

# POPULAR COMMUNICATIONS

AUGUST 2013

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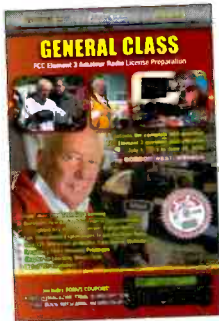
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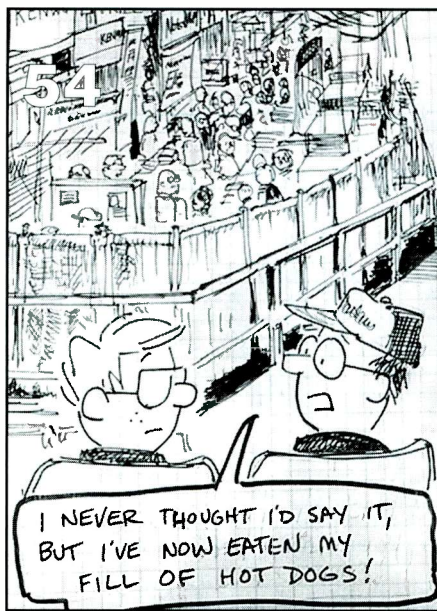
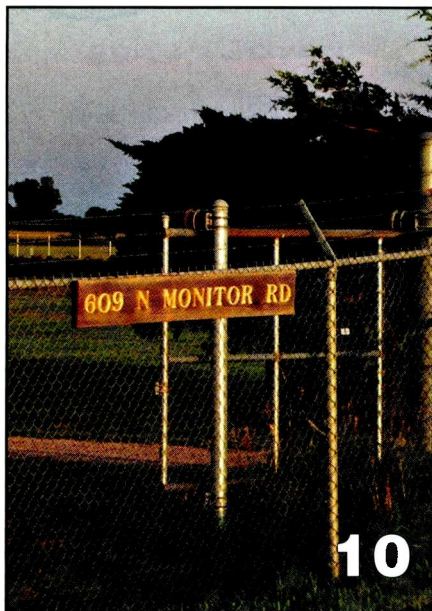
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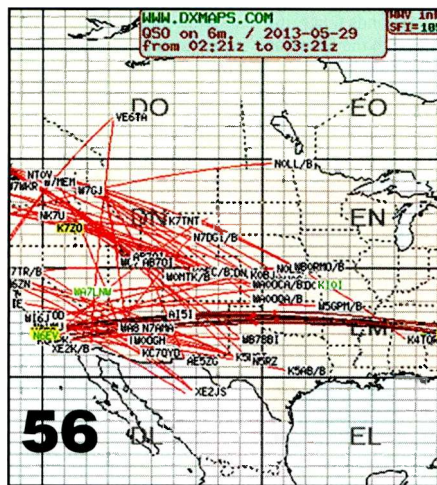


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## ON THE COVER

RF Noise can invade your listening post from a whole army of devices. From printers and toasters to fax machines and TVs, they create enough interference to ruin your monitoring fun. This month, Gordon West, WPC6NOA, declares war on noise and gives you his strategies for hunting it down and stamping it out. See page 17. ALSO: Propagation expert Tomas Hood, WPC7USA, reminds us that this is the time of year for Sporadic-E, which is a gateway to FM broadcast band DXing. See his column on page 56. Then turn to page 63 for plans to build a simple FM antenna to do some DXing of your own. *Plane Sense's* Bill Hoefler, KPC4KGC, suggests some smartphone apps that will make your aviation monitoring all the more interesting! (Photography courtesy of Shutterstock and KPC6PC)

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



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MFJ-752D  
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## EDITORIAL

### Tuning In

by Richard Fisher, KPC6PC/KI6SN  
<[editor@popular-communications.com](mailto:editor@popular-communications.com)>

# Pop'Comm @ 30: A Wrap for Our 30th Anniversary Year

It has been as interesting as it has been fun turning back the pages of *Popular Communications* to September 1982 when the late Tom Kneitel, ex-K2AES/W4XAA/WPE2AB/WPC4A (SK), and CQ Communications Publisher Dick Ross, K2MGA/WPC2A, launched a publication that “built a virtual fence around a bunch of interest areas — CB, shortwave, scanners, hams, etc.” As you see, 30 years later it remains a winning concept.

Yes, the technological landscape has grown exponentially and *Pop'Comm* races to keep pace. At the same time, though, it holds true to Ross' and Kneitel's core fundamentals. Each issue honors the past, embraces the present and looks to the future.

Beyond showcasing *Pop'Comm* Founding Editor Kneitel's “brilliance, imagination, and creativity,” in the last 12 months, *Pop'Comm @ 30*, has, for example, documented how 1982's *On the Line: New and Exciting Telephone Technology* column in a way continues. Smartphone apps to use in aviation monitoring? Believe it! (SEE: *Bill Hoefler, KPC4KGC's, “Hold the Phone! Aviation Apps are Plentiful — and Often Free”* on page 42. — KPC6PC)

Exhibit B: In February 1983, Kneitel stirred up a bee's nest by fueling a debate over whether *Pop'Comm* should give column space to pirate radio. Readers — pro and con — responded, and Tom erred on the side of providing the coverage. The result: “*Free Radio Focus*,” written by veteran SWLer Al Muick. In February 2013 we asked readers, via online poll, if coverage of pirate radio should return to the pages of *Pop'Comm*. An overwhelming 95.4 percent said it should. So with the June 2013 edition we reintroduced “free radio” with Steve Handler, WPC9JXK's, *COPS*, — our new monthly Clandestine, Opposition, Pirate, and Spy radio column beginning this month on page 26.

Over the past year we recognized, too, that while things change, there is merit to keeping some things the same. *Global Information Guide* and *Tuning Tips* columnist Gerry Dexter, WPC9GLD, and hobby communications feature writer Gordon West, WPC6NOA, have been with *Pop'Comm* since Vol. 1, No. 1. We are so thankful for their journalistic legacy. There is much to be said for a magazine such as *Pop'Comm* to have touchstones for its sense of place and history. Gordo and Gerry are that. See pages 17 and 66.

The greatest reader reaction over these 12 installments of *Pop'Comm @ 30* has been the revelation that the young and beautiful hobbyist communications writer Alice Brannigan, **Photo A**, was in reality a CIPO (columnist in picture only). It was Kneitel who was really pushing the pen. His daughter-in-law, a.k.a. Alice, was merely a *poser* <<http://bit.ly/SPTMyD>>, and we mean that in the *kindest* way. Many of you were dazed and confused to learn that. *Surprise!*

Anyhow, thank you for coming along on this year-long retrospective. And in the meantime, we'll catch up with you in the next few decades for another *Pop'Comm @* update.

## From Dayton, With Love

To the hundreds of *Pop'Comm* fans who stopped by the CQ Communications booth on the floor of Hara Arena at the 2013 Dayton Hamvention®, thanks! It was great to meet you, and your feedback is so helpful.

By the way, *Pop'Comm* cartoonist Jason Togger, KB3CNM, made Hamvention® history this year by live-blogging his popular *Spurious Signals* from the convention between May 17-19. He really captured the communications craziness, as you can see in a gallery of his Hamvention® drawings this month on pages 54-55. It's a view of Dayton activities like no other — and *hilarious*.

For *Pop'Comm*, it was a great weekend — and so many of you made it so.

## Pop'Comm-WRO Live Online Chat, August 11

Don't miss this month's live online chat beginning at 8 p.m. Eastern time on August 11. It's a casual, fun and laid back way to wrap up a summer weekend. At chat time go to <<http://worldradioonline.blogspot.com>> and get in on an hour of fun. — Richard Fisher, KPC6PC



**Photo A.** The wildly popular Alice Brannigan was in reality *Pop'Comm*'s CIPO — columnist in picture only.

# The Weirder Side of Wireless, and Beyond

Compiled by  
Richard Fisher,  
KPC6PC



**Photo A.** Major Edwin Howard Armstrong must have been *crazy in love* when he scaled the RCA tower in midtown Manhattan to pose for a picture. His stunt won the heart of Marion MacInnis, General David Sarnoff's secretary. Wedded bliss ensued. (*Internet screen grab*)

## Edwin Howard Armstrong: Hopeless Romantic?

Despite all his genius, it's well documented that Edwin Howard Armstrong — Father of FM — was a bit of a *nut ball*. In fairness, though, his renowned tower-climbing antics may have less to do with being a fruitcake and more to do with being in love. Here's the story:

While working for RCA Chairman David Sarnoff, the Major developed a crush on Marion MacInnis, the General's secretary. To get her attention, Armstrong arranged for a photographer to be on the scene when he climbed the RCA radio tower — rising 115 feet from atop the 21-story Aeolian Hall in midtown Manhattan. *He was dressed to impress.*

A copy of the picture was sent to Miss MacInnis. Sarnoff was furious. Marion was smitten. In December 1923 they honeymooned in Palm Beach, Florida. **Photo A.** Edwin's wedding gift to Marion? *A portable radio, of course!*

*(IN DEPTH: A snapshot of the life and times of Major Armstrong <<http://bit.ly/11e6ERc>>. — KPC6PC)*

## MTV Turns 32! One and a Million: 'Video Killed the Radio Star'

MTV debuted 32 years ago this month — 12:01 a.m., August 1, 1981. The first music video: "Video Killed the Radio Star." Considering the state of U.S. broadcast radio today, the Buggles just may have been right. (**WATCH:** "Video Killed the Radio Star," <<http://bit.ly/ZBmxGn>>, **Photo B.** — KPC6PC)

By the way, on February 27, 2001, that premiere music video became the 1 millionth to be played on MTV. Is it time for a Buggles song titled "Reality Shows Killed the Video Star?" Just askin.' — KPC6PC

## Please Stand By for Mayhem

According to the UK's *Dorest Echo*, police are seeking witnesses to an alleged road rage incident involving "a VW transporter van . . . which had a large amateur radio aerial on the roof."

Authorities said it is believed the VW van "overtook a silver Audi A4 driven by a Portland man in his 40s as it was



**Photo B.** At once the first and one-millionth music video played on MTV, the Buggles' catchy "Video Killed the Radio Star" launched the cable network on August 1, 1981. In February 2000 it made history again as No. 1,000,000. (*Internet screen grab <<http://bit.ly/ZBmxGn>>*)

travelling southbound along Easton Lane and onto Reforme."

"The van driver and a passenger approached the car driver and threatened him, removing the keys to the Audi and throwing them down the road," according to the *Echo*. (**WONDERING:** Might that "large amateur radio aerial" have been tuned to 14.313 MHz? <<http://bit.ly/1Ivu9nY>>. **READ:** The full *Echo* story at <<http://bit.ly/1IimltL>>. — KPC6PC)

## Report: Nation's 'Only Bunny Rabbit Station' Is in a Stew

*About.com* radio columnist/humorist Corey Dietz reports that "this country's only radio operation run solely by bunny rabbits is having a fiscal crisis. The station, K-HARE (KHRE) in Rabbit Hole, Wyoming — a few miles from Jackson Hole — has been quietly providing what it calls *Cuddly and Soft Rock* for a number of years. Lately, though, K-HARE is struggling with a slump in advertising and listener apathy. I talked with the Program Director, Peter."

Here is part of Dietz' interview with Mr. Cottontail.

**Corey:** So, your cash flow has decreased, salaries are not moving forward, and you're having a hard time attracting employees who will work for less benefits?

**Peter:** That's right. What am I supposed to do? Pull a rabbit out of my hat?

**Corey:** Uh, you don't even wear a hat.

**Peter:** My point exactly! I can't even afford a hat! I'm just in the wrong vocation. I should have listened to my brother and gone into a real profession.

**Corey:** What does he do?

**Peter:** He's a storybook rabbit. His last gig was as the March Hare. Maybe you saw him in *Alice in Wonderland*? He was the one next to the Mad Hatter.

**Corey:** Actually, I have seen him before.

**(OBSERVATION:** We can't find a listing for KHRE and wonder if Mr. Dietz may have inadvertently stumbled into some loco weed while passing through Wyoming. **MORE:** Read Dietz' full interview with Mr. Cottontail at <<http://bit.ly/17dvwA9>>. — KPC6PC)

## Communications News, Trends and Short Takes

Compiled by  
Richard Fisher, KPC6PC

### CQ Posts Dayton New Product Links Online

The Dayton Hamvention® New Product List is live on the *CQ* magazine homepage. View information on many of the new hobbyist communications products that premiered at the Hamvention® May 17-19 at Hara Arena. Visit the *CQ* homepage at <<http://www.cq-amateurradio.com>> (Source: *CQ* magazine)

### August: 85<sup>th</sup> Anniversary of First Trans-Atlantic TV Transmissions

In a series of television firsts, Baird Television Development Co., (BTDC) transmitted a “Stereoscopic” signal 85 years ago this month. (*IN DEPTH: What is “Stereoscopic” television?* <<http://bit.ly/11cmnQO>>. – KPC6PC)

By any measure, 1928 was a banner year for BTDC. Led by John Logie Baird, the company on February 9, 1928 “achieved the first television transmission between London, England, and Hartsdale, New York,” and “demonstrated the first TV transmission to a ship in the mid-Atlantic” in the same year, according to a posting by the *Southgate ARC News*.

The first color transmission, “using scanning discs at the transmitting and receiving ends with three spirals of apertures,” took place July 3. It was on August 10 that Baird demonstrated his “Stereoscopic” transmission. (Source: *Southgate ARC News*)

### Irish News in ‘Gaeilge’ Makes a Move to 40 Meters

The weekly Irish Radio Transmitters Society radio news, broadcast in Irish by Paddy Maher, EI7GK, on Sundays at 11:30 a.m. local time, moved from 80 to 40 meters on June 9.

“The new frequency is 7.128 MHz, which is 5 kHz above the English-language 40-meter news frequency,” *Southgate ARC News* reported. “As well as ‘Gaeilge,’ call-ins in English are welcome. (*LISTEN: To Gaeilge, also referred to as Gaelic, at* <<http://bit.ly/12Uda1b>>. – KPC6PC) (Source: *Southgate ARC News*)

### WATCH: A Seminar Explaining Bistatic RADAR

A lecture on the history and research into Bistatic RADAR and the work of Frank Harvey, presented by Prof. Hugh Griffiths, has been captured on video online. Griffiths is winner of the annual AF Harvey Engineering Research prize and delivered his presentation in May. Link to <<http://bit.ly/143zEPV>> and click on *Access the Live Webcast*. (*IN DEPTH: What is Bistatic RADAR?* <<http://bit.ly/17FbNKr>> – KPC6PC) (*Southgate ARC News*)

### ‘Perceptive Radio’ Can Alter BBC’s Script

A radio that is able to change the content of a broadcast depending on where you are and what you are doing

— in other words, *your environment* — has been demonstrated by the BBC.

The Perceptive Radio, created by Ian Forrester of BBC’s Future Media Division, is thought to be a world first, according to published reports.

The team produced a computer-generated radio drama where the script changed depending on factors such as weather. Read the full story at <<http://bbc.in/ZyUrLY>>. (Source: BBC, published reports)

### Interference Prompts PCJ RI Move to 11835 kHz

Co-channel interference has forced PCJ Radio International to move from 11750 to 11835 kHz, officials said. Programming was scheduled on Sundays from 1300-1400 UTC in the 25-meter band. Power output is 125 kilowatts and is beamed to East and Southeast Asia. PCJ has facilities in Canada, the Netherlands, U.S. and Taiwan <<http://bit.ly/138ylc1>>. (Source: *PCJ Media*)

### ... And All That Jazz, Radio Australia Style

“If Radio Australia ever stops broadcasting on the shortwaves, one program I will certainly miss is Jazz Notes,” writes Thomas Witherspoon, administrator of the always interesting *The SWLing Post* at <<http://swling.com/blog>>.

“Jazz Notes showcases the best in Australian jazz, often featuring new and original recordings made in ABC’s studios,” he recently noted. “The show is hosted by Ivan Lloyd and has been offered on Radio Australia for several years. I listen to the show Wednesday mornings at 9:30 a.m. EDT.” (*LISTEN: To a recent edition of Jazz Notes at* <<http://bit.ly/117iTxY>>. – KPC6PC) (Source: *The SWLing Post*)

### Canada’s Public Broadcaster OK’d to Run Ads

The CBC, Canada’s public broadcaster, has been granted “a new streamlined regulatory framework that will support the implementation of its strategy plan, and allow advertising on its radio channels,” according to a Web posting by The Asia-Pacific Broadcasting Union.

“The decision permits the public broadcaster to introduce advertising to CBC Radio 2 and Espace musique, ‘which will help the corporation ensure that its music services can continue to be a point of discovery for Canadian music fans,’” *Radio Info* noted.

“The endorsement of our plan by the (regulator) CRTC comes at a great time for us,” said CBC/Radio-Canada President and CEO Hubert T. Lacroix. “We’ve just passed the half-way point of our 2015 strategy to become more regional, more Canadian, and more digital: we’ve opened eight new regional stations since 2011, we’re offering more Canadian content today than at any other point in our history; and we’re pioneering the second screen experience and delivering online and mobile offerings that are constantly evolving. The modern framework the CRTC has given us today will help us keep our momentum.” (Source: *APBU, Radio Info, published reports*)



# Capitol Hill And FCC Actions Affecting Communications

Compiled by  
Richard Fisher,  
KPC6PC

## Commission Hammers CBer with \$18,000 Fine

The FCC issued an \$18,000 Notice of Apparent Liability for Forfeiture and Order in May to Nathaniel Johnson of Pittsburgh, Pennsylvania for failing to make his Citizens Band (CB) station available for inspection by the FCC and for failing to comply with the restricted hours of CB station operation.

According to the *ARRL Letter*, the base forfeiture amount for failure to allow inspection of radio equipment — including a CB station — is \$7,000. The FCC raised the forfeiture amount by \$4,000, as the nature of the violation is similar to failing to respond to a Commission communication. The FCC also found that Johnson's failure to permit a lawful inspection of his CB station — after multiple notices directing him to do so — justified a \$7,000 upward adjustment of the base amount for this violation, bringing the total amount to \$18,000."

The FCC noted misconduct such as Johnson's "is serious, exhibits contempt for the Commission's authority, and threatens to compromise the Commission's ability to fully investigate violations of its rules." (*Source: ARRL Letter* <<http://bit.ly/10F1OQH>>)

## 'Tolerable' Interference Levels Being Studied By FCC

Should the federal government set specific interference rejection standards for receiver manufacturers? It's a question the FCC considered, and decided against, back in the 1980s, when television interference (TVI) was still a major problem; and it's an issue that three separate federal panels have been studying for the past year and a half, looking at growing interference problems accompanying the staggering growth of wireless systems using frequencies shared with or adjacent to other services — including radio amateurs.

It appears the FCC is headed down the same road it went down 30 years ago, with recommendations from its Technological Advisory Council, headed by Chairman-designate Tom Wheeler, to develop thresholds of "tolerable" interference for receivers rather than mandating specific interference-rejection standards. Visit the *CQ* Newsroom for late updates <<http://www.CQNewsroom.blogspot.com>>. — (*Source: W2VU*)

## Supreme Court Backs Commission on Cell Tower Issue

The Supreme Court has affirmed the authority of federal regulators to try to speed local government decisions on proposals to build or expand cellphone towers.

The court voted 6-3 in May to uphold an appeals court ruling in favor of the FCC, according a story in the *Washington Post*.

"The case involves complaints to the FCC by telecommunications companies and the wireless industry that local authorities are delaying the placement and construction of wireless service facilities," the *Associated Press* reported

in the *Washington Post*. "The FCC said that local jurisdictions generally should act on applications within three months for existing structures and five months for new towers." Several cities had challenged the Commission's authority. (*Source: AP, Washington Post*)

## FCC Seeks Radio Amateur Vanity Callsign Fee Increase

The FCC released a Notice of Proposed Rulemaking (NPRM) on May 23, seeking to raise the fee for Amateur Radio vanity callsigns by 20 cents. Currently, a vanity callsign costs \$15 and is good for 10 years. The new fee, if approved, will go up to \$15.20 for 10 years.

Read the NPRM at <<http://bit.ly/10EIO4L>>. (*Source: FCC, published reports*)

## 'Flexibility' Called for in FM Translator Access

iBiquity Digital General Counsel Albert Shuldiner has written to the FCC to encourage it "to provide greater flexibility for AM stations that seek to obtain access to FM translators. This waiver request provides the Commission with an immediate opportunity to address the need of many AM broadcasters to find creative ways to enhance their ability to serve their listeners."

Shuldiner noted that "the current economic challenges confronting AM broadcasters have impeded their ability to make capital investments in HD Radio equipment, further delaying their access to this means of upgrading AM broadcasting. Although iBiquity <<http://bit.ly/143Umiw>> believes conversion to digital broadcasting offers the best long-term prospect for AM broadcasters, iBiquity recognizes this transition will take many years, and AM broadcasters cannot wait that long." (*IN DEPTH: Read the full context of Shuldiner letter at the RadioInk website* <<http://bit.ly/15pxQQq>>. — KPC6PC) (*Source: RadioInk*)

## ARRL Comments on Proposed 5 GHz License-Free Broadband Expansion

The ARRL, observing that "a decision in the near term with respect to the addition of [unlicensed National Information Infrastructure] U-NII devices to the 5.85-5.925-GHz band would be premature," has commented in response to an FCC Notice of Proposed Rule Making (ET Docket No. 13-49).

The docket proposed to authorize U-NII use of an additional 195 MHz of spectrum in the 5.35- to 5.47-GHz and 5.85- to 5.925-GHz bands. The Commission was obligated, pursuant to Section 6406(a) of the Middle Class Tax Relief and Job Creation Act of 2012 (Public Law No. 112-96), to begin a proceeding to allow U-NII devices in the 5.35- to 5.47-GHz band.

"There is no legislative obligation, however, to make available the 5.85- to 5.925-GHz band for U-NII use," the ARRL noted. (*Source: ARRL Letter* <<http://bit.ly/1aJF56P>>)

# Bits and Pieces of Trends and New Technologies

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

*“A growing number of innovative ideas and social trends are shaping the world of technology we live in today and help define the shape of things to come.”*

**T**his month we will visit a few technologies and trends that should be mentioned here but don't justify an entire column of their own.

**Up first is an interesting trend** that would have been unconceivable a decade or so ago. There is increasing evidence that individuals and families are “dual-screening” or “multiscreening.” This occurs when more than one TV or monitor screen is in use in a room at one time to relay television, video, radio, and so on, often by different users.

In other words, not only are you checking data on your favorite club with a laptop while watching them play a rival but someone across the room is accessing another media source via a smartphone. We could debate the social aspects of this but that would be getting away from the technological issue, which is more screens per person at the same time.

**The end of dominance for touch-oriented devices** is on the horizon. You're probably saying that you have just now gotten used to that touch interface on the smartphone or new laptop and they are already obsolete? Not exactly, but it may well prove to be a transitional technology. If you think about the keyboard, mouse, and even the Morse key, we've been in the touch era since the invention of the telegraph.

Work is moving rapidly toward technologies that use voice, hand motion such as waving and pointing, and eye motion instead of requiring the user to touch the device. Google Glass™ here I come.

**Coincident with the first item**, there is the growing trend in continuous work across multiple devices. For example, you begin work on a project at work at your desk. Instead of taking it home in the briefcase, you simply go home, load it up on your tablet, and pick up where you left off. Later, you tweak a few things from your smartphone.

This is all done without having to go to extraordinary lengths to transfer or sync files. As powerful computer processing chips become widespread among more and more devices this is a

logical outcome. Convenience and the desire of software makers to be everywhere their customers are, drive this trend.

**Virtually every circuit you know** can be described with resistance, inductance, and capacitance. To this, you can now add *memresistance*. Soon to appear in devices you purchase may be *memresistors*. The name comes from the functional ability to “remember” their resistance over time when power is removed.

Whatever resistance value they have when the current stops will be the value they have when it resumes. Current flows in one direction resulting in increased resistance, and in the other direction it leads to reduced resistance. *Memresistance* can be calculated as the variation of voltage divided by the variation in current and is measured in Ohms (be careful here as it is time dependent!). Leon Chua first proposed *memresistors* in a research paper in 1971 and now after decades of development they are starting to be used in commercially made chips. The form closest to commercial use is based on a titanium dioxide nanofilm between layers of titanium and platinum. Depending on the circuit, a *memresistor* can replace solid-state memory or transistors while taking up less space.

**Finally, just to show how far** we've come along the storage curve, you can expect to be able to purchase 1 terabyte SD cards in the next year. SD cards are the type that you may be familiar with using on a digital camera. Soon you can now store more data on a SD card than on 200,000 of the hard drives on the original IBM PC.

Of course, I'm sure you could carry around every issue of *Popular Communications* dating to 1982 with room to spare on such a card. I thought when I bought that 100 megabyte disk drive in 1987 it would last me for a decade. I was very wrong on that count.

*Where do you think I am right and where do you think I am wrong? Drop me a line or two and share your thoughts and predictions. I'm looking forward to hearing from you. – K8RKD*

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# FCC Monitoring Station, Grand Island, Nebraska: In the Rearview, Across the Decades

By Randal R. Schulze, KDØHKD

*“Although there is no longer a human presence, it’s good to know that after long and distinguished service, the Grand Island monitoring station is still alive and well”*

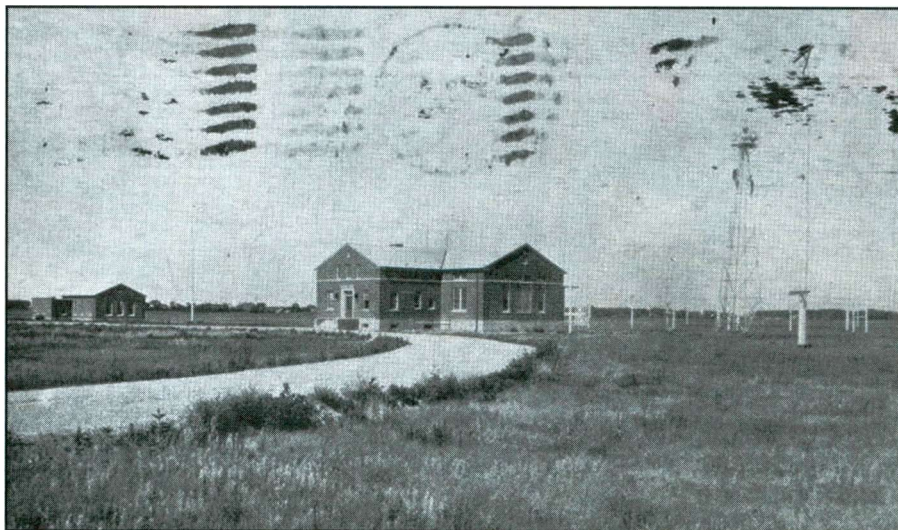
**I** Like many radio amateurs, I’ve had the “bug” for electronic communications, and have been involved in communications professionally one way or the other most of my adult life. I first became aware of the FCC Monitoring Station at Grand Island, Nebraska when I was 16 years old, during the Citizen’s Band radio craze of the mid-1970s.

I grew up in Kearney, Nebraska, a scant 45 miles west of Grand Island, and worked part-time at the local Radio-Shack® where we sold a lot of CB radios and met with many of the *good buddies* from the area on a daily basis. “*Ya’ll better keep your ears low, Driver, or Uncle Charlie will come out here from G.I. and shut her down! 10-4?*”

I never actually saw or had firsthand knowledge of a representative of the FCC coming to town to deal with a CB issue, but the rumors would hit the air if anyone saw a plain white van with more than one antenna on it driving through town!

I enrolled in college a few years later, and majored in Radio and Television Broadcasting. I also worked at one of the local AM/FM radio stations. At that time, if the station did not have an onsite, licensed engineer, disk-jockeys at radio stations were required to test for, and hold a valid Third Class Radio-Telephone Operators License issued by the FCC.

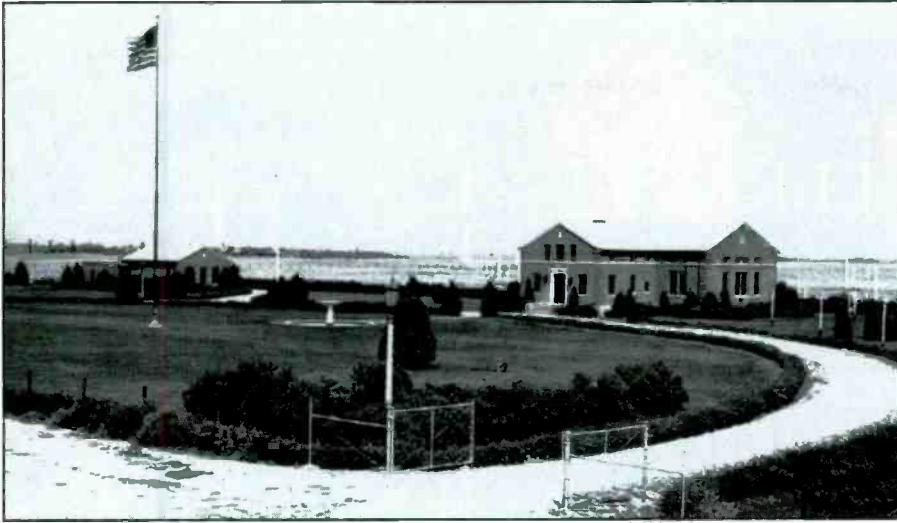
In preparation for our license test, we were taught about just what the FCC



**Photo A.** This card, postmarked in 1936, was from the Auburn Greeting Card Company, featuring a very early picture of the FCC Monitoring Station near Grand Island, Nebraska. Note the aircraft beacon located to the right. (Courtesy of KDØHKD)



**Photo B.** Here’s a view inside the Monitoring Room on the north side of the building as it appeared in 1932. This is the same room KDØHKD saw on his tour of the facility in the early 1980s. Equipment included primary and secondary standards and an all-wave receiver. (U.S. Government photograph, courtesy of KDØHKD)



**Photo C.** This photograph was attached to the 1972 application to add the Grand Island FCC Monitoring Station to the National Register of Historic Places. The actual date of this picture is unknown. However, the similarity of this photograph to the postcard accompanying the sidebar headlined “A Brief History of the FCC Monitoring Station Program, and Grand Island Site” is striking. This may be from around the era of World War II. (U.S. Government photograph, courtesy of KDØHKD)

could and *would* do if our radio stations were found to be in violation of regulations or laws, and that if we were the operator — disk jockey — on duty at the time of the violation, our personal license, as well as the station license could be in jeopardy. (NOTE: No license means no job! — KDØHKD)

To back up what was being taught, we were shown examples of letters to stations from the FCC, which would typically contain a paragraph that said some-

thing like, “At such and such time, on a specified date, Engineers for the Federal Communications Commission Monitoring Station at Grand Island, Nebraska monitored the following violation, etc., etc . . .”

