	26	19	18	17	16	16	15	15	15	14	14	14	14	26	30	32	34	35

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	24	24	23	22	20	18	17	15	14	13	13	13	15	17	18	20	21	22	22	23	23	24	24	24
NORTHERN SOUTH AMERICA	28	28	27	24	22	20	19	17	16	15	14	14	16	19	21	23	24	25	26	27	27	28	28	28
CENTRAL SOUTH AMERICA	32	29	26	24	22	21	19	18	17	17	16	20	23	25	27	29	30	32	33	33	34	34	35	34
SOUTHERN SOUTH AMERICA	24	19	18	17	16	16	15	15	15	14	14	14	21	24	26	28	30	31	33	33	34	34	32	29
WESTERN EUROPE	20	19	17	16	14	14	15	16	16	17	18	19	20	21	22	22	23	23	23	23	23	23	22	21
EASTERN EUROPE	14	14	13	12	11	16	17	16	16	18	19	21	22	23	23	24	24	24	24	23	22	21	19	16
EASTERN NORTH AMERICA	10	10	10	10	9	8	8	7	6	6	6	6	7	8	8	9	9	10	10	10	10	10	10	11
CENTRAL NORTH AMERICA	23	23	23	22	22	20	18	17	15	14	14	14	15	17	18	19	20	21	22	22	23	23	23	23
WESTERN NORTH AMERICA	31	31	30	30	29	28	26	24	22	20	19	19	19	22	24	25	27	28	29	29	30	30	31	31
SOUTHERN NORTH AMERICA	24	24	24	23	22	20	18	17	15	14	13	13	14	16	18	19	20	21	22	23	23	24	24	24
HAWAII	29	29	30	30	29	28	26	23	21	20	18	18	18	17	16	16	18	21	23	24	26	27	28	28
NORTHERN AFRICA	25	23	21	19	18	17	17	18	18	19	21	23	25	26	28	28	29	30	30	30	30	30	29	28
CENTRAL AFRICA	22	20	18	17	16	16	18	18	18	19	21	23	25	26	28	29	29	30	30	30	29	28	26	24
SOUTH AFRICA	17	16	16	15	15	15	14	21	19	19	20	23	26	28	30	31	32	33	30	24	22	20	19	18
MIDDLE EAST	22	20	19	18	18	18	17	16	16	17	19	20	21	22	23	24	24	25	25	25	25	25	25	24
JAPAN	23	24	24	23	22	21	19	18	16	16	16	18	20	21	20	19	17	17	17	18	20	21	22	23
CENTRAL ASIA	24	24	23	23	21	20	18	17	15	15	16	18	20	21	23	23	23	21	20	18	18	18	20	23
INDIA	11	11	10	10	17	18	16	15	15	16	18	20	21	23	23	23	22	22	21	19	18	13	12	11
THAILAND	19	22	23	21	20	18	17	15	14	15	18	20	21	22	23	24	25	23	21	20	18	17	16	17
AUSTRALIA	36	36	36	35	35	32	29	27	25	23	21	20	19	18	17	16	16	15	15	15	22	29	32	34
CHINA	22	23	23	22	20	19	17	16	15	14	17	19	21	22	22	21	19	18	16	15	15	17	19	21
SOUTH PACIFIC	34	34	34	32	31	28	22	18	17	16	16	15	15	15	14	14	14	14	14	26	30	32	33	34

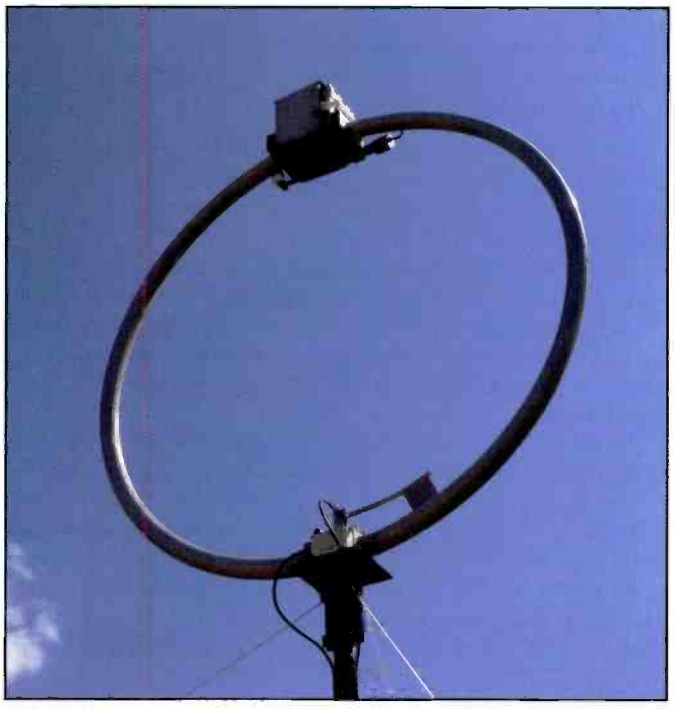


Photo C. Loop antennas can be an ally in fighting noise. This vertical loop covers 1.75 through 30 MHz with its automatic tuning unit. WPC7USA recommends a 160-foot-long, horizontal loop as a quiet and effective antenna — if you have the room. See text for details. *(Courtesy of ©Trixt via Wikimedia Commons)*

Not everyone can obtain such an effective radio ground. But do the best you can with a good earth ground and use a loop antenna, if practical. For example, if there is room at your location, 160 feet of wire running around the perimeter of your property would be a good start. The ends are tied together and run into your radio shack. This should significantly reduce local noise problems. Loops can also be used effectively at higher frequencies, **Photo C**.

Coming Up

Next month, we will look at how noise actually affects your reception of radio signals. Noise matters!

HF Propagation for June

June is a month of typical summertime radio propagation on the high-frequency bands. Solar absorption is expected to be at seasonally high levels, resulting in generally weaker signals during the hours of daylight when compared to reception during the winter and spring months. Nighttime usable frequencies to most parts of the world are higher than at any other time of the year, while the daytime usable frequencies are generally lower than are those during winter. At the highest end of the HF spectrum, propagation from DX locations east and west is a rare event, except via Sporadic-E propagation, which can provide shorter-range openings. Openings via the F-layer will unlikely occur, so worldwide east/west paths on the highest HF bands are dead.

North and South paths may open up on some higher HF bands, especially around sunrise and sunset. Nineteen and 16

meters will likely be the most reliable daytime DX bands, while 19 and 22 may offer weak nighttime openings.

Twenty-five and 31 meters will be fair in the evenings and mornings. At night, those paths that remain open will be marginal. The most reliable band for both daytime and nighttime should be a toss-up between these two bands.

Forty-one and 49 meters should offer good DX conditions during the night despite higher static. Look for Europe and Africa as early as sunset. After midnight, start looking south and west for Pacific, South America, and Asia. Short-skip should be possible out to about 750 miles during the daytime.

Expect some openings on 75 and 90, similar to how 40 meters will be acting. Fairly frequent short-skip openings up to 1,000 miles are possible during darkness, but expect very few daytime openings with all the static and absorption. Medium-wave and 120-meter propagation is rough in the summer due to the high static and higher overall absorption caused by the short nights and higher D-Layer ionization.

Thunderstorm noise increases considerably during June and the summer months. As we just discussed, this can degrade the ability to receive exotic DX signals. This can make catching weak DX signals a true challenge.

VHF Conditions

The summertime Sporadic-E (E_s) season for the Northern Hemisphere began in force in May, with June seeing strong and frequent E_s openings. Within the normal E-layer region of the ionosphere, regions of abnormally intense ionization are formed. Through June, you can expect to see 20 to 24 days with some E_s activity. Usually these openings are single-hop events with paths up to 1,000 miles, but double-hop is possible during June.

Look for E_s on lower VHF frequencies throughout the day but especially in the afternoon.

A seasonal decline in trans-equatorial (TE) propagation occurs by June, though an occasional opening may still be possible on the low VHF bands toward South America from the southern tier states and the Caribbean area. The best time to check for TE openings is between 9 and 11 p.m. local daylight time. These TE openings will be north-south paths that cross the geomagnetic equator at an approximate right angle.

It might be possible to catch a Tropospheric ducting event. Watch for high-pressure weather systems, where ducting is most likely to develop. If the weather forecast maps show mean-sea-level atmospheric pressure in millibars, look for Tropospheric possibilities when a stalled high-pressure cell in your area reaches 1,025 millibars over the path you are interested in. Of course, it is most likely to occur when this high-pressure cell develops over moist air. This is why the path between Hawaii and the West Coast has made possible communications on VHF with as little as five watts, over a path of 2,500 miles.

Advanced visual and infrared weather maps can be a great aid in detecting the undisturbed low clouds between the West Coast and Hawaii or farther during periods of intense subsidence-inversion band openings. This condition occurs also over the Atlantic.

If you know that conditions are favorable for tropospheric ducting in your area, try tuning around the 162-MHz weather channels, to see if you can hear stations way beyond your normal line of sight reception. It is possible to hear stations over 800 miles away. Amateur radio repeaters are another source of DX that you might hear from the other end of the duct.

These openings can last for several days, and signals will remain stable and strong for long periods during the opening. The duct may, however, move slowly, causing you to hear one signal well for a few hours, to then have it fade out and another station take its place, from another area altogether.

Be sure to check out *CQ VHF* magazine for details regarding VHF propagation through the spring and summer, <http://www.cq-vhf.com/>.

Current Solar Cycle 24 Progress

The Royal Observatory of Belgium, the world's official keeper of sunspot records, reports a monthly mean sunspot number of 38.0 for February 2013, significantly lower than 62.9 for January, and even lower than December's 40.8.

The low for the month was 19 on February 24. The high of 71 occurred on February 19. The mean value for February results in a 12-month running smoothed sunspot number of 58.1 centered on August 2012. Following the curve of the 13-month running smoothed values, a smoothed sunspot level of 77 is expected for June 2013, plus or minus 12 points.

Canada's Dominion Radio Astrophysical Observatory at Penticton, British Columbia reports a 10.7-cm observed monthly mean solar flux of 104.4 for February 2013. The 12-month smoothed 10.7-cm flux centered on August 2012 is 119.2. A smoothed 10.7-cm solar flux of about 131 is predicted for June 2013.

The geomagnetic activity as measured by the planetary-A index (A_p) for February 2013 is 5. The 12-month smoothed A_p index centered on August 2012 is 8.1. Geomagnetic activity should be much the same as we have had during May. Refer to the Last Minute Forecast published in *CQ* magazine 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 e-mail 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 <@hfradiospacewx>. 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/NW7U>.

Speaking of Facebook — check out the *Popular Communications* magazine fanpage at <http://www.facebook.com/PopComm>. This is a great place for the *Pop'Comm* community, for you, 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,

73, Tomas, NW7US
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Situation Deteriorating at Ekala Relay Site in Asia

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

"Although the NHK/Radio Japan transmitters at the site are still in good condition, they are used only to supply spare parts since they are too costly to run, much less repair."

Another major Asian relay site is about to gobble dust. Well known DX'er Victor Goonetilleke of Sri Lanka reports on the situation at the Ekala site there and its deteriorating condition.

Only two of the three VOA transmitters there are in working condition, the transmitters (once used by the old post-war Radio SEAC — South East Asian Command) are nearing the end of their useful life. Although the NHK/Radio Japan transmitters at the site are still in good condition, they are only used to supply spare parts since they are too costly to run, much less repair.

In addition, the Ekala site sits on prime land that is close to the metro area and is thus thought to be a logical shutdown target. If that should happen, would that mean shutting down the Sir Lanka Broadcasting Corporation (SLBC)? Let's keep our fingers crossed and hope it does not happen!

Victor also points out that the SLBC uses the former Deutsche Welle Relay site at Trincomalee, but that site needs to be active for at least 45 hours per week — at a cost of about $1,000 weekly — in order to operate and maintain the station.

Around the Dial . . .

Some shortwave newslines:

- One of the Argentine feeder outlets is being heard on 16150 carrying **Radio Metro**, a Buenos Aires FM station (95.1 MHz). I've tried for one of these feeder things many times without success, having never been able to figure out any pattern of usage for the relays.
- There's another report of troubles at Gabon's **Africa Number One** (9580) involving mismanagement and embezzlement, which puts a gigantic question mark hovering above their towers.
- **Deutsche Welle** has cancelled all of its Chinese broadcasts, thus taking still a few more steps on its downhill slide.
- **Thazin Radio** in Myanmar (7110) has returned to the air having solved its transmitter problems.
- All relays from the **Samara, Russia** site has now been discontinued, as I had reported some months ago.
- **Family Radio** says it urgently needs funds to continue its work. *Family Radio News* magazine reported last fall that income is not able to keep up with the expense of operating FR's worldwide service, so it is facing the possibility of shutting down shortwave efforts. ***(NOTE:** Could it be that they are using too many relays? – WPC9GLD)*

Rich D'Angelo got this nice QSL card from the Voice of (the) Strait in China, which uses 4940 and 9505.