### An Impromptu Tour of the Station

Some years later, I had started a career in law enforcement and public safety and

worked at the Hall County Emergency Communications Center, known as GIEC in Grand Island. After I’d lived and worked in Grand Island for a while, I thought I’d drive out and take a look at the FCC Monitoring Station west of town I’d heard so much about over the years. It was sometime in 1980 or ’81.

When I arrived at 609 North Monitor Road — *gee, I wonder why the road got that street name?* — I observed this not-too-large, red brick building that resembled a mid-20<sup>th</sup> century schoolhouse. Outside were what appeared to be an airport beacon light and an antenna farm, with wires strung out across the property around the building. I parked in the horseshoe-shaped driveway in front and entered, expecting to find a receptionist or someone at a front desk, but instead found a fairly plain lobby with a glass display case containing a model of a car from the 1920s and some old radio parts.

After a while, a casually dressed individual — *I wish I remembered his name* — stepped into the lobby, and not expecting a visitor. I didn’t have an appointment, but he kindly greeted me, and asked if he could help me. I introduced myself, told him a bit about my background, and explained that I was curious, and wondered if I could arrange for a tour.

He was very happy to comply, adding that there was really not much to see. He told me about the items in the display case. The model car was the type of vehi-



**Photo D.** This is a view of the FCC Monitoring Station near Grand Island, Nebraska as it appears today. With the exception of the shaggy grass growing on the gravel drive, it appears much as it did in the 1980s. (Courtesy of Creative Commons CC0 1.0 Universal Public Domain Dedication)



**Photo E.** Here's a view of the station from the northwest, showing the classic street address plaque. To the communications aficionado, the name of the road is a dead giveaway to the building's use. (Courtesy of Creative Commons CC0 1.0 Universal Public Domain Dedication)

cle used by the Department of Commerce before the days of the FCC to monitor radio traffic, and that a similar car was used to select Grand Island as the FCC's first and flagship monitoring station<sup>1</sup>.

He explained that in those days, the government was monitoring not only to regulate the airways, but also to investigate possible issues of espionage<sup>2</sup>. Wow! *Spy stuff!*

The other end of the building contained offices, "really nothing to see there," but the actual Monitoring Room was in the north half of the building. I was escorted to a very large, well-lit room, with a big L-shaped rack containing various types of

equipment. At the right end of the console were two Model 28 teletype machines. One was hard-wired via dedicated telephone lines while the other worked via radio. But both carried basically the same traffic simultaneously.

On the right side of the room behind the teletypes were large shelves filled with all sorts of books and documents. My tour guide selected one binder and looked up a page and said, "Here you are, Randy. It has your Third Class ticket and your CB license listed here!" I did not have my amateur radio license then . . . but that's another story for another time.

Two engineers were working on calibrating some equipment



**Photo F.** From the southwest, the Grand Island Monitoring Station presents a view that no longer has the site's historic aircraft beacon light. (Courtesy of Creative Commons CC0 1.0 Universal Public Domain Dedication)

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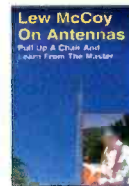


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with an oscilloscope, while in the background we could hear the notorious “Russian Wood Pecker” chattering away from one of the speakers. “Yeah . . . the Russians claim they’re doing atmospheric research, but who knows. It’s real annoying!”

On the far left end of the console was something I was told I’d be interested in. Built in, was a standard AM/FM radio, like you’d find in the dashboard of any car of the day, and a programmable radio scanner.

My tour guide explained that if the engineers weren’t too busy, they would listen to music, or more specifically, listen for ID violations on the broadcast or public service bands. Sure enough, the FM station where I had worked was already tuned in, and the scanner was programmed to listen to my Emergency Center at GIEC. Our center was normally considered a *good dog*, and that as far as he recalled, we had no violations.

## Learning About the Site’s Antenna ‘Farm’

I asked about the antenna farm. Many of the antennas scat-

tered over the adjacent land were no longer in use, my guide said. There was one particular antenna array that was fairly new and cutting edge at the time — remember, this was 1980 or ’81 — and was used for most of their activity.

It was connected to RF direction-finding equipment that when used in conjunction with the other monitoring stations, was extremely sensitive and accurate. I mentioned the tower that appeared to be an airport light beacon, and asked what that was for. Turns out, it was no longer in use, but back when the site was established in 1929, not only was radio in its infancy, so was aviation.

Navigation at the time was by the visual identification of landmarks, and in predominantly rural areas, such as Central Nebraska, there were not a lot of lights that might be observed from the air at night.

Lights, similar to what we might recognize today as airport beacons, were set up along air routes on any available government land. Nighttime navigation was done visually from beacon to beacon.<sup>3</sup>

# A Brief History of the FCC Monitoring Station Program, and Grand Island Site

By Randal R. Schulze, KDØHKD

Let me tell you about the history of the FCC Monitoring Station program and the Grand Island, Nebraska station, in particular. Here’s a snapshot I gleaned from a display in the lobby of the Federal Communications Commission:

“Under the Radio Acts of 1910 and 1912, the Department of Commerce received the authority to monitor and inspect shipboard radio equipment, license radio operators for that equipment, and prevent interference between stations.

“Prior to 1930, there were few radio services. The primary users of the available frequencies were ships, coastal stations, point-to-point telegraph, AM broadcasting, and radio amateurs with the radio amateurs far outnumbering the other radio operations. The budding AM broadcasting segment of radio operations began to grow phenomenally after the start of KDKA in a basement in Pittsburgh, Pennsylvania in 1921. Licensed and unlicensed broadcast stations were in service, causing a need for a frequency monitoring facility.

“The Radio Division in the Department of Commerce in Chicago used

Packard radio-test cars and other equipment to determine the best location for a Central Frequency Monitoring Station. After an extensive search, the flat prairie region of central Nebraska, specifically,

an area six miles west of Grand Island, Nebraska, was selected because of its superb reception conditions, central geographic location, and freedom from nearby transmitting stations. The original



**Photo A.** A genuine Curteich “C.Y. Art-Colortone” postcard shows the artist’s view of the Monitoring Station near Grand Island, Nebraska. It was postmarked in 1945. The poles in the background held up wire antennas. (Courtesy of KDØHKD)



I was invited to come back during the graveyard shift — that's when most of the interesting monitoring cases are worked, and he provided me with a phone number to call to let the night engineer know when I was coming.

## Monitoring Excitement on the Night Shift

A few weeks after my initial tour, I was about to come off the evening shift at the Emergency Communications Center at 11 p.m., and telephoned the FCC Monitoring Station to see if this might be a good night to come out and observe. The duty engineer replied that he was expecting my call, and added this would be a perfect night to come, as he would be involved in an interesting investigation.

I arrived at the station around midnight, and was cordially invited inside. The engineer — *again, I wish I could recall names, but this was a long time ago* — explained to me that the FCC had received many complaints from amateur radio oper-

ators about an unidentified person who frequently came on the 40-meter band who sounded like he was intoxicated and was preaching, swearing, and generally jamming and interfering with other conscientious radio operators.

This *ne'er do well* was on the air on this night and up to his regular routine! Along with Grand Island, several other monitoring stations would be involved. I was told they only needed two stations to make a successful location identification, but more would make a more valid conclusion.<sup>4</sup> Grand Island would be the station coordinating the investigation.<sup>5</sup>

Once at the radio console, the engineer used a piece of equipment which, to my untrained eye at the time, appeared as an oscilloscope that would display a lobe on the screen pointing by compass degrees to the source of the signal.

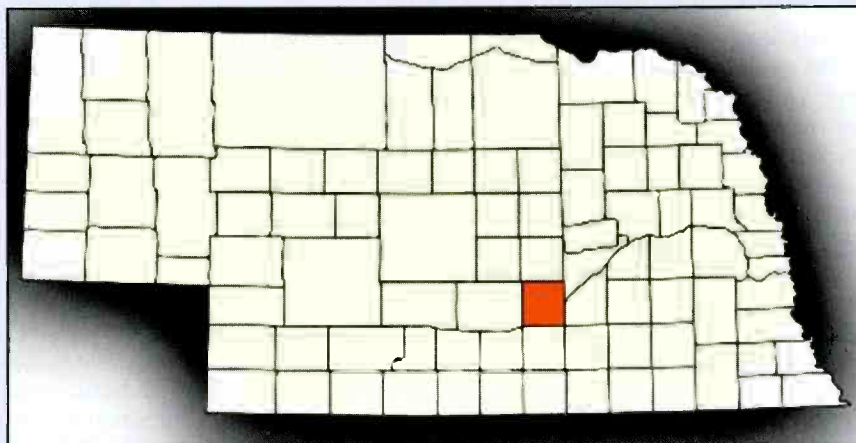
When the subject started transmitting, the engineer would tune his equipment with his left hand, while typing on the teletype to other participating monitoring stations with his right hand. "On, On, On, On, On," during the transmission.

tract of land for the monitoring station was comprised of 50 acres, which was purchased in April 1929 for the sum of \$1 from the estate of Fred Matthiesen, Jr.

The 47<sup>th</sup> Legislature of Nebraska passed a bill in 1931 that allowed school land to be purchased by the Department of Commerce for the development of a radio monitoring station."<sup>1</sup>

The FCC Monitoring Station at Grand Island was added to the National Register of Historic Places. In its 1972 application to the National Parks Service it was noted that this was the "first United States Radio Monitoring station and site. Construction completed in 1930 near the geographical center of the 48 contiguous states. Transferred to the FCC by passage of the Communications Act of 1934 as part of President Roosevelt's New Deal. At the time of the construction of this building there were nine radio district headquarters in various parts of the United States. At the present time (1972) there are 24 radio districts and 19 monitoring stations. In July 1911 there were two radio inspectors — one in New York and one in San Francisco — who were responsible for the inspection of ship radio installations. These original two inspectors have increased until, at the present time. (1972) there are approximately 420 employees of the Field Engineering Bureau who are concerned with the various aspects of monitoring.

Frequency coverage in 1927 extended from 10 to 30,000 kHz, in contrast to the frequency range today to more than 30,000,000 kHz. The latest figures in the Annual Report to Congress issued by the FCC shows that there are more than



**Photo B.** Hall County, Nebraska, is home to the Grand Island FCC Monitoring Station (Courtesy of Wikipedia Commons)

7,948 broadcast stations (radio and TV), 1,745,709 stations (using 8,858,222 licensed transmitters) in the Safety and Special Radio Services, 2,523 CATV systems in addition to the telephone and telegraph facilities which are under the jurisdiction of the Commission. In the past 20 years it is estimated that transmitters in operation have increased more than 50 times."

Elsewhere in the application, the specific site of the Monitoring Station is described:

"(The) FCC Monitoring Station consisting of 200 total acres in one parcel with one large two-story unpainted brick and asphalt-shingled building with detached garage of similar construction, with smaller auxiliary buildings nearby. The original monitoring room contained 2,000 square feet of floor space, and room for dormitories, kitchen, work-

shop, storage batteries, motor generator, and switchboards were provided. This building was constructed from plans and specifications prepared by the Navy Department, Bureau of Yards and Docks with the ground breaking in October 1929. The original site comprised 50 acres and was the first monitoring station constructed for the exclusive use of the predecessor, namely, the Federal Radio Commission which was authorized in an act approved February 23, 1927."<sup>2</sup>

## FOOTNOTES:

1. For the story on the establishment of the FCC Monitoring Stations, visit <<http://bit.ly/12YzxE3>>.

2. National Register of Historic Places Inventory — Nomination Form 10-300, June 13, 1972, Nebraska State Historical Society <<http://bit.ly/19hF6kv>>.

The subject was indeed transmitting, and he did indeed sound intoxicated. I believe “hammered” is a better term! Although they obtained a fix very quickly on the subject, the monitoring stations continued scanning him for about another 15 minutes.

After triangulation between the stations had been completed, a latitude and longitude was calculated. The monitoring engineers determined the subject was about 10 miles off the coast of Wilmington, North Carolina, most likely on a boat.

I learned later the U.S. Coast Guard was dispatched and arrested the subject on suspicion of boating while intoxicated. As far as the FCC was concerned, that got the subject off the air and although documented for probable cause, no FCC related charges were made to my knowledge.

I asked the engineer what else he had to look forward to that night. He replied, mostly paperwork, but jokingly added if he found time, he’d turn on the scanner and write up some of my cops for *failure to ID* violations on the public service bands! I called it a night, and headed home after a very interesting and educational evening.

## The Monitoring Station is Closed

I had contact with the FCC Monitoring Station one more time in 1984 while I served as Chief of Police for a small town in Northeast Nebraska. We had been suffering very strong radio interference to our in-car mobile repeaters in part of the business district of town. It was on the 155-MHz band, and made it impossible for my officers to communicate with anyone while in that area. At my request, engineers from the FCC at Grand Island came to town, located the offensive source in short order, and corrected the issue in less than one week from my original telephone call to them.<sup>6</sup>

On August 17, 1995, then FCC Chairman Reed Hundt announced the total restructuring of the FCC. This included the following:

*“Monitoring Stations: We currently conduct national frequency monitoring operations in nine separate monitoring stations, and in four additional monitoring sites within FCC field offices. Fortunately, technological advances will permit us to replace these monitoring stations with a national automated monitoring network by the summer of 1996. Accordingly, I am proposing to the full Commission that we will close all nine monitoring stations and the monitoring functions within field offices at that time. The monitoring will be done electronically. No monitoring function will be impaired. We will retain one facility in Laurel/Columbia, Maryland, as our central station.”*<sup>7</sup>

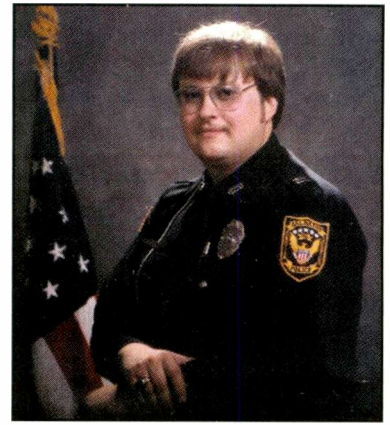
Shortly after the new National Automated Monitoring Network was established in 1996, the FCC Monitoring Station at Grand Island, Nebraska was closed . . . Or so it seemed.

After considerable effort and the assistance of my U.S. Senator’s office, I was able to learn that the old FCC Monitoring Station is still in use. In correspondence, the Federal Communications Commission replied:

*“The Grand Island Monitoring Station is part of the FCC’s High Frequency Direction Finding (HFDF) network. This network provides monitoring and interference resolution support for the Federal government, the public safety community, and other FCC licensees. The network is vital to FCC management of HF spectrum (below 30 MHz) within the U.S. and the enforcement of FCC spectrum rules. The network operation also provides special monitoring and technical assistance support during and after major emergencies.”*<sup>8</sup>

Although the human presence is no longer at the station, it’s

**Photo G.** Randal R. Schulze, KDØHKD, as he appeared about the time of his tour of the Grand Island FCC Monitoring Station in the early 1980s. (Courtesy of KDØHKD)



good to learn that after a long and distinguished career, the FCC Monitoring Station at Grand Island, Nebraska is still in service, and will continue to be in service well into the foreseeable future.

## About the Writer

Randy Schulze, KDØHKD, grew up in Kearney, Nebraska, later attending the University of Nebraska at Kearney, then known as Kearney State College, and Dana College at Blair, Nebraska majoring in Radio Broadcasting.

Schulze served 16 years as a law enforcement officer with agencies in Nebraska and Missouri as 911 communications operator, police officer, and chief of police. Although involved in radio communications professionally throughout his adult life, Schulze did not get fully involved in amateur radio until the spring of 2009. Since then, along with two of his best friends, he is part of the Hams in Space Team, which provides presentations and videos on working amateur radio satellites <<http://hamsinspace.com>>.

Schulze resides at Kansas City, Missouri and works in Information Technology for CenturyLink in Overland Park, Kansas. He’s an active member and President of the Raytown (Missouri) Amateur Radio Club, and is the National Coordinator for the CenturyLink Employees’ Amateur Radio Club.

## FOOTNOTES:

1. This display has been moved to FCC Headquarters. See <<http://bit.ly/12YzxE3>>.

2. Further reference to this activity can be found in a document titled, 1945 UNITED STATES GOVERNMENT MANUAL regarding FCC Activities during World War II <<http://bit.ly/12J8nPZ>>.

3. This was verified by a representative of the Federal Aviation Administration (FAA) at Kansas City, Missouri in August 2012.

4. I did not know this at the time, but reflecting on my experience in law enforcement investigations, it is likely the selection of three or more monitoring points, from disparate locations all over the country, not just ones close to the suspected location, is probably something suggested by the attorneys as a matter of evidence, to rule out any other signal sources, not as an engineering consideration.

5. Grand Island was considered the “lead monitoring station.” A list of FCC Monitoring Stations can be found at <<http://bit.ly/10vqGtW>>, however this list has not been verified as accurate.

6. The “Offensive Source” turned out to be office equipment, similar to a telex machine. When disconnected from power, the interference stopped.

7. An FCC announcement dated of August 17, 1995 regarding the restructuring of the Federal Communications Commission, including the closure of the Monitoring Station at Grand Island, Nebraska <<http://bit.ly/Zaa5Le>>.

8. From a letter to the author from the Office of U.S. Senator, Claire McCaskill. (Missouri) March 12, 2013.

# 'This is War, Man!'

## Go On Recon to Track Down That Darned Noise!

By Gordon West, WB6NOA/WPC6NOA

*The clouds of conflict are on the horizon.*

Your scanner continuously locks up on 155.160 MHz. In the driveway, your mobile radio hears this same signal. Walk down the street a few houses away, though, and the noise goes away. Troubling.

On shortwave, Voice of America at 15580 kHz, is drowned out by a steady, raspy carrier starting on 15500 kHz, and ever-so-slowly inching up the band.

On Saturday and Sunday, your favorite program — say, “The Tech Guy,” Leo Laporte, W6TWT, on KFI-AM at 640 kHz — is hammered by pulsing interference that mysteriously disappears at noon.

Noise is invading. It's time to gather in The Situation Room. It's time to zap back! Zap it at its source! *This is war, man!*

### 'We're Not Going to Take This!'

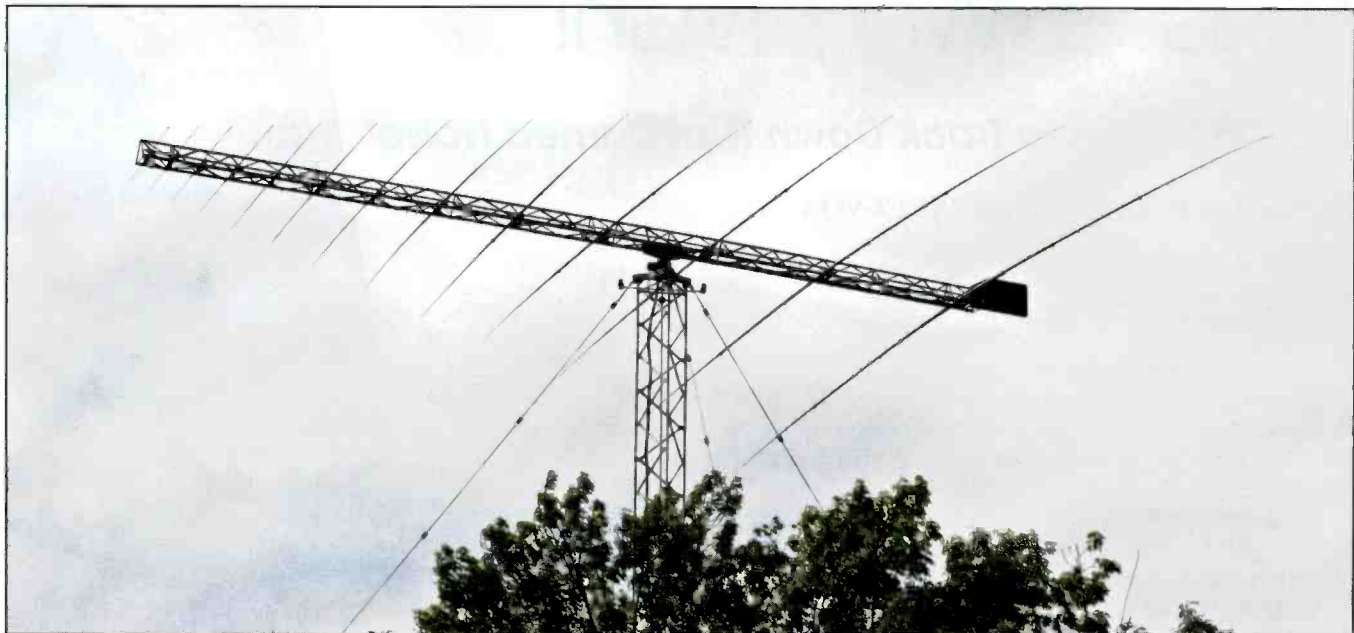
OK, let's not jump to any hasty conclusions. Don't blame your neighbor or power company as the enemy just yet. Noise could very well be coming from the home front — *your own house or apartment!*

The steady, unmodulated carrier on 155.160 MHz FM, we call a “birdie.” It's not a term of endearment.



**Photo A.** This fax machine put out a dead carrier on 155.160 MHz. That's the marine Search and Rescue FM channel. *And that's unacceptable.* After locating the noise with a CCrane SW receiver, Gordo moved the crystal in the printer's internal oscillator “just a smidge and the frequency is now clear.” *Victory! War's over!* (Photography courtesy of WPC6NOA)





**Photo B.** Rotating a beam while watching the S-meter on your receiver or transceiver can give you a good indication of whether RF noise is coming from inside your home or perhaps from a neighbor's — or nearby power line.

*“Everything from a new fax machine to a simple programmable coffeemaker seems to be bringing on the noise. It’s enough to ruin your reception — and your day”*

Hash is what you are hearing on the AM radio dial — the noise that suddenly disappears at noon in our example.

That slowly-traveling shortwave *buzz* could well be a spurious emission or harmonic from a next-room office electronics device.

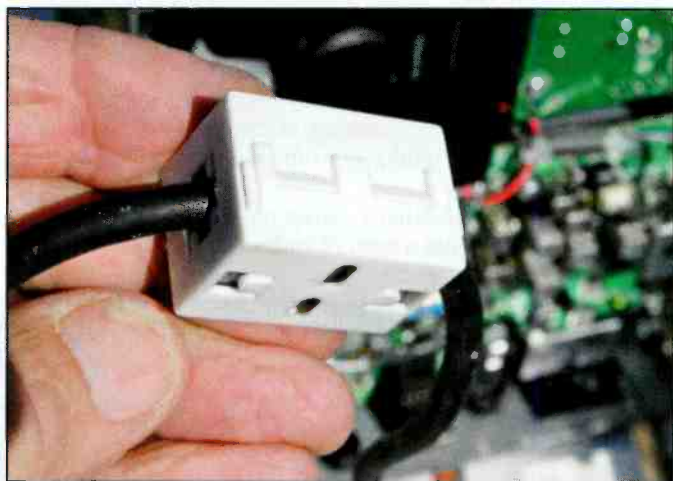
## Our Changing RF Battlefield

Over the last five years, the switch from analog to digital home appliance technology has caused a significant increase in private residence *noise*. We’re not referring to the kids or grandkids screaming at the TV while they’re playing video games. This is everything from a new fax machine to a simple programmable coffeemaker, each emitting a tiny discreet signal or broadband hash. It’s enough to ruin your reception — and your day.

Federal Communications Commission Part 15 Rules for unlicensed RF emitting devices classifies an *unintentional* radiator as a piece of equipment that may have an internal oscillator that generates a radio frequency signal *within* the device, with limits on how far that internal emission can travel — in our case, to a scanner, shortwave, or AM radio receiver.

On the flip side, the FCC classifies an *intentional* radiator as a short-range transmitter on a specific-approved band. Think of your wireless weather station on 433 MHz.

Home electronics — from televisions to microprocessor toasters — must meet more stringent Class B interference limits. For commercial and industrial businesses, a massive solar panel system or a full-building burglar alarm system will have looser limits of radiation interference as Class A digital devices.



**Photo C.** To help eliminate noise from in-home electronics, snap-on filters can help reduce broadband interference and those pesky “birdies.”

If you recently brought home a major Xerox™ copy machine, it might radiate a lot more RF interference than your dandy small home fax machine that doubles as a color copier.

Most of today’s home computer systems are designed around tighter Class B, Part 15 regulations.

*(IN DEPTH: The most comprehensive amateur radio book on RF interference I’ve seen is “The ARRL RFI Book,” edited by Ed Hare, W1RF1, available from most ham radio dealers and shortwave receiver outlets. — WPC6NOA)*

## Circling the Enemy

This annoying interference you are picking up on scanner, shortwave, and AM broadcast bands is usually confined to a 3-meter circle around the device, usually at less than 150 microvolts per meter. *(PERSPECTIVE: Three meters is 9.84 feet.*

That's, like, fourth down and 3+ yards to go. Yikes! – WPC6NOA)

This means that while holding your portable scanner close to that fax machine will yield an S-9 signal level with a birdie on 155.160 MHz. But get about 10 feet away, and the signal should drop *dramatically*. And, at roof level, where your scanner antenna is perched, the signal will quite likely disappear.

But in the real world, with the latest consumer electronics pouring in from overseas, we can track a VHF birdie as far as five houses away, and a shortwave buzz carrier from across the street. So, it is *your* hobby radio job to track down the noise source and identify the device that's causing it. *Charge!*

## VHF: Reconnaissance and Capture

For VHF, the majority of interference is not broadbanded, but rather an on-frequency dead carrier — that birdie we've been talking about. Take your portable scanner, tune it to the offending signal, and walk the walk. Or, more precisely, stalk the stalk. You're on a guerilla mission.

As you get close to a room full of electronic devices, remove the scanner antenna, and rapidly hold the scanner next to each potential noise source. When you get next to that brand new whiz-bang cof-

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feemaker with the clock, brew, and timing circuits, *verify* that this unit is the *UNintentional* insurgent . . . *errr*, radiating device.

How can you make absolutely certain? Simple. Unplug it! If the noise disappears instantly, or fades away within a couple of seconds, (*filter capacitors at work*), you have identified your noise source.

If the noise source appears broadbanded on VHF and occurs at night, *sniff* those new LED light bulbs that you

recently added in place of power-hungry incandescent bulbs. Simply shut off the light switch and watch the S-meter on your scanner drop to *zero* in the FM mode.

## Chasing Signal Destroyers on the Shortwaves

To identify local noise sources messing up shortwave frequencies, the ultimate *sniffer* is a small receiver or transceiver — such as the Yaesu FT-817 <<http://bit.ly/114SP6M>> — and a little rubber-duck-style antenna. (**NOTE:** With the FT-817, make sure you have the rubber-duck antenna properly set in the front or rear connection menu. – WPC6NOA)

Go to the offending frequency, and *walk the walk*. As you zero-in, you might want to remove the rubber-duck and stick the end of a straightened paper clip into the antenna socket. Often, you don't need much of an "antenna" on these snooping missions.

When you get right next door to the noise source, remove the paper clip. Now hold the little radio next to the suspected noise emitter. If you have close-in reception of noise, you found the culprit. Again, unplug the item to assure that the noise disappears. "*Direct hit, Captain!*"

## Calling in the Air Force

For radio amateurs using a beam, watch your transceiver's S-meter as the antenna rotates. If it reads a constant S-5 on 20 or 15 meters and the strength of the interference doesn't change as the beam is doing its 360-degree sweep, the noise is more than likely inside your shack.



**Photo D.** This clothes washer put out so much RF it could work DX on 40 meters. The solution was to put it under house arrest — *shut it off* — when operating on the 7-MHz band.

It's time to pull out the FT-817 again and hunt down the offender.

## The Ground War on Ground Wave and Beyond

For AM broadcast band interference, along with AM short-wave, I use CCrane portable radios to track down noise <<http://www.ccrane.com/radios>>. Changing bands is easy and in the double-sideband mode, they go nuts when held within a foot of the noise emitter.

If you're still not convinced the problem is coming from within *your* house, try this:

- Tune in the noise on a portable shortwave or medium-wave receiver, or the birdie in the case of your scanner.
- Go to your home or apartment's utility box and shut off all of the power breakers.

If the noise disappears, you *know* the enemy is in your own compound . . . *errr*, living space.

## Détente: Cool Heads Must Prevail

What if your house is electronically clean and the evil birdie gets worse as you approach your neighbor's home across the street? No, a sneak attack is out of the question.

Diplomacy is your first job. "Can we all get along?"

- Try to reason with your neighbor by pointing out his or her Wi-Fi system might work much faster with *you* helping minimize the noise.
- Maybe suggest the noise could be beyond MPE (maximum permissible exposure) limits to everyone inside the house, and you want to help prevent "*nuking*" the entire family.

MFJ Enterprises <<http://www.MFJEnterprises.com>> makes plenty of small, directional antenna sniffers, and I use them regularly on my FT-817 portable gear. Any directional antenna system tuned to the approximate band of noise interference will do the trick — including the "Pet Finder" receiver and directional antenna from CommSpec in Orange, California <<http://www.thecatlocator.com>>.

## Negotiating Reparations

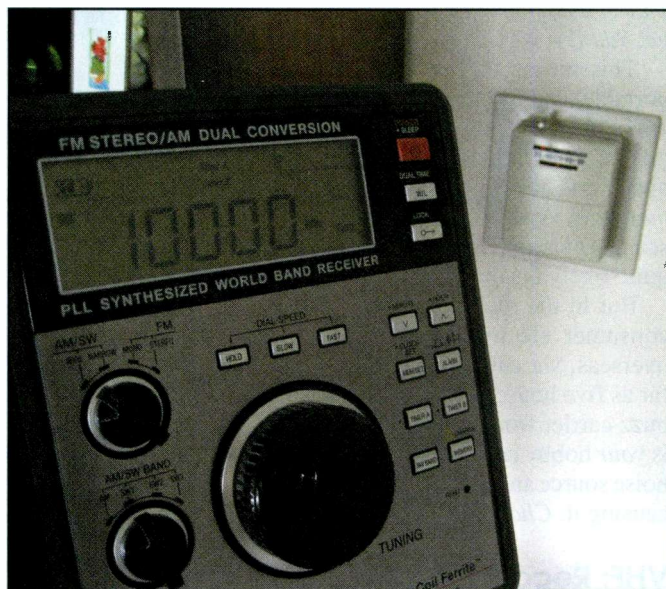
Sometimes, turning off your house AC circuit is not enough. I recently discovered RF noise coming from the solar charger for my dune buggy.

The charger goes into a float mode when the battery is full, emitting a ticking noise as the time domain circuit begins to pulse the battery, rather than delivering a constant overcharging current.

*So, you found the culprit. Now what? Time for reparations!*

On a VHF/UHF FM birdie, you can sometimes move the local oscillator and the multiplier circuit off your favorite frequency by gently pushing components on the circuit board. Sometimes just moving a few wires in the oscillator section may help, but now that manufacturers are doing away with independent wires, this is getting harder.

One time I got a very distressing "birdie" coming from a printer. It had landed right on the marine VHF distress Channel 156.800 MHz. By simply going into the printer, locating the



**Photo E.** Gordo's neighbor installed a new thermostat — a *very RF noisy* thermostat. WPC6NOA bought him another brand and *bingo*, the problem was easily solved. *Think diplomacy!*

metal crystal, and gently moving it a few millimeters from vertical, the "birdie" disappeared.

On some equipment, aluminum foil below the feet of the device may help. Sometimes adding RF chokes to the power cord does the trick.

On broadband noise generation stuff, like LED lighting circuits, you may need to bring in an electrician to swap out the main AC feed lines with shielded two-conductor line. Or maybe, just shut off the lights during Voice of America reception!

## Sometimes, You've Got to Retreat!

If the broadband hash gets all the way down to the AM broadcast band, AC line filters may work. But consider doing what I do: take your CCrane AM broadcast radio, retreat to the outdoors deck or patio and tune in Leo Laporte — unfettered.

## Good Intelligence is Key

The steady carrier FM birdies are easy to track. Shortwave broadband noise can be isolated by individually turning off and on certain breakers. During a 40-meter net each morning, we don't do laundry at our house.

Our Kenmore "Elite" totally wipes out HF reception in the spin mode.

In the agitate mode, it really does its thing to the radio operator. (*NOTE: Agitate, indeed. —WPC6NOA*)

So the first "cure" for resolving specific frequency or broadband noise is walk the walk and stalk the stalk with a portable radio. Find the noise source, and, if you must, put the offender on a timer to turn it off during the time you plan to use your radios.

There is no magic interference *filter* to put on your radio's antenna. After all, the noise you are picking up is valid RF, and that's what your radio is designed to receive. You must declare war on noise and attack.

Don't let interference get you down. *Zap it at its source!*

# In Spite of It All, CB Survives and Thrives

## COMMENTARY

By Cory GB Sickles,  
WPC2C5/WA3UVV  
<wa3uvv@gmail.com>

*“Now, CB doesn’t have as many rules as it once had, but they have been carefully established and you should — must — respect them.”*

**E**verything — even Class D Citizens Band — has rules. Now, CB doesn’t have *as many* rules as it once had, but they have been carefully established and you should — *must* — respect them. With the hobby’s popularity, there have to be guidelines, for heaven’s sake, **Photo A**.

I won’t bore you with a full recitation of Part 95, but you should study it, if you haven’t already. (*IN DEPTH: FCC rules for Citizens Band are covered in Part 95, Subpart D, accessible via the Internet at <<http://1.usa.gov/15baL46>>. — WA3UVV*)

When Class D CB was conceived, it was ill-conceived. The original idea came from a mélange of thoughts about a low-cost, two-way radio service for business users with possible Civil Defense applications.

### Historical Perspective

Classes A and B were allocated in the UHF (460 MHz) range and had very tight restrictions. (*NOTE: It’s argued that this service is what ultimately became the General Radio Mobile Service, but there isn’t a straight line to that conclusion. I’ll cover that issue in an upcoming column. — WA3UVV*)

UHF gear was also quite expensive for the time, so the “low cost” goal wasn’t even close to being met.

In North America, there was a narrow amateur radio allocation known as 11 meters. It ran from 26.96 to 27.23 MHz. It was also an ISM shared allocation — Industrial, Scientific & Medical. Note that this was not a worldwide allocation, just singular to Canada and the United States, much like the 220-MHz band.

The 11-meter band was an allocation that appeared after the end of World War II. That’s also about the time that UHF CB was first conceived. As time went on, it became obvious that this new service wasn’t catching on, mostly due to cost. Lower frequencies meant lower costs, so the search was on.

The searchlight quickly focused on 11 meters. Here was an underutilized allocation that could be pressed into service. After all, it was right next to the 10-meter amateur radio band and had virtually the same characteristics.

Many hams — even those who weren’t born yet — still cringe at the idea that this band was “stolen” from them. But, *c’mon folks*, it’s time to give it a rest. In the long run, radio amateurs are much better off with 12 and 10 meters, as these are each worldwide allocations that hams don’t have to share with industrial users.

Class C Citizens Band was envisioned as a group of channels for remote control and paging applications. Class D was for voice, with its channels intermingled with five Class C channels and



**Photo A.** Used CB radios, such as this 40-channel Realistic TRC-421A AM transceiver, are selling today for well under \$25 on auction sites such as eBay. (Courtesy of KPC6PC)

Channel 23, being shared. That's why, if you look at a table of channel frequencies, you see a skip in the pattern every four of the original channels.

The idea with Class D was to use it for short transmissions and conversations that didn't last more than a few minutes at a time. Also, you weren't supposed to talk over long distances.

### And Therein Lies the Rub . . .

Well, make *all the rules you want*, but human nature being what it is, and HF propagation being what it is, good luck

with CB distance rules. Exhibit A: Part 95.413 (9) under "*What communications are prohibited*," **Figure 1**. I mean, *in all practicality* . . .

The people who thought — or think — such rules would or will be followed to the letter are or were what's commonly known where I grew up as "*just plain stupid*."

If CB were envisioned today, it absolutely should be UHF only and utilize narrow band 2.5-kHz deviation. The cost of equipment is reasonable. Using FM assures a certain noise immunity and there's little chance of DXing, except for the occasional "tropo opening."

But CB wasn't conceived of today. It was conceived more than six decades ago in the era of tubes. Even at 27 MHz, FM would have been superior to AM, except that the FM of the day used 15-kHz deviation. You would have had a lot fewer channels available, so AM beat it out. Also, AM was cheaper to implement — heterodyning, electrical hum, and atmospheric noise was just part of the compromise. And so, the CBER is faced with the dilemma of "Managing the CB Skip Zone," **Figure 2**.

### Expanding Horizons

When CB transceivers first hit the market, they had one or two channels for transmit and tunable receivers. Event-

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#### **§95.413 (CB Rule 13) What communications are prohibited?**

(a) You must not use a CB station—  
(1) In connection with any activity which is against federal, state or local law;

(2) To transmit obscence, indecent or profane words, language or meaning;

(3) To interfere intentionally with the communications of another CB station;

(4) To transmit one-way communications, except for emergency communications, traveler assistance, brief tests (radio checks), or voice paging;

(5) To advertise or solicit the sale of any goods or services;

(6) To transmit music, whistling, sound effects or any material to amuse or entertain;

(7) To transmit any sound effect solely to attract attention;

(8) To transmit the word "MAYDAY" or any other international distress signal, except when your station is located in a ship, aircraft or other vehicle which is threatened by grave and imminent danger and your are requesting immediate assistance;

(9) To communicate with, or attempt to communicate with, any CB station more than 250 kilometers (155.3 miles) away;

(10) To advertise a political candidate or political campaign; (you may use your CB radio for the business or organizational aspects of a campaign, if you follow all other applicable rules);

(11) To communicate with stations in other countries, except General Radio Service stations in Canada;

**Figure 1.** As a Citizens Band operator it is your responsibility to know rules set forth by the Federal Communications Commission. Part 95 is easily accessible via the Internet by linking to: <http://1.usa.gov/15baL46> and scrolling to Subpart D covering CB, beginning on Page 544. The part outlined in red addresses "the distance" issue. (*Internet screen grab*)



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ually, you could pick up a six-channel rig, but one with all 23 in it didn't appear for some time.

With limited channel selection, the local plumber, electrician, or carpenter found he or she could use the service to keep in communication with other trucks, but little else. Once the multi-channel radios appeared on the market, it was possible for the local plumber, electrician, or carpenter to talk with one another about what they needed when working on the same job or to give referrals for other work — a form of business networking.

When the workday was over, as some of the local plumbers, electricians, and carpenters (*whew*) were friends, they started chatting with each other — for more than just a few minutes — about things other than business. *Presto!* The hobby use of CB radio had begun. Things became so relaxed that callsigns and identifying went neglected. Names and nicknames begat “handles” in order to obfuscate the FCC's enforcement efforts. Things started going downhill.

## A General Science Reality Check

Now let's factor in nature. You may be familiar with the 11-year sunspot cycles that make certain frequency bands “go long,” meaning at unusually great distance.

What you may not be as familiar with is something wave propagation students refer to as “gray line DX.” When an area on the earth transitions from day to night and night to day, the ionosphere gets excited in such a way as to make the bands *go long* — in a polar direction.

This transition is known as the *gray line*, hence the term. It happens twice a day, every day. Some days it's more pronounced than others, but it's there.

It means conditions make it possible to talk over longer distances than the FCC allows for CB operators, almost every day of the year. If you want to stay legal, make sure you know the exact location of the other station and have a map and compass handy. *Yeah, right.*

*(DISCLAIMER: I'm by no means advocating Citizens Band operators to break the rules, but when the rules set you up for failure from the start, I think that's wrong. — WA3UVV)*

## Tempting CB Hijinks

I'm not going to go on about the first gas crisis, truckers, lowered speed limits, movies, and the explosion of CB. You can look all that up if you don't know it already.

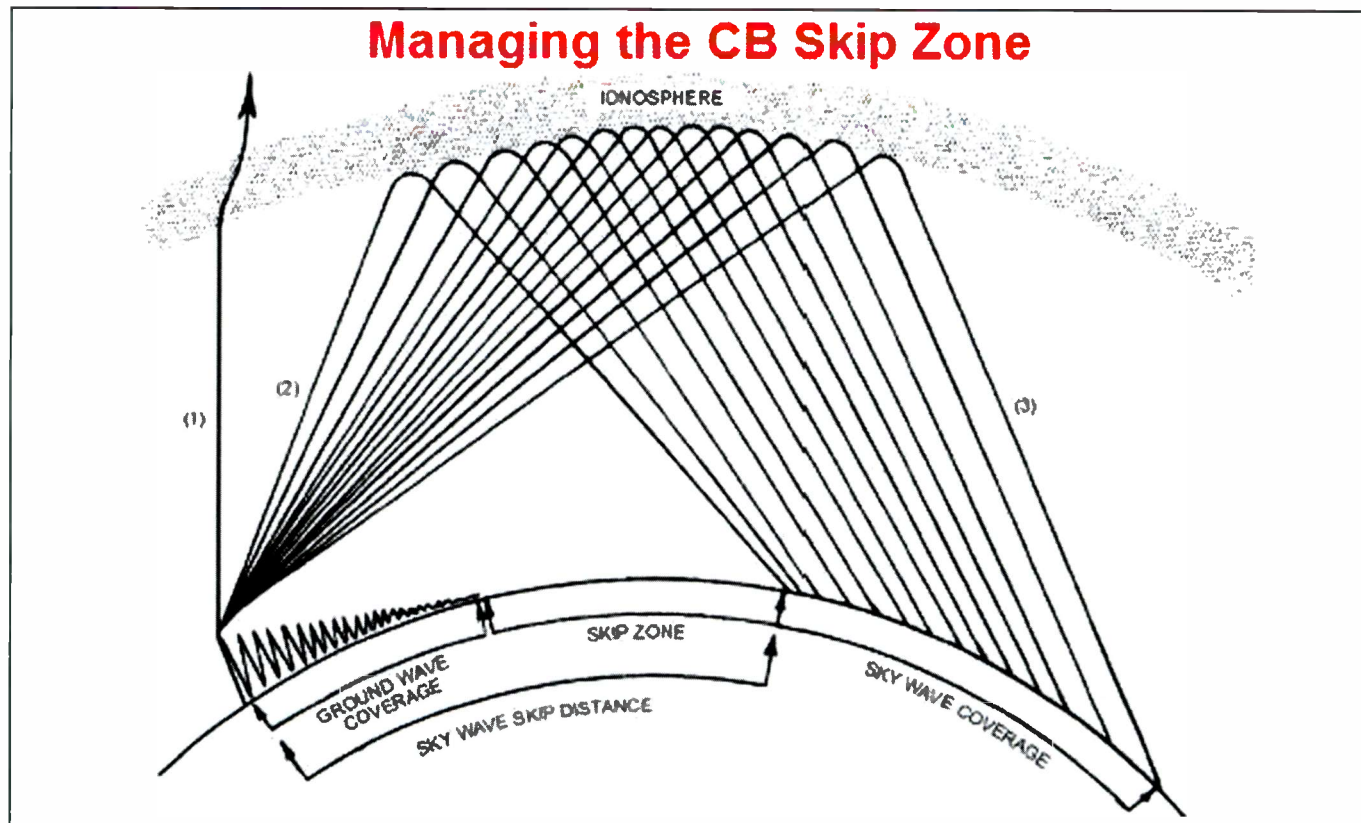
One thing that's significant is that by the time CB began to blow up, the foundation for hobby use and illegal activity had been poured.

Another thing that's significant is that the Electronics Industry Association's members thought they could make even more money if the band were expanded and so it lobbied for the introduction of 40-channel radios.

In short order, 23-channel models became somewhat obsolete, although to be fair, they are still quite useful. Some manufacturers sold off 23-channel board and control sets for as little as \$10 and radio amateurs bought them. AM activity on 10 meters starting around 29 MHz became quite popular. Others were modified for FM activity. Heil Sound's Bob Heil, K9EID, a purveyor of high-quality microphones and audio equipment, wrote “The FM Handbook” which was the guide for such things.

The 23- vs. 40-channel era accounts for why it's so easy and cheap today to find a used 23-channel radio. But a used 40-

## Managing the CB Skip Zone



**Figure 2.** Propagation at 27 MHz can present some challenges to the CB operator, especially where Part 95 FCC rules stipulate at what distance the operator can legally make contact with another Citizens Band operator. (Internet screen grab)

channel isn't that much more. Also, the incredible growth of CB in that era, **Photo B**, exhausted the FCC's Enforcement Bureau. In order to save face and money, the rules were relaxed and licenses were no longer required. Today, you really have to go out of your way to get their attention. *And some do.*

By operating with illegal amplifiers, they're akin to a beat-up old car with no muffler — garnering undesirable attention with objectionable noise. (SEE: "CBers: A Bit of Respect and Common Sense, Please!" — WA3UVV)

I think the only neighborhood you

should want to be a part of is the first one. Plus, you should do *everything* you can to keep it that way — leading by example.

### Be Proud of Your Role

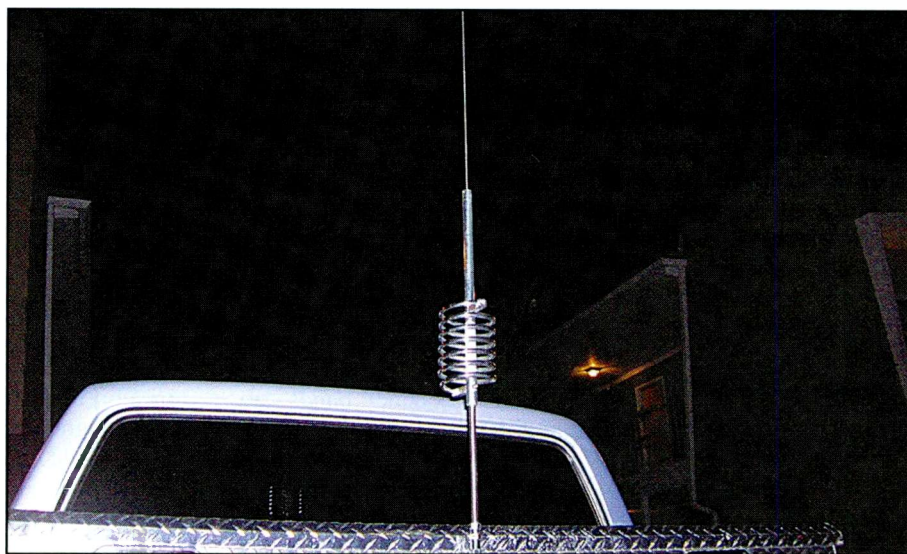
When you are on the Citizens Band, it's a form of public speaking. You aren't

### Good Neighbors, or Not

The important things to be cognizant of these days apparently are to use only type-accepted transceivers and *no amplifiers*. Stay within the power you are allowed and don't cause interference with other CBers and other services.

CB channels can be compared to neighborhoods. Some neighborhoods are pleasant and well taken care of. There's a sense of community and they're kid-friendly. Others are not where you want to be at night — *or possibly any time of day*. They're populated with the bottom feeders of society.

Still others may seem friendly at first, but soon you learn that everyone there talks like an inebriated cartoon version of a person with the IQ of a toaster oven. Additionally, they appear to spend their money on every sound-effect-generating and audio-distorting product available.



**Photo B.** A telltale sign of Citizens Band's popularity is the ubiquitous CB antenna seen on so many vehicles even today. In addition to nice home-based stations, mobile CB units are in cars, trucks, boats, and *who-knows-what-else* just about everywhere we look. (Courtesy of Wikimedia Commons)

just talking to one other person — you're talking to everyone who might be listening in. Talk as you would in person. Speak with a maturity that makes others want to know you better. Encourage the respect you'd like to be shown. Just because you're using a *handle* instead of a callsign and your real name, doesn't mean you should act any less of a person than you are.

## Making Things Better for Everyone

From a practical standpoint, the FCC has more important matters to address than someone who might work a station beyond the "line in the sand" while enjoying the challenge of *getting out with 5 watts or less over any distance*.

(NOTE: Among radio amateurs, such operators are known

as *QRPers*. They typically represent the driving force in equipment building, experimentation, and technical innovation. — WA3UVV)

The others listening in, even those from some of the less-desirable neighborhoods, will be more impressed with what you are doing with a "normal" voice and you may just encourage better behavior in everyone you're exposed to.

CB wasn't originally intended for fun, or hobby use, but the realities involved have made it that way. And it can be an incredibly enjoyable pursuit. But it's up to you and the people you communicate with to assure that it happens that way.

Perhaps in time, the distance restriction will be lifted. And if so, responsible CB operators will trump those operating irresponsibly.

## CBers: A Bit of Respect and Common Sense, Please!

By Cory GB Sickles, WPC2CS/WA3UVV

I have traveled to most of the United States and a couple of Canadian provinces and have found each possesses its own personality and regional dialects, along with certain colloquialisms. Being from the Pittsburgh area, greetings like "Jeet yet?" are well understood, but not forced onto the rest of the world. (TRANSLATION: "Did you eat yet?" Perhaps an invitation to lunch. — WPC2CS)

What is it that drives so many CB operators, however, to morph into circus clowns by adopting over-the-top regional dialects?

For example, I've met many wonderful people in the southern U.S. The combination of hospitality, friendliness, and "life at a slightly slower speed" is warm and welcoming. In my encounters with Southerners in a variety of situations, I've *never* heard anyone speak in person with the painfully forced drawls and dropped G's that I have on CB. It's especially repugnant, sad, and insulting to people of the Southeastern U.S. when some knucklehead is trying desperately to sound like "Foghorn Leghorn" . . . on Quaaludes, **Photo C**.

This, and the constant "heeeeelllll-looooo, whoot, whoot, whoot, heeeeelllll-looooo" combined with bloopy sounds and echo chambers. It is childish and nauseating. Why anyone in their right mind would — of their own will — spend extra money so they could sound like that is beyond me. (KEY PHRASE: "In their right mind." — WPC2CS)

Yet, at some point in the exponential growth of CB in the 1970s, the desire to sound like some wise old country preach-



**Photo C.** In some cases, you'd think the late Mel Blanc, cartoon voice of "Foghorn Leghorn," had returned from the dead to operate Citizens Band, where faux southern accents can so often be heard. Coincidentally, Mr. Blanc was a CBER in 1977 and '78 using such handles as *Bugs* and *Daffy* on the air in the Los Angeles area. (To Mr. Leghorn in "Crockett Doodle Doo" at <<http://bit.ly/11bL1nX>>. — WA3UVV) (Internet screen grab)

er rocking on a porch became the cacophony of execrable behavior that I often hear today on Channel 6 and a few other RF wastelands where I live.

I doubt that many of us would put up with that sort of behavior (and some of the questionable language) on Facebook, Twitter, LinkedIn, and other social media communities we might engage. Who would want to do business with anyone like that? Why then, would you want to encourage — or display — that sort of behavior on CB?

My plea to you, if just starting in CB, is just to speak "normally" — whatever's normal to you, from Maine to Georgia to Hawai'i. Speak as clearly as you can. Don't drive your microphone to the point of distortion by shouting into it. Be a good example for others.

If you are already involved in CB but have fallen into the abyss of bad behavior, it's not too late to change. Chances are, you'll enjoy the experience that much more — and so will everyone else within earshot.

## Radio Free Asia, Bringing a Free Press to Closed Societies

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

*“Unlike many traditional opposition shortwave stations, RFA seeks to bring unbiased reporting to its target countries without advocating a specific political position”*

Imagine sitting at your kitchen table in North Korea, China, or elsewhere in Asia. In front of you is your portable shortwave radio and you are listening in the hope of hearing something other than your government’s sanitized version of the news.

As Americans we take access to a free press almost for granted. Yet, in some countries in Asia, governmental control of the news media is the rule, and journalists and reporters who fail to tow the government line can find themselves in jail — or worse. Each day in Burma, Cambodia, Laos, North Korea, People’s Republic of China, and Vietnam, Radio Free Asia (RFA) pierces the government’s wall of censorship. **Photo A.**

Since being created by Congress in 1994, RFA’s goal is to act as a “surrogate free press” for those countries in Asia lacking access to a free press. RFA is not a U.S. government agency; rather, it is a private, nonprofit corporation which receives funding each year from Congress. Unlike many traditional opposition shortwave

stations which advocate the position of a government or exile group, RFA seeks to bring unbiased reporting to its target countries without advocating a specific political position.

It should be no surprise that some countries to which RFA broadcasts have attempted to prevent RFA’s reception by jamming its shortwave broadcasts. China has been extremely aggressive in its efforts to prevent its citizens from receiving them. Elsewhere in this month’s column you will read about the “Firedrake,” a jammer used by the Chinese government to block or disrupt some RFA broadcasts.

### Identifying RFA’s Key Players

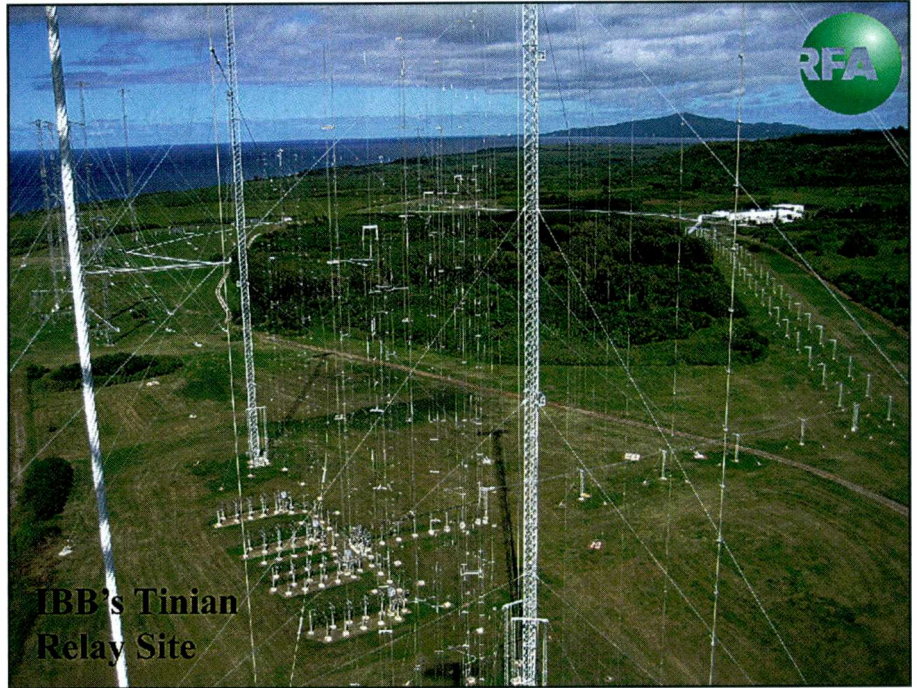
To get a picture of the importance, effectiveness, and impact of Radio Free Asia’s shortwave broadcasting operations, as well as a glimpse at the future, *Pop’Comm* interviewed Dan Southerland and André Mendes.



**Photo A.** Radio Free Asia’s 45<sup>th</sup> QSL card issued in 2012 features a view of the International Broadcasting Bureau’s Tinian, Northern Marianas Islands transmitter site used for some of the RFA broadcasts. The photo shows the view facing north from Tinian’s Tower 16, part of antenna 305L, overlooking the antenna fields. The transmitter is at the upper right side of the picture and above it you can see the Island of Saipan to the north of Tinian. (*Courtesy of Radio Free Asia*)



**Photo B.** Nobel Peace Prize-winner, leader of the Burmese opposition National League for Democracy (NLD), and member of Burma's parliament Aung San Suu Kyi visits Radio Free Asia's Washington headquarters. (Courtesy of Radio Free Asia)



**IBB's Tinian Relay Site**

**Photo C.** Here is a current Radio Free Asia QSL featuring the International Broadcasting Bureau Saipan, Northern Marianas Islands transmitter site used for some of the RFA broadcasts. The 7.4-acre Saipan site has three curtain antennas and three high-power shortwave transmitters. This card will be issued by Radio Free Asia until the end of this month. (Courtesy of Radio Free Asia)

Southerland is RFA's Executive Editor and Vice President for Programming. He spent almost two decades as a foreign correspondent in Asia. He was *The Washington Post's* bureau chief in Beijing from 1985-90 and covered the Tiananmen crackdown in 1989. This coverage brought him a nomination for a Pulitzer Prize.

Mendes is the Director of Technology, Services and Innovation for the International Broadcasting Bureau (IBB), which provides transmitter facilities and technical services not only to RFA but the VOA, Radio Marti, and other broadcasters. Mendes's responsibilities include overseeing the IBB's worldwide shortwave transmitting facilities. He has held several responsible positions in the field of information technology. He served as Senior Vice President, Strategic Planning and Global Chief Information Officer for Special Olympics International. He also served as Chief Technology Integration Officer for the Public Broadcasting Service (PBS), where he was responsible for both Information Technology and Broadcast Engineering. His industry awards include the 2008 MIT Awards for IT Innovation.

### Inside the Brain Trust of RFA

[Handler] RFA's mission statement posted on your website states "Radio Free Asia's mission is to provide accurate and timely news and information to Asian countries whose governments prohibit access to a free press." In the six countries targeted by your shortwave broadcasts, Burma, Vietnam, Laos, Cambodia, North Korea, and the People's Republic of China, in which country do you believe that RFA has achieved the greatest success in fulfilling its mission, and why?

[Southerland] It's difficult to say that one language service is more effective than another. They all impact their target coun-

tries differently. You could perhaps make the case that Burma is RFA's greatest success.

For decades, the country was ruled by a ruthless junta. Just talking to RFA could land a person in prison. But because of the widespread use of shortwave radio, RFA was able to report year after year on how this government had led the country into poverty and how it had become a virtual economic colony of China. We now know that not only were ordinary Burmese citizens listening regularly but so were the military elite. The military did an about-face in 2011 and has continued to move forward toward reform ever since.

Because of RFA and other international media, the people of Burma knew all along that they were entitled to a better life. They can now follow the progress — or lack thereof — on RFA radio and TV. But it's much more difficult to measure impact in regions that are more tightly controlled — in Tibet and China's Xinjiang Uyghur Autonomous Region, for example.

But we know from listener feedback that people are listening. And all of our language services break stories that are picked up widely by bloggers, news agencies, and international publications. Four of the language services have call-in shows that further the discussion of the topics that we raise in news stories and commentaries.

[Handler] Within each of the six countries that RFA targets, (Burma, Vietnam, Laos, Cambodia, North Korea, and the People's Republic of China) what do you rank as RFA's most important contribution in the last year?

[Southerland] I can't single out only one contribution as being the most important, so I'll mention a number of them.