A Veteran SWLer Passes Away

I'm saddened to report the passing of former GIG reporter Brian Alexander of Mechanicsburg, Pennsylvania. A package I sent to him recently was returned by UPS marked "deceased." We lost Brian at the *way too young* age of 55 on the day after Christmas. I always greatly appreciated his quality, detailed logs, which were always very accurate, nicely laid out, and a pleasure to work with. RIP, Brian.

Let's Hear from You

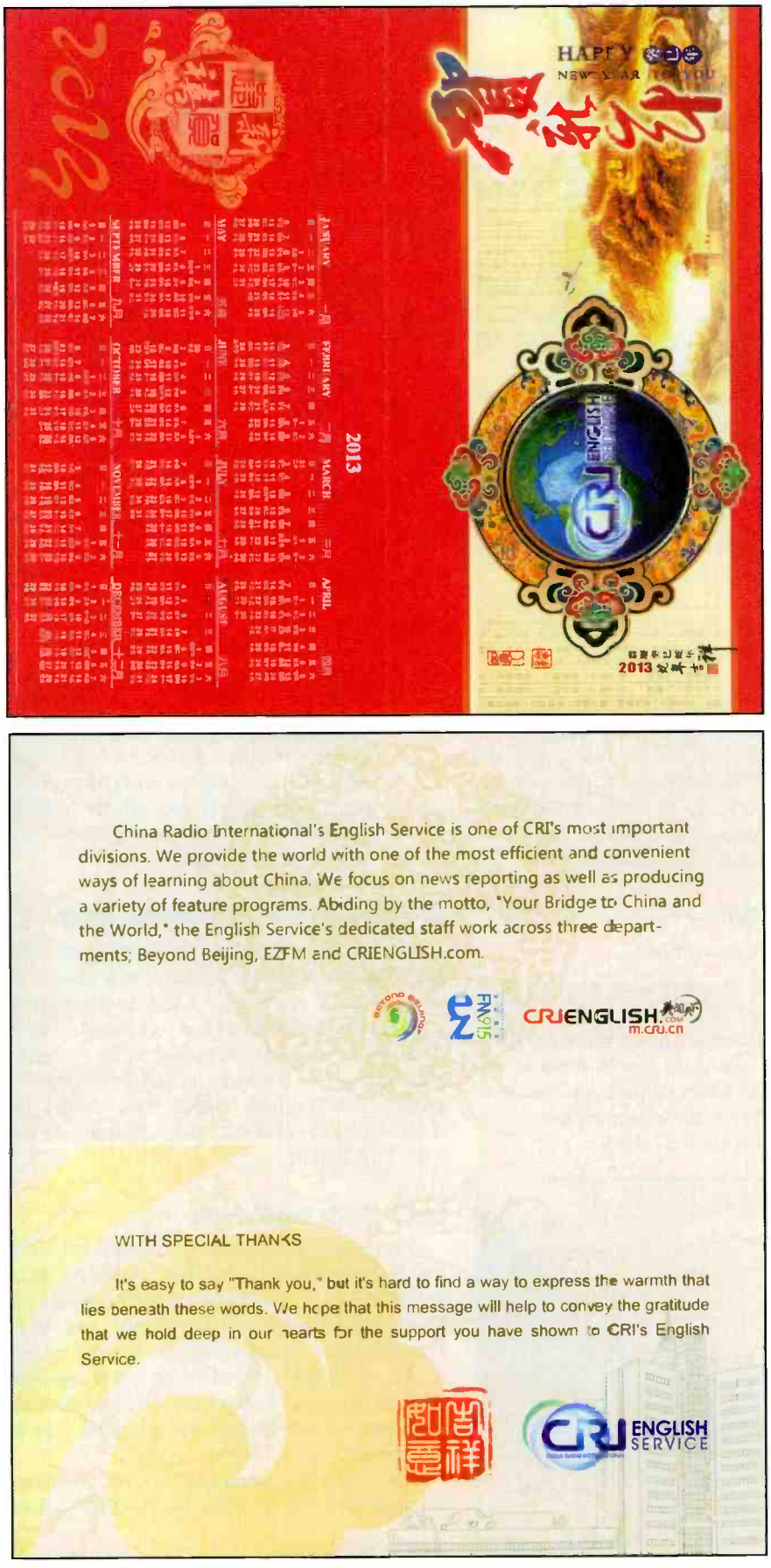
Remember, your shortwave broadcast station logs are always welcome. But *please* be sure to double or triple space between the items, list each logging *according to its home country* and include your last name and state abbreviation after each.

Also needed are spare QSLs or good copies you don't need returned, station schedules, brochures, pennants, station photos, and anything else you think would be of interest.

And how about sending a photo of you at your listening post? It's your turn to grace these pages.

June Reports

Here are this month's logs. All times are in



China Radio International sent this card wishing everyone a Happy New Year.

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, 7355 at 1341 with a W in Mandarin and religious instrumentals. (Handler, IL)

ALGERIA—Radio Algerienne, 9395 at 2140 with talks in AA. (Brossell, WI)

ANGUILLA—University Network, 6090 at 0315 with Gene Scott preaching. (Maxant, WV)

ARGENTINA—Radio Argentina al Exterior, 11710 at 0200 with IS and ID loop prior to hour's start then M hosting *The English Connection.* (Coady, ON) 0208 talking about a mountain climber. (Sellers, BC) 0212 with news and political commentary on Argentina's relations with other South American countries. (Rippel, VA)

Radio Nacional, 15345 at 0200 with time pips and M ID, into presumed newscast and a "Radio Nacional" jingle. (Rippel, VA)

ASCENSION ISLAND—BBC, South Atlantic Relay, 6005 at 0558 ending the hour f/by 6 time pips at 0600, ID and news. (D'Angelo, PA) 7255 at 0331 with W doing newscast, 7435 at 0336 reporting on the Italian elections. (Sellers, BC) 7255 at 0400 with W and pgm previews, then BBC News. (Coady, ON)

AUSTRALIA—Radio Australia, 11945 with a various vocals, 13630 at 0650 with global weather, f/by sports. (Maxant, WV)

Northern Territory Shortwave Service: VL8T, Tennant Creek, 2325 at 1220 with talks by M and 4835 via (p) long path at 2116 with talks by M/W and severe CODAR QRM, 4910 at 2135 via long path. Also, 4835 VL8A-Alice Springs, via long path at 2127 with pops pgm hosted by M, //4910 and 5025. 5025-VL8K-Katherine, at 2145 with pgm // to 4835 mixing with Cuba's Rebelde, also on 5025. (Rippel, VA) 4835 playing bluegrass records at 1303, //2325, 2485 was barely audible. (Sellers, BC)

BELARUS—Radio Belarus, 11730-Kalodzicy at 2016 with mellow vocals and talks about Belarus culture and its scenery. (Taylor, WI)

BOLIVIA—Radio Pio Doce, Siglo Veiente, 5952 at 0151 at a fair level. Local music hosted by M in SS, possible coml with sound effects. (Rippel, VA)

BOTSWANA—VOA Relay-Mopeng Hill, 12080 in FF at 1926. (Brossell, WI)

BRAZIL (all in PP – gld)

Radio Clube do Para, Belem, 4885 at 0148 with Brazilpops, M DJ with ads and promos. (Coady, ON)

Radio Aparecida, Aparecida, 5035 at 0054 with M hosting lite music pgm. Very poor, more out than in. Also, 11855 at 0047-0118 with M talk, W at 0058 with ID, several anmt and promos, time pips at 0100, then M with ID and more talk. (D'Angelo, PA)

Help Wanted

We believe the Global Information Guide — month after month — offers more logs than any other monthly SW publication! (Just over 300 shortwave broadcast station logs were processed this month.) Why not join the fun and add your name to the list of GIG reporters? Send your logs to Gerry Dexter, Global Information Guide, 213 Forest St., Lake Geneva, WI 53147 or email them 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*

Voz Missionaria, (p) Camboriu, 9665 at 0045 with a sermon, into choir at 0100 with spoken accompaniment by a M. (Rippel, VA)

Radio 9 de Julho, Sao Paulo, 9820 with mellow vocals and M ancr. (Taylor, WI)

Super Radio Deus e Amor, Curitiba, 11765 at 0207, //9565 with an overly dramatic preacher. (Coady, ON)

Radio Nacional Amazonia, Brasilia, 11780 at 0400-0432 t/out with M and ID at 0430, then PP vocals. (Rippel, VA) 2315 with two M talk and a guest, later with a W presenter jingles and SFX bridges. (Handler, IL)

CANADA—CFRX, Toronto, 6070 at 0605 with a news item. (Maxant, WV)

CKZN, St. John's (Newfoundland), 6160 at 0300 with *CBC News*. (Brossell, WI) 0336 with *Vinyl Tap* pgm. (Coady, ON) 0555 on Chavez and Venezuela's future. (Maxant, WV)

CHU, Ottawa, 7850 at 0342 with ID and time anmt. (Sellers, BC) 14670 at 1410. (Maxant, WV)

CHAD—Radio Nacional Tchadienne, 6165 in FF at 2245 with pop vocals and DJ with small talk and M with possible news at 2301. (Coady, ON)

CHINA—China National Radio/CPBS: Xizang PBS, 6025 at 1408 in Tibetan, M speaking to telephone guests at 1408. (Handler, IL) 7210 in (l) Korean at 2234. (Brossell, WI) Voice of the Strait, Fuzhou, 6115 at 1247 in Mandarin with M/W talk, (Handler, IL) 7365-Shijiazhuang at 1342 with M/W alternating in Mandarin. Several CNR jammers heard in //. Also, 9455-Lingshi in Mandarin at 2159 with W and 4 +1 time pips before going into dead air and xmtr off at 2205. (Taylor, WI)

China Radio International, 4990-Hohot in (l) Mongolian at 1205, 6175-Beijing in Chinese at 1203 and 9640-Kashi in SS at 2148. (Brossell, WI) 7325 in JJ at 1250. (Rippel, VA) 11790-Xi'an at 0024-0059* with W hosting pgm of news features with brief music segments. Poor, and almost gone by closedown. (D'Angelo, PA) 13670 via Cuba at 1515 with news on the Chavez funeral. (Maxant, W)

CNR-1 jammer, 11905 with W and interview in Mandarin at 1539, //11945 and 13725. (Taylor, WI)

Firedrake music jammer, 13920 at 0130-0200*. (Rippel, VA) 15900, 15970, 16100, 16160, 16250, 16360, 17080, 17170, 17730, and 17730 all between 0235 and 0245. (Rasmussen, MD

DIJBOUTI—Radio Djibouti, 4780 at 0327 in Afar with pgm of enjoyable HOA music and M ancr. (Taylor, WI)

DIEGO GARCIA—AFN/AFRTS, 4319u at 2204 with hip-hop and techno things. (Coady, ON) 12579u at 0239 with barely audible pop. (Sellers, BC) (That's the best kind! – gld)

ECUADOR—Radio Oriental, Tena, 4781.7 in SS with M and impassioned talk and W with brief comments. (Coady, ON)

EGYPT—Radio Cairo, 9975 at 2310 with under-modulated EE talks. (Handler, IL) 11560 in GG at 1915. (Brossell, WI)

ENGLAND—BBC, 5875 at 1323 with 2 M talking about technology exhibits. (Handler, IL) 6040-Cyprus Relay at 0335 with AA service including some EE, off at 0359. 12015 via South Africa at 0434 with *In the Balance* pgm, 0324 with sports news f/by a news magazine pgm. (D'Angelo, PA) 12095-Oman Relay at 0255 with TOH beeps, ID sequence and news. (Taylor, WI) 15755-Thailand Relay at 0057 with *From Our Own Correspondents* dealing with the fear of flying. (Coady ON) 21470 on future Olympic sporting events. (Maxant, WV)