Over the past year, our Mandarin language service provided detailed coverage of numerous protests over land grabs as well as crackdowns on Chinese activists and petitioners. In his first

interview with an international broadcaster, the blind Chinese legal activist Chen Guangcheng praised RFA for its coverage of human and civil rights issues in China. He said shortwave still plays an important role in China, especially in rural areas.

The Tibetan service broke the majority of stories on Tibetans' self-immolation against Chinese rule over the past year. They've involved 118 Tibetan men and women, including a number of teenagers.

RFA Tibetan also did exclusive reporting on thousands of students protesting the release of a Chinese booklet that disparaged the Tibetan language and ridiculed the self-immolation.

The Cantonese service broke numerous stories on China's food safety problems, pollution caused by power plants, and the lead poisoning of children. RFA Cantonese also documented cases of forced abortions, land grabs, rural-urban disparities, and the problems of petitioners and migrant workers.

The Uyghur service documented the continued disappearance of Uyghurs in China's Xinjiang Uyghur Autonomous Region since 2009. This required meticulous reporting and interviews with relatives of the Uyghurs who have gone missing.

The Cambodian service covered violent crackdowns on villagers over land disputes and acts of intimidation against reporters, broadcasters, and human rights groups. The service devoted several broadcasts to the assassination of Chut Wutty, a prominent environmentalist.

The Vietnamese service reported on mass demonstrations of farmers protesting inadequate compensation for land seized for state-backed development projects. The service also covered the arrest, trials, and sentencing of bloggers who spoke out about corruption and human rights abuses in Vietnam.

The Lao service reported on the sex trafficking of Lao girls to Thailand and took undercover video footage of teenage girls working in a brothel in Vientiane. The service also reported on growing Chinese influence in Laos.

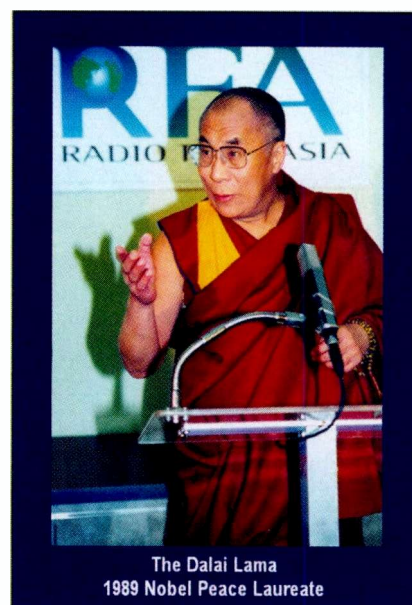
In January 2012 the Burmese service launched RFA's first daily television program. RFA led coverage of deadly communal violence in western Burma, including video interviews with refugees.

*[Handler] With North Korea being known as one of the most repressive and restricted countries on the planet, what inroads has RFA made in acting as a sub-*

## Radio Free Asia

Created and funded by the U.S. Congress, Radio Free Asia (RFA) began in March 1996. As a surrogate broadcast network, RFA is dedicated to the free flow of accurate, timely, unbiased news, information and commentary that is beamed to Asian countries where such news reports are unavailable. It also aims to promote freedom of opinion and expression, including the freedom to seek, receive, and impart information and ideas through any medium, regardless of frontiers. Mandated to broadcast in Burmese, Cantonese, Khmer, Korean, Lao, Mandarin, Tibetan, Uyghur and Vietnamese, English is spoken only when appropriate.

RFA is headquartered in Washington, DC with offices in Asia and correspondents throughout the world. Please listen to our programs and learn more from our website at [www.rfa.org](http://www.rfa.org).



**Photo D.** Radio Free Asia's first QSL card in use between 2002 and July 31, 2004 pictures the Dalai Lama on the front.. If any *Pop'Comm* reader received one of these cards, please let me know at <[stevenhandler-popcomm@yahoo.com](mailto:stevenhandler-popcomm@yahoo.com)>. (Courtesy of Radio Free Asia)

*stitute for indigenous free media in the Democratic People's Republic of Korea?*

**[Southerland]** When it comes to media freedom, Freedom House and other reputable human rights watchers have consistently ranked North Korea at the bottom of the list. But just as consistently, surveys of hundreds of North Korean refugees, travelers, and defectors have shown that RFA has "significant" numbers of listeners in North Korea.

RFA's strength lies in our use of North Korean defectors. We now have close to 20 defectors working with us regularly, including two full-time. They provide programs on a variety of topics. Included among those defectors are a North Korean intellectual, an ex-diplomat, an ex-trade official, a former air force officer, a poet, and two former North Korean journalists

A North Korean concert pianist also analyzes and compares songs from both the North and South on a weekly basis. When North Korean dictator Kim Jong Il died a year and a half ago (December, 2011), RFA had a contingency plan for emergency broadcasting. We featured five hours of original Korean language broadcasts for three consecutive days. Our coverage included interviews with North Korean defectors, academic experts, North Korean refugees living in China and defectors in South Korea, the U.S., the UK, and other countries.

We provided information to North Koreans that was unavailable to them inside their own country. Since the Internet is not readily available in North Korea, we've initiated an effort to reach out to a growing number of mobile phone users. But shortwave radio still provides a vital means of reaching North Koreans.

*[Handler] Released in November 2010 from almost 15 years of house arrest, Aung San Suu Kyi, Nobel Prize winner and leader of Burma's opposition National League for Democracy (NLD) is working for change in Burma, Photo B. In her visit to RFA last year she was quoted by RFA as saying, "This is the time we need all the help possible to make sure that our country keeps on the right path. This is another way of saying RFA is needed more than ever for us in Burma and for other people in other places, which are not yet free." In response to her statement, how is RFA supporting Burma's movement toward the "Rule of Law" and lasting democratic reform?*

**[Southerland]** A free press is vital to achieving lasting democratic reform and the rule of law in Burma. But while some major restrictions on the media have been lifted, Burmese journalists still face other restrictions.

Journalists worry about provisions in a new draft printing and publishing law that might effectively re-impose censor-

ship guidelines. They may also face imprisonment for covering banned topics.

RFA provides an example of good journalism by adhering to standards that exemplify accuracy, balance, and fairness in its editorial content. We were criticized by both sides for our coverage of two outbreaks of sectarian violence in Rakhine State last year, and we received hate mail from many Burmese listeners. But I think that in the end many people understood that we were trying to cover both sides of the conflict.

We've also hired stringers to cover ethnic conflicts in Kachin State, Rakhine State, and Shan State and have given them training. We've provided video training to a number of our reporters because good video is vital to our efforts to improve our Burmese TV programs. While shortwave is still essential, TV will loom larger in our future.

*[Handler] RFA has taken a strong lead in providing environmental news. Recently, you have covered the issue of clean drinking water in Asia. What reaction have you seen to RFA's Water Project series of stories and coverage, and has RFA's reporting led to any positive changes in any of the countries to which you broadcast?*

**[Southerland]** Our Web managing editor formally launched the water project in Phnom Penh on April 19. She met with experts and representatives of nongovernmental organizations in Burma and Cambodia who deal with water issues. The Cambodian NGOs praised our new app in development, "How's your water today," and several showed an interest in collaborating with us on the project.

We're reporting on water system failures in Asia but also on some of the success stories. One example: Sonn Chan, the former head of the city water authority in Phnom Penh, was able to restore drinking water at the tap in Phnom Penh.

Phnom Penh, capital of one of the poorest countries in the region, is a rare Asian city where it's safe to drink the tap water. Sonn Chan refused to back off when confronted by corruption and abuses of power that were limiting his efforts to move forward. His courage earned him the nickname "Water Hero."

RFA's approach to this project differs from the in-depth reporting we did for our award-winning Mekong River series in 2009. We collaborate wherever possible with local NGOs in producing films, photos, and in-language news reports. We've already established an informal partner-

ship with the NGO Water for People. As we break news regarding pollution, contamination, floods, and drought, we not only broadcast on the air but also publish the news on our website together with an RSS feed that will auto-populate special "hub" pages.

We've begun production on eight short films focused on water stories at the village level in Burma, Cambodia, China, Laos, Tibet, Vietnam, and the Xinjiang Uyghur Autonomous Region.

*[Handler] What differentiates RFA's news coverage over that of the BBC, VOA and other major international broadcasters.*

**[Southerland]** Unlike VOA and the BBC, RFA does only limited reporting of world news or U.S. news. As a "surrogate" news organization, we focus on domestic news and commentaries specific to each of the countries to which we broadcast. Unlike the VOA and BBC, RFA does no English-language broadcasting. We broadcast only in local lan-

guages and dialects. We do no English-language broadcasting, although we do have a small English-language Web team. We complement the broadcasts with nine Asian-language websites.

*[Handler] Radio Free Asia delivers its message through a mix of shortwave broadcasts, television broadcasts, Internet, and through other means. Over the last several years many international broadcasters including the BBC, Deutsche Welle, Radio Netherlands, and others have either substantially reduced or eliminated their shortwave broadcasts. Many broadcasters feel that shortwave has lost its relevance as a method of communications. What is the future of RFA's use of shortwave to reach their target audience.*

**[Mendes]** Shortwave remains a viable method of distribution for some of RFA's target countries. Such is the case with North Korea, Burma, Tibet, and the Uyghur region. In other areas, shortwave, for a variety of reasons including owner-

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ship, listenership, effectiveness of jamming, and price/performance ratio is a far less effective transmission methodology.

[Handler] *Several major shortwave broadcasters including All India Radio, Voice of Russia, and Radio Australia have been experimenting with Digital Radio Mondiale (DRM) shortwave broadcasts. Has RFA looked at this technology and if so, does it have a future in your broadcasting mix?*

[Mendes] The penetration of DRM receivers in the areas highlighted as viable SW markets is minuscule at best. The likelihood that those populations will transition from SW to DRM shortwave is extremely low, as well. However, the BBG (Broadcasting Board of Governors) will continue to monitor developments in the DRM space — especially in the penetration of DRM receivers in relevant SW markets — and will react accordingly if the data indicates an opportunity for significant audience gains.

### Insight, With Appreciation

I wish to thank Dan Southerland and André Mendes for generously taking time out of their busy schedule. Radio Free Asia’s frequencies and broadcast times can be found on its website at <<http://bit.ly/132Ug9T>>. For more samples of RFA QSL cards, see **Photos C and D**.

Although Radio Free Asia offers no English language programming, its sign on for each broadcast includes a brief English language ID. RFA encourages reception reports and offers several different QSL cards each year. It also has a history of responding quickly to QSL requests.

For a quicker reply, I suggest sending reports either by email or via RFA’s automated Web reception report site. The email address is <[qsl@rfa.org](mailto:qsl@rfa.org)>, and its automated reception report website can be found at <<http://bit.ly/17s7EcX>>. For those who prefer correspondence by postal services, write: Radio Free Asia, 2025 M Street NW, Suite 300, Washington, DC 20036.

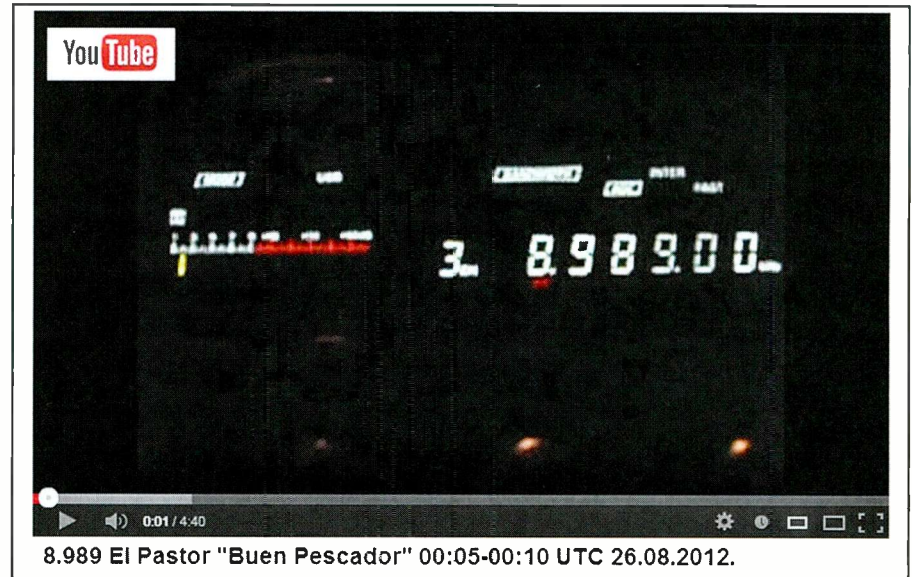
### ‘El Buen Pescador,’ the Good Fisherman: Pirate or Legit Broadcaster?

For several years, listeners in North America and elsewhere have heard a station that has become known as “El Buen Pescador” (The Good Fisherman), **Photo E**. It is not known whether this is a

licensed station or a pirate radio station.

Pirate radio stations traditionally broadcast music. However, El Buen Pescador broadcasts religious programs in Spanish. The broadcasts have includ-

ed monologues with religious content, singing, and sometimes comments or conversations via two-way radio with listeners who are presumably mariners and fishermen.



**Photo E.** Is “El Buen Pescador” — The Good Fisherman — a pirate or legit? We don’t know. Watch and listen to a broadcast at <<http://bit.ly/12OmIA4>>. (Internet screen grab)



**Figure 1.** This map shows Nicaragua and the surrounding area in Central America. Nicaragua’s western border is the Pacific Ocean and the eastern border is the Atlantic. (Courtesy of the U.S. Department of State)



The broadcasts have been heard between 2200 and 0100 GMT on an unusual frequency, 8989 kHz USB. This frequency is often allocated to the aeronautical band and yet it would appear the target audience of this station is mariners. So, why use an aviation frequency rather than a frequency in bands used by mariners?

Based on the content of the broadcasts, DXers speculate that the broadcaster is located in Nicaragua, **Figure 1**. A request to the FCC for information about the location of this station drew a reply that no information was available.

When more details are available, you can read about it here. (**WATCH and LISTEN to El Buen Pescador** at <<http://bit.ly/12OmlA4>>. – WPC9JXX)

## Chinese Jamming Shifts Gears, Raising More Safety Concern

On April 20, the Chinese government's jamming efforts underwent a major change. It drastically curtailed the use of its jammer known as *Firedrake* — consisting of loud, high-pitched music without any identification or spoken words. Replacing *Firedrake* is China National Radio's domestic Mandarin language station, CNR-1, broadcasting on the same frequencies previously jammed by *Firedrake*.

CNR-1 had been used by the Chinese government to jam some incoming shortwave broadcasts it wished to block. Now, at least for the time being, CNR-1 has become the primary method the Chinese are utilizing to block broadcasts from being heard in China. Targets of the CNR-1 jamming have included Mandarin or Tibetan broadcasts of the Sound of Hope, Voice of Tibet, Voice of America, Radio Free Asia, and Radio Taiwan International.

At press time, only a very few frequencies were still being jammed by *Firedrake*, one being 13795 kHz between 1200 and 1400 GMT. This remaining *Firedrake* is targeting a Tibetan language broadcast from Radio Free Asia. Whether China's switch from *Firedrake* to CNR-1 is temporary or permanent remains to be seen. However, whether the Chinese government uses CNR-1 or *Firedrake*, the end result is that broadcasts originating outside of China continue to be systematically blocked, jammed, or disrupted.

Last month I reported that, on April 7<sup>th</sup>, *Firedrake* interfered with a maritime weather broadcast of the Australian Bureau of Meteorology. This appears not to have been an isolated incident. At least twice since, on May 8<sup>th</sup> and 9<sup>th</sup>, the Chinese government once again caused interference to station VMC, the Australian Bureau of Meteorology's HF marine weather station located in Charleville, Queensland. This time, however, instead of *Firedrake*, the interference was caused by CNR-1. Because of the bandwidth taken up by the AM signal of CNR-1, its apparent attempt to jam a broadcast on 12370 kHz, encroached on, and interfered with, the Australian weather broadcast which was using the adjacent frequency of 12365 kHz USB at 1130 GMT.

Once again, the Chinese government's actions, which caused interference to Australian Marine Weather station VMC, could possibly have resulted in catastrophic consequences, preventing needed weather information from reaching mariners who rely on the weather broadcasts to safely navigate coastal waters.

They say you can't tell the players without a scorecard. So, to help *Pop'Comm* readers, I have included a chart of some of the frequencies and times I heard *Firedrake* jamming between January and April. Since April 20, rather than *Firedrake*, the

Chinese are broadcasting CNR-1 to jam many, if not most, of these frequencies, **Figure 2**.

## North American Pirate Loggings

Note that all days and times are UTC.

**Delta Fox Radio (?)** 6930.9 AM, 0001-0027 sign off on Monday, man and woman with some sort of drama discussion followed by music, some vocals. Male announcer with ID at 0014 and Gmail address. Talk about first wedding in outer space. More music until closing announcements thanking listeners for tuning in. Fair on peals but very noisy conditions. (D'Angelo-PA)

**Radio Cinco de Mayo** 6925 USB, 0022-0041 Saturday, man announcer with Spanish IDs and e-mail address <[radiocinco-demayo@gmail.com](mailto:radiocinco-demayo@gmail.com)> hosting music program with Mexican Hat Dance, La Bamba, and song entitled Cinco de Mayo. Nice program for the special event. Good signal. Also 2340-2346

**CHINESE JAMMER "FIREDRAKE" HEARD IN USE 11-15.7 MHz in AS OF 4-20-13 THE CHINESE STOPPED USING FIREDRAKE ON ALMOST ALL OF THESE FREQUENCIES SUBSTITUTING CNR-1**

FREQ-kHz	GMT	GMT	GMT	GMT	GMT	GMT	GMT	GMT
	1130	1200	1230	1300	1330	1400	1430	1500
11500	SOH	SOH	SOH	SOH	SOH	SOH	SOH	
11825	SOH							
11970	SOH	SOH	SOH	SOH	SOH		SOH	
12230		SOH	SOH	SOH	SOH	SOH	SOH	
12320	SOH		SOH	SOH				
12370	SOH	SOH	SOH	SOH	SOH		SOH	
12500	SOH	SOH	SOH	SOH		SOH	SOH	
12670			SOH	SOH	SOH	SOH	SOH	
12870				SOH	SOH		SOH	
12980					SOH			
13130	SOH		SOH	SOH	SOH	SOH		
13530	SOH	SOH	SOH	SOH	SOH	SOH	SOH	
13575			SOH					
13795		RFA	RFA	RFA	RFA			
13820	SOH	SOH	SOH					
13830	RFA							
13850	SOH	SOH						
13920	SOH	SOH	SOH	SOH	SOH	SOH	SOH	
13970	SOH	SOH	SOH	SOH	SOH	SOH	SOH	SOH
13980					SOH			
14400	SOH							
14700	SOH	SOH	SOH	SOH	SOH	SOH	SOH	
14750	SOH	SOH	SOH	SOH	SOH		SOH	
14800		SOH	SOH	SOH			SOH	
14980	SOH		SOH	SOH	SOH		SOH	
15525						VO		
15560			VOT	VOT	VOT			
15565				VOT	VOT			
15570					VOT	VOT		
15605		VOT	VOT	VOT	VOT			
15610					VOT	VOT		

SOH SOUND OF HOPE Mandarin Language Broadcast  
VOT VOICE OF TIBET Tibetan or Mandarin Broadcast  
RFA RADIO FREE ASIA Tibetan Language Broadcast

— WPC9JXX

**Figure 2.** Partial list of frequencies heard by the author which were jammed by *Firedrake* from January to April 20 and at times jammed by CNR-1 thereafter. The colors denote the intended target of the jamming. Not all frequencies and times are used each day. (Courtesy of WPC9JXX)

Sunday, repeat of previous program with Mexican Hat Dance followed by male announcer with ID and email address in Spanish. Good signal. (D'Angelo-PA)

**Wolverine Radio** 6935 usb, 0240-0258 sign off, Sunday, rock vocals selections with a male announcer providing station IDs at 0247 and again just prior to closing at 0256. FAX transmission at closedown. Good signal. (D'Angelo-PA)

## Clandestine and Opposition Station Loggings

*Note that all days and times are UTC.*

**Radio Dabanga** via Santa Maria Galeria, the Vatican beamed to the Darfur region of Africa 15725 AM. 1552 in Arabic two men with what sounded like an interview including a ment. of Radio Dabanga. At 1554 several seconds of music by a male singer followed by another ID of Radio Dabanga. Fair signal with slight fading. Sunday. (Anonymous Contributor 1-USA)

**Radio Free Sarawak** targeting Malaysia (p) 15500 AM 1259-1300 s/off. Good signal. Unknown transmitter site. 5/5/13 (Anonymous Contributor 1-USA)

**Radio PMR**, Pridnestrovie/Moldavian SSR, 9665 AM 2301-2340 Saturday, noted with news in English with fairly good signal noting Monday through Friday broadcasts on 9665 kHz followed by French program at 2315. (D'Angelo-PA)

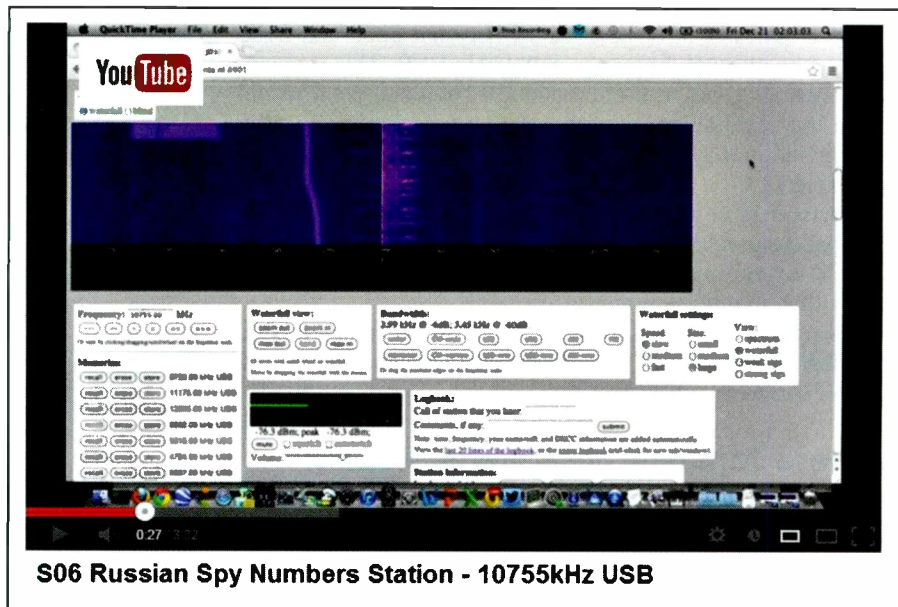
## Spy and Numbers Station Loggings

*Note that all days and times are UTC.*

**E07 Numbers Station** 14812 USB. (Enigma 2000 designator E07). Tuned in 1901 until 1902 sign off. Male mechanical synthesized voice repeating two different three-digit numbers over and over. (Anonymous Contributor 1-via Web SDR Netherlands)

**E11A Numbers Station** 10487 USB from 1710-1719. (Enigma 2000 designator E11A) Female voice in heavily-accented English reading "Niner Fiver Three Oblique Three Two" repeated for three minutes, then "Attention!" followed by 30 groups of five numbers (each group read twice). At 1717 "Attention!" again, followed by the same 30 groups of five numbers read only once this time, "Out" at 1719. Good signal on Friday. (Lambert-via Netherlands WebSDR)

**G06 Numbers Station** 5912 USB.



**Photo F.** Watch and listen to a broadcast of the S06 Spy and Numbers Station at <<http://bit.ly/158Q8G7>>. (Internet screen grab)

(Enigma 2000 designator G06) 1929 with Female in German reading "Tswu Eins Acht" (218) then "Funuf Sechs Sieben" (567) twice and "Eins Funuf" (15) twice. Message of 14 five-number groups was then read, followed by a repeat of the 567/15 sequence and then "Null Null Null Null Null." Significant QRM coming from Chinese shortwave station CNR-1 on 5945 kHz. Carrier was on for at least four minutes before broadcast but was turned off immediately after the "Null" sequence. Heard on Friday. (Lambert-via Netherlands WebSDR)

**G11 Numbers Station.** 5815 USB. (Enigma 2000 designator G11) Heard from 1325-1328 with female voice in German reading "Zvau Neun Neun Strich Zero Zero" continuously for three minutes, and then "Ende." Very weak on Friday. (Lambert-via Netherlands WebSDR)

**HM-01 CUBA Numbers Station** 9155 kHz AM. (Enigma 2000 designator HM-01) Tuned in 1022-1023. Female synthesized voice in Spanish with a five-digit number in between Redundant Digital File Transfer (RDFT) data transmissions. Good to excellent signal strength and good modulation. Re-checked at 1028 and heard female synthesized voice in Spanish with five-digit number groups in progress. 9155 kHz was // but behind by four to five seconds with the same broadcast on 5855 kHz also which had a fair signal strength Sunday. (Anonymous Contributor 1-USA)

**HM-01 CUBAN Numbers Station** 10715 AM. (Enigma 2000 designator

HM-01) Heard at 2158 with female voice in Spanish reading six groups of five numbers repeating for several minutes, followed by a reading of each five-number group and then a transmission of data in RDFT format. Transmission break at 2225, repeat of broadcast at 2228. Heavy fading by 2230, transmission became unreadable. Heard on Friday. (Lambert-MB)

**S06 Numbers Station** 15835 USB. (Enigma 2000 designator S06) Heard at 1815 with a male in Russian repeating "chety're dva shest" (426) callsign several times, followed by several five-number groups. Closes with "Null Null Null Null . . . Null" (0000 0). Heard Friday 5/13/13 (Lambert) (**WATCH and LISTEN:** to an S06 Numbers Station Broadcast at <<http://bit.ly/158Q8G7>>, **Photo F.** – WPC9JXX)

## Contributors

Logging contributors this month include **Rich D'Angelo**, Wyomissing, PA; **Jack Lambert**, Winnipeg, MB; **Mark Taylor**, Madison, WI; and **Anonymous Contributor 1-USA**.

## Signing Off for Now

*Thank you for reading this month's COPS. If you'd like to contribute Pirate, Clandestine, Opposition, Spy or number station loggings for possible inclusion in this column, I can be reached at <[steven-handler-popcomm@yahoo.com](mailto:steven-handler-popcomm@yahoo.com)>.*

–WPC9JXX

# Behind the Green Scenes of Public Access Community TV

By Bruce A. Conti,  
WPC1CAT

*“All you need is an idea and desire. We’ll provide the equipment, studio, and production assistance,” said station Manager Dick Gagnon.”*

If you haven’t watched your local cable TV access channel lately, take another look. You might be surprised by what you see. Community television and the accompanying technology have evolved from the days of VHS/Beta home videos and the MacKenzie Brothers” — those infamous *hosers* from the “Great White North Green.”

Access Nashua Channel 96 <<http://www.accessnashua.org>> is one example of how far community television has advanced. Nashua is a relatively small city, yet with a population just under 100,000 it’s the second largest in New Hampshire. It’s also within the big city television market of Boston, Massachusetts.

Nashua has three community channels on cable TV:

- Government
- Education
- Public access

The public access channel has only been on the air since July 2011. A message on the studio camera teleprompter, **Photo A**, welcomed *Pop’Comm* as Dan Young, Creative Director, Producer, and Trainer for Access Nashua, gave a tour of the public access facility.

## The Green Room

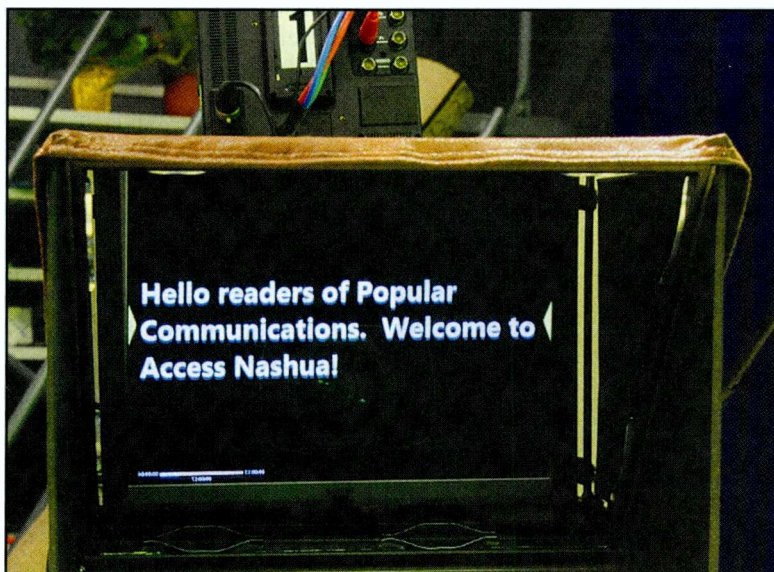
Three stationary JVC cameras are positioned in the “green screen” recording studio of Access

Nashua, **Photos B and C**. The bright green walls and floor provide the backdrop for insertion of overlays by computer software. This replacement of green with background overlays or graphics is known as chroma key special effects or simply green screen effects. Technically speaking, the specified shade of green is Pantone 354C. However, the software will actually detect various shades of green.

For example, a new episode of the “Fairy Tale Access” program was being recorded during the *Pop’Comm* tour. Program host Denise-Marie McIntosh was interviewing Samantha Russo of Nashua, **Photo D**, who was just crowned Miss New Hampshire 2013, but first a green-colored fashion accessory that the software was replacing with background overlay had to be removed. (**WATCH:** Previous episodes of “Fairy Tale Access” on YouTube at <<http://www.youtube.com/user/FairyTaleAccess>>, **Figure 1.** – WPC1CAT)

*Why green?* Apparently green was selected as the standard for chroma keying because it once was considered an unfashionable color. Of course now emerald green is listed as one of the top colors for fall/winter 2013 according to Pantone — so program hosts and their guests need to be forewarned not to arrive at the studio wearing green for a recording session.