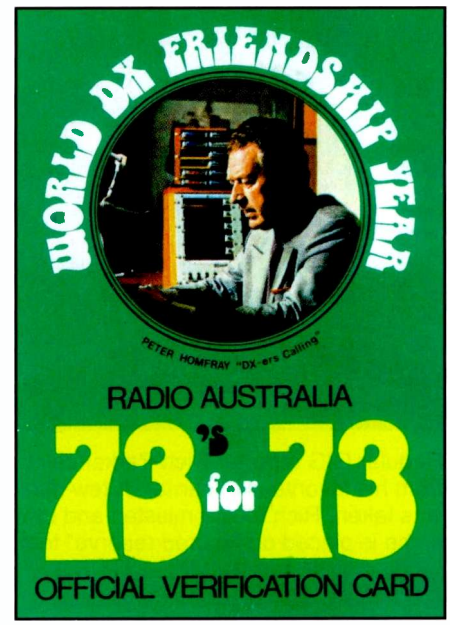
EQUATORIAL GJUINEA—Radio Africa, Bata, 15190 at 1906 with usual EE preacher. One pgm ended at 1940 with EE M ancr moving right into the next one. (D'Angelo, PA)

ERITREA—Voice of the Broad Masses, 4700 (a new frequency) at 0258 sign on with guitar-like music, M in (p) Amharic over music and into pgm at 0300. (Sellers, BC)

ETHIOPIA—Voice of the Tigre Revolution, 5950 at 0254 stringed instrument IS, 0257 into anmts in either Tigrinya or Afar, seeming ID with frequencies, then into presumed news headlines until music at 0302. (Sellers, BC)

FRANCE—Radio France International, 15300-Issoudun in FF at 1855. (Brossell, WI) 17858.2 in FF at 1746. M/W alternating a series of quick anmts with ID included. This odd frequency had been noted by others earlier. (Taylor, WI)

GABON—Africa No. One, 9580 with M/W in FF hosting music pgm. ID by W at 2259, f/by M with news. A bad het, which disappeared at 2301. (D'Angelo, PA)



World DX Friendship Year was dutifully celebrated with this Radio Australia QSL in 1973.
(Courtesy of Michael Yohnicki, Canada)

GERMANY—Deutsche Welle, 11800-Rwanda Relay at 0555, signing off wishing listeners a Good Morning. (Maxant, WV) 15260 in (l) Sudanese at 2227. (Brossell, WI) 15275-Rwanda Relay at 1824 in Hausa with M/W in long discussion and ID at 1858 closedown. (D'Angelo, PA)

Radio Oeoemrang, 15215-Wertachtal at 1637-1700* with its annual broadcast in lower GG with many EE translation snippets. (D'Angelo, PA)

GUAM—AFN/AFRTS, 5765 at 1239 with news items and PSAs directed at Navy personnel. Mentioned *AFN Spectrum* as the pgm title. (Sellers, BC)

GUATEMALA—Radio Verdad, Chiquimula, 4055 with talks in SS at 0355. (Brossell, WI) 4055 in SS with children singing in SS and then a sudden loss of signal. (Maxant, WV) 1204-1217 with M/W presenters. (Handler, IL)

INDIA—All India Radio, 9445-Bangaluru, at 2145 with sitar music and songs and 12025-Panaji (Goa), at 1737 with talks in (l) Malayalam, and 11670-Bangaluru, with local music and songs at 2140. (Brossell, WI) 2107-2230* with commentary about Nepal, f/by General Overseas Service to 2230 close. (D'Angelo, WI) 11620-Bangaluru, in (l) Urdu at 0248 with Hindi pops and M ancr. 11740-Panaji (Goa), with Hindi pop tunes at 0247, and 15120-Bangaluru at 0250 with pop songs and W ancr in Hindi. (Sellers, BC) 2115 with South Asian music and EE ancr. (Taylor, WI) In (l) Pashto at 0220 with traditional Hindi vocals and M with talk. (Coady, ON) 2227-2335 with Hindi music to time pips and ID f/by EE talk features, M/W ancrs. News at 2300 f/by more talk features and nice Hindi music from 2315. (D'Angelo, PA) 11670 with

Regular GIG reporter Rich Parker celebrates receiving a QSL from his favorite mail carrier. A few minutes after the photo was taken, Rich took a misstep and badly racked up a knee, so he is placed on "injured reserve" temporarily.

domestic music at 1415, 13710 with a vocal at 1415. (Maxant, WV) 11740-Panaji (Goa), at 0049-0110* in (l) Sinhalese f/by Hindi vocals. Carrier cut in mid-song at 0110. (D'Angelo, PA) 0330 with sub-continental music. (Rippel, VA)

Athmeeyayathra Radio, 15285 via Wertachtal, at 1427 with talks in (p) Hindi. (Brossell, WI) 1429 with W preacher in (l) Banjara and M into (l) Haryanvi at 1430. (Handler, IL)

TWR-India, 15755 via Uzbekistan at 1359-1430 in Hindi with music, W presenter and M preaching in EE, then translated into Hindi. W with ID and close at 1430. (Handler, PA)

INDONESIA—Radio Republik Indonesia: 4750 Makassar (Sulawesi), (p) at 1233 with solid W in II talks from 1230-1240 but fading fast. (Rippel, PA) 9680-RRI Jakarta, in II at 1032 with W talking phone calls from several other women. M ballad and talk at 1041. (Coady, ON)

Voice of Indonesia, 9525.8 at 2020 in FF with W talk and mention of "Jakarta." (Coady, ON)

IRAN—Islamic Republic of Iran Broadcasting, 6095 at 0233 in Pashto with Islamic chants, W ancr under heavy QRM which soon overwhelmed it. (Sellers, BC) 9895 in AA at 0256 doing Qur'an through the top of the hour. (Taylor, WI) 11850 at 0410 with Qur'an recitations and into talks by W at 0420. (Rippel, PA)

ISRAEL—Galei Zahal, 6885-Lodi at 0352-0423 with W in Hebrew f/by light guitar, then more talk and some vocals. Fanfare at 0400, f/by ID and news. (D'Angelo, PA)

JAPAN—NHK/Radio Japan, 11665 at 2316-2329* with (l) II service, W ancr, several talks and some lite instls. ID at closedown. (D'Angelo, PA) 11740 at 0505 with news on Syria and Japan. (Maxant, WV)

Radio Nikkei, 6055 at 1142-1157 in JJ with M/W talking back and forth with background music. (Handler, IL)

KUWAIT—Radio Kuwait, 15540 at 1930 with EE pgm *Kuwait in the Heart of History* on damages by Iran and reparations sought. Also, 21540 with two M in AA. (Handler, IL)

LAOS—Lao National Radio, 6130 at 1155 with SEA style music until TOH jingle, bell strike and into (p) news. (Rippel, VA)

LIBYA—Radio Libye, 11600-Sabrata, 1634-1710 with M/W with excited AA discussion pgm and some music segments. (D'Angelo, PA) 1903-2005 in AA with talks and songs and occasional music bridges. (Handler, IL) 1933 with contemporary ME music, M ancr in AA. (Taylor, WI)

MEXICO—Radio Educacion, Mexico City, 6185 at 0224 with easy listening Mexican tunes and SS ancr frequently mentioning "California." 0244 with ID and mention of frequency and meter bands. (Sellers, BC) 0540 in SS on the Mexican president. (Maxant, WV)

NETHERLANDS—The Mighty KBC, 7375 via Nauen at 0009 with songs, commercials, and IDs with M DJ. (Handler, IL) 9450 via Bulgaria at 0045-0159* with Moody Blues and other 60s things hosted by M. Many ads for KBC Imports in *The Giant Jukebox* pgm. Announced they were broadcasting from Bulgaria using a Russian transmitter. (D'Angelo, PA)

NEW ZEALAND—Radio New Zealand International, 5950 at 1343 with the *Mailbox* pgm and M/W reading listener mail, f/by Beatles songs and news at 1400. (Handler, PA) 9765 at 0800 with time pips and "Radio New Zealand news at nine," 11725 at 1100 with IS and ID which included "Voice of the Pacific" slogan. Also, 15720 at 0400 with time pips and "Radio New Zealand News. It's five o'clock, I'm Chris Whitter." (Coady, ON) 11725 at 0640 with DJ playing oldies from the '20s and later. (Maxant, WV)

NICARAGUA—El Buen Pastor, 8989u at 2327-2349 in SS with M preaching. (Handler, IL)

NIGERIA—Voice of Nigeria, 7255 at 2100 with EE ID, news, hi-life music. (Rippel, VA) 15120 in AA at 1742. (Brossell, WI) 0550 with "This is Lagos" ID and into music. (Maxant, WV)

NORTH KOREA—Voice of Korea, 11680 with back-to-back martial music. Time pips and ID by M at 2300. (Rippel, VA) 11710 in FF at 1405 with a patriotic chorus then W at 1408 with "Voix du Koree" ID and into long talks. (Coady, ON)

Korea Central Broadcasting Station, 2850 at 1210-1230 fade out. Non-stop KK talk on a particularly good Asian opening. (Rippel, VA) 6400 in KK at 1256 with orchestral things and M ancr. (Sellers, BC)

OMAN—Radio Sultanate of Oman, 15140 in AA at 1609. (Brossell, WI) (Has since moved to 15595 – gld)

OPPOSITION—(see also USA – gld)

ESAT Radio, 15375 (via Moldova to Ethiopia), in Amharic at 1720. This is Saturdays only from 1700-1800. (Brossell, WI)

Denge Mezopotamia (via Grigoriopol to Iran), 11510 at 1354 in Kurdish with M changes and talking on the phone. (Coady, ON) 1502 in Kurdish with M talk to 1509 tune out. (Taylor, WI)

Fursato no Kaze, 9960 (via Palau to North Korea), with contemporary JJ song, W with JJ talk, off at 1500 in mid-sentence. (Taylor, WI)

Radio Damal/Voice of the Somali People, 11615 at 1917 in (l) Somali. (Brossell, WI)

Radio Dabanga (via Vatican to Sudan), 7315 at *0427-0530 with numerous AA IDs, f/buy jingle mentioning Radio Dabanga, then pgm of mainly news and long talks. (D'Angelo, PA)

Radio Miraya FM, 9940 (via Ukraine to Sudan), at 0442-0519 with M/W in AA with remote interview, ID prior to news at 0500. (D'Angelo, PA)

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!

The winner this month is NASWA head guy **Rich D'Angelo** who supplies me with so many neat illustrations each month (not to mention the top-level logs). Rich gets one of Universal Radio's "Go Bags," which are so perfect for carrying small portables, batteries, notebooks even, er, scanners and other miscellany. Check page 53 of your Universal Communications Catalog for details — you can even use the bound-in order form to get one for yourself. The Go Bags are great to take along on trips or DXpeditions. They have a zippered top and a handy carry strap.

Radio Tamazuj, 7315 (via Vatican to Sudan) at *0358-0427 with M/W doing opening ID and anmts f/by news in AA, but some EE with talk on South Sudan. (D'Angelo, PA)

PHILLIPINES—Far East Broadcasting Corp., 9430 at 1251 in Mandarin with an upbeat hymn, M/W with talk at 1252. "Praise the Lord" over bluegrass fiddle at 1254. (Coady, ON) 1343 in Mandarin with a song, f/by two different M talkers. (Handler, IL) 12095 at *2259-2330* with M and EE ID: "FEBC Radio broadcasting from Manila, Philippines" prior to music fanfare at 2300 and opening in (l) Hmong. (D'Angelo, PA)

Radio Veritas Asia, 15320 via Vatican at 1518 in listed Tagalog. (Brossell, WI)

PIRATES—WFMT, "Family Radio," 6924.6 at 2210-2340 with "live" rock album and IDs between each number. M gave call letters and W saying "This is Sonja Norwood and you are listening to Family Radio," later some talks about family by Norwood. (D'Angelo, PA)

Captain Morgan Shortwave, 6925 at 2351-0014* with rock and frequent IDs by M/W. Closed with Twilight Zone and Alfred Hitchcock themes. (D'Angelo, PA)

The Crystal Ship, 6925.6 at 0103-0142 with rock, ID, more rock, another ID, a skit and more vocals. Off at 0142 with ID and FAX xmsn before carrier cut. (D'Angelo, PA)

Undercover Radio, 6925 with heavy metal at 0200-0216. <undercoverradio@gmail.com>. (Hassig, IL)

WAZU, 6955 at 0027 with music and new microphone test according to the ancr. (Patterson, PA)

Voice of Planet Zulu, 6925 monitored at 0026 with music and a computer-generated ID. (Patterson, PA)

Blue Ocean Radio, 6930 at 0214 playing banjo things and IDs at 0219 then into fiddles. (Sellers, BC)

Wolverine Radio, 6935 with oldies at 0220 and ID at 0224. (Sellers, BC) 0200 with heavy metal, country-rock, SSTV, and FAX segments then a section of songs featuring the word "Party." (Hassig, IL)

Rave-On Radio, 6925u with music at 0014-0023. (Patterson, PA) 2342 with a "Lou Reed birthday show. <raveonradio@gmail.com>. (Hassig, IL)

Global Warming Radio, 6925 with music at 1920-1933. (Patterson, PA)

Pissant Radio, 6925u at 0240 with country stuff. (Patterson, PA)

Radio Deadman, 9625u at 0059 with music and ad for Tree Frog Beer. (Patterson, PA)

Radio Jamba International, 6925 at 0543 with third movement of Beethoven's Ninth, "strange" music, more classical music, SFX and more weird music. (Hassig, IL)

Voice of Pancho Villa, 6925 at *0500-0505* annual SWL Fest broadcast as Pancho goes to the Vatican to help elect the next Pope. (D'Angelo, PA) *0500-0515* the traditional "midnight ride" of Pancho Villa and the Cardinals voting on a new Pope. (Zeller, OH)

Flying Dutchman Radio, 6300 (Netherlands) with segued music, peaking around 2251. (Rippel, VA)

Radio CWR, 6300 with The Doors and an ID. (Rippel, VA)

Cupid Radio, (Netherlands), 6255 well heard here at 2326 with ID and usual back-to-back music. Reports should be mailed to: <cupidradio@hotmail.com>. (Rippel, VA)

Overijssel Radio (p) Netherlands, 6305 at 0235 with talks by M and pops. (Rippel, VA)

Border Hunter Radio, (Euro), 6300 well heard at 0230-0250* with pops. Stayed on frequency after sign off and then heard Dr. Benway calling Border Hunter and they had a brief QSO. (Rippel, VA)

Python Radio (Euro), 6305u at 2240-2250* with segued selections, ID and s/off by M. (Rippel, VA)

Radio Marabu, (Germany), 6209.8 with back-to-back selections and ID by M in (p) GG. Building steadily as our sunset approached. (Rippel, VA)

Spaceshuttle Radio (Euro), 15580 with pops and many IDs at 1223. (Rippel, VA)

RUSSIA—Voice of Russia, 7290 heard at 0110 about an African American living there. (Maxant, WV) 7340-Petropavlovsk-Kamchatska, in (l) JJ at 1213 and 9395-Armavir, with world news at 2200. (Brossell, WI) 9395 via Gavar (Armenia), at 2300-2359* with ID and news in EE f/by World Service pgm, which included a discussion by a M/W on the current political and the election situation there. (D'Angelo, PA) 9750 via Gavar at 2237 with 2 M and discussion in PP. ID at 2259, Kremlin Bells, another ID and news at 2300. (D'Angelo, PA)

Radio Rossii, 6100-Kyzyl at 2258 in RR with folk music, 2300 into a long vocal, then RR ID and probable news. (Taylor, WI)

RWANDA—Radif. Rwandaise, 6055 (p) at 2051-2059* with W and FF talk hosting music pgm which continued until carrier termination. (D'Angelo, PA) 2057 In FF with African choral anthem to s/off anmts and a mention of "Rwanda," then off at 2100. (Coady, ON)

In Times Past

Here's your "blast from the past" for this month:

Radio Miranda, YVNL, Los Teques Venezuela, on 6000 in Spanish at 0250 on February 28, 1967

SAUDI ARABIA—Broadcasting Service of the Kingdom, 11820 Holy Qur'an Service at 2231-2300* with recitations and AA talk. Off at 2300 after last recitation, 15435 at 1524-1757* with AA talk from M/W, interview, time pips at 1600. I stayed for the music pgm, which went off in mid-song. (D'Angelo, PA) 15120 at 1420 with talks in (l) Bengali. (Brossell, WI)

SERBIA—International Radio of Serbia, 6190 via Bijeljina (Bosnia), at 0122 ending Serbian language pgm. IS at 0129 f/by W in EE with ID and news in EE, Serbian reopened at 0200. (D'Angelo, PA) 0137 with EE service on rural development and talk about subsidies f/by M with sports. (Handler, IL) 2150-2211 with local music, IS at 2156 and EE pgm opening at 2200. (D'Angelo, PA)

SEYCHELLES—BBC, Indian Ocean Relay Station, 7435 at 0230 with W and news summary, then *World Business Report at 0232*, 9410 with coverage of Burkina Faso vs. Togo in African Cup soccer. (Coady, ON) 7435 at 0310-0431 with EE news features. ID at 0330 f/by news. (D'Angelo, PA) 9419 on uprisings in Bahrain at 2153. (Brossell, WI)

SINGAPORE—BBC, Far East Relay

Christian Voice marked the closure of its site in Chile with this special QSL, received by Rich D'Angelo.

Station, 6195 at 0220 with a report on voting rights in the US. (Brossell, WI) 11890 at 1300 with news and current events. (Handler, IL) 15355 at 0100 with time pips and pgm promo on local health clinics in South Asia to be heard after the news. (Coady, ON)

SOUTH AFRICA—Channel Africa, 7230 at 0330 on South Africa becoming a democracy. (Maxant, WV)

Radio Sonder Grense, 3320 at 0415 in Afrikaans with classical music. (Orzel, CA)

SPAIN—Radio Exterior de Espana, 3350-Costa Rica Relay, in SS with Spanish folk songs. (Orzel, CA)

SRI LANKA—Sri Lanka Broadcasting Corp., 9770 at 0151 with oldies, time pips at 0200, ID and TC for 7 a.m., then news. (Coady, ON) 11905-Ekala at 0152 in Hindi and then EE with South Asian music, mention of Colombo, ID at 0200 and more of the same music. Into news in EE at 0215. (Taylor, WI)

SWAZILAND—TWR, 4775 at 0358 with IS, EE ID "This is Trans World Radio, Swaziland" and open in GG at 0400. (Sellers, BC) 0350 with talks in (l) Lomwe language. (Brossell, WI) 9500 with a preacher at 0520. (Maxant, WV)

TAJIKISTAN—Radio Tajikistan, 4765 in Tajik at 0149 seemed to be news headlines then mostly Tajik songs, some popular, some more traditional. But they faded after 0200. (Sellers, BC)

TAIWAN—Radio Taiwan International, 6105 at 2253 with talks in listed Mandarin. (Brossell, WI)

Sound of Hope, 7105 in Mandarin at 2207 with M in excited talk and something close to its "Xi Wang Zhi Sheng" ID. Also, 7280 in Mandarin at 1209 with W and spirited talk over occ. Oriental instls, possibly from the Firedrake jammer. (Coady, ON) 7280//7365 at 1209 with CC talks, excellent signal with no sign of Chinese jamming. (Brossell, WI)

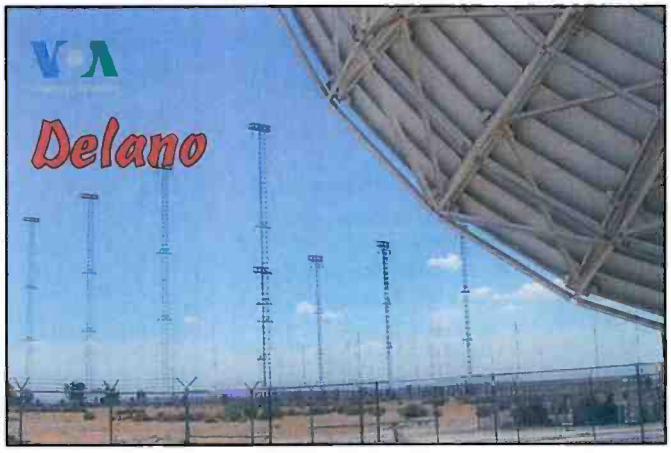
THAILAND—Radio Thailand, 13745 at 0002 with M/W and news, ad for Bangkok Airways at 0011. (Coady, ON)

TUNISIA—RTV Tunisienne, 7345-Sfax heard at 2202 with M and news in AA to carrier cut at 2206*. (D'Angelo, PA) 17735 at 1606 with AA talks, struggling with co-channel Radio Japan via France. (Brossell, WI)

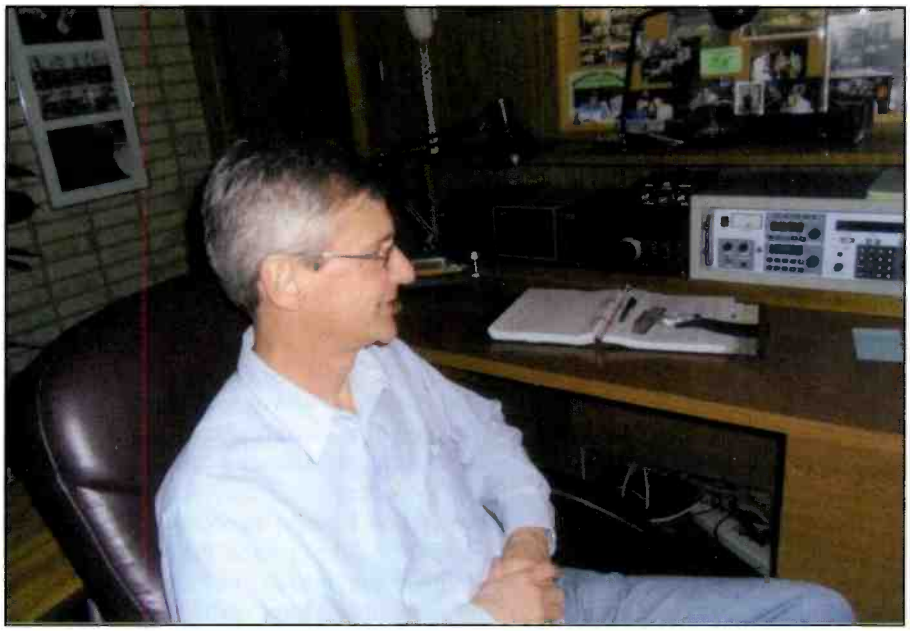
TURKEY—Voice of Turkey, 9515 with *DX Corner* pgm at 0315. (Brossell, WI) 9655 at 0400 with W doing ID, sked and pgm highlights, then M/W and news. (Coady, ON) 9655 at 0320 on Syrian refugees, 12035 with vocals. (Maxant, WV) 9700-Emirler at 0526-0550 with W in TT hosting music pgm. (D'Angelo, PA)

USA—VOA, 7225-Philippines Relay in (l) Korean at 1202, 9390-Philippines at 1312 in (l) Mandarin, and 13580 via Wertachtal with talks in listed Kurdish. (Brossell, WI) 9845 in AA at 0259 in AA. Afia Darfur pgm began at 0300, 9875-Thailand Relay at 2242 in Mandarin competing with a CNR-1 jammer also in Mandarin. VOA with M/W talk, CNR with just a M talk, the jammer was //9835. (Taylor, WI)

RFE/RL, 6075 via Vatican in Byeloussian at 0344 with pgm of news



Here's a shot of the former VOA site at Delano, California received on a QSL by Dan Amoroso in Pennsylvania.



A well-known name in BCB/FM DX circles, NASWA member, and good friend Tim Noonan paid a visit to GIG's Listening Post shack last fall.

shorts. (Taylor, WI) 15265-Lampertheim Relay at 1424 in listed Uzbek. (Brossell, WI)

Radio Free Asia, 9355-Northern Marianas Relay in Mandarin at 2137. (Brossell, WI)

WRNO, Louisiana, 7506.4 at 0310 with a preacher and bad audio. (Maxant, WV) 0339 giving their email address and returning to more Gospel songs. (Sellers, BC) 0403 with W airing DW news and a request for donations. (D'Angelo, PA)

WTWW, Tennessee, 9370 at 1425 with Brother Stair. (Maxant, WV)

WEWN, Alabama, 15610 with *Catholic Connection* call-in pgm. (Maxant, WV)

Family Radio, Florida, 5945 at 0032 with their theme music, f/by M with SS religious talk, replaces 5885. (D'Angelo, PA) 9280 via Taiwan at 1221 in Mandarin and 15560 via Nauen in Hindi at 1439. (Brossell, WI)

Adventist World Radio, 15240 via South Africa at 1923 in (l) Fulani, 15255 via Sri Lanka Relay in (l) Punjabi at 1515. (Brossell, WI) 17575 in Somali at 1640 with enjoyable Somali music. M began long talk at 1650. (Taylor, WI)

WRMI, Florida, 9955 at 1410 with a preacher. (Maxant, WV)

Overcomer Ministry, 11650 via Bulgaria in EE with Brother Stair at 2009, //11685 listed as Kostinbrod. (Taylor, WI)

KJES, New Mexico, 11715 monitored at 1415 with M/W and litany prayer. (Coady, ON) 1420 with children singing Gospel songs. (Maxant, /WV)

VATICAN—Vatican Radio, 7410 via Uzbekistan heard at 0143 in English and an interview about reaching out to other faiths. Also, 11625 via Madagascar at 0301 on the Pope receiving the president of Romania. (Sellers, BC) 0645 discussing the conclave of cardinals. (Maxant, WV) 9600 via Tinang at 2210 in Mandarin with W talk. (Taylor, WI) 15570 at 1746 on youth and the Church. (Brossell, WI)

VIETNAM—Voice of Vietnam, 9635-(p) Son Tay in VV at 2215 with traditional Vietnamese music hosted by W. (Taylor, WI) 9640 via England with M/W and news in EE at 0340. (Sellers, BC) 9840 at 1230 EE sign on with "This is the Voice of Vietnam," M/W with a pgm line up and news. (Sellers, BC)

ZANZIBAR—ZBC Radio, 11735 at 1920 with talks in Somali. (Brossell, WI) 2056 in EE with distinctive music, quick ID for "Spice FM" and off at 2059. (Taylor, WI) 2100 in Swahili with many "Spice FM" IDs and promos over "Bollywood-like" vocals, then DJ chatter. Finally went off at 2140. (Coady, ON)

Time for the salutes and high fives offered to the following folks who did the good thing with their logs this month: Rich D'Angelo, Wyomissing, PA; Mark Coady, Peterborough, ON; Chuck Rippel, Chesapeake, VA; Harold Sellers, Vernon, BC; Steve Handler, Buffalo Grove, IL; Mark Taylor, Madison, WI; John Orzel, Salinas, CA; Gene Patterson, Gibsonia, PA; Bob Brossell, Pewaukee, WI; William Hassig, Mt. Pleasant, IL; Charles Maxant, Hinton, WV; Lloyd Rasmussen, Kensington, MD; and George Zeller, Cleveland, OH. Thanks to each of you.