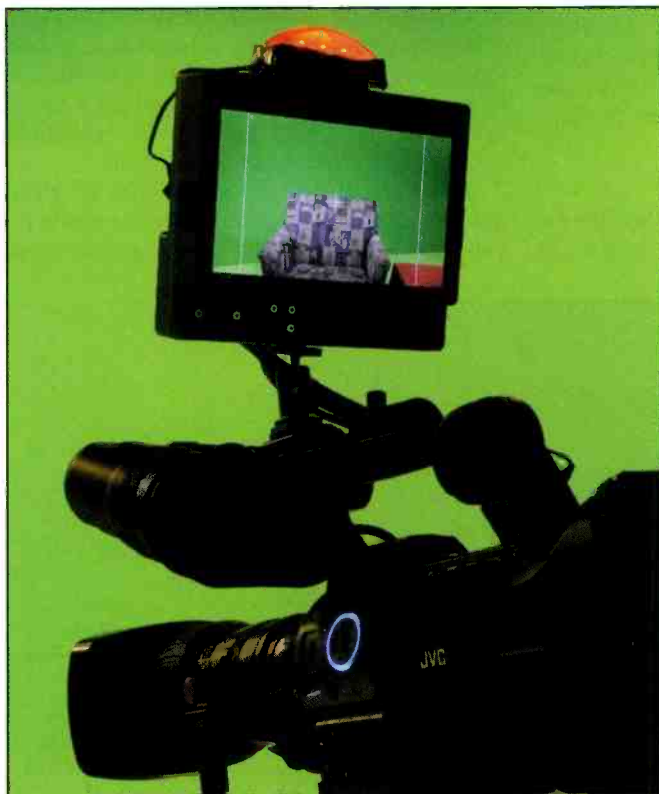
The studio was brightly lit with overhead lighting aimed to prevent shadows against the green screen walls which might otherwise



**Photo A.** The teleprompter on Camera 1 welcomes *Pop’Comm* readers to Access Nashua! (Photography courtesy of WPC1CAT)



**Photo B.** The bright lights and cameras are ready for action in the green screen recording studio of Access Nashua.



**Photo C.** Here is one of three JVC cameras in the green screen studio where most TV shows are recorded at Access Nashua.

obscure the computer overlays. Furniture and props were moved into position, the host and guest took their seats, audio levels were set, and then it was “lights, camera, action!” Well, actually the producer didn’t pick up a megaphone and shout it, like in the movies. But it was clear it was show time.

### Master Control

One camera provided a wide shot while the other two were focused on the individuals. The producer remotely switched between cameras in a separate control room while the program was being recorded, **Photo E**.

Dylan Smith, a volunteer intern, **Photo F**, assisted with live production in the control room. The Broadcast Pix Slate 1000 Video Control Center <<http://www.broadcastpix.com>> was used to switch cameras and graphics which were pre-assigned to programmable pushbuttons.

Monitors in the control room displayed each camera image, graphics, and the final output with integrated background and title graphics. Two wireless microphones provided audio through a Mackie 1604-VLZ3 board, which had additional XLR audio inputs for larger groups. Blackmagic Design <<http://www.blackmagicdesign.com>> Media Express software pulled it all together. Final edit was completed with Sony Vegas Pro 11.0 software <<http://www.sonycreativesoftware.com>>, which included the addition of the program opening with titles, and the closing with rolling credits.

“Sony Vegas is fairly easy to use,” Young said, **Photo G**. “So people can learn to do their own editing, or we’ll do it for them. It’s available in a consumer/home version called Vegas Studio.



**Photo D.** TV show host Denise-Marie McIntosh, Miss New Hampshire Samantha Russo, and producer Dan Young prepare to record an episode of "Fairy Tale Access."

However, we also use Adobe Premiere which is my editor of choice."

As a professional photographer, Young uses Adobe Photoshop, which works seamlessly with Premiere. Young has photographed many of the backgrounds for the green screen and can assist with studio and camera setup, creation of graphics for titles and the green screen, and provide training for those who would like to borrow equipment for on-location video or try editing their own programs.

### On the Air

After recording and editing is completed, the finished program is entered into the on-air rotation.

"The final product is delivered to cable TV via Tightrope Media Systems Cablecast," said Dick Gagnon, Station Director/Manager. "Programs saved in mpeg-2 files are transferred to the playback system and entered into scheduling software, then picked up by the cable TV



**Figure 1.** Previous episodes of "Fairy Tale Access" can be viewed on the program's YouTube channel at <<http://www.youtube.com/user/FairyTaleAccess>>. (Internet screen grab)



**Photo E.** The main monitor in the control room displays the three camera inputs with green backgrounds, along with overlays, graphics, and the final program channel with chroma key effects.



**Photo F.** Volunteer intern Dylan Smith assists with preparing master control for recording a new episode of "Fairy Tale Access."

company via a remote modulator at city hall using EZ Stream."

Tightrope Media Systems <<http://www.trms.com>> is a manufacturer of Cablecast broadcast automation software, along with multiformat video playback servers and instant replay machines. EZ Stream <<http://www.ezstream.com>> is commonly used by community television broadcasters for streaming webcasts.

"We typically receive two to three inquiries a week about starting a TV

show. All you need is an idea and the desire," added Gagnon. "We'll provide the equipment, studio, and production assistance to turn your idea into reality."

Gagnon has been involved with community access television for more than 17 years, starting as a volunteer in Goffstown, New Hampshire. "Then I got hooked," said Gagnon. "With local newspapers disappearing, it's become one of the last media outlets to represent freedom of speech, open to everyone in the

community. It's a passion, not a job. You never know who might show up with a proposal for a new program. That makes it exciting."

Young got his start by developing a pilot for the Food Network while working for a photographer several years ago. "But the pilot wasn't quite right. It featured too much travel, even though food travel shows are popular today. We were ahead of our time," said Young. "Although the pilot wasn't picked up by the network, I still had a want for film and video," he said. Then a buddy approached him about producing a TV program for car enthusiasts who enjoy working on their vehicles. "Garage X" was the result, with the last episode broadcast in 2012 and now archived on the Access Nashua website.

## Slide Production

The Nashua Access channel broadcasts an online bulletin board that cycles through a series of public service announcement slides between scheduled programs. NTSC 720 x 486 digital slides are created in Photoshop or comparable image manipulation software. 720 x 480 pixels is the 4:3 aspect ratio of digital standard-definition (SDTV), appearing the same as old-fashioned analog 720 x 486 television, based on National Television System Committee (NTSC) specifications first developed in 1941.

I got the opportunity to create a slide

from a non-profit organization's press release that included graphics. Often these press releases contain way more information than a viewer can process in a single screen shot, so the first job is to pare it down to just the basic facts. Then the text and graphics are entered on an NTSC blank page in the imaging software, keeping within a *safe zone* as anything too close to the edge might be cropped by a TV monitor. After applying a bit of creativity with font styles, background, and layout, the slide is saved as a jpeg file and ready for broadcast on Access Nashua — my entry into the television broadcasting field!

### Access Alliance

The Alliance for Community Media (ACM), the world's largest organization

of public access TV stations, envisions an ever-increasing array of media channels, with communities demanding relevant, factual, and hyper-local content from respected sources. Its mission is to advance democratic ideals by ensuring that people have access to electronic media and by promoting effective communication through community uses of media.

The annual ACM Hometown Media Awards recognize the best in community media programming, including student, independent producer, and access center professional categories. Among all the winners for 2013, three access center websites were honored with awards:

- Dakota Media Access <<http://www.dakotamediaaccess.org>> of Bismarck, North Dakota

## This Month in Broadcast History

**75 Years Ago (1938):** General Electric was granted an experimental license for development of two-way VHF FM communications at 49 MHz to replace police radio at the top of the AM broadcast band. FM inventor Edwin Armstrong assisted with the experiments.

**50 Years Ago (1963):** "My Boyfriend's Back" by The Angels, **Photo A**, topped the WABC Silver Dollar Sound music survey. (**WATCH:** The trio perform their mega-hit live on New York television in 1963 at <<http://bit.ly/114oB4R>>. — WPC1CAT)

**25 Years Ago (1988):** The Rush Limbaugh radio show debuted nationwide from flagship 770 WABC New York City.



**Photo A.** The Angels performed their monster hit, "My Boyfriend's Back" live on the Clay Cole Show on WPIX-TV, New York, in 1963 <<http://bit.ly/114oB4R>>. (Internet screen grab)

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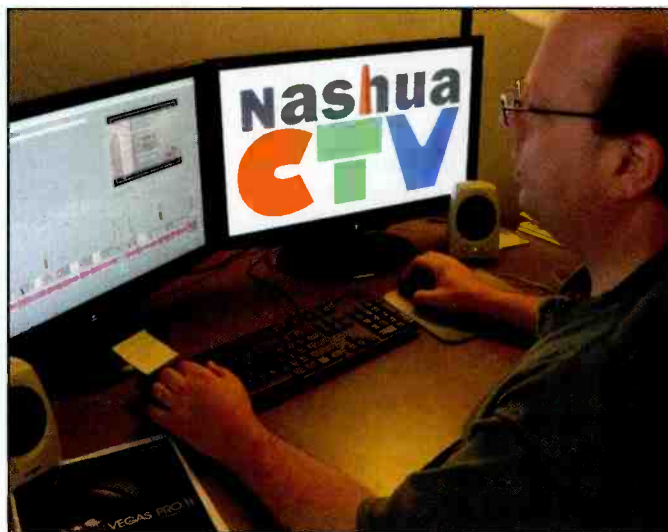
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**Photo G.** Producer Dan Young edits a TV show on one of two Sony Vegas Pro workstations at Access Nashua.

- Quad Cities Community Television <<http://www.qctv.org>> serving Andover, Anoka, Champlin, and Ramsey, Minnesota
- Northampton Community Television <<http://www.paradisecitypress.org>> in Massachusetts.

Like Access Nashua, Dakota Media Services will provide the training, equipment, and assistance with development of TV programs. The QCTV website opens with an impressive series of streaming promos. In addition to community television, Valley Free Radio WJOJ-LP 103.3 FM <<http://www.valleyfreeradio.org>> in Northampton provides public access opportunities for broadcasting your own radio show.

## Internships Available

The local cable TV public access channel is a great place to intern for a career in broadcasting. You may recall meeting Shawn Denoncour, N1WOF, remote broadcast tech at WFXT Fox 25 in Boston, in our coverage of the media during the 2012 presidential primary (*Popular Communications*, April 2012). "I got a job at a public access channel right out of high school," Denoncour said. "Having an amateur radio license helped, too. After all, RF is RF. Then through connections with the public access job, I was hired at NBC, and now I've been working at Fox 25 for 10 years." Most public access outlets including Access Nashua actively seek interns who need to fulfill educational requirements as well as volunteers who want to learn.

## With Appreciation

Thanks to Dick Gagnon and Dan Young for an interesting look inside public access community television. Become active in your community through broadcast technology.

Check out the local public access station to learn about volunteer opportunities. You might even be convinced to try your hand at graphics or starting your own TV show, maybe about radio communications. Station managers can be very persuasive.

73 and Good DX! – WPC1CAT



## IN GEAR

### Power Up

By Jason Feldman, WPC2COD

### MFJ Debuts New Antenna Analyzer

MFJ Enterprises is stepping up its antenna analyzer offering with the introduction of the new MFJ-225 HF/VHF, 1.8- to 170-MHz, Two-Port Graphic Antenna Analyzer. It packs all of the analyzer functions you've come to depend on plus a host of advanced features like built-in LCD graphics, two-port VNA measurement, PC-Interface using IG-miniVNA freeware, and precise DDS frequency control.

The MFJ-225 has a tough all-aluminum MFJ-style enclosure that measures 3 3/32-inches wide by 6 1/8-inches high by 1 1/2-inches deep and is fully shielded ensuring durability whether on the bench or in the field.

Out in the field, the 1 pound, 2-ounce MFJ-225 is a completely self-contained handheld analyzer. On the bench it becomes a full-fledged two-port (S21) desktop machine when teamed up with your PC. The IG-miniVNA freeware allows you to run detailed data analysis and then print out color-graphic plots to document your work.

The exterior features a built-in, back-lit 3-inch LCD graphic screen that helps users make fine circuit adjustments using full-screen, easy-to-view SWR bar graph, capture vivid swept displays for SWR, impedance, return loss, phase angle, and more.

Operation is simple, users can adjust the center frequency, tuning step, and sweep width instantly while viewing the plot.

Rounding out the front face of the MFJ-225 are three, large soft-touch selector buttons located on the front panel next to the screen and a large side-mounted frequency control knob positioned for users' right hand.

Covering all frequencies from 1.5 MHz to 179.9 MHz, the MFJ-225's VFO has a programmable DDS (direct digital synthesis) generator with 1-kHz frequency resolution. The MFJ-225 DDS stimulus generator also gives you a leveled -5 dBm signal source for driving mixers, low-power amplifiers, filters, networks, diplexers, and antennas on the test range. And with more than -50 dBc of harmonic and spur suppression, MFJ says that your test signal will always be clear. Connect an external step attenuator, and it becomes a signal generator for peaking sensitive receivers and preamplifiers. In addition to traditional single-port (S11) reflected-power measurements, MFJ features an advantage of making two-port (S21) forward-power measurements, essential for optimizing filters, diplexers, matching networks, etc.

What the MFJ-225 measures:

- SWR (1:1 to 9.9:1)
- Complex Impedance (R+jX)
- Impedance Magnitude (Z)
- Return Loss (RL, 0-30dB)
- Phase (0-180°)
- Capacitance (0-9999pF)
- Inductance (0.1uH-80uH)
- Cable Length (0.5-45m)
- Cable Loss (0-30dB)



MFJ Enterprises Inc.

The MFJ-225 runs from multiple power sources to suit almost any operating environment. In the field, it powers itself for up to four hours using three self-contained AAA NiMh cells. On the bench, it accepts any convenient external 12-volt DC power source or a 12-volt AC wall adapter. It can also run off a PC's USB jack. Connecting an external power source automatically initiates recharging of the internal NiMh batteries with an LED charge indicator that goes out when the charge cycle is complete. Typical 12-volt power consumption is 230 mA, increasing to 550 mA when batteries are recharging at max.

The MSRP of the MFJ-225 is \$399.95 and is covered by MFJ's *No Matter What*® warranty. For more information contact: MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762. Phone: (800) 647-1800. Website: <<http://www.mfjenterprises.com>>.

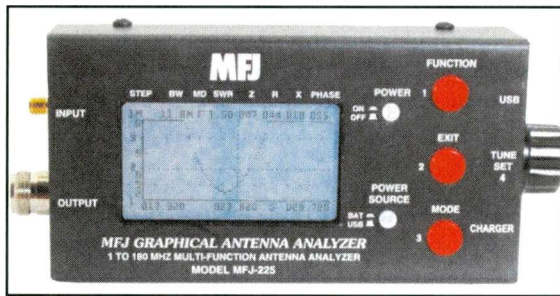


Photo A. The front face of the MFJ-225 shows off the back-lighted, 3-inch liquid crystal graphic display. (Courtesy of MFJ Enterprises, Inc.)

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## BROADCASTING

### World Band Tuning Tips

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

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

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

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	9455	China National Radio	Mandarin	0300	6165	Zambia National Broadcasting	
0000	14400	Firedrake jammer, China		0300	6015	ZBC Radio, Zanzibar	
0000	11780	Radio Nacional Amazonia, Brazil	PP	0300	6010	Radio Mil, Mexico	SS
0000	9490	Radio Republica, (to Cuba)		0400	11620	All India Radio	Urdu
0000	13745	Radio Thailand		0400	7250	Channel Africa, South Africa	
0000	7375	Voice of Croatia		0400	9705	La Voix du Sahel, Niger	AA
0000	7475	Voice of Greece	Greek	0400	6010	La Voz de Concencia, Colombia	SS
0100	9870	All India Radio		0400	5910	Radio Alcaravan, Colombia	SS
0100	9450	Mighty KBC, Neth., via Bulgaria		0400	7255	Radio Belarus	Belarus
0100	7460	Radio Aap ki Dunyya, USA	Urdu	0400	6165	Radio Chad	FF
0100	19000	Radio Australia		0400	7120	Radio Hargeisa, Somalia	Somali
0100	5040	Radio Havana Cuba	SS	0400	11690	Radio Okapi, Congo, via S. Africa	FF
0100	6105	Radio Panamerica, Bolivia	SS	0400	11895	Tartarstan Wave, Russia	RR
0100	9640	Voice of Vietnam		0400	7175	Voice of Broad Masses, Eritrea	Tigrinya
0100	5110	WBCQ, Maine		0400	7385	WHRI, Indiana	
0200	11815	Radio Brazil Central	PP	0400	4960	VOA, Sao Tome Relay	
0200	4825	Radio Cancao Nova, Brazil	PP	0500	5865	Radio Algerienne, Algeria	AA
0200	4915	Radio Difusora Macapa, Brazil	PP	0500	6185	Radio Educacion, Mexico	SS
0200	9430	Radio Farda, USA to Iran	Farsi	0500	4950	Radio Nacional Angola	PP
0200	4747	Radio Huanta 2000, Peru	SS	0500	7220	Radio Romania International	
0200	15285	Radio Pilipinas, Philippines		0500	9885	VOA, Sao Tome Relay	
0200	5025	Radio Rebelde, Cuba	SS	0600	4885	Radio Clube do Para, Brazil	PP
0200	9570	Radio Tirana, Albania	CC	0600	5995	RTV Malienne, Mali	FF
0200	4055	Radio Verdad, Guatemala	SS/EE	0600	7250	Vatican Radio	various
0200	7200	Sudan Radio TV		0600	15120	Voice of Nigeria	
0200	11775	University Network, Anguilla		0600	4895	Radio Novo Tempo, Brazil	PP
0200	4775	Radio Tarma, Peru	SS	0700	5970	Radio Itatiatia, Brazil	PP
0300	6140	BBC, via South Africa		0900	4990	Radio Apinte, Suriname	DD
0300	4780	Radio Djibouti	AA	0900	4765	Radio Rural, Brazil	PP
0300	9855	Radio Liberty, USA	Uzbek	0900	6135	Radio Santa Cruz, Bolivia	SS
0300	5010	Radio Madagasikara, Madagascar	Malagasy	0900	4717	Radio Yura, Bolivia	SS
0300	7200	Radio Omdurman, Sudan	AA	0900	6060	Super Radio Deus e Amor, Brazil	PP
0300	9490	Radio Republica, via F. Guiana	SS	0900	4755	The Cross, Micronesia	
0300	7320	Radio Rossii, Russia	RR	0900	6050	HCJB Global, Ecuador	SS
0300	4826	Radio Sicuani, Peru	SS	1000	3330	Ondas del Huallaga, Peru	SS
0300	13600	Radio Sultanate of Oman		1000	5035	Radio Aparecida, Brazil	PP
0300	9530	Trans World Radio, Swaziland	Amharic	1000	6135	Radio Fides, Bolivia	SS
0300	7505	WRNO, Louisiana		1000	5039	Radio Libertad, Peru	SS
0300	5050	WWRB, Tennessee		1000	3310	Radio Mosoj Chaski, Bolivia	SS

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
1000	3380	Radio Municipal, Brazil	PP	1500	15760	Kol Israel	Farsi
1000	4700	Radio San Miguel, Bolivia	SS	1500	9575v	Radio Medi Un, Morocco	FF
1000	4775	Radio Tarma, Peru	SS	1500	11620	Radio Romania International	AA
1000	6173	Radio Tawantinsuyo, Peru	SS	1500	15735	Radio Romania International	Romanian
1000	4940	Voice of the Strait, China	CC	1600	7390	Denge Mesopotamia	Kurdish
1100	2325	ABC No. Territory Svc., Australia		1600	15345	Radio Cairo, Egypt	
1100	9280	Family Radio, USA via Taiwan		1600	12105	Radio Dialogue FM, to Zimbabwe	
1100	4815	Radio El Buen Pastor, Ecuador	SS	1600	9705	Radio Ethiopia	
1100	4781	Radio Oriental, Ecuador	SS	1600	6050	Radio Kuwait	AA
1100	11520	Radio Taiwan Internatiional	Tagalog	1600	11600	Radio Libye, Libya	AA
1100	4790	Radio Vision, Peru	SS	1600	11725	Radio Tirana, Albania	AA
1100	9835	Sarawak FM, Malaysia	Malay	1700	12035	Radio Farda, USA to Iran	Farsi
1100	5020	Solomon Is. Broadcasting Corp.		1800	15720	Radio Japan, via Madagascar	
1100	12085	Voice of Mongolia		1800	15445	Radio Japan, via Germany	JJ
1200	6070	CFRX, Canada		1900	15190	Radio Africa, Equatorial Guinea	
1200	9400	Far East Broadcast, Philippines	unid	1900	15340	Radio Havana Cuba	FF
1200	9430	Far East Broadcast, Philippines	Mandarin	2000	9445	All India Radio	
1200	9770	KBS World Radio, South Korea	CC	2000	11810	BBC, Ascension Is. Relay	
1200	9615	KNLS, Alaska		2000	9410	BBC, Seychelles Relay	
1200	6130	Lao National Radio	Laotian	2000	11625	Vatican Radio	
1200	9580	Radio Australia		2000	15580	VOA Botswana Relay	
1200	5995	Radio Australia		2100	6885	Galei Zahal, Israel	HH
1200	5740	Radio Marti, USA to Cuba	SS	2100	9395	Radio Algerienne, Algeria	AA
1200	6055	Radio Nikkei, Japan	JJ	2100	7105	Radio France International	FF
1200	4750	Radio Republik Indonesia	II	2100	15476	Radio Nac. Arcangel, Antarctica	SS
1200	7310	Radio Rossii, Russia	RR	2100	6090	Voice of Russia	PP
1200	9720	Radio Thailand		2200	9580	Africa No. One, Gabon	FF
1200	7110	Thazin Radio, Myanmar	Burmese	2200	7550	All India Radio	
1200	9455	Voice of Russia	RR	2200	9555	BSKSA, Saudi Arabia	AA
1200	9840	Voice of Russia	RR	2200	6090	Caribbean Beacon, Anguilla	
1200	5885	Voice of Russia, via Tajikistan		2200	6160	CKZN, Canada	
1300	5875	BBC, Thailand Relay		2200	6100	Intl. Radio of Serbia, via Bosnia	
1300	11670	All India Radio	Dari	2200	3955	KBS World Radio, South Korea	
1300	9610	Deutsche Welle, via Singapore	Mandarin	2200	7495	Radio Algerienne, Algeria	AA
1300	9680	KNLS, Alaska	Mandarin	2200	21740	Radio Australia	
1300	5940	Radio Australia		2200	7580	Radio Farda, USA to Iran	Farsi
1300	9965	Radio Australia, via Palau		2200	6180	Radio Nacional Amazonia, Brazil	PP
1300	9360	Radio Liberty, USA, via Saipan	RR	2200	15345	Radio Nacional, Argentina	SS
1300	9595	Radio Nikkei, Japan	JJ	2200	11605	Radio Taiwan International	JJ
1300	7460	Radio Thailand	Thai	2200	7345	Radio Tunisienne, Tunisia	AA
1300	15630	Voice of Greece	Greek	2200	7450	Radiofonikos Makedonias, Greece	Greek
1300	9525v	Voice of Indonesia		2200	11860	VOA, Philippines Relay	
1300	5950	Radio New Zealand International		2200	7255	Voice of Nigeria	
1300	15105	Bangladesh Betar		2230	7290	Radio PMR, Moldova	
1400	17615	BSKSA, Saudi Arabia	AA	2300	4319u	Armed Forces Net., Diego Garcia	
1400	9420	China National Radio	KK	2300	9795	Far East Broadcast, Philippines	
1400	9635	Intl. Radio of Serbia		2300	7290	IRRS, via Romania	
1400	15760	Kol Isreal	Farsi	2300	8989	Pescador Preacher, Nicaragua	SS
1400	11660	Radio Australia		2300	9855	Radio Australia, via UAE	
1400	11850	Radio Liberty, USA, via Germany	RR	2300	7520	Radio Farda, USA, via Sri Lanka	Farsi
1400	15560	Radio Sultanate of Oman		2300	5960	Voice of Turkey	
1400	9975	Trans World Radio, Guam	Mandarin	2300	9665	Voz Missionaria, Brazil	PP
1400	11605	Radio Free Asia, USA, via Taiwan	VV	2300	5950	Voice of Turkey	
1500	11955	Adventist World Radio, Austria	Turkish	2300	4955	Radio Cultural Amauta, Peru	SS
1500	15255	AWR, via Sri Lanka					
1500	15505	Bangladesh Betar					
1500	9345	Far East Broadcast, Philippines	Mandarin				

# Hold the Phone! Aviation Apps Are Plentiful — and Often Free

By Bill Heofer, KPC4KGC/KG4KGC

I'm on the clock 40 hours a week, so during the other 128 hours, I often listen to the aviation frequencies. At home it's with my scanners, but when I'm out and about, I use iPhone apps. Most are free.

## AirportMap

AirportMap by Air Dave, LLC, gives information for most civilian airports in the U.S. When called up it gives a map with little red pushpins for airports, **Photo A**.

The screen uses the built-in GPS to locate your position — a little pulsating blue dot — with the red pushpins for specific airports. Touching the pushpins gives a mini-data block giving airport three or four ATE and alphanumeric identification, the official airport name, its distance from your location, and the ubiquitous blue arrow.

Pressing the arrow opens a new page from <http://www.airnav.com> giving airport location, operations, communications, nearby navigation aids, airport services, runway information, operations statistics, instrument procedures, local road maps, aerial photo, position on sectional chart, an airport distance calculator, local sunrise/sunset, nearby airports weather sequences, terminal forecasts, and NOTAMs. A lot of information for a tiny app. Visit: <http://bit.ly/10xt97j>.

## iMetar

You're on your way home after a long vacation to the Florida Space Coast. You want to know what the weather is for your home, but the local radio stations won't give you the information for Grand Island, Nebraska (GRI).

Just because you're passing through Ocala, Florida (OCF) doesn't mean you can't get the latest information. Pick up your iPhone and tap the app for iMetar, **Photo B**. Like the AirportMap app you'll see the same map with the same little pushpins.

What separates the two is that when tapping the pushpin, the data block that opens gives not only the airport name and identifier but the current weather in the same data block. Hitting the blue button gives the METAR information in an easier-to-read form and even gives a slightly expanded version of it as you scroll down the page.

You can even add favorite airports. The information is less cluttered here than on AirportMap, but only the basics. It is easier to read. Visit: <http://bit.ly/10En3yp>.

## FlightView

You may recall my telling you of both FlightAware <http://bit.ly/13fyMpf>, **Photo C**, and FlightRADAR24

*“Keeping track of commercial, private, and military aviation can be in the palm of your hand with a growing number of applications — apps — for your smartphone.”*



**Photo A.** The AirportMap app screen uses the built-in GPS to locate your position — indicated by a little pulsating blue dot — with the red pushpins representing specific airports. (Internet screen grab <http://bit.ly/10xt97j>)

<<http://bit.ly/18qlnQF>>, **Photo D**, for your home computers a couple of months ago. They are both available for the iPhone in slightly truncated forms but I'll discuss those in a later column.

The free FlightView app <<http://bit.ly/11mS5K9>>, **Photo E** — there are two available for purchase, priced up to \$3.99 — is a very basic version. After registering you can place the aircraft you wish to flight follow — giving take off times, arrival times, speeds, altitudes, terminals, departure and arrival weather, and so on.

You can even get information for airport delays and flight tracks. Much of the information from both FlightAware and FlightRadar24 is located here but just not in their slick format. However, airport delays can be found here.

## ATC Delays

This free mini-app is very helpful for determining airport delays, **Photo F**. The top of the page gives both the local and Zulu times. Tapping the right blue arrow

opens a page giving information on delays into and out of a particular airport. Since this information comes from the FAA's Air Traffic Control Systems Command Center it is virtually real time.

This can be very valuable whether you're traveling, or simply scanning aviation frequencies on your smartphone. Visit: <<http://bit.ly/18qnggp>>.

## What Aviation Apps Are You Using?

*There you have the classified intelligence for what's on my iPhone. What aviation apps do you have on your iPhone, BlackBerry, or other device? I'd like to know and perhaps do an extended column on them.*

— KPC4KGC

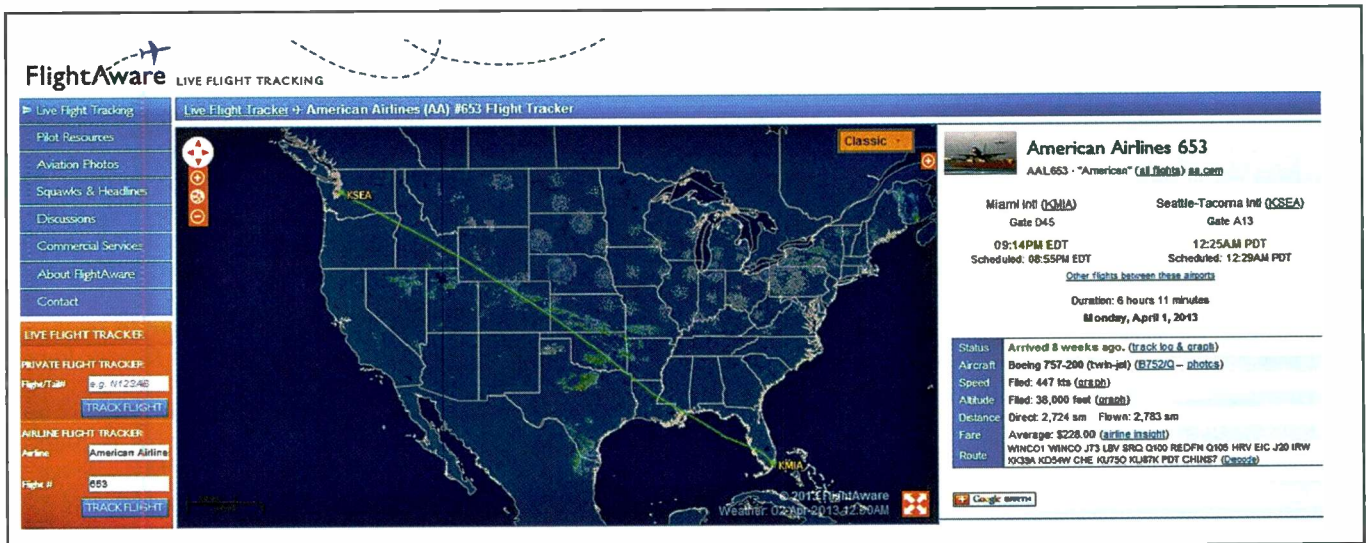
## Keeping Track of Who, What, and Where, When the System's Down

It's been said that the job is not finished unless the paperwork is done. This is true in virtually all aspects of life from the job, to hobbies, to automobile and aircraft maintenance, and on and on.