Until next month — good listening!

That Riverside Radio Summer

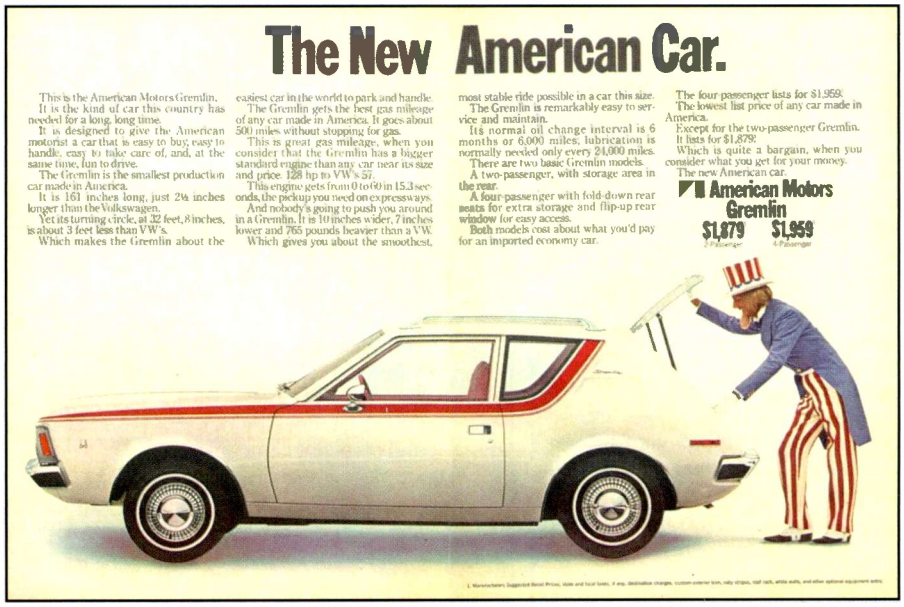
by Shannon Huniwell,
WPC2HUN
<melodyfm@yahoo.com>

"On what had been considered by some of their friends as a bold decision, they stuffed the Gremlin with their clothes and modest possessions and headed west . . ."

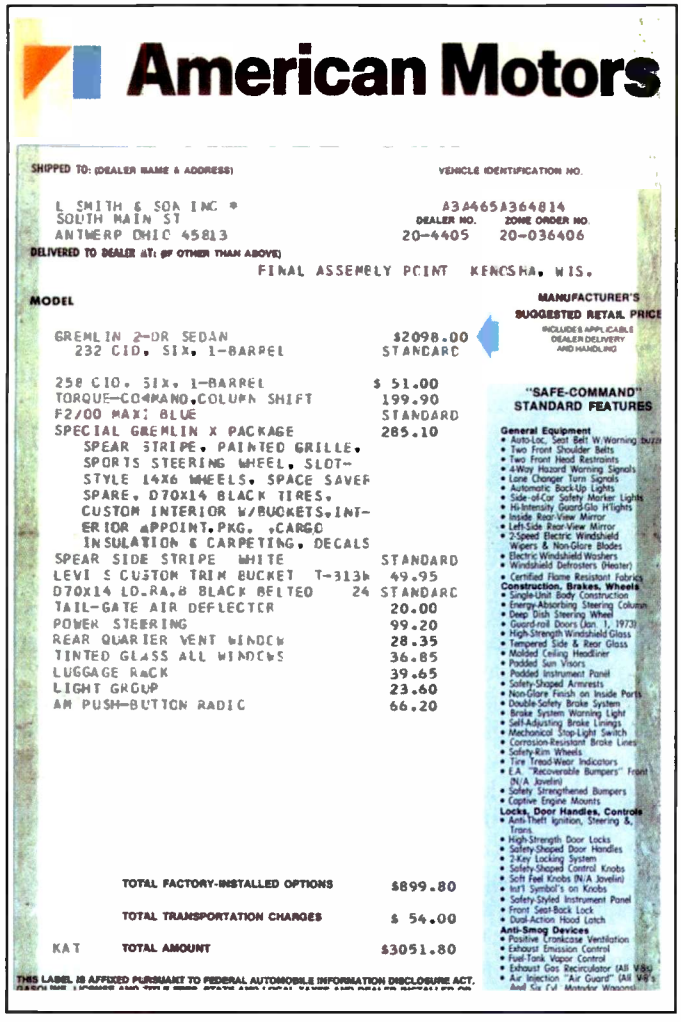
"YOU COULD WIN A CAR!" an announcer on a shoestring, Midwestern daytime-only radio station emphasized. His declaration constituted the first and last sentences of a public service "commercial" aired at the tail end of a local break in *Paul Harvey's News & Comment*. Racing through the live copy, so as to finish before American Broadcasting Company's famed personality returned, the DJ explained how one could net such a prize. "Just buy a Lion's Lucky Loot ticket from any member of our fine community's Lion's Club," he read aloud, "and you just might be the winner of an AMC Gremlin! ***(WATCH:*** *An advertisement for AMC's famous Gremlin <http://bit.ly/109t0DZ>. – WPC2HUN)* The guy ripped through other minor details and obligatory contest disclaimers but still got momentarily over-talked by Mr. Harvey on the rejoined ABC Network feed.

Though no listener could see it, that Lion's Club script was awfully hard to read, scarred with thick black cross-outs eradicating the word *new* and several letters on either side of it. The desirable descriptor had originally been part of the opening and closing phrase, as in "YOU COULD WIN A *NEW* CAR!" One of the station's owners was an attorney who felt sufficiently uneasy about promoting an event that included prize, consideration, and chance — technically constituting a "lottery" and barred from broadcast. When a fellow Lion on the sweepstakes fundraising committee admitted that the prize was a year-old leftover demonstrator and not actually showroom fresh, the lawyer really wanted out. The compromise was a change in terminology and a sharp reduction in on-air mentions, so as not to upset the FCC.

Mrs. Ruth Weaver couldn't have cared less about the vehicle's provenance. As that prize car announcement coming through a faithful 5-tube Sears Silvertone kitchen radio caught her attention, Ruth vividly pictured it as an answer to a prayer. In church, a couple of days later, she spotted Harry Dunn whom she recalled being a past president of the local Lion's Club. Ruth took it as a good omen that he just happened to have a



Get a load of the price for a brand spankin' new 1970 economy Gremlin with no back seat, $1,879. Today, few would balk at that figure just for a brake job and new tires! While American Motors Corporation used Uncle Sam to promote its debut 1970 compact car, the '78 Gremlin that our story's Dan and Joan Northrup drove to Dan's Uncle Ralph's HVAC shop in Riverside, California looked pretty much the same.



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SPEAR STRIPE, PAINTED GRILLE, SPORTS STEERING WHEEL, SLOT-STYLE 14X6 WHEELS, SPACE SAVER SPARE, D70X14 BLACK TIRES, CUSTOM INTERIOR W/BUCKETS,INTERIOR APPOINT.PKG., CARGO INSULATION & CARPETING, DECALS		
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• Windshield Defrosters (Heater)
• Certified Flame Resistant Fabrics

Construction, Brakes, Wheels
• Single-Unit Body Construction
• Energy-Absorbing Steering Column
• Deep Dish Steering Wheel
• Guard-rail Doors (Jan. 1, 1973)
• High-Strength Windshield Glass
• Tempered Side & Rear Glass
• Molded Ceiling Headliner
• Padded Sun Visors
• Padded Instrument Panel
• Safety-Shaped Armrests
• Non-Glare Finish on Inside Parts
• Double-Safety Brake System
• Brake System Warning Light
• Self-Adjusting Brake Linings
• Mechanical Stop-Light Switch
• Corrosion-Resistant Brake Lines
• Safety-Rim Wheels
• Tire Tread-Wear Indicators
• E.A. "Recoverable Bumpers" Front (N/A Javelin)
• Safety Strengthened Bumpers
• Captive Engine Mounts

Locks, Door Handles, Controls
• Anti-Theft Ignition, Steering & Trans.
• High-Strength Door Locks
• Safety-Shaped Door Handles
• 2-Key Locking System
• Safety-Shaped Control Knobs
• Soft Feel Knobs (N/A Javelin)
• Int'l Symbol's on Knobs
• Safety-Styled Instrument Panel
• Front Seat-Back Lock
• Dust-Action Hood Latch

Anti-Smog Devices
• Positive Crankcase Ventilation
• Exhaust Emission Control
• Fuel Tank Vapor Control
• Exhaust Gas Recirculator (All V8's)
• Air Injection "Air Guard" (All V8's And Six Cyl. Manuals Wagons)

THIS LABEL IS AFFIXED PURSUANT TO FEDERAL AUTOMOBILE INFORMATION DISCLOSURE ACT.

Here's a 1973 Gremlin window price notification that might give today's readers "sticker shock" in reverse. Who could complain about shelling out a bit over three grand for a ride with all those listed options — including a genuine AM push-button radio for $66.20. Costs had escalated in 1979 when Joan Northrup's grandmother bought one for her Lion's Club prize Gremlin. That radio set her back about 75 bucks, including dealer installation.

few of the $3 bright orange raffle tickets in his suit coat pocket. Ruth held the cardstock trio tightly in her folded hands and vowed: "If she could win the automobile, she'd loan it to her granddaughter's boyfriend, Dan, so he would have reliable transportation."

That gesture would enable him to get a decent job following graduation, she projected, so then Dan and her granddaughter, Joan, could get married *after* Joan had earned at least a year's worth of community college credits but *before* the young couple might manage to get themselves pregnant.

Joan Northrup laughs at this logic, though understands why her grandmother fixated on such reasoning. The older woman was scared silly that her granddaughter would find herself "expecting" and have to drop out of school. Joan's mom — whom she'd only seen a few times — had her just shy of 17. Several weeks later and after admitting uncertainty about who the father might be, Joan's birth mother ran off with the second or third in a continuing series of losers.

Mrs. Weaver assumed custody of Joan and lived with dread that history would repeat itself. As the teen and her boyfriend of nearly four years approached the last few months of their high school careers, Ruth Weaver took on the nervousness of a hapless basketball coach who closes his eyes and wishes for the clock to run out. "If I win that car on the radio contest," the apprehensive grandmother promised Joan and Dan, "I'll sign it over to the two of you as a future wedding gift. Please notice," she emphasized with a clumsy wink, "I specified just *two* of you." The young couple seemed to blush their comprehension and showed appreciation for Ruth's long shot offer by reassuring her with a pair of hugs and pledge to continue being "good."

The Lion's Loot drawing was supposed to be aired live, but at the last minute the station's part owner and legal counsel decided that such coverage might not be passed off as a simple oversight of the Commission's rules, should some stick-in-the-mud complain to Washington about gambling corrupting impressionable listeners of the hometown broadcast frequency.

Ruth Weaver was in the midst of pointing at her radio and wondering aloud why the contest proceedings weren't being covered, when a neighbor called.

"Ruth," the woman began in a tone just right for gossip, "I wanted to be the first to tell you, so I ran to this phone booth. I'm downtown where they're picking the Lion's Loot tickets and *you* won the car! Can you believe it?" she practically stated the question with a palpable tone of envy.

Ruth didn't know what to say, except to whisper, "Thank you," in a way that sounded like a prayer as much as it was gratefulness to the caller.

The *Rare* Leftover With An Optional AM

Ruth Weaver became a bit of a neighborhood celebrity. Because of the win, she was interviewed twice by the daytimer's morning man and enjoyed front-page, above-the-fold coverage in the local weekly newspaper. Its reporter included a paragraph detailing the prize Gremlin's specifications. He pointed out that while most Gremlins were powered by very American six-poppers, this car had a German-designed, 4-cylinder engine.

Besides the 1978 AMC vehicle's "demonstrator" status, about 4,500 miles already on its odometer, and manual transmission, the four-banger was admittedly inadequate to give the zippy-looking auto any measure of spunky performance. Drew Beck's Allpar.com article, *The Gremlin: AMC's Successful Compact*, admits that "the only performance dogs in the Gremlin family were the 1977 and '78 models equipped with the [Porsche] Audi 4-cylinder engine. They simply had no torque. In order to get any kind of acceleration out of these cars, you had to be constantly rowing the gearshift to keep the engine wound up to its power peak. Four-cylinder cars equipped with automatic transmissions were agonizingly slow; you would grow old trying to get up to speed on any freeway entrance ramp with even a slight uphill grade."

Joan and Dan found such a critique to be accurate, but never let on publicly, having no desire to look a proverbial gift horse in the mouth. Plus, Ruth Weaver had sweetened the prize. Discovering that the very basic Gremlin was sent to the dealer sans radio, she took $73.50 out of her rainy day fund to have the dealership install an original equipment manufacturer/authorized pushbutton AM. "You know, that radio worked amazingly well," Joan recalls; "especially at night."

The young pair was wed a week after their secondary education concluded. On what had been considered by some of their

friends as a bold decision, they stuffed the Gremlin with their clothes and modest possessions and headed west — twisting the economy car's radio dial as they passed through each landmark city's dominant Top-40 signal. By the time they motored through the Kansas City market, the two had sung along with then current hits like The Bee Gee's *Love You Inside and Out* so often that they could recite the lyrics. And the newlyweds still had a lot of highway music to memorize.

A great uncle of Dan's, who ran a heating, air-conditioning, and ventilation business in Riverside, California (some 60 miles east of Los Angeles) hinted to Dan's older sister (the only family the boy now had since the unexpected passing of their barely 40-year old mother five years earlier) that he might be willing to teach Dan the trade *if the kid passed muster, had a good head on his shoulders, was worth his salt*, or some such qualification-oriented adage. The old bachelor relative wasn't much for kudos, but apparently liked Dan's aptitude and work ethic well enough to lend the couple money for a down payment on a matchbox of a house about a year after they arrived in the Golden State. Joan says that was the old man's way of asking them to stay beyond Dan's apparent probationary employment period. By that time, she'd assumed the position of de-facto bookkeeper, having stepped in after witnessing Great Uncle Ralph rifling through a row of invoice-filled shoeboxes searching fruitlessly for some bill a delinquent customer claimed to have never received.

An Air-Conditioner On The Roof, A Foot In The Door

One client agreeing to render payment as soon as repair work got performed, was Riverside radio station KPRO. Dan had been sent there to check out a dead topside cooling unit. The service call allowed him a glimpse of the local AM's operation and rekindled an interest in broadcasting that was first sparked when a grade school classmate let him listen to a radio the boy's father helped them concoct out of a razor blade, bent safety pin, pencil lead, a discarded wax paper tube, and wire.

Because he loved climbing trees, Dan was put in charge of attaching the end of a long length of some of that wire to a huge oak about 100 feet from his pal's bedroom window. The other end got tethered around a rooftop vent pipe on the boy's house. Dan then tossed a shorter run, spliced into the resulting antenna and temporarily coiled at one end, to his compatriot waiting for this lead at his open window. After the kid's father made some final adjustments and suggested they each take a turn with the headphones, the man remarked that Dan seemed the more grateful and enthusiastic of the two youngsters. Dan thanked the fellow several times for including him in the Saturday morning project.

It could have been that the gentleman knew that Dan's own dad was not in the picture.

But for whatever reason, the guy suddenly decided that the radio boys needed a fast food lunch and topped that off with an impromptu tour of the local radio station that would — a decade later — be promoting the give-away of the AMC Gremlin. The guy was apparently a bowling buddy of the DJ who did the pint-sized AM's weekend polka music show. Dan could hardly believe his good fortune of being up close to dancing meters, fat glowing tubes peeking through porthole windows on the transmitter, and then being ushered into the smokey, fascinatingly cluttered little studio where records spun, dials were turned, and where he actually got to say his name on the air.

As he stood, toolbox at the ready, in front of KPRO, Dan relived that wonderful memory of the boyhood station adventure and how excited his mom had been to have caught the brief broadcast exchange between the polka DJ and her son. "Maybe you'll be in radio someday," she'd predicted.

"*Hey Mom*," he whispered skyward, imagining his deceased mother looking down, "*maybe I will*." About an hour later, he'd already got the balky air-conditioner humming again, diplomatically coaxed a check from somebody who'd briefly emerged from an office, and then received permission to venture into the studio where big-band music was being programmed. The announcer on duty was particularly loquacious while off the air, offering Dan KPRO's history so detailed that little could be reasonably absorbed.

Jan Lowry's Broadcast Memory To The Rescue

Joan's account of her then young mate's KPRO introduction sent me quickly to our column's official source of radio station background. Jan Lowry fast obliged with much of the following narrative and even more intricate detail that would have easily overflowed my *Pop'Comm* word count limit.

Jan begins with July 17, 1940. That's when the Federal Communications Commission (FCC) granted a construction permit for a new Riverside, California broadcast station to the Riverside Broadcasting Company, for operation on 1420 kilocycles with a power of 250 watts unlimited hours. For some reason, perhaps due to the FCC's questions about who would end up operating the facility, the permit was rescinded "pending further consideration" a week later.

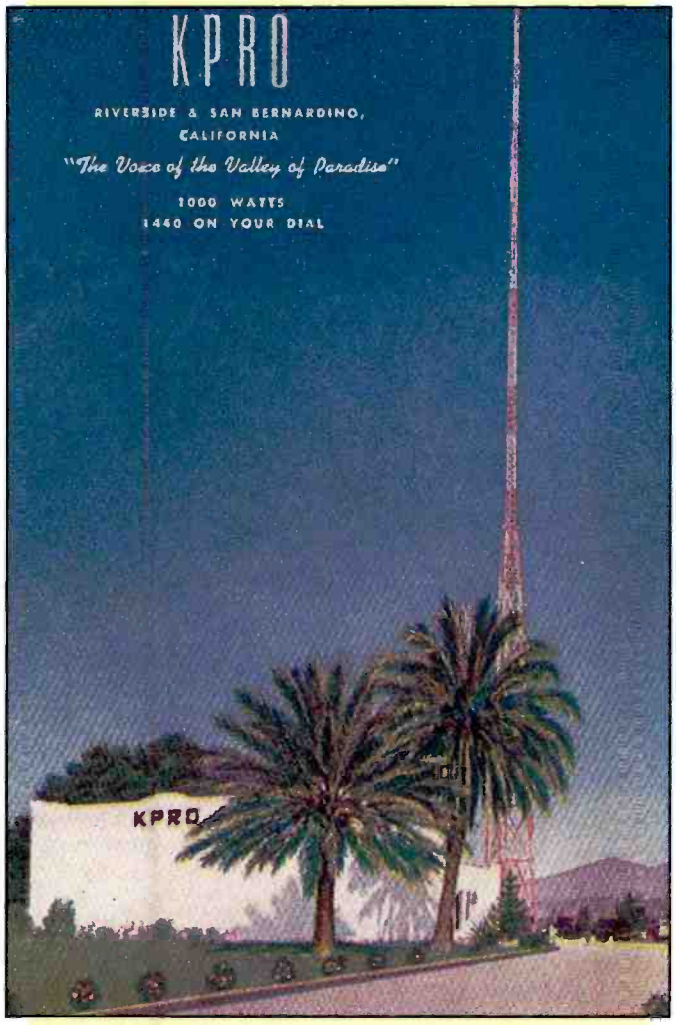
Meanwhile, the Broadcasting Corporation of America (Willard L. Gleeson, President) acquired the Riverside Broadcasting Company and reapplied for 1440 kilocycles with 1,000 watts of power. This application was approved by the FCC in early 1941, the K-P-R-O identity was granted (The call letters stood for *P*omona, *R*iverside, and *O*ntario, California.), and construction began on Mr. Gleeson's new station.

In September 1941, KPRO installed a 1-kilowatt, Collins transmitter and a three-legged, 366-foot-tall, self-supported Truscon steel vertical radiating antenna tower at a site 1-1/2 miles north of Riverside — at 3401 Russell Street — where a two-story office and studio building was constructed on the site of an old farmhouse.

KPRO made its on-air debut Saturday evening at 7 p.m., November 15, 1941. Jan even dug-up the IDs of the station's original announcers: Grant Holcomb, Jr.; Hap Polite; and Dick Gifford. On the technical staff were Chief Engineer Norman Dewes and Technician Robert McGaughey, formerly of KYCA Prescott, Arizona. Jayne Stout and Betty Peterson staffed the office.

California AM/FM/TV Dreamin'

In 1944, the Broadcasting Corporation of America applied to the FCC for permission to establish a new Frequency Modulation station on 43.5 megacycles and for a new television station to serve Riverside on channel 3. These applications were later dismissed due to wartime conditions. Also in 1944, KPRO affiliated with the Blue Network Company. The Blue Network changed its name to the American Broadcasting Company effective June 15, 1945. Also in June 1945, Gene Williams became KPRO's general manager to replace Mr.



Probably dating to the early 1940s, here's a linen postcard image of the original KPRO, "The Voice of the Valley of Paradise." The 1,000-watter on 1440 kHz had relocated by the time Dan Northrup went to KPRO in order to fix its air conditioner. The Riverside station also aimed its programming at listeners in better known San Bernardino, though its calls signified the primary coverage communities of Pomona, Riverside, and Ontario. Because AM transmission typically includes a wagon wheel shaped copper ground system with the "hub" at the tower base and the spokes and wheel buried a few inches under the earth, one can assume that part of that system was interrupted by the studio/transmitter building's footprint, but did run under the roadway in the foreground.

Gleeson, "who was retiring from active management to devote full efforts to FM and TV development."

A couple of weeks prior to Christmas 1946, the Broadcasting Corporation of America was granted a construction permit to build a new community television station at Riverside on channel 1. This TV station would be physically located in nearby San Bernardino, where KPRO maintained an auxiliary studio.

Money was spent immediately on television studio construction and equipment at 3401 Russell Street, Riverside. The video authorization was assigned KARO (TV) as its callsign. This was during a time when FCC rules barred the same root callsign (as in WAAA, WAAA-FM, WAAA-TV) on sister stations that didn't share the same city-of-license.

If you're wondering where a channel 1 might appear on a traditional click-tune television receiver, you are not alone. Few folks were ever aware that a channel 1 was on the FCC's plate, as the allocation was apparently meant for ultra-local service, as the Low Power Television (LPTV) stations popular in the 1990s would later be. Anyway, although NBC (circa 1944-45) also held a CP for channel 1 in New York City, later bumped to channel 4, the FCC reallocated TV channel 1 (44 to 50 megacycles) to other communications services in mid-summer 1947. That made KARO (TV) the only outstanding CP for the lowest VHF channel in the United States.

November of '47 represented another blow to the KPRO management when KPRO's ABC network affiliation was lost to a new San Bernardino radio station (KITO). KPRO was now an independent, non-network-affiliated outlet. As if that weren't enough of a setback, the FCC officially dropped TV channel 1 in a final action coming in May 1948, leaving partially-built KARO (TV) without a channel assignment. While channel 6 was proposed as a channel allocation for Riverside, it was never actually assigned, and the community's bid for a local television service was quietly dropped by the end of 1948.

It is unclear what happened to KPRO's 1944 low-band (42- to 50-megacycle) FM plans. Had the station debuted, however, one can safely speculate that the callsign would be something like K35R or K35RV for a West of the Mississippi frequency modulation broadcast station on 43.5 megacycles at Riverside.