When it comes to personal computers, anyone who has not experienced the "blue screen of death" (BSD) is one very fortunate person. (**CAVEAT: OK, Mac users have their own version of BSD, I**



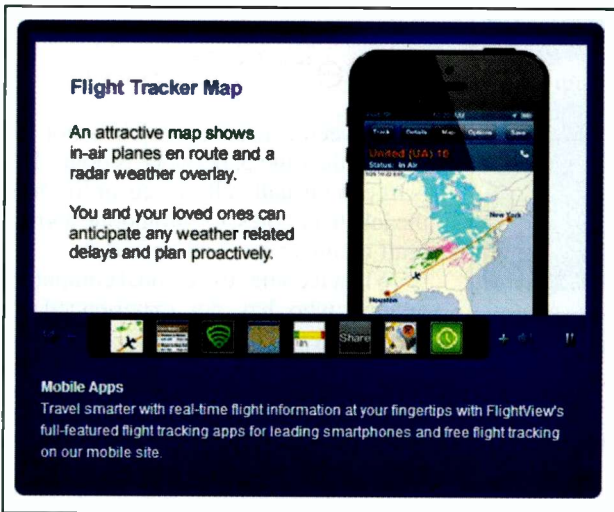
**Photo B.** With iMetar, when tapping a pushpin, a data block that opens gives not only the airport name and identifier, but the current weather. (Internet screen grab <<http://bit.ly/10En3yp>>)




**Photo C.** FlightAware is a very useful program referred to in a previous *Plane Sense*. KPC4KGC says he'll focus on it in more detail in an upcoming column. There is a truncated version that is suited for smartphones. (Internet screen grab <<http://bit.ly/13fyMpf>>)



**Photo D.** FlightRadar24 is a popular website, as well, with a program that has been modified for use as an app with smartphones. (Internet screen grab <<http://bit.ly/18qInQF>>)



**Photo E.** With the FlightView app, “after registering you can identify the aircraft you wish to follow — giving take off times, arrival times, speeds, altitudes, terminals, departure and arrival weather, and so on,” KPC4KGC writes. (Internet screen grab <<http://bit.ly/11mS5K9>>)



**ATC Delays by CinoFusion, LLC**


→ App description

ATC Delays gives you access to the Air Traffic Control System Command Center by the Federal Aviation Administration. This tool allows you to view Ground Stop programs, Ground Delay programs, Arrival and Departure Delay programs and Airport Closures. View when there are delays in to airports and the anticipated length of time for the delay. This tool is a huge benefit for airline pilots to be able to track the delay programs. Private and commercial pilots who fly into major airports. Even individuals who are flying on the airlines can view the air traffic control delay programs that are currently active.

→ What's new in version 1.4

Bug Fixes

Screenshot #1 (iPhone)



**Photo F.** KPC4KGC notes that ATC Delays is a free mini-app that “is very helpful for determining immediate and local delays,” KPC4KGC writes. (Internet screen grab <<http://bit.ly/18qnggp>>)

don't know what it is, but this applies to you, too. – KPC4KGC)

There has been more than one occasion that computers fail in air traffic and controllers must revert to the old standby — paper and pencil. Even in the FAA Academy in Oklahoma City, students use the standby black and red mechanical pencil.

Controllers use strips, mechanically produced, placed in plastic strip holders and then on a specially made board. These are moved up and down as needed to track aircraft, and written on to remind the controllers what control instructions are given to the pilots and information received from them.

When I was working at the non-RADAR approach control in Albany, Georgia (ABY) in the early 1980s we relied on these strips totally and marked them accordingly. Each day the strips were collected and placed in storage for a minimum of two weeks.

Many a time I've used strips, or shortened versions of them, to maintain the awareness of callsign, type of aircraft and position of the aircraft when there was more than just two or three aircraft in the pattern.

Modern strips are computer generated today and will have much of the aircraft information recorded on them. This does not relieve the controller of his or her responsibilities, but does assist in maintaining accuracy. It also helps with legibility. Face it: Some people can't even print clearly.

Flight service does utilize paperwork during computer outages — position logs, flight plan forms for domestic and international flights, search and rescue, and in-flight. The individual flight service data recording strip is the FAA Form 7230-21, and as printed collectively on a sheet as FAA Form 7233-5. These forms have been in use unchanged since 1970.

Figure 1 is an example of the 7233-5. Since radio amateurs and SWL scanners often use preprinted forms to log their contacts, it is presented with this month's *Plane Sense* to copy for your use. (NOTE: You're welcome to photocopy and enlarge the page to fit your logging needs. – KPC4KGC)

The marking of these strips is up to you. How we mark strips is found at <<http://1.usa.gov/17IPPMv>>. Since the strips are being used by you, just adapt them as you see fit. My recommendation for part of these strips is to use the far-left block on the top of each strip for the call-sign and the 15 blocks on the right of the



# Grab Your Scanner and Listen 'Up!'

While we're getting into *what* you'll likely be hearing, here's a 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 is 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*



**Photo H.** A large aviation fuel truck is dwarfed by the giant C-5A Galaxy — one of the largest aircraft in the world. The horizontal stabilizer is larger than some commercial jets' wingspan, and the aircraft is so big, it produces *two blips* on controllers' RADAR. (Courtesy of Wikimedia Commons)



## In Search of the Right Antenna Rotator for Your Station

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

*“Learning how rotators work, are rated, and how to correctly install them will only help you choose the best model for your needs and your budget.”*

As an enthusiastic teenager, I mounted a vintage Channel Master rotator on top of my backyard tower to aim a two-element “bamboo beam” for 15 meters that I’d made from salvaged parts.

After a short honeymoon, the old rotator froze and never worked again — an experience I’m sure many hams have had. Most beginners have never owned an “amateur grade” rotator, making do instead with TV rotators — probably used — which are suitable only for the smallest ham antennas and are subject to premature and regular failure.

Decent rotators aren’t exactly inexpensive, so you really need to do your homework before making a purchase. Unlike radios, which you can switch in and out as necessary, mixing and matching rotators is much more difficult and involves removing the rotator from the top of your tower or antenna mast, rigging the new rotator and reinstalling it. Plus, if you live in the frozen north, switching rotators is all but impossible for several months of each year.

So, regardless of your climate situation, learning about how rotators work, how they’re rated, and how to correctly and safely install them will only help you choose the best model for your needs and your budget.

*(NOTE: For the small-talk period at your next hamfest, swap meet, or club meeting, remember that helicopters and disc brakes have rotors. Antennas have rotators. No exceptions! — KPCØZZZ)*

We’ve all heard at least one “fish story” about some ham who used a TV rotator to turn an oversized stack of antennas, through summer’s blazing fury and winter’s freezing chill, for 26 years without so much as greasing the bearings. As we examine modern rotators in this month’s column, let me assure you that, should you decide to do the same, you won’t be as lucky!

The “urban legends” about rotators are a big part of the problem. There isn’t much in the way of comprehensive, beginner-oriented material out there when it comes to rotators. And without



**Photo A.** When is a low-quality, failure-prone rotator a good deal? When it’s new-in-the-box and on sale for \$5! In the mid ’90s my local Wal-Mart had a stack of these on super-sale, and \$25 netted me a five-pack! I don’t mount them on towers, where they’d be a hassle to adjust and replace, but they work great on 20-foot masts with a lightweight 6-meter beam. The last boxed unit, shown here, is reserved for my June VHF QSO Party/Field Day portable station. (Courtesy of KPCØZZZ)

this *nuts-and-bolts* information, new hams are left to learn from folklore, myths, and legends. In this month's column I will do my best to cover some of that missing material.

## Rotators 101

Essentially, a rotator is a weather-resistant, motorized gearbox mounted on top of your tower or antenna mast that aims your antenna in the desired direction. Some are square and boxy, but many ham radio rotators have a distinctive "bell housing" shape that makes them look like miniature automobile transmissions.

Inside the housing is:

- An AC or DC motor that turns a gearbox or gear mechanism (planetary or worm).
- A brake to hold the rotator in a fixed position when it's not supposed to rotate.
- Position feedback sensors that let a shack-mounted control box accurately display the direction in which the antenna is pointed. The control box is also used to control the position of the rotator mechanism, thereby aiming the antenna.
- A multi-strand control cable usually runs from the tower-mounted rotator to the control box in the shack. Some rotators require only a few wires, while some require a whole bunch. Typically, sensor wires are smaller than those carrying power to the drive motor.

All rotators are somewhat similar, but there are enough variations in motors, mechanisms, and sensors to make things interesting — or confusing. A rotator's design capacity drives many of those differences, and if you compare an economy car to a monster truck, you'll know what I mean.

The gearbox and braking mechanisms required to rotate a large antenna and hold it in place in a strong wind are much different than the parts required to handle a small 2-meter beam on a calm day.

## Mast or Tower?

There are several ways to mount a typical rotator. The most robust involve mounting the rotator in the tower structure, usually at the top, but occasionally at the bottom. Most antenna towers have a "rotator shelf" just below its highest point.

Depending upon the make and model

of your tower, the holes drilled in the rotator mounting shelf may or may not match the bolt pattern of your rotator. If the holes don't match you'll have to purchase or make a suitable shelf or adapter. Check this out before installation day.

Some installations can accommodate rotators mounted *at ground level*, which is super convenient. You'll have to install a mast inside the tower — from top to bottom — to make this work, but adjusting and accessing the rotator will be a piece of cake, even if installing the giant multi-section mast probably won't be much fun.

Regardless of where your rotator is mounted, be sure to use a *thrust bearing* at the very top of your tower to extend the life of your rotator and keep it from self-destructing under heavy loads. The idea is to mount the rotator — on its shelf — in the center of the tower while extending the rotating mast vertically through the thrust bearing.

The bearing isolates the rotator from "side to side" and "up and down" forces. The rotator's main job is to steer the antenna left and right and absorb any rotational forces, or *torque*, that are present. If the rotator doesn't have to accommodate other forces, it will function at its rated capacity, work better, and last longer.

Not every antenna is tower-based, however, so most rotators can be mounted, which sometimes requires a specific adapter. In this configuration the bottom of the rotator is mounted to a fixed support mast, while a rotating mast, with attached antennas, is mounted to the top part of the rotator.

With no thrust bearing and no rotator shelf to safely transmit mechanical forces to the tower, all of those forces must be handled by the rotator itself, *greatly reducing* its effective capacity — usually by 50 percent. Accordingly, rotators rated for 10 square feet of antenna load while tower mounted can safely handle only five square feet when mast mounted. Understanding this is *critically important!* Not understanding it contributes to most rotator failures.

## Rotator Ratings

Rotators are sized and categorized by a variety of performance specs, the most common being wind load, typically measured in square feet.

Simply put: if a rotator is designed to handle a maximum wind load of, say, 10 square feet, that means:

It can handle an antenna or antennas with the total or combined wind load of 10 square feet while properly tower

mounted with a mast of a reasonable length in reasonable weather conditions.

That last part is *super important*: A rotator's wind load rating — 10 square feet in this example — isn't an absolute value, and it doesn't mean that you can get away with crazy things as long as you keep the combined antenna wind load to 10 square feet or less. Most rotators medium-size and up will also list their braking or torque specifications, which indicate the point at which the rotator can no longer hold an antenna in a fixed position.

So, even if your antenna meets a rotator's wind load specifications, if it has an extra-long boom, for example, the extra torque transmitted to the rotator may cause it to fail prematurely — or instantaneously in the next stiff breeze.

The same goes for the antenna mast, especially if there's no thrust bearing in the system. If you install a 12-foot mast atop a rotator designed to handle a 6-foot mast, the additional leverage applied to the rotator will likely cause it, or your tower, to fail prematurely.

Think middle-school physics: when using a lever and a fulcrum to raise a heavy object, a longer lever provides *much more* mechanical advantage to the lifting process, as do the use of long-boom antennas and extra-long masts.

Rotators come in a variety of capacities, from about three square feet for cheapie models designed to aim small TV antennas, to monster-size units that might as well be built from tractor parts. Mid-sized units are rated for five to 15 square feet, while the big twisters handle larger arrays from 20 to 50 square feet. Prices start high and only go higher, so *be sure* to do your homework before buying.

## Control Boxes

The basic function of a rotator's control box is to sit in your shack and display the direction in which the antenna is pointed and provide control knobs or buttons that allow you to point the antenna in the desired direction. Most rotators come with a basic control box. It may not be sexy, but usually gets the job done. Some manufacturers offer deluxe control boxes, as do some third parties. The features they offer might be desirable, but they come at quite a price.

Basic control boxes typically don't incorporate digital interfaces, so if you want your logging or rig-control software to steer your antenna, you'll have to upgrade the control box or purchase a digital interface. Some companies also offer kits or upgrade boards that add delayed



**Photo B.** When it comes to bang for the buck in medium-duty antenna rotators, Yaesu's G-800SA is hard to beat. This picture-perfect installation is at W7MRE, The American Museum of Radio and Electricity in Bellingham, Washington. (Courtesy of AE6K)

braking capabilities or swap LEDs for persnickety incandescent indicator lamps.

### Tidbits

- Unless you're turning a very small VHF/UHF antenna, don't buy a cheapie TV rotator unless it's mounted in the attic or some other *easily accessible* location. Instead, buy an entry-level, ham-grade unit. It will cost more, but it will last much longer and it will actually work! Murphy's Law clearly states that your cheapie TV rotator will fail on top of your tower in the dead of winter. Guaranteed!
- Don't rotate your antenna if it's loaded with ice. The extra weight and wind load may destroy your rotator.
- Be sure to use control wires of the specified size or your rotator's motor may not work, may work slowly, or may fail prematurely.
- Don't overload your rotator! Experts recommend loading your rotator to 85 percent of maximum capacity to build in a reasonable safety margin. So, if your rotator's rated for 10 square feet, limit your antennas to 8.5 square feet to ensure a long and healthy service life.
- Try to purchase your rotator from a vendor who will actually test it prior to shipping. And when you receive it, thoroughly test it on the ground before installing it — remembering how difficult it is to swap it out once it's up in the air.

There is a wide range of rotators and sources for amateur radio's many applications to consider. For example, the Alliance U-100/U-110 light-duty rotator (\$149), available from Norm's Rotor Service, <<http://www.rotorservice.com>>, and Yaesu's G-800SA medium-duty unit (\$400). If you need an even bigger rotator you have a lot more homework to do!

There are lots of user reviews at <<http://www.eham.net>>.

Finding the right rotator for your particular application isn't too difficult if you follow a few simple rules

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## MONITORING

Listening, Around the World

# The Knight-Kit 'Star Roamer' Receiver, and Other Monitoring Delights

Compiled by  
Richard Fisher, KPC6PC

Do you remember an Allied Knight-Kit shortwave receiver called the "Star Roamer?" Robert Fickel, WPC8ISC, of Casa Grande, Arizona, certainly does! He kicks off this month's remembrances as one of the newest registrants to the *Pop'Comm Monitoring Station* program. Fascinating reflec-

tions, as always! Please keep those cards, letters, and emails coming. Write: <PopCommMonitor@gmail.com>. *Good listening!*

— Richard Fisher, KPC6PC

**Robert Fickel, WPC8ISC,  
Casa Grande, Arizona**

When I lived in Ohio, I originally held *Popular Electronics* Short-Wave Monitor Certificate of Registration WPE8ISC — issued August 15, 1965. My first radio was a Knight-Kit "Star Roamer," Photo A. With a job and a family, SWLing got pushed into the background until recently, when I retired to Arizona.

**Robby Abdul Kadir, 9WPC6RYB,  
Sabah, East Malaysia**

I never thought that I would be involved in radio monitoring, but then I tuned in the Voice of America. I got my local Apparatus Assignment and have been doing it ever since! So, 9WPC6RYB would be the perfect station ID sign for me.

**Thomas Porcella, KPC6IAC,  
Moraga, California**

IAC was the suffix of my amateur radio Novice callsign, KB6IAC, which I got when I was 12 — quite a few years ago. I found my way there by way of SWLing, with my old Hammarlund SP600.

**Scott Vawter, WPC6SEV,  
Morongo Valley, California**

My primary enjoyment is civil aviation and military communications. I am a ham operator (W6SEV), so I'm quite happy to get a *Pop'Comm Monitoring Station* ID sign similar to my amateur callsign.

**Antoine Gamet, KPC3DY,  
East Fallowfield, Pennsylvania**

I am 32 years old and I have been a radio amateur since the age of 10. SWLing is fun and DXing

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- Superhet Circuit; Controlled Regenerative IF Stage
- Electrical Bandspread for Razor-Sharp Tuning
- Has AVC; ANL; Illuminated "S" Meter; 4" Speaker

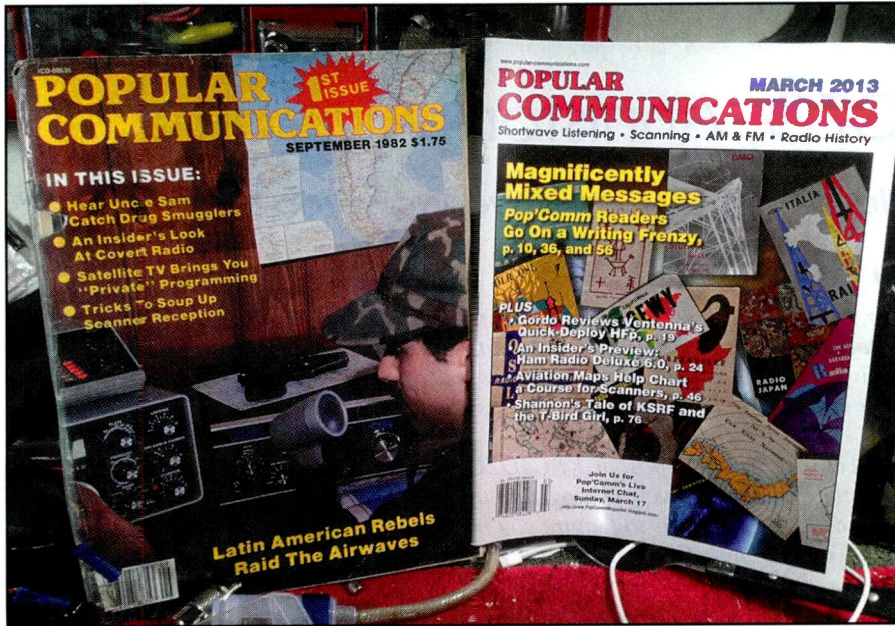
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83 TX 102-D. \$5 Monthly..... **39.95**  
83 Y 099-D. Outdoor Antenna Kit. Wt., 1 1/2 lbs..... **99c**  
83 Y 257-D. Dual Headset and Plug. Wt., 1 lb..... **2.50**

See Page 50 for Star Roamer Package Offers **ALLIED 7**

**Photo A.** This advertisement from the Allied Catalog touts the virtues of the Knight-Kit "Star Roamer" multiband receiver, which was popular among members of the shortwave listening crowd in the 1960s and '70s, as Robert Fickel, WPC8ISC, can attest. (*Internet screen grab <<http://bit.ly/16tASrj>>*)



**Photo B.** Ernie Rice, KPC8ELR, must be cramped for space at his Hamilton, Ohio listening post. He has every issue of *Pop'Comm* since its launch in September 1982. That's a stack of magazines 300+ issues tall! (Courtesy of KPC8ELR)

on AM is a blast, especially with simple receivers and antennas. Therefore I thought I should join. Thanks for this cool program!

### Ernie Rice, KPC8ELR, Hamilton, Ohio

I have every issue of *Pop'Comm* from the very first, **Photo B.** I am retired now and have more time to devote to the radio hobby. My first SWL radio was a Hallicrafters S-85. I now have many radios ranging from small portables to boat anchors weighing 50 lbs. or more. I am also a dedicated CB operator. Thanks, *Pop'Comm*, for the last 30 years and hope to be around for 30 more.

### Tony Oresteen, WPC1AJO, Newnan, Georgia

I have been listening to the shortwaves since I was a kid in Pakistan in the 1960s. I use a Hallicrafters SX-100 and a Yaesu VR-5000 receivers. My ham call is W1AJO. I also have an Iraqi call, Y19AJO. My first ham call was KG4SPA.

### Richard Saydak, VEPC4DXN, Winnipeg Beach, Manitoba, Canada

I was registered with the *Popular Electronics* listening program as VE4DX1AC. I even received a certificate for verifying 20 states. I started monitoring way back in the late 1960s after I

found a couple of QSL cards my brother had been mailed from AM radio stations. I still listen to my radios that consist of a DX394, Pro 2006, and two handheld scanners. I would like to get a computer controlled receiver soon.

### John Lemery, Jr., KPC2DVD, Fort Edward, New York

I have been an avid shortwave listener for years and would like to have an actual *Pop'Comm Monitoring Station* identification sign for QSL cards.

### August Stellwag, WPC2QAI, Orangeburg, New York

Back in the 1940s, three radio amateurs who sparked my interest in short-

wave radio were Dave, W2QAI; Monty, W2YLA; and Les, W2EDM.

## New Members: *Pop'Comm* Monitoring Station Community

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

Robby Abdul Kadir, 9WPC6RYB, Sabah, East Malaysia; Mark Hyland, KPC5MDH, Albuquerque, NM; Antoine Gamet, KPC3DY, East Fallowfield, PA; Richard Saydak, VEPC4DXN, Winnipeg, Manitoba, Canada; Omer Whipple, KPC7JNY, Isleton, CA; John Lemery, KPC2DVD, Fort Edward, NY; Errol Urbelis, KPC2AN, Kings Park, NY; Tracy Stephens, KPC4OZG, Anniston, AL.

### WPC Prefixes

Also: Tom Rowden, WPC5TR, Clinton, MS; Robert Fickel, WPC8ISC, Casa Grande, AZ; Tony Oresteen, WPC1AJO, Newnan, GA; August Stellwag, WPC2QAI, Orangeburg, New York; Vincent del Giudice, WPC0AAA, Denver, CO; Steve Sprauge, WPC0EVU, Coffeyville, KS; Thomas Root, WPC8GCC, Flushing, 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](mailto:PopCommMonitor@gmail.com)>

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## MONITOR OF THE MONTH

Listening, Around the World

# KPC4OZG, Anniston, Alabama

## A Firm Believer in, 'You Can Never Have Too Many Radios'

Tracy Stephens, KPC4OZG, intersperses a bit of the old wireless with a lot of the new at his Pop'Comm Monitoring Station in Anniston, Alabama. And why not? When you've got a vintage World War II receiver, you'd be crazy not to savor its performance 70+ years after it served our country, right? Mix in a battery of VHF/UHF scanners and a NOAA weather radio and he's got an impressive layout.

Are you as proud of your listening post as KPC4OZG? You, too, 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

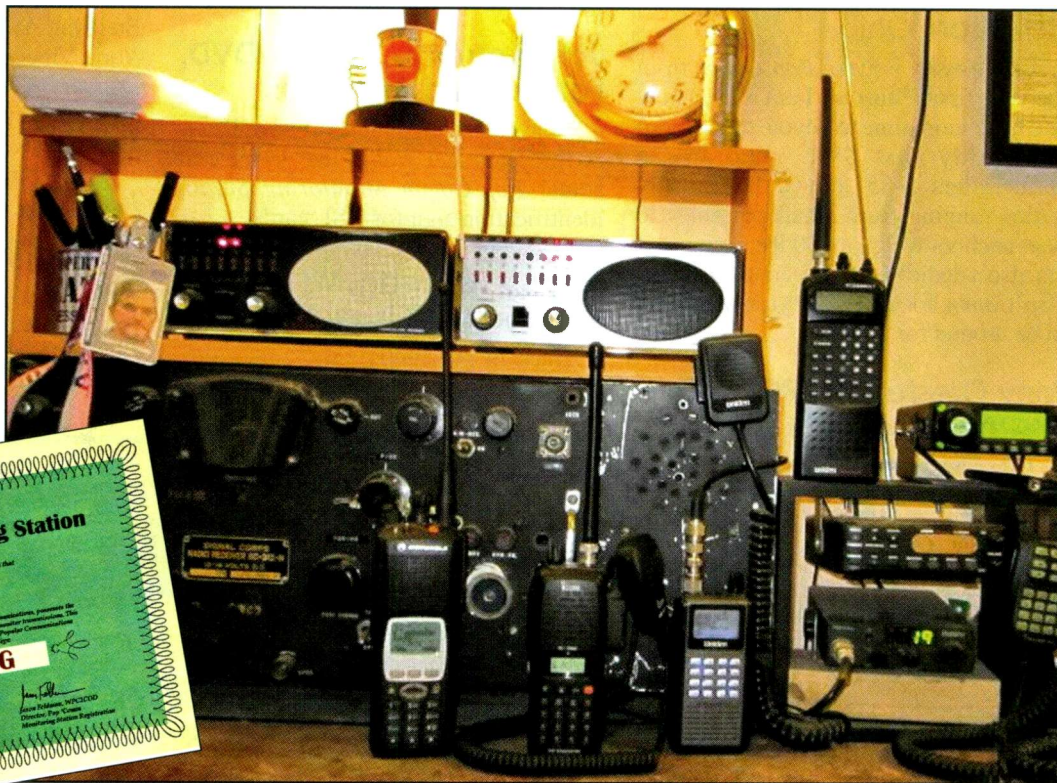
By Tracy Stephens,  
KPC4OZG/KI4OZG

Well, the accompanying picture, **Photo A**, is my home radio position for amateur operation as KI4OZG and for monitoring as KPC4OZG.

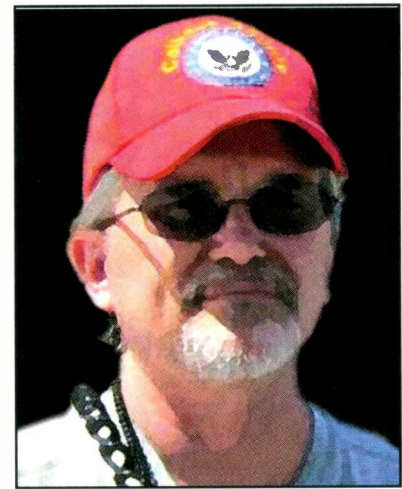
The small, portable radios (in front, from left) include:

- A Motorola XTS 5000 (county issued, used with Calhoun County Radio Amateur Civil Emergency Service in support of Calhoun County EMA)
- ICOM IC-V82
- Uniden BCD396T

*“My father and oldest brother both were DJs, so I practically grew up being around radio and continue to have fun with it.”*



**Photo A.** The shortwave and scanner Pop'Comm Monitoring Station at KPC4OZG mixes both vintage and up-to-date gear, often zeroed-in on the amateur radio bands. Tracy Stephens has the ham callsign KI4OZG in addition to his monitoring ID. (Courtesy of KPC4OZG)



**Photo C.** After more than a dozen years in law enforcement and security services, KPC4OZG is serving his community in a variety of public information positions related to amateur radio.  
(Courtesy of KPC4OZG)

**Photo B.** Watch and listen to a U.S. Army Signal Corps BC-312 receiver put through its paces on the shortwaves at <<http://bit.ly/1150Bxp>>. (Internet screen grab)

The big radio in the background to the left is a vintage U.S. Army Signal Corps BC-312-N receiver — from the World War II era. (**WATCH and LISTEN:** To a World War II classic BC-312 receiver at <<http://bit.ly/1150Bxp>>, **Photo B.** — KPC6PC)

The scanners sitting on top of the BC-312-N are, left, a Bearcat III Electra and a Bearcat IV Electra.

To the left of the lamp is a First Alert NOAA Weather Radio. Radios to the right of the BC-312-N are:

- Top row from left, a Uniden Bearcat BC2500XLT, an ICOM ID-800H, and a Kenwood TM-741A
- Middle row from left, a Uniden Bearcat BC350A and ICOM IC-2200H
- Bottom row, a Uniden Pro 510XL

I was in the U.S. Air Force for six years (1982-1988) in the Security Police, stationed at Ellsworth AFB in Rapid City, South Dakota, assigned to the 44<sup>th</sup> Missile Security Squadron.

Shortly after being honorably discharged I worked for more than six years (1989-1995) with the Dothan Airport Police Department in Alabama.

After 12+ years in security and law enforcement, I decided it was time for a change, **Photo C.** I'm now in retail and have a great wife and two sons.

I've been in amateur radio since May 2006 and am the Public Information Officer for Calhoun County ARES®/RACES and the Calhoun County Amateur Radio Association. In addition, I'm Electronic Media PIO for the Alabama Section of the ARRL. So, in my own little way I'm once again serving and protecting my community.

As you can see, I follow the adage: You can never have too many radios!

I have the DV Dongle, as well, so you can tell I really like D-STAR and got my start in it just two weeks after getting my callsign.

The Calhoun County ARES/RACES group along with our local club, the Calhoun County Amateur Radio Association use D-STAR on various functions and activities.

The Calhoun County Amateur Radio Association owns and operates the WB4GNA repeaters <<http://www.QRZ.com/db/WB4GNA>> — located on Mt. Cheaha, which is Alabama's highest peak at 2,407 feet.