Focusing on its aural property, KPRO officials agreed to link their AM with the Dallas-based Liberty Broadcasting System in 1950. Meanwhile, likely due to the doused video situation, in 1951 the station's licensee declared bankruptcy. Mr. Gleeson continued however, as President and General Manager of the 1-kilowatt Riverside station. He got word that the LBS network folded in May 1952 and then had to step aside when KPRO's bankrupt licensee was involuntarily transferred to Trustee William B. Ross in December. The FCC approved the transfer of the Broadcasting Corporation of America from W.B. Ross to Fred E. Carr, as Trustee in Bankruptcy, on January 20, 1954.

Next, in a multi-station acquisition, KPRO's licensee was acquired by the Imperial Broadcasting System during February 1957 for $533,000. Included in the purchase price were stations in Blythe (KYOR), Brawley (KROP), and Indio, California (KREO). During this period, KPRO used the slogan "Radio Riverside," and ran a music, news, weather, and sports format that one might consider the era's generic programming for a small independent AM.

On August 16, 1961, KPRO and the three other California broadcast stations owned by the Imperial Broadcasting System were acquired as a group by KPRO Inc. Headquarters for this entity's "Southern California Radio Group" were established at 6362 Hollywood Boulevard, Los Angeles. A non-network station until September 1961, KPRO then joined the Mutual Broadcasting System as that network's Inland Empire affiliate. By mid-1964, KPRO was in 24-hour operation with a "middle-of-the-road" music format from its combined studio/transmitter site at 3401 Russell Street. The venue, razed by 1979, now houses a business center complex.

The Dick Clark Connection

KPRO's licensee, KPRO Inc., was purchased from the Tolbert Foster group on June 1, 1965 by Progress Broadcasting

Most AM directional arrays are tough to photograph in their entirety and with the related studio/transmitter building in full view. *Pop'Comm* Editor Richard Fisher managed to squeeze 3/4 of the 1570-kHz version of KPRO antenna system — plus some of the shack — in this colorful shot.

Inc., fully owned by Dee Cee Television Productions Inc. (itself solely owned by TV performer Dick Clark.) FCC approval of this $285,000 sale allowed Dick Clark to become President of KPRO Inc. He installed his father, Richard A. Clark, to supervise the operation.

The Clark's secured a construction permit to move KPRO's studio and transmitter to new Riverside locations. In October 1967, KPRO made these shifts; offices and studios went to the Magnolia Center on 3701 Merrill Avenue, and a new guyed antenna tower was placed on the air in a field south of Colton, adjacent to the Santa Ana River there. In late 1968, its affiliation with the Mutual Network ended when KPRO joined the ABC Information Network.

The next change of note occurred in 1976 when KPRO switched to a "Beautiful Music" format. It was now operating from 5:00 a.m. until 1:00 a.m. daily. Effective May 1, 1977, KPRO joined the CBS Radio Network. Its ABC Information Network liaison ended at this time and signaled a simultaneous trade of affiliations with San Bernardino's KCKC.

KPRO was sold by KPRO Inc. to Inland Empire Broadcasters — Howard N. Fisher, principal owner — on June 1, 1978. Once the FCC approved this $780,000 purchase, a Big Bands music format — dubbed "Memorable Standards" and news and sports — was introduced. That's the KPRO version that our story's Dan Northrup encountered.

"Ever Want To Be A DJ?"

Following the KPRO DJ's mid-July 1979 version of these Riverside Radio histrionics, Dan apparently impressed the guy as seeming sufficiently enthralled to be invited back for another lesson in broadcast culture. This session included a crash course in running the main studio control board. Shortly after the early Saturday afternoon tutorial, Dan was flabbergasted to hear the fellow admit he had just remembered another important commitment that needed his immediate attention. "You don't have to say much except for the name of the song and artist and the time," the guy noted, then matter-of-factly adding. "Oh yeah, play all of those commercial 'carts' I stacked up for you and give the call letters followed by city-of-license at the top and bottom of each hour, like this . . . K-P-R-O Riverside, California."

With that abridged brand of instruction, Dan found himself alone and even more frightened about being caught by some furious station official as an unauthorized impostor, than he was scared of soon throwing the tiny mic switch and being heard throughout Golden State airwaves. But apparently nobody noticed. The only calls he received during his nearly 3-hour tenure were from an excited Joan who couldn't believe her ears when hearing her husband turned "broadcast professional," and from an old lady inquiring about the weekend weather forecast. Even the person responsible for the next air-shift seemed unfazed at Dan's presence.

"Are you the new guy?" she asked with a hint of disinterest.

Dan tried explaining the strange situation to his unlikely-looking replacement — a petite 30-something meticulously attired in a tennis outfit, how he'd pretty much been abandoned in the studio. But she waived him off.

"Don't feel bad," the young woman noted. "You'll probably live long enough to someday be stuck with more exciting ways to waste your time than this."

As they traded places, she sent an anemic smile Dan's way. "Come to think of it, last week, your so-called broadcasting teacher told me he was offered about 50 cents more per hour at the other Riverside AM station. My guess is . . ." she enunciated as if some veteran English teacher addressing colleagues, "that his debut there closely and coincidentally coincided with the conveniently hasty exit that put you here."

"I didn't even know that there was another station in town," Dan said.

"Two AMs actually, and a bunch of FMs," the pony-tailed girl in the pleated pink skirt stated. "There's KMAY-AM 1570 which is religious, I think, and its FM sister, KHNY running a kind of contemporary middle-of-the-road format."

That declaration instantly struck her as curious because she reasoned the FM was automated, not needing live talent, and figured her erstwhile co-worker's offensive penchant for questionable off-mic language and suggestive jokes would repel him from anything sounding like church sermons. She then shrugged that Dan should probably simply reappear at KPRO next Saturday at noon and if nobody else showed up, the slot would be his. "Don't even bother telling anybody during the week in the front office," she recommended, "because I sure don't want them bugging me to cover noon 'til sign-off."

Dan didn't breathe a word to anyone associated with KPRO. When he cautiously returned to the studio the following weekend, though, half expecting to be reprimanded for commandeering a federally-licensed broadcast facility, Joan accompanied him. The morning announcer didn't appear to find anything unorthodox about the couple's entrance, and simply pronounced a quick "Hi" and "See ya," sandwiched in between a few instructions about which commercials to play and an admonition to avoid using a particular cartridge machine that was "eating tape." The only hitch occurred on their drive home when Joan admitted displeasure over the 4 p.m. to sign-off announcer's clingy exercise outfit and meticulous makeup.

"Who needs to look like that for radio?" Joan burst forth rhetorically before asking Dan if he still loved her.

"Of course! Dan replied with a wink. "I'll always be in love with you even more than I cherish this beautiful car."

Playfully, she balled up a couple of McDonald's napkins pulled from the Gremlin's glove compartment and tossed them at her grinning husband. Such declarations of unfounded jealousy loosely repeated itself throughout those summer radio stints — once when Joan got an unintended glimpse of the shapely woman's red tennis panties as the otherwise nearly expressionless announcer reached for a piece of ad copy that had fall-

Pop'Comm Editor Richard Fisher surely captured KPRO's spirit of TALL, with AM towers, VHF receive antennas, and trees surrounding its studio/transmitter headquarters.

en under the control desk. And then on the Saturday after Labor Day 1979, the girl wasn't there at their arrival. Instead, a man looking to be in his 50s, met them in the lobby and apologized for the "misunderstanding and inconvenience" Dan had endured. After tactfully doubting that neither Dan nor Joan possessed an FCC permit to operate a broadcast transmitter, he criticized Dan's assumed radio mentor for having foisted such responsibilities on Dan without first consulting station management.

"Believe me," the man shook his head, "that guy will never be working for any of my stations again. The fact that almost two months have gone by and we weren't apprised of his departure really represents the height of irresponsibility!"

Dan's protest that he actually appreciated the opportunity to be of service to KPRO didn't spark the result he hoped for. The guy thanked him with the information that KPRO had just hired an experienced part-timer to do several newly configured weekend shifts, including noon to sign-off, and then handed Joan an envelope containing a $100 bill. "I hope this covers things," he said before rather obviously ushering them towards the door. Not five minutes later, Dan and Joan were still parked in the Gremlin discussing the situation when that KPRO official rushed out of the station and hastily drove away.

Will The Real KPRO And Its Tower(s), Please Stand Up!

While trying to get a good grasp on the Riverside radio environment circa 1979, I happened to get an offer of assistance from *Pop'Comm* Editor Richard Fisher, who volunteered to shoot a few pictures of KPRO. He indicated that the station's four tower directional array wasn't too far from his home base. This kind gesture threw me for a bit of a loop, nonetheless, as I knew KPRO as a single stick/non-directional operation. Yes and no . . . turns out that KMAY 1570 snapped-up the legacy Riverside KPRO calls in October 1986 after the original KPRO dumped the identity.

This sent me back to Jan Lowry for details of the KPRO's competitor that later assumed its cross-town rival's name. His in-depth station profile, with my edits for required page length guidelines, follows:

During early October 1956, Ray Lapica, an employee of KBLA Burbank, received a construction permit from the FCC to build and operate a new Riverside, California AM broadcast station on 1570 kilocycles with a power of 1,000 watts. It was limited to daytime hours only and was required to install a directional antenna system to protect other stations already on 1570. Call letters K-A-M-P were issued in October, but prior to going on the air, the FCC learned that Mr. Lapica changed his mind, so it OK'd his last-minute request to dump KAMP's callsign so that the new AM could be known as KACE.

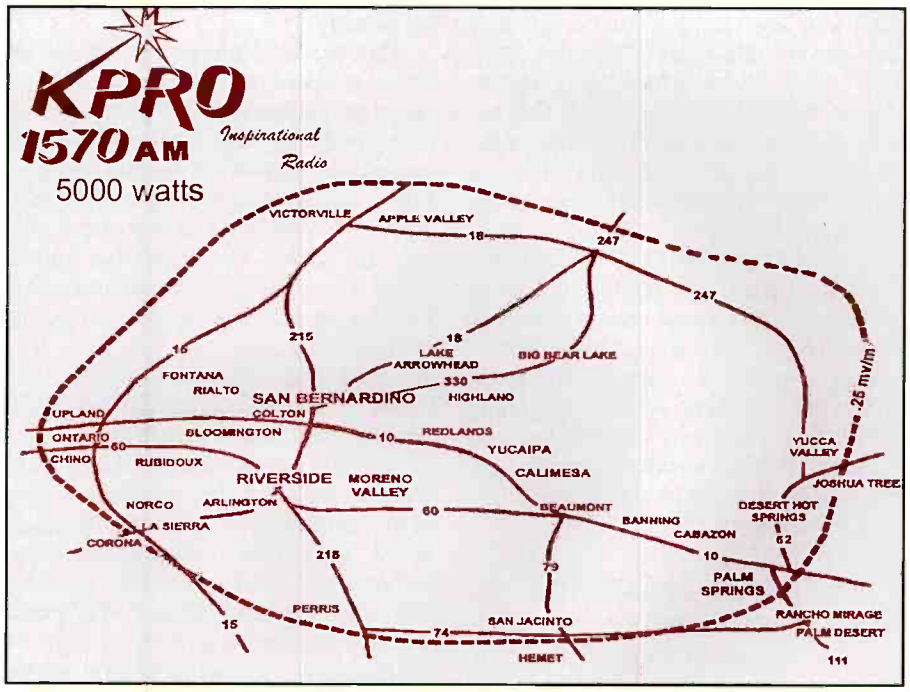
This renamed daytimer began broadcasting June 22, 1957 from its combined studio-transmitter site at 7351 Lincoln Avenue in a rural section southwest of downtown Riverside. There, a small, single-story studio building was erected on the north side of the street, where four in-line guyed vertical radiating antenna towers were placed. Originally, KACE was marketed as "The Newspaper Of The Air."

A companion "Class A" FM station, KACE-FM, debuted on 92.7 megacycles in 1959. Jan notes that this outlet later became KAJL-FM at Adalanto, California. Near the close of 1967, KACE was granted FCC permission to raise power from 1,000 watts to 5,000 watts — still daytime-only directionalized — though the upgrade didn't take place until 1969. The "Newspaper-of-the-Air" moniker had been short lived, as KACE settled upon a generic brand of "middle-of-the-road" music common to hundreds of small stations in the 1950s and '60s.

The kid who sprayed graffiti on that dead-end sign probably eyed those KPRO sticks as ultimate avenues for his artwork. But a perimeter fence and individual fencing around each of the four towers discourages unauthorized entry. In areas where real estate prices are high, land for such directional arrays is sometimes more valuable than its related station's license. KPRO's specifies that those vertical radiators can send Riverside, California area listeners 5 kilowatts during daylight hours and just 192 watts at night.

By spring of 1970, however, KACE dropped "MOR" music to begin a "Contemporary Music" format. To offer the fare prior to sunrise in Southern California, the station was granted a PSA (Pre-Sunrise Authority) to use 114 watts starting at 6 a.m. during months when official sunrise times occurred later than 0600. The hit music output lasted only a couple of years until KACE began a "Country & Western" format in late winter 1972. As its first network affiliation, the station joined the Mutual Broadcasting System, abandoned locally by KPRO 1440.

Sometime during February 1976, KACE AM/FM changed call letters to KHNY and switched back to an "Adult Contemporary" music format (accomplished via automation) dubbed "Honey Radio." Near the end of 1978, listeners to the KHNY simulcast heard the announcement that "soon the AM and FM will be split." This paved the way for KHNY to change call letters to KMAY and start an AM-only "Religious and



You have to look very, very closely at the dotted line at the right hand side of this KPRO 1570 coverage map to get a sense of where the Riverside AM station might potentially be received. The tiny qualifier noting that the boundary signal only possesses 0.25-mv/m potency admits that reception in that outer zone is more the province of a DXpedition than clear, static free coverage on the average radio. Add to that an interference factor from fluorescent lighting and other electrical hash present in populated areas, and one could more accurately shrink the listenable footprint 50 percent. This reality is not just the challenge of directional stations like KPRO, but can even impact the fringe signals of 50-kilowatt, non-directional "flame-throwers."

Inspirational Music" programming format. Jan notes that KMAY's air slogan was then "Inspirational Radio." The station's MBS network affiliation was retained.

KPRO Switcheroo And A Little Night Power

KMAY dropped its Mutual network connection and changed call letters to KPRO in early October 1986. This was a "hot call," as it was given up by the first Riverside AM station in late September 1986 after having been known by that handle since 1941. In addition to snagging those heritage calls, this new KPRO got word that the FCC's engineering computer allowed the longtime, daytime-only 1570-kHz facility to implement a nighttime power of 192 watts and change to two pattern directional (DA-2) all hours. The welcomed change began in 1989, as the station instituted nighttime broadcasting with a power of 192 watts. During the daylight hours, it remained at the 5,000-watt level.

KPRO became an independent outlet in 1998 when MBS network affiliation ended, but another network relationship was consummated as the station joined CNN Radio for hourly national newscasts in 2000. The station passed from its original owner to new licensee, Impact Radio, Inc., in the summer of 2005.

Today, KPRO "Inspirational Radio" broadcasts from its original location as a 24-hour-a-day "Religious and Inspirational Music" outlet, and continues as a CNN Radio affiliate, which provides top-of-the-hour newscasts. It remains licensed to operate on 1570 kHz with 5,000 watts days and 192 watts nights (directional, separate patterns day and night.)

What About The Original KPRO After Being Renamed?

For quite a while after the original (1440 kilohertz) KPRO's Dick Clark era, it seldom enjoyed clear financial skies. The new owners reorganized, changed the format to "All Talk" in 1983, and a

year later announced, "Due to financial problems, KPRO will sign off for good on March 16, 1984."

A similar fate struck its two Barstow, California sister stations. But just like those old cliff-hanger cowboy westerns radio dramas of the 1930s and 40s, a last minute reprieve from an outside investor enabled KPRO's payroll to be met and the 6 p.m. sign-off on March 16th did not happen. In May 1984, KPRO's licensee, now known as Klein/Ray Broadcasting, filed for bankruptcy. Meanwhile, KPRO rejoined affiliation with the Mutual Broadcasting System. It continued to run some CBS fare, too.

By fall 1986, KPRO was sold out of bankruptcy by Klein/Ray Broadcasting to Inland Empire Wireless for an undisclosed purchase price. New management changed their acquisition's calls from KPRO to KDIF when English-language talk programming was dropped in favor of a Spanish music format, dubbed "La *Dif*erencia Musical." That dual affiliation with CBS and the Mutual networks said "adios" concurrent with the shift. The station began AM stereo broadcasting, using the Motorola C-QUAM system in 1990. Also in that year, studios were moved to 1465 "A" Spruce Street and 24-hour operation began. KDIF joined the "CBS Americas" Hispanic radio network in 1994.

Beginning in May 1998, group station owner Jacor Broadcasting Inc. entered into a Local Marketing Agreement to lease part of KDIF's airtime for English language sports programming. Its Los Angeles AM station, KXTA, was to be simulcast in the Riverside-San Bernardino area over 1440 kHz to broaden the coverage of Dodgers Baseball.

Essentially this signaled a "rent-to-own" scenario which resulted in a KDIF sale to Jacor's broadcast subsidiary, The Citicasters Company, for $2.6 million a month later. KDIF dropped "CBS Americas" to affiliate with CRC (Cadena Radio Centro) in 1998.

KDIF's licensee, The Citicasters Company, was acquired through Jacor's merger with Clear Channel Communications Inc., in late May 1999. The station dropped its CRC affiliation in 2003, moving studios from 1465 "A" Spruce Street to Suite "A," 2030 Iowa Avenue, Riverside, the following year.

In August 2005, KDIF switched to a "Spanish Adult Hits" music format under the nickname "La Preciosa," also announcing that its Dodger sports broadcasts simulcast from a Los Angeles Clear Channel AM station had ended. The foreign language content ran for another half-decade until KDIF's "Spanish Adult Hits" music gave way to an "All Comedy, All the Time" format in English. Call letters denoting the *FunNY* programming were introduced near the end of September 2010 when KDIF changed call letters to KFNY.

Clear Channel billed KFNY as "24/7 Comedy Radio," its satellite-delivered format featuring a wide variety of recorded performances of stage, club, and television comedians, current and past. Riverside's pioneer AM — originally KPRO — is California's 52nd oldest continuously licensed standard broadcast station and operates on 1440 kHz with 1,000 non-directional watts.

An Epilogue Of Car And Radio Memories

Joan Northrup, the Woodcrest, California woman whose *Pop'Comm*-subscribing husband, Dan, suggested she jot down their story and send in my way, was kind enough to review my rough draft of this article.

"You made our life 'adventures' sound a bit more dramatic than I suppose they really were," she complimented me before admitting, "and there's something I really do need to confess . . ."

In one of her emails, Joan attached two thumbnail size photos of the old Gremlin, one showing them, at maybe 18 or 19, with a smiling Joan sitting on the hood and Dan leaning against the car's grill and beaming with his arm around his cute wife. The other shot was a reprise of the first, but with the couple as they appear today as 50-somethings.

Dan had wanted Joan to be sure to mention that he was never able to get much more broadcast experience than those few weekends at the original KPRO. "He didn't want to give his fellow *Pop'Comm* readers the false impression that he'd made a career in Golden State radio. Dan quips that H-V-A-C were the only other call letters he can claim. That small Riverside plumbing and heating shop in which he apprenticed grew into a very profitable regional establishment. Dan and Joan scraped up the money to acquire it four or five years before the business — primarily in need of energetic management and a good advertising campaign — really took off. Much to the surprise of Joan's grandmother, Ruth Weaver, the couple never did manage to have any kids. Perhaps that's why they are more like adoptive parents to their loyal staff.

That second little picture of the old Gremlin turned out not be of the original car at all. In that way, the automobile in the second tiny image parallels the KPRO second station assumed identity situation. My remark to Joan that the vintage vehicle sure looked great with its new paint job and HVAC company logo emblazoned along the sides, prompted her to fill-in a bit of history missing from her earlier emails.

"By the late 1980s, our beloved Lion's Club Gremlin wasn't running very well," Joan reported. Dan eventually nicknamed it "The Oil-Burner" and used it less and less until the sun-faded old car spent most of its time parked in back of the Riverside HVAC shop. That's where some collector spotted it and offered us probably more than the tired old auto was worth. The offer occurred around the time we were putting together financing to buy the business, so when the guy came into the shop with a wad of bills in his pocket, Dan deferred to me and I half-heartedly nodded to let it go.

Every so often, though, the couple would reminisce about their prized car, musings that climaxed when Joan got the idea to check for Gremlins on the *eBay Motors* website. Jumping into Dan's lap while he was seated at the office computer estimating some lucrative contract bid, Joan playfully commandeered the mouse and keyboard, and clicked her way to the AMC Gremlin listings. Near the bottom of that lineup was a red 1979 model that looked enough like their old green one to prompt them to enter the bidding. A few days later, Dan was on a job site in the midst of interpreting some complicated blueprints when Joan rang his cell phone.

"We won the car!" she said with sufficient emphasis for the HVAC crew nearby to plainly hear.

"You mean we won a chance to pay for the darn thing and somehow get it from who-knows-where in the middle of Texas," Dan replied, the smile on his face broader than an air conditioning duct.

The seller guaranteed that, if the couple took it easy, they safely could drive their "new" Gremlin back to California. And that's just what they did, making a leisurely week of heading west and singing to tunes provided by the occasional oldies station caught on the lucky little car's AM pushbutton radio.

And so ends another day of radio memories on Pop'Comm.

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Random Thoughts On An Antenna for the Shortwaves

by Bill Price, N3AVY
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"Everyone needs a friend with a bucket-truck, and I've got mine . . . I guess it's time to call and barter for some antenna work."

Norm and Beezer are safely accounted for. My three retired LEO friends (that's Law Enforcement Officers) are likewise, with visions of incarcerated "perps" dancing in their heads, and my HF ham rig is resting quietly in its corner of the kitchen, waiting to experience a (nominal) 50-ohm load in its RF output port.

Only one of those retired LEOs is not an amateur radio operator, but he and I share the common interest in the chromatic harmonica, on which a person can send Morse code just fine.

With the pipe-freeze alerts behind us for another year and the grass growing faster than I can mow it, thoughts of putting up (at least) a small amateur band antenna are circulating in my head once again. I know as David G. reads this he'll soon be calling and asking me when, and on what bands?

Lately, I've renewed my interest in shortwave listening. There's never enough time to tune in *all* the frequencies listed here in *Pop'Comm*, but it's still fun to go down the lists and see what's going on out there. Like so many of you, I usually get sidetracked as I'm working my way down the list.

I still spend some time copying the code practice broadcasts. Copying code is *much better — and safer* — than riding a bicycle. You never forget either, but with my knees, it's not a matter of never forgetting how to ride. I may never get back to my one-time peak of 35 wpm, but I'm happy to copy a solid 20 when the wind is blowing in the right direction.

And now the shortwave antenna is starting to materialize, at least in my mind. It will definitely be a "random wire," because of the random trees and random position of the N3AVY mansion and its attendant power lines. I've got the slingshot and the thrift shop spin-casting reel loaded with smelly old fishing line and random *(there's that word again)* lengths of leftover wire. There really is no excuse not to put up a good SWL antenna and stop using the built-in whip or the window screen in my office.

Back in the '70s, my brother and I put a new roof on our parents' house. We walked around that roof like it was level. It's funny how pitch increases proportionately to a person's age. Today, I'm pretty careful walking on a sloping sidewalk. Ladders don't scare me. I can look at them all day. But the rooftops I now frequent are all accessed by elevator, and perhaps one flight of stairs — with railings.

Everyone needs a friend with a bucket-truck, and I've got mine. He's a young, healthy guy with the same fearless attitude I had at his age. I guess it's time to call and offer some sort of barter for some antenna work.

Mrs. N3AVY has recovered from the embarrassment of melting the toe off of her sneaker, and her new titanium hips are working just fine. Much better than the originals. I figure I'm soon due for two hips, two knees and an ankle — all the more reason to stay off rooftops. Young Beezer is probably the only one among us young and healthy enough to climb up onto a roof and string antenna wire and coax like a pro, and he's at least a thousand miles away.

The past seasons have included the winter of my discontent. Even the cows who live on three sides of my home are regarding me with either suspicion or contempt. It's hard to tell with cows. I'm less inclined each passing day to run the Marine Corps Marathon or swim to Hawaii to save the airfare. Maybe this summer will be easier. Maybe a friend with a bucket truck will show up on the lawn.

I'm regaining what little health I had to begin with. I'm in more danger of tripping over my oxygen tube than contacting malaria or *hobi-hobi. (**DON'T LOOK IT UP:** It's a disease some friends and I made up when dinosaurs still ruled the earth. – N3AVY)*

Meanwhile, maybe you're thinking about putting up your first (or second or third) antenna. If you've got back issues of *Pop'Comm* dating back into the '90s, you might want to read some of the horror stories of my antenna escapades with friend Norm, who's also getting a little too old to swing from a piece of RG8. Please *don't* do it the way we did it. Use common sense. Observe the rules of physics, and remember about that old devil, *gravity*.

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