The Calhoun County Amateur Radio Association is the oldest active amateur club in Calhoun County Alabama and the home of the Golden Gabbers Net <<http://www.calcoamrdoascia.webs.com>>.

In addition to my amateur license, I hold a Restricted Radiotelephone Operator Permit issued in 1984.

My father and oldest brother both were DJs, so I practically grew up being around radio and continue to have fun with it.

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# A First: KB3CNM's 'Spurious Signals: Live from Dayton'

You tell us you love "Spurious Signals," so why not ask Pop'Comm cartoonist Jason Togyer, KB3CNM, to capture the Dayton Hamvention® in his inimitable, hilarious style? Well, he did just that! Here is "Spurious Signals: Live from Dayton," just as Jason blogged it to Pop'Comm On the Web <<http://bit.ly/hpaVyy>> from Hara Arena May 17-19. We believe it is the first time live cartooning has been done in the convention's 60-plus year history. We so appreciate Jason on so many levels. He always makes us smile!

— Richard Fisher, KPC6PC


**HAMVENTION** Thursday, May 16

Cartoon blog { togyer KB3CNM for Pop'Comm magazine



Tens of thousands of people pour into Dayton Ohio every May for HAMVENTION... every area hotel & motel is **JAMMED** to the rafters. Smart hams book months in advance... like we did ... 😊 ← SMUG

.. EXCEPT that our "budget hotel" turned out to be a seedy PIGSTY... forcing us to find new lodgings at the last minute... 45 min. ... we're now north of Dayton in Greenville, OH... the home of KITCHENAID™ mixers!



**HAMVENTION** FRIDAY, MAY 17 togyer KB3CNM

Our fancy wireless card died after only a few minutes... the cell phone company promised us a new one... by Monday! ... NO GOOD.

PSST... MORSE GETS THROUGH WHEN ALL ELSE FAILS!

ROTTEN PIECE OF SHIT!


FIND CQ + POP'COMM IN BOOTHS NO. 70+71 IN THE HARA ARENA!

Pop'Comm

I COULD WATCH THIS ALL DAY!

... so we're borrowing some wi-fi from our neighbors at SteppIR ... which has a nifty motorized dipole on display!

thank you, SteppIR!

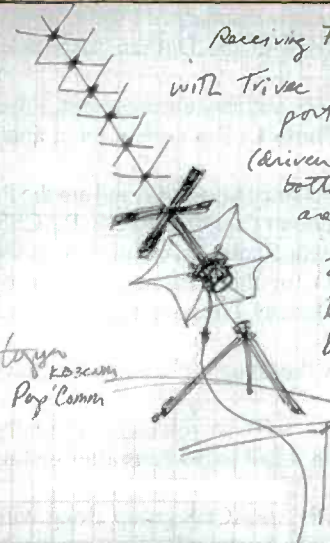


Receiving Fleet sat com with Trivee Awant portable antenna (driven element at bottom... rest are reflectors.)

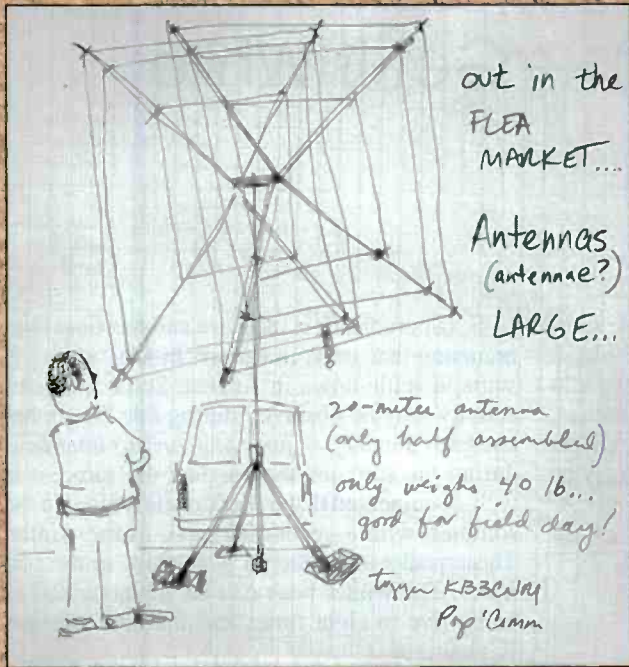
253500 Mhz Brazilian pirates... bottlegging gov't frequencies.

... and ANTENNAE (antennas?) small...

togyer KB3CNM Pop'Comm





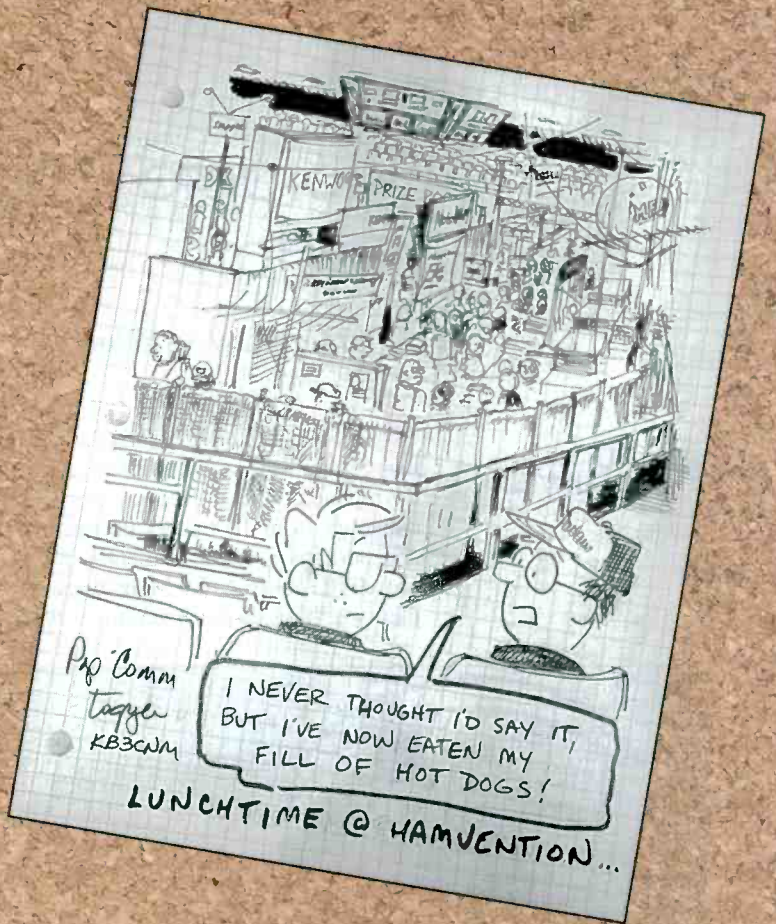


out in the  
FLEA  
MARKET...

Antennas  
(antennae?)  
LARGE...

20-meter antenna  
(only half assembled)  
only weighs 40 lb...  
good for field day!

toyer KB3CWM  
Pop'Comm



Pop'Comm  
toyer  
KB3CWM

I NEVER THOUGHT I'D SAY IT,  
BUT I'VE NOW EATEN MY  
FILL OF HOT DOGS!

LUNCHTIME @ HAMVENTION...



ONLY \$285? WHY  
IS IT SO CHEAP?

OVERHEARD...

I STOLE  
IT,  
LAST  
NIGHT.  
I'M A  
THIEF.

(SARCASTIC)

I CAN'T BELIEVE HOW  
EXHAUSTED I AM!

YOU REALIZE  
WE'VE ONLY  
SEEN LIKE  
1/8<sup>TH</sup> OF  
THIS?!

**HAMVENTION** sat. May 18  
Pop'Comm mag toyer KB3CWM

OUT IN THE FLEA MARKET:

"Melody  
Radio  
Cruiser"

BOAT SHAPED

"All-American  
5' x

Am radio  
(mW)

\* (5-tube  
Ac circuit)

Vintage 1940's  
or 1950's?

MFD. BY  
GENERAL RADIO + TV CORP.  
CHICAGO, ILL



HAMVENTION  
'13

YOU EXPECT  
ME TO PUT  
THAT ON MY  
BUS?!

GETTING THAT  
"BARGAIN" BACK  
TO THE HOME  
QTH...

NOT ANOTHER  
ONE!

DO WE CALL  
TROTWOOD  
FIRE + RESCUE  
... OR  
RUMPKA  
SANITATION?

THE  
PERILS OF  
"DUMPSTER  
DIVING"...

HELP!

Pop'Comm  
mag

## THE PRACTICAL SIDE

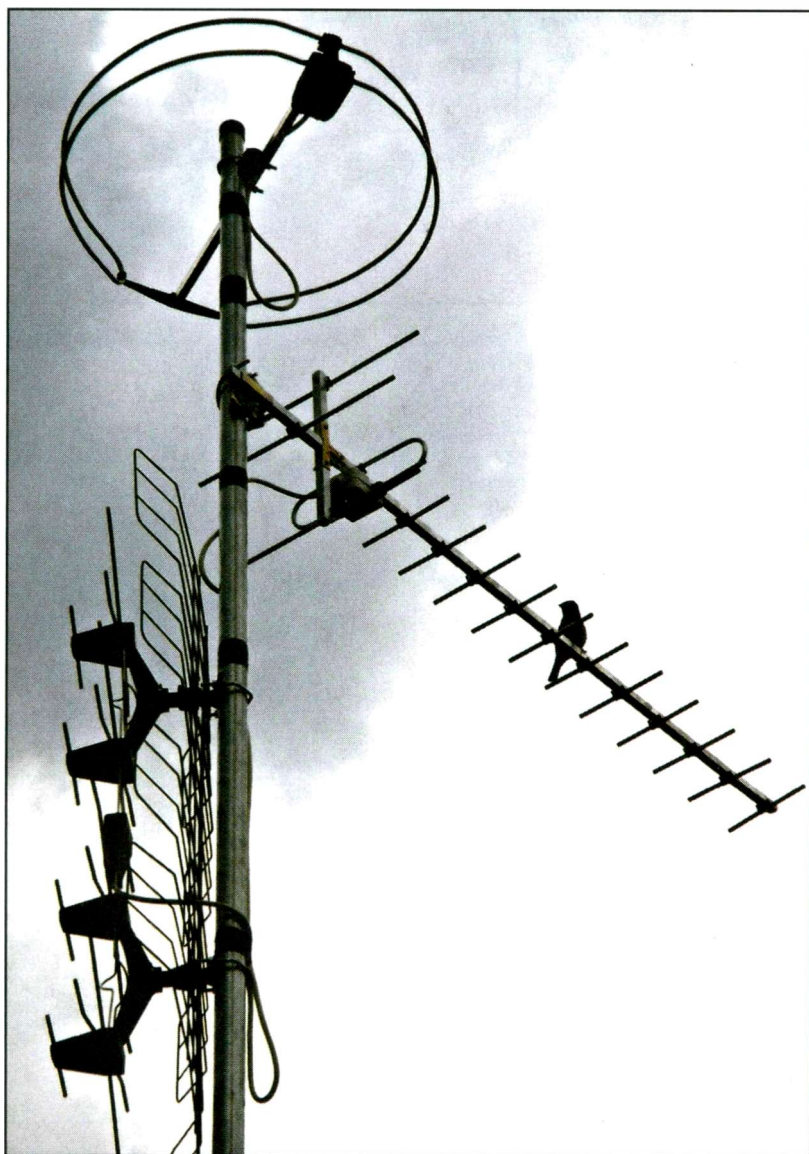
The Propagation Corner

# Sporadic-E ( $E_s$ ) — Get It While It's Hot!

“<<http://bit.ly/11yRDhN>”

By Tomas Hood,  
WPC7USA/NW7US

While the month of August is the end of the summer Sporadic-E season, this month still holds a lot of potential for exciting moments for radio amateurs from 10 meters up through 6 meters, and perhaps even on 2 meters. For FM DXers prowling 88.1 to 107.9 MHz, there will likely be plenty of long-distance action, as well, **Photo A.**



**Photo A.** At the top of this multi-antenna array is a halo, or circular antenna used for FM reception — a popular choice of FM DXers chasing Sporadic-E openings over the years. (Courtesy of Wikimedia Commons)

$E_s$  (Sporadic-E) is mostly a summertime phenomenon that starts in earnest in May and only starts to settle down in August. Some minor  $E_s$  activity may be observed during late December and early January — just *not nearly as intense* as during the summer season. Just the same, it is well-documented that  $E_s$  occurs most often in the summer, with a secondary peak in the winter. These peaks are centered very close to the solstices. The winter peak can be characterized as being five to eight times less than the summer  $E_s$  peak.

## Hummmmmmmmm . . .

We do not yet fully understand the causes of Sporadic-E. Scientists are still pursuing the cause — or more likely the multiple causes. As far back as 1959, 10 distinct types of Sporadic-E and at least nine different theories of causation were offered. The classification of distinct types has been retained, but since the 1960s, the wind shear theory combined with meteor dust has become the most accepted hybrid theory.

Wind shear occurs when the wind blows at different directions and speeds as you increase with height. Simply, the wind shear theory holds that gaseous ions in the ionosphere's E-region are accumulated and concentrated into small, thin, patchy sheets by the combined actions of high-altitude winds and the earth's magnetic field. The resulting clouds may attain the required ion density to serve as a reflecting medium for VHF radio waves. Although most research has confirmed a close association between wind shear and Sporadic-E, not all aspects of the phenomenon can be explained, including its diurnal and seasonal variations. That is where the theory of meteor dust comes in.

Simply, passing comets have left in their trail great concentrations of comet dust, and when the Earth moves through these patches, we have meteor showers. We also have a greater amount of this dust entering into the Earth's atmosphere. Wind shear and the strong magnetic fields of the Earth cause concentrations of this dust in the E-region, in patches, and these result in Sporadic-E, or so goes the theory. Because these comet trails are at very specific moments of the Earth's orbit, Sporadic-E occurs with the same frequency and nearly at the same time as these encoun-

ters. This makes the hybrid of wind shear and comet dust a reasonable model of how  $E_s$  occurs.

## Some Atmospheric Science

Sporadic-E propagation affects higher frequencies more than does typical ionospheric F-region skip. This mode of propagation may become noticeable on 15 meters, but becomes more pronounced on low VHF. As noted earlier,  $E_s$  occurs most frequently during late spring and early summer, though it can still provide strong and surprising openings even during August. Sporadic-E propagation does not typically last very long, but the openings can be quite strong. The reason we call it *Sporadic-E* is precisely because of the sporadic nature of the propagation. A radio signal propagation path — an *opening* — may exist one moment, and then the next, that path is no longer usable. Just why this occurs is due to some fascinating science.

Earth's atmosphere is a mixture of gases held to our planet's surface by gravity. These gases vary in density and composition as the altitude increases above the surface. As the atmosphere extends outward from Earth, it becomes thinner and blends with particles of interplanetary space.

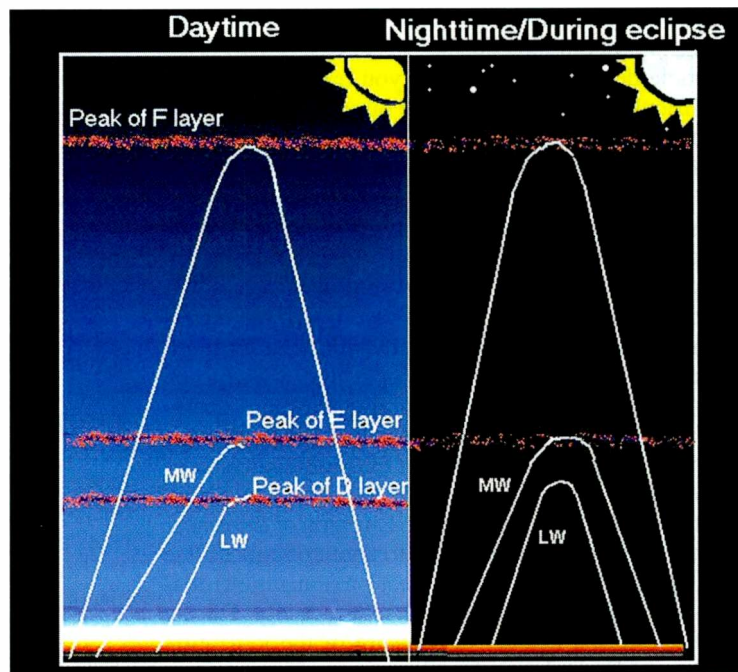
The first 60 miles of Earth's atmosphere consists of a homogeneous mixture of various gases. This region is called the homosphere. Above the homosphere lies the heterosphere where the gases are no longer uniformly mixed. Relatively more of heavy gas molecules such as  $N_2$  (molecular nitrogen) and  $O_2$  (molecular oxygen) are found near the bottom of this region, and relatively more of the lighter gases such as hydrogen and helium are found near the top.

The atmosphere is also divided into four regions according to temperature trends:

- Troposphere
- Stratosphere
- Mesosphere
- Thermosphere

The lowest region is the troposphere and it extends from the Earth's surface up to about six miles. The gases in this region are heavier than those in higher altitudes, and include  $O_2$  and  $N_2$ . The highest mountains are within this region, as is the high-altitude jet stream. Weather is confined to this lower region and it contains 90 percent of the Earth's atmosphere and 99 percent of the water vapor.

The atmosphere above the troposphere is called the stratosphere, starting



**Figure 1.** This informational graphic of the D, E, and F ionization layers is posted on the website of the UK Solar System Data Centre <<http://www.ukssdc.ac.uk>>. (Internet screen grab)

at about six miles altitude. Gas composition changes slightly as the altitude increases and the air thins. Incoming solar radiation at wavelengths below 240 nanometers is able to create ozone, a molecule of Oxygen consisting of three Oxygen atoms ( $O_3$ ), in this layer. This gas reaches a peak density of a few parts per million at an altitude of about 16 miles.

At an altitude above 50 miles, the gas is so thin that free electrons can exist for short periods of time before they are captured by a nearby positive ion. The existence of charged particles at this altitude and above marks the beginning of the ionosphere, a region having the properties of a gas and of plasma.

Atoms in the ionosphere absorb the incoming solar radiation, causing them to become highly excited. When an atom becomes energized, an electron may break away from its orbit, and free electrons and positively charged ions are produced. At the highest levels of the Earth's outer atmosphere, solar radiation is very strong but there are few atoms to interact with, so ionization is small.

As the altitude decreases, more gas atoms are present so the ionization process increases. At the same time, however, an opposing process called recombination begins to take place in which a free electron is "captured" by a positive ion if it moves close enough to it. As the gas density increases at lower altitudes,

the recombination process accelerates since the gas molecules and ions are closer together.

## Ionization Regions

Because the composition of the atmosphere changes with height, the ion production rate also changes and this leads to the formation of several distinct ionization regions, known as the D-, E-, and F-regions, **Figure 1**. The breakdown between regions is based on which wavelengths of solar radiation are absorbed in that region most frequently.

The D-region is the lowest in altitude, though it absorbs the most energetic radiation, known as hard X-rays. The D-region doesn't have a definite starting and stopping point, but includes the ionization that occurs below about 56 miles. This region absorbs high-frequency (HF) waves between three and 30 MHz or wavelengths between 100 meters and 10 meters. It refracts frequencies in the range of 3 to 30 kHz, very low frequencies (VLF).

This is a daytime layer due to the density of the gases. Absorption of ultraviolet and visible light radiation creates more negative ions than electrons during the day. At night these ions quickly recombine with other ionic particles, allowing distant AM radio reception to occur.

The F-region is the largest part of the ionosphere, as well as the highest, and is the primary refractor of high-frequency

(HF, or shortwave) frequencies. It extends from about 65 miles up through the end of our atmosphere.

Since particle densities decrease as you travel away from Earth, it is difficult to say exactly where our atmosphere ends. Since it is such a large region, the F-layer is divided into two main sections, the daytime layer,  $F_1$ , and the denser  $F_2$  layer which exists both during the day and night. Recently, a third layer,  $F_3$ , has been identified, but more research is being done to understand its characteristics.

The F-region “reflectivity” is directly influenced by solar activity. During years of peak solar activity, this whole region will have a much higher ionization density, allowing for higher frequencies and sharper angles of propagated waves to be reflected (actually, refracted). Six-meter amateur radio operators look forward to solar cycle peaks, as those years are typically when the F-region can bring distant DX on frequencies of up to 50 or 60 MHz.

Between the D- and F-regions lies the E-region of the ionosphere that extends from about 56 miles to about 65 miles. The region’s height varies, and, along with electron (ionization) density, depends on solar zenith angle and solar activity. During daylight hours, electron density (a measure of the ionization level) increases, while at night, when the supply of X-rays from the sun is cut off, ionization levels drop. These ionization densities are expected under normal conditions, absent of  $E_s$ . But it is in the E-region where the magic of Sporadic-E occurs.

Occasionally very thin regions of extremely dense ionization can form within the E-layer. These regions can be caused by several mechanisms and have a wide variety of characteristics.

## Special Occasions

At times, these thin regions form into dense clouds, or patches, which are capable of reflecting radio waves of frequencies much higher than those reflected by the regular E- or F-layers. Sometimes these clouds make it possible to communicate over relatively long distances on frequencies as high as 220 MHz. These clouds usually cover a rather small geographical region, approximately 50 to 100 miles in diameter. They occur randomly and are short lived, usually disappearing within a few hours. Sporadic-E is classically defined as transient, localized patches of relatively high-electron density in the E-region of the ionosphere, which significantly affect radio wave propagation. Sporadic-E can occur during daytime or nighttime, and it varies markedly with latitude.

The shape of the clouds is likely ragged — not true circles or ellipses. Clouds have been shown to have concave undersides in many instances, with tilts up to 10 degrees. The vertical thickness of these clouds is usually quite small — no more than a few kilometers. The thickness of these  $E_s$  clouds has been measured by rocket flights through the E-region.

## Blowin’ in the Wind

Very strong currents of air exist at the E-region altitude. After the formation of an ionized cloud, these winds move the cloud. Over North America, they tend to move large  $E_s$  cloud groups to the west or northwest. Of course,  $E_s$  clouds may move in any direction on occasion, especially north and south — and less likely to the east. The velocity of these clouds has been measured to be in the neighborhood of about 110 miles per hour, and higher velocities are thought to occur.

Reflection from  $E_s$  clouds takes place with very little signal loss, resulting in exceptionally strong signal levels during most openings. Quite often it is possible to maintain communications considerably off the great circle path between two stations by means of back and side scatter from a Sporadic-E cloud.

## Measuring the Possibilities

Using simple geometry we can approximate the single-hop propagation via a Sporadic-E cloud: The theoretical maximum distance for a transmitted signal propagated after only one encounter with a cloud in the  $E_s$  region is 2,100 kilometers (1,305 miles). For the HF bands (below 30 MHz), this appears to be very accurate. However, many transmissions exceeding 2,350 kilometers (1,460 miles) have been observed in the VHF bands. This may be due to a combination of other propagation modes (tropospheric and ground wave enhancements, and so forth) which adds distance to the theoretical maximum on both sides of the typical propagation model.

If two  $E_s$  clouds exist within the signal path, the theoretical distance propagated by  $E_s$  can almost be doubled, as long as the clouds are in line with both the transmitter and receiver. This “double hop” propagation is fairly common during widespread occurrences of  $E_s$ , especially below 70 MHz.

Three or more clouds could potentially line up, providing low-loss propagation over even further distances. Of course, the likelihood that each of the clouds are of sufficient density and ionization, and are geometrically lined up, is pretty slim — especially if your interest is in higher frequencies.

## Peeking at $E_s$ Peaks

Sporadic-E propagation tends to occur in two peaks during the daylight hours centered on either side of noon.

$E_s$  occurrence during the year seems to follow a similar trend, with the main peak in the late summer, and a second but weaker peak occurring in the winter.

During the winter, peak  $E_s$  is most common just after sunset. The summer daytime peak is in the morning between 7 a.m. and noon, local time. A secondary peak occurs between 8 and 10 p.m. However, observations over many decades show a slightly stronger likelihood of  $E_s$  in the morning than in the afternoon or evening.

Despite the apparent greater likelihood of  $E_s$  in the morning hours, however, this diurnal characteristic is much less noticeable in the day to day casual observation of DXers. In addition, check for  $E_s$  after dark! I remember many summertime  $E_s$  openings around midnight between Washington state and California on 10 meters. Many still remember an opening that occurred after midnight on June 19, 1992 that resulted in propagation of 144 MHz and higher signals.

## Additional Observations

A pattern of the occurrence of  $E_s$  by some observers suggest that  $E_s$  is correlated with the presence of an excess of meteor dust in the E-region, where it is pushed into dense patches on the outside of the upper altitude Jet Stream’s wind eddies.

This possibility is loosely supported by the repeated presence of  $E_s$  above certain locations, such as is seen from the United Kingdom over Nantes in France, and to a lesser extent, over Denmark.

Several studies over the past 30 years have confirmed the

Optimum Working Frequencies (MHz) - For August 2013 - Flux = 135, Created by NW7US

UTC	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
TO/FROM US WEST COAST																									
CARIBBEAN	27	27	26	25	23	21	19	18	16	15	14	13	14	16	19	21	22	24	25	26	26	27	27	27	27
NORTHERN SOUTH AMERICA	34	34	34	31	28	26	24	22	20	19	18	17	17	19	23	25	28	29	31	32	33	34	34	34	34
CENTRAL SOUTH AMERICA	34	31	29	26	24	22	21	19	18	17	17	19	18	21	25	28	30	32	34	35	36	37	36	36	36
SOUTHERN SOUTH AMERICA	31	27	23	22	20	19	18	17	16	16	15	15	15	18	21	24	27	30	31	33	34	35	35	34	34
WESTERN EUROPE	16	12	12	11	11	16	17	14	12	12	17	19	20	21	22	23	23	23	23	23	22	21	20	19	19
EASTERN EUROPE	11	11	11	10	15	18	17	12	12	11	11	15	18	20	21	22	22	22	21	20	19	17	12	12	12
EASTERN NORTH AMERICA	31	30	29	28	26	24	22	20	19	17	16	15	17	21	24	26	28	29	30	31	31	32	32	31	31
CENTRAL NORTH AMERICA	17	17	17	16	15	14	13	12	11	10	9	9	8	11	13	14	15	16	16	17	17	17	17	17	17
WESTERN NORTH AMERICA	9	9	9	9	8	8	7	7	6	6	5	5	4	4	6	7	7	8	8	9	9	9	9	9	9
SOUTHERN NORTH AMERICA	28	28	28	27	26	24	22	20	19	17	16	15	14	15	18	21	23	24	26	27	27	28	28	29	29
HAWAII	24	24	24	24	24	23	23	21	19	18	16	15	14	13	12	12	14	16	18	19	21	22	22	23	23
NORTHERN AFRICA	18	16	15	14	13	13	16	14	13	12	16	19	20	22	22	23	24	24	24	24	24	23	21	19	19
CENTRAL AFRICA	20	19	17	16	15	16	18	16	13	15	18	19	20	21	22	22	23	23	23	23	23	23	23	22	22
SOUTH AFRICA	21	20	18	17	16	17	18	17	16	15	16	21	24	26	27	28	29	30	30	29	26	24	22	22	22
MIDDLE EAST	14	13	13	14	18	19	17	13	12	11	11	17	19	21	22	22	23	24	23	22	20	18	17	15	15
JAPAN	24	25	25	25	24	23	22	21	19	16	15	14	13	12	14	15	14	13	12	16	19	21	22	24	24
CENTRAL ASIA	25	25	25	24	23	22	21	19	16	15	14	13	12	15	18	20	19	18	16	15	17	20	23	23	23
INDIA	20	21	21	21	21	20	19	16	12	11	11	11	15	12	11	11	10	10	10	13	16	18	19	20	20
THAILAND	20	23	24	24	24	23	22	21	19	16	14	13	13	13	17	20	21	21	19	18	17	16	15	17	17
AUSTRALIA	34	35	36	37	37	36	35	33	30	27	25	23	21	20	19	18	19	18	17	16	18	24	28	31	31
CHINA	23	24	24	24	23	23	22	20	19	16	14	13	12	16	18	16	15	14	13	13	14	18	20	22	22
SOUTH PACIFIC	36	37	37	36	35	34	31	27	23	21	20	19	18	17	16	16	15	15	15	25	30	33	35	36	36
TO/FROM US MIDWEST																									
CARIBBEAN	31	30	30	28	25	23	21	20	18	17	16	15	16	20	22	24	26	27	28	29	30	30	31	31	31
NORTHERN SOUTH AMERICA	31	31	31	28	25	23	21	20	18	17	16	16	15	19	22	24	26	27	29	30	30	31	31	32	32
CENTRAL SOUTH AMERICA	34	31	28	26	24	22	21	19	18	17	17	18	20	23	26	29	31	32	34	35	35	36	36	35	35
SOUTHERN SOUTH AMERICA	31	26	24	22	20	19	18	17	17	16	15	15	18	20	24	26	29	31	32	33	34	35	35	33	33
WESTERN EUROPE	19	17	14	12	15	15	14	13	12	14	18	20	21	22	23	23	23	23	23	23	22	22	21	20	20
EASTERN EUROPE	12	11	11	11	10	17	14	13	12	17	19	20	21	22	23	23	23	23	22	21	20	19	17	12	12
EASTERN NORTH AMERICA	22	22	21	20	18	17	15	14	13	12	12	11	14	16	18	19	20	21	22	22	23	23	23	23	23
CENTRAL NORTH AMERICA	10	10	10	9	9	8	7	7	6	6	5	5	5	7	8	9	9	10	10	10	10	10	10	10	10
WESTERN NORTH AMERICA	18	17	17	16	16	15	13	12	11	10	10	9	9	10	12	14	15	16	16	17	17	18	18	18	18
SOUTHERN NORTH AMERICA	20	20	19	19	18	16	15	14	13	12	11	10	10	12	14	15	17	18	18	19	19	20	20	20	20
HAWAII	28	28	28	28	27	26	24	22	20	19	17	16	15	14	14	14	16	19	21	23	24	25	26	27	27
NORTHERN AFRICA	22	21	19	18	17	16	15	14	13	12	16	19	21	23	24	24	25	25	26	26	26	25	25	24	24
CENTRAL AFRICA	21	19	18	17	16	15	14	13	12	17	19	21	23	24	24	25	25	26	26	26	25	25	22	22	22
SOUTH AFRICA	21	19	18	17	16	16	22	20	19	18	21	25	28	31	33	34	35	34	31	28	26	24	22	22	22
MIDDLE EAST	15	14	13	13	15	15	14	13	12	15	18	20	22	23	24	24	25	25	24	23	21	19	18	16	16
JAPAN	25	25	24	23	22	21	19	16	15	14	13	12	14	17	16	15	14	13	12	17	19	21	23	24	24
CENTRAL ASIA	25	24	24	23	22	21	19	16	15	14	13	12	16	19	21	22	21	19	18	17	16	17	20	23	23
INDIA	14	16	18	19	20	19	16	13	12	12	17	19	20	19	19	18	16	14	11	11	11	10	10	10	10
THAILAND	20	23	23	22	22	20	19	17	14	13	12	16	19	20	21	22	23	21	20	18	17	16	15	17	17
AUSTRALIA	34	36	37	36	35	34	32	29	26	24	22	21	19	18	20	19	18	17	17	16	20	25	29	32	32
CHINA	23	24	23	22	22	20	19	17	14	13	12	17	19	20	18	16	15	14	13	12	14	18	20	22	22
SOUTH PACIFIC	37	37	36	36	34	32	29	23	21	20	19	18	17	16	16	15	15	15	18	27	31	34	35	36	36
TO/FROM US EAST COAST																									
CARIBBEAN	24	24	23	21	19	18	16	15	14	13	12	12	15	17	19	20	21	22	23	24	24	24	25	25	25
NORTHERN SOUTH AMERICA	28	28	26	24	22	20	18	17	16	15	14	14	15	18	20	22	24	25	26	27	27	28	28	28	28
CENTRAL SOUTH AMERICA	33	30	28	25	23	22	20	19	18	17	16	18	22	25	27	29	31	32	33	34	35	35	35	35	35
SOUTHERN SOUTH AMERICA	30	26	24	22	20	19	18	17	16	16	15	15	20	23	26	28	30	32	33	34	34	35	35	33	33
WESTERN EUROPE	17	15	14	13	12	11	13	12	12	15	18	20	21	22	23	24	24	24	23	23	22	22	21	19	19
EASTERN EUROPE	12	12	11	11	14	14	13	13	12	17	19	21	22	23	24	24	24	23	23	22	21	20	19	16	16
EASTERN NORTH AMERICA	11	10	10	9	8	8	7	6	6	6	5	6	7	8	9	9	10	10	10	11	11	11	11	11	11
CENTRAL NORTH AMERICA	23	23	22	21	19	18	16	15	14	13	12	12	15	17	19	20	21	22	23	24	24	24	24	24	24
WESTERN NORTH AMERICA	31	31	30	28	27	24	22	20	19	18	16	16	17	21	24	26	28	29	30	31	31	32	32	32	32
SOUTHERN NORTH AMERICA	25	24	24	23	21	19	17	16	15	14	13	12	13	16	18	20	21	22	23	24	24	25	25	25	25
HAWAII	30	30	30	29	28	25	23	21	20	18	17	16	15	17	16	15	18	20	23	25	26	28	29	29	29
NORTHERN AFRICA	23	21	20	18	17	16	15	17	16	17	21	24													

presence in  $E_s$  clouds of dense patches of meteoric comet dust. This idea is further supported by looking at the seasonal nature of  $E_s$  and how it coincides directly with those times of year when the Earth passes through the dense tracks of comet dust.

## Sporadic-E Propagation and the FM DXer

DX enthusiasts know that during the summer months FM radio stations between 88 and 108 MHz are regularly propagated long distances via  $E_s$  propagation. (*WATCH and LISTEN: To Sporadic-E FM DX received from great distances into Watertown, New York during the summer of 2011 at <<http://bit.ly/11yRDhN>>, Photo B. – WPC7USA*)

The first sign that a Sporadic-E event is starting is by hearing the FM band become filled with signals from stations far outside the normal range of local radio stations. During  $E_s$  propagation, signals can abruptly appear or disappear. Ordinary FM radio dipoles are adequate for  $E_s$  reception, and sometimes are preferred by some FM DXers because they can be sharply directional.

*(BUILD IT: If you'd like to take a run at FM DXing via August's anticipated Sporadic-E, check out this month's Wireless Connection for instructions to make a simple, but effective folded dipole antenna from common speaker wire cut for the center of the FM band. It's inexpensive and takes only minutes to assemble. Turn to page 63. – KPC6PC)*

## Even Higher Frequencies

Is it possible that  $E_s$  can support DX of signals in the higher VHF frequency band, say, 175 to 226 MHz? Doubling the frequency reduces the probability to one-tenth. This means if you are receiving via  $E_s$  a signal of 50 MHz, then a 100-MHz signal will be propagated one-tenth of the time period of the 50-MHz signal.

A 200-MHz signal will be propagated one-hundredth of the time. Since many high MUF (Maximum Useable Frequency) propagation paths are multi-cloud, the probability could be higher than these figures.

The MUF of a single cloud can be lower than the frequency propagated by a two-cloud path. In practice, it is difficult to know of a possible propagation path for the highest frequency, because of the geometric restrictions imposed, and unless the DXer and the transmitter are in precise relative positions, the DX station will not be heard.

Since  $E_s$  reception above 138 MHz often involves high-path losses, it is important that you use the highest gain and lowest noise receiving equipment possible. A directional Yagi antenna, with at least 8 dB of gain, mounted 15 to 20 feet above ground level, with low-loss matched coax cable, a low-noise receiver,

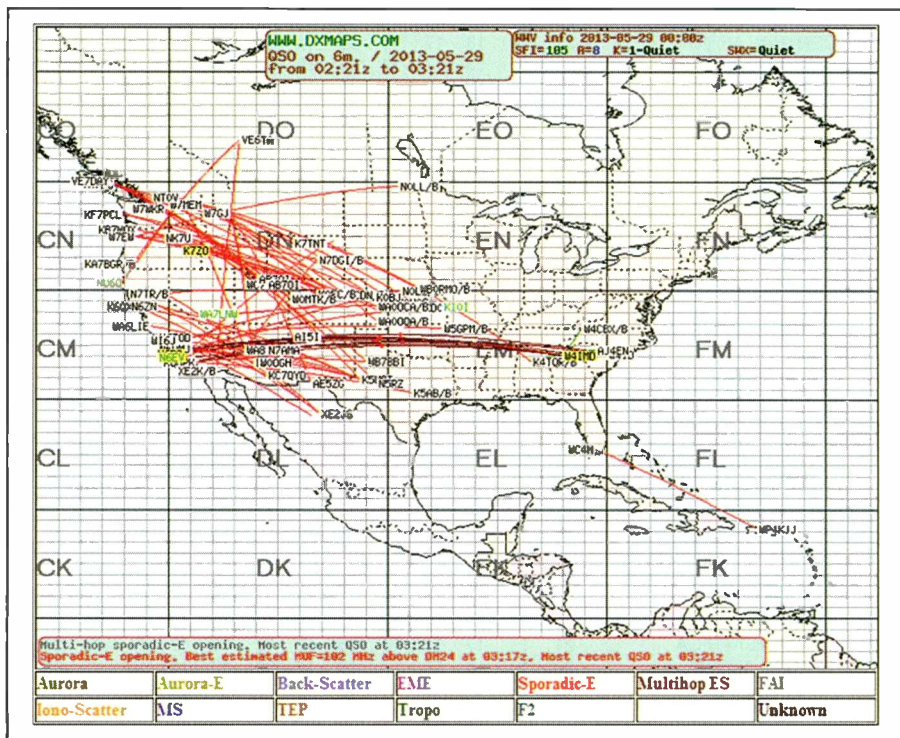
and a low-noise MOSFET pre-amplifier are ideal for receiving weak signals.

## Considering $E_s$ Range

What are the minimum, maximum, and typical range of distances propagated via  $E_s$  for various VHF modes? In other



**Photo B.** YouTube poster spunker88 posted this audio/video package featuring FM DX he or she logged from Watertown, New York during the summer of 2011. As you will hear, long-distance reception is entirely possible when conditions are just right and Sporadic-E ( $E_s$ ) is in play <<http://bit.ly/11yRDhN>>. (*Internet screen grab*)



**Figure 2.** Sporadic-E contacts between radio amateurs on 6 meters the evening of May 28 were fast and furious, as depicted by the red lines in this activity chart posted on QSO/SWL Real Time Maps at <<http://bit.ly/16prlli>>, an excellent tool for monitoring activity across a wide RF spectrum. (*Internet screen grab*)

words, how far can one realistically expect for single and multi-hop Sporadic-E propagation?

With more than a half-century of E<sub>s</sub> DX logs and observations, we now have a very large database of information that gives us a very good idea regarding what distances are possible on the VHF band. This data is mainly obtained from VHF ham radio and TV DX enthusiasts.

One factor as to the maximum distance propagated by Sporadic-E is the height of the E<sub>s</sub> cloud. According to the data collected by an ionosonde (a device used to measure reflectivity of the ionosphere), E<sub>s</sub> usually occurs around 56 miles of altitude. At this altitude the maximum possible single-hop distance is about 1,500 miles. The highest frequency reflected back to the surface of the earth, the E<sub>s</sub> MUF, varies from 20 MHz to at least 220 MHz.

The main factors that set the minimum and maximum distance limits for E<sub>s</sub> DX reception are geometry of the Earth, E<sub>s</sub> cloud electron density, the number of E<sub>s</sub> clouds, and E<sub>s</sub> ionization height, **Figure 2**.

## Estimating Single-Hop Targets

One method to identify your single-hop E<sub>s</sub> target area would be to obtain a great-circle map and draw two sets of boundary lines with a compass.

For FM radio broadcast, draw one boundary circle at approximately 500 miles, and one at 1,500 miles. This would be your prime target area for single-hop E<sub>s</sub>.

The same method can be applied to double-hop E<sub>s</sub>, with a boundary line drawn at 1,750 miles, and another one at about 2,800 miles.

A great-circle distance calculator is also useful for submitting longitude and latitude coordinates, <<http://g.nw7us.us/13Dphi2>> and <<http://g.nw7us.us/NNUt17>>.

## HF Propagation for August

Propagation on the higher frequencies will fluctuate less drastically during August, as the hours of sunlight are quite long and the ionosphere has very little time to recombine during the hours of darkness.

Higher HF frequencies are going to be unusable over most paths, but when Sporadic-E (E<sub>s</sub>) openings occur, expect good domestic signals.

Nineteen and 22 meters will compete with 16 for the best daytime DX band during August. Broadcasters know that the summer daytime MUFs are higher than during the winter, so they move their scheduled broadcasts up in frequency. These bands will open for DX just before sunrise and should remain open from all directions throughout the day, with a peak in the afternoon.

Nighttime conditions will favor openings from the south and tropical areas. Look for gray-line propagation from Asia, with long-path common from southern Asia, the Middle East, and northeastern Africa as well as the Indian Ocean region via the North Pole.

The 25- and 31-meter bands have an incredible amount of activity since many broadcasters target their audiences during prime times — morning and early evening — in the target areas. Expect 11 MHz to be an excellent band for medium distance (500 to 1,500 miles) reception during the daylight hours. Longer distance reception (up to 2,000 to 3,000 miles) should be possible for an hour or two after local sunrise, and again during the late afternoon and early evening. Heavy congestion will occur

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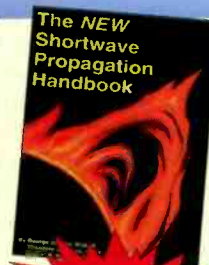
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here, too, as many international and domestic broadcasters make use of 25 meters.

The backbone of worldwide shortwave broadcasting, 31 and 41 meters, will provide medium distance daytime reception ranging between 400 and 1,200 miles. During August, reception up to 2,500 miles is possible during the hours of darkness, and until two to three hours after local sunrise.

Forty-one and 49 meters should remain best for worldwide DX from sunset to sunrise. Early evening and into darkness, increasingly longer paths develop, up to several thousand miles. As propagation conditions don't change much on the lower HF bands through the solar cycle, a high number of HF broadcasters rely on these bands. International and domestic broadcasts compete with amateurs on the 41-meter band and with each other on both. This makes for a lot of interference, especially during the late afternoon and evening hours, making reception of weak, exotic signals a bit more of a challenge.

Don't expect any improvement in nighttime DX conditions on 41 through 120 meters during August, since we are not yet close enough to the seasonal decrease in the static levels of winter. The 5-, 3-, and 2-MHz shortwave bands are used mostly in designated tropical areas for domestic broadcasting. The entire 4-MHz band is set aside for domestic broadcasting in Asia, and some of this band is used throughout Europe.

On all of these bands, during daylight, reception should be possible from up to 500 miles away. After sunset until an hour or so after sunrise, reception of signals from 1,000 to a possible 2,000 miles away is possible. There will still be a high level of static during August, so these bands will be a challenge to those looking for long-distance DX of exotic tropical stations. The best time to search for these would be just before sunrise and an hour or so after daylight.

## VHF Conditions

Statistical studies show that a sharp increase in Sporadic-E propagation takes place at mid-latitudes during the late spring and summer months. During August, short-skip propagation over distances as great as 1,400 miles should be possible for about 10 percent of the time on 6 meters. Higher VHF 2-meter openings may also be possible during periods of intense Sporadic-E ionization.

In addition, conditions for tropospheric ducting begin to form over wide areas of North America, and over the Atlantic and Pacific Oceans. Watch for stalled high-pressure cells between your location and the DX.

Each summer season in North America, weather systems develop that produce conditions favorable for VHF DX. Stalled high-pressure weather cells, with pressures reaching above 1025 millibars, are known to cause ducting of VHF radio signals. When ducts occur, VHF radio signals may propagate through these ducts far beyond the normal line of sight distances.

Tropospheric ducting forms each year between Hawaii and the U.S. West Coast, and from San Francisco to Los Angeles, Denver to Dallas, Texas to Florida, the Great Lakes to the eastern seaboard, from the Great Lakes to Texas, Nova Scotia to Miami, and from the Midwest to the Southeast.

Advanced visual and infrared weather maps can be a good aid in detecting the undisturbed low clouds between the West Coast and Hawaii or further during periods of intense subsidence-inversion band openings. This condition occurs also over the Atlantic. There is a great resource on the Internet that provides a look into current conditions. Bill Hepburn has created

forecast maps and presents them at <http://www.dxinfocentre.com/tropo.html>, which includes maps for the Pacific, Atlantic, and other regions.

Don't forget to check out *CQ VHF* magazine for more details on VHF propagation and conditions. If you use Twitter.com, you can follow [@hfradiospacewx](https://twitter.com/hfradiospacewx) for hourly updates that include the K index numbers. You can also check the numbers at <http://SunSpotWatch.com>.

## Current Solar Cycle Progress

**The Royal Observatory of Belgium**, the world's official keeper of sunspot records, reports a monthly mean sunspot number of 72.4 for April 2013, also significantly up from March's 57.9. The low for the month was 53 on April 1. The high of 101 occurred on April 30. The mean value for April results in a 12-month running smoothed sunspot number of 58.6 centered on October 2012. Following the curve of the 13-month running smoothed values, a smoothed sunspot level of 83 is expected for August 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 125.0 for April 2013, up significantly from March's 111.2. The 12-month smoothed 10.7-cm flux centered on October 2012 is 119.2. A smoothed 10.7-cm solar flux of about 135 is predicted for August 2013.

**The geomagnetic activity as measured by the planetary-A index ( $A_p$ )** for April 2013 is 5. The 12-month smoothed  $A_p$  index centered on October 2012 is 7.4. Geomagnetic activity should be much the same as we have had during July. 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.

## Please Keep in Touch

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

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

Speaking of Facebook, check out the *Popular Communications* magazine fan page at <http://www.facebook.com/PopComm>. This is a great place for the *Popular Communications* 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, WPC7USA/NW7US  
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## A Simple, Inexpensive Receiving Antenna You Can Build for Chasing FM DX

By Richard Fisher,  
KPC6PC/KI6SN

**I**n *The Propagation Corner* this month, radio wave expert Tomas Hood, WPC7USA, writes about the excitement Sporadic-E can bring to the upper high-frequency and VHF spectrum — including broadcast FM, 88.1 to 107.9 MHz.

As Hood points out, part of the allure of E<sub>s</sub> is that it can, and does occur at just about any time of the day, especially during June, July, and August. Around the winter solstice, too.

If you've never tried FM broadcast band DXing, you're in for a treat. Sporadic-E can turn a *ho-hum* day on the band into a wild free-for-all, with stations fading in and out from the most unexpected and distant places.

You don't need a fancy receiver, hilltop location, or an elaborate antenna to get into the game. When the band is open, the simplest of setups will do just fine.

### Keeping It Easy, and Cheap

A small, directional antenna will serve you well — even with *you* as its tower and rotator. Why not try your hand at a simple, inexpensive half-wave folded dipole to get you started? (**IN DEPTH:** For details on the theory behind the folded dipole, visit <http://bit.ly/11ce4o3>. — KPC6PC)

You can move up the ladder, figuratively and literally, with more sophisticated outdoor arrays as the FM DX bugs sinks its teeth in.

This little antenna and feedline is made of speaker wire — the kind you can find at Radio Shack®, discount, and home improvement stores. Lamp cord will work just as well. Remember, we're keeping it simple and inexpensive.

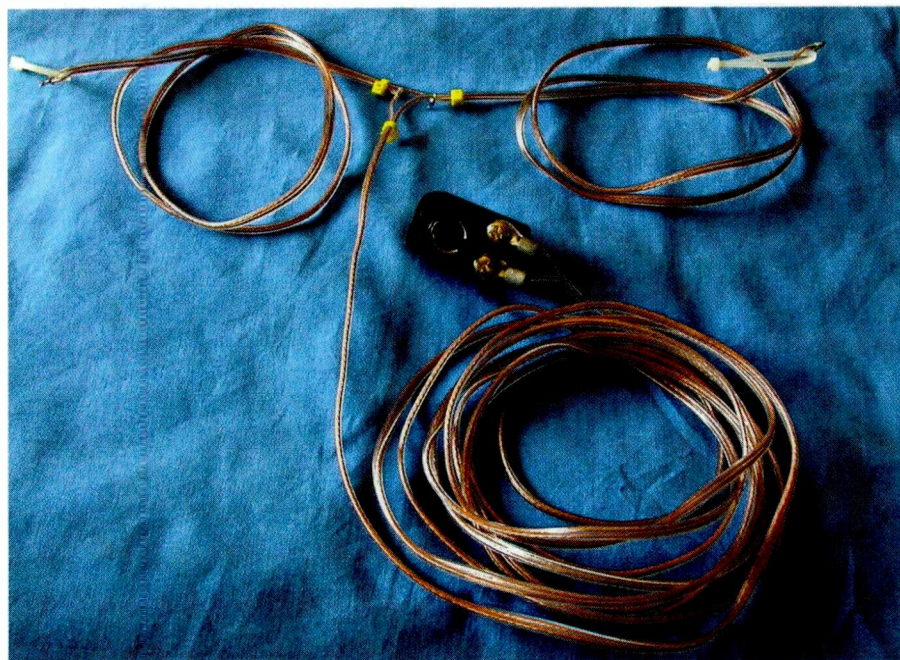
### Crunching the Numbers

Without getting too technical, here's how the dimensions were derived.

To determine the middle of the FM broadcast band, add together 87.5 and 107.9 — the bottom and top frequencies in megahertz (MHz):  $87.5 + 107.9 = 195.4$

Divide 195.4 by 2 to get the center FM frequency: 97.7 MHz. That's the frequency we'll target our folded dipole.

Using the half-wave dipole formula, we determine our antenna's length:  $468/97.7 = 4.79$  feet or 57.48 inches, which is 57-1/2 inches. That's how long our FM folded dipole will be. It works out to 28-3/4 inches per side. (**NOTE:** For a schematic diagram of this folded dipole and feedline, visit *Pop'Comm On the Web*, <http://bit.ly/hpaVyv>. — KPC6PC)



**Photo A.** Unfurled, this little 57-inch folded dipole, designed for the center of the FM broadcast band, can be your ticket to FM DXing — perhaps via Sporadic-E this month! (Photography courtesy of KPC6PC)

A feedline to your FM radio's antenna connection will be attached to the center point of the "folded" portion of the speaker wire.

## Gathering the Parts

Now that we've made our calculations, it's time to gather the materials.

- About 15 feet of speaker wire (about 5 feet for the folded dipole and 10 feet for the feedline)
- 2 solder lugs
- 5 plastic zip ties
- Basic bench tools (soldering iron, solder, wire cutters, X-ACTO® knife and so on)

## Putting It Together

With our "stuff" in hand, let's head to the homebrew bench and build this *bad boy*.

- Start by measuring 57-1/2 inches of speaker wire and cut it from the 15-foot total length
- Remove an eighth of an inch of insulation from the wire pair at each end
- Twist the bare stranded wires together on each end and solder
- Fold the 57-1/2-inch folded dipole in half and identify the center point with a marker
- Cut *one* of the speaker wires at that center point
- Separate the wires about a half inch on each side of that center point
- Remove the insulation from the end of each of those wires
- Take the remaining 10-foot section speaker wire, separate each end by about an inch and remove about a half-inch of insulation.
- Solder the wires at one end of the 10-foot section to the wires at the center point of the folded dipole

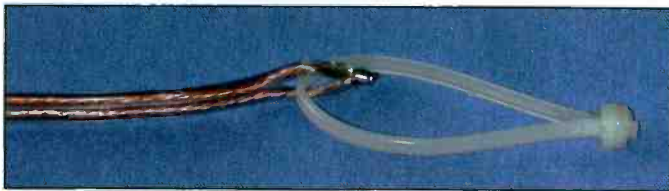


**Photo B.** Two-conductor speaker wire, such as this No. 22 stranded available from RadioShack®, (No. 278-1385) is the main ingredient for making a simple, cheap antenna for FM DXing.

- On the opposite end of the 10-foot section separate the wires and attach a solder lugs to each one.
- With zip ties, crimp the folded dipole and feedline at the points shown in the photograph. This will keep the speaker wires from further separating.
- Add a zip tie to each end of the folded dipole to slip your fingers through as you become the "tower" and "rotator" for your FM DX antenna.

## Whew . . . Final Touches

Yes, there are a lot of steps to building this antenna, but they move quickly. I think it took longer for the soldering iron to heat up than it took to assemble this folded dipole and feedline.



**Photo C.** Solder the ends of the 57-1/2-inch speaker wire section to form the "fold" in the dipole. A zip tie was added so the user can slip a finger through it while acting as "tower" and "rotator."



**Photo D.** This mini-pictorial shows how the feed line is soldered to each side of the horizontal folded dipole, and where zip ties were added to keep the wires from further separating.



**Photo E.** Solder lugs on the receiver-end of the feed line were connected to a standard antenna adapter (RadioShack® 15-1253 or similar) to make connecting to the KPC6PC Wave Radio a snap.

You'll see I added an antenna connector as an attachment for the solder lugs. This is so it can easily be attached to my Wave Radio, which for the moment is my FM DXing receiver.

OK, as WPC7USA points out in this month's *Propagation Corner*, Sporadic-E is just that — sporadic. So chances are you might not have a band opening at the time you're testing your new antenna. That's OK.

## Listening On the Band

Holding the antenna stretched out over your head, select an FM frequency in your area that is usually clear of an FM signal, or has a weak signal. (**NOTE: FM DXing this way counts as a stretching exercise in your daily routine. You'll be moving and shaking as you position the antenna for best signal.** — KPC6PC)

You should notice an improvement in signal strength over your FM receiver's internal or whip antenna. With the folded dipole outstretched, move slowly in a 360-degree circle and notice when the signal is strongest and when it gets weaker, or nulls.

During this exercise, you might hear two or three FM stations on the same frequency depending on which direction your antenna is pointing. Wait for a station ID, log it and move on to the next frequency up or down the FM band. You may be blown away by what you're hearing.

## New Procedure: Pop'Comm August 2013 Reader Survey

Your feedback is important to us at *Pop'Comm*. You'll notice there is no longer a pull-out card to fill in. Instead:

- **Cut out or photocopy** the *Pop'Comm Survey* card below.
- **Circle the appropriate numbers** corresponding to this month's questions.
- **Place it in a stamped envelope** and mail to: August Reader Survey, Popular Communications, 25 Newbridge Rd., Hicksville, NY 11801.

As always, 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 name, mailing address, and other contact information.**

Please write your response to our "comment" question on a **separate piece of paper** and include your name. Send it to us in the envelope with the Reader Survey card.

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

**For the broadcast band, shortwave or scanner listener, the radio is only part of the success formula. On a scale of 1 to 5, how would you rate the importance of your antenna?**

- 1, not that important . . . . . 1  
 2, less important than my receiver . . . . . 2  
 3, about equal in importance to my receiver . . . . . 3  
 4, a bit more important than my receiver . . . . . 4  
 5, extremely important . . . . . 5

**Generally, what has been the source of your antennas?**

- I design and build my own . . . . . 6  
 I build my own from the designs of others . . . . . 7  
 I buy used commercially-made antennas . . . . . 8  
 I buy new commercially-made antennas . . . . . 9  
 Nice people give them to me . . . . . 10

**Assuming you devote at least 5 percent of your time listening, how much of the rest of your communications hobby is devoted to antenna experimentation?**

- 75 to 95 percent . . . . . 11

If you're lucky enough to be testing during a Sporadic-E opening, *good for you!* Have a piece of paper and pencil handy to log FM DX stations as quickly as you can. As Hood points out, openings can last from a few seconds to hours. You never know what you're going to get.

Keep in mind, too, that FM signals can reflect off of passing aircraft. So if you're fortunate to be in an area with lots of commercial airline traffic, have a ball.

## Next Month

We'll report findings of our experimentation with this simple antenna in Southern California at KPC6PC. And we hope you do the same from your location!

## Are You an FM DXer?

If you like chasing distant stations between 87.1 and 107.9 MHz, we'd like to hear from you. What do you use for equipment, antennas, and accessories? What are your FM DXing strategies? What types of propagation do you most depend on? What are some of your best FM DX catches, and how far away were they from your listening post?

Please write to: <PopularCommunications@gmail.com>. Thanks in advance for sharing your expertise!

— Richard Fisher, KPC6PC

55 to 74 . . . . .	12
35 to 54 . . . . .	13
15 to 34 . . . . .	14
1 to 14 . . . . .	15
0, zilch, none . . . . .	16

**Do you consider communications monitoring a technical hobby?**

Yes . . . . .	17
No . . . . .	18

**What company or companies do you consider leaders in antenna design for the communications hobbyist? (Please comment on a separate piece of paper, and be sure to include your name.)**

## Take This Reader Survey Online

You can now participate in this reader survey via the Internet. Simply link to <<http://svy.mk/18NOFL8>> and fill out the *August 2013 Pop'Comm 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 **Dan Holtz, WPEØESQ**, of **Cherokee, Iowa**, who attached a colorful return address sticker featuring his old *Popular Electronics* Short-Wave Monitor ID sign, and CB callsign — KNH 6455. *Congratulations, Dan! Please keep us posted on your monitoring activities.* — KPC6PC

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# Burgeoning 'Radio Puntland' Reaches Out from Northeast Somalia

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

*"It has already been testing on and off, using 13800 and occasionally 6160, although specific times haven't, to my knowledge, yet been announced."*

**T**here is an arid area of Northeast Somalia that declared itself independent back in 1998. The self-declared "state" calls itself "Puntland" and now has its own radio station, known as Radio Puntland. (*NOTE: Please resist the urge to nickname it "Radio Fourth Down."* – WPC9GLD)

And I probably should keep a basket of punctuation marks handy for use around the word. "Puntland" wasn't seeking recognition from other countries around the world. It simply wanted to separate itself from the violence in Somalia, which, in the long run, ended up crossing Puntland's doorstep anyway. Its citizens subsist on livestock and fishing, not to mention serving as a center for piracy. The remaining state income comes from its overseas workers who represent an important part of the area's income.

Radio Puntland has already been testing off and on, using 13800 and occasionally 6160, although specific times haven't, to my knowledge, yet been announced. The new transmitter will eventually operate with 20 kilowatts from the Puntland capital, Garowe. As yet, the North American Shortwave Association (NASWA) has not added Puntland to its country list and I expect it will be some time before that status is achieved, if ever.

## Return of 'Radio Voice of Justice'

Adalatin Sasi Radiosu, which translates to "Radio Voice of Justice," is back again from Stepanakert in Nagorno-Karabakh (Azerbaijan). Check page 89 of the 2013 *World Radio-Television Handbook* (WRTH) for its listing under Azerbaijan as "Mountainous Karabakh," a breakaway region of that former Soviet country. Active just briefly a



The Voice of Vietnam confirmed a broadcast via Austria with a new look logo.  
(Courtesy of Rich D'Angelo)

few years back The Voice of Justice has returned with a new transmitter running 10 kilowatts, (not the 5 kilowatts shown in the WRTH).

It's operating on 9677 in Azeri, seemingly from around 1400 and perhaps again at 0600 — although not daily. Nagorno-Karabakh has separate country status on the NASWA country list. You can download the complete country list free at <<http://www.naswa.net/list>>, then look for it listed under "Asia." With a 10-kilowatt power level on that 31-meter band frequency, there is less than a full guarantee you'll hear this one — but, "nothing ventured . . ."

## Persistence Pays Off in Radio Asena QSL

Speaking of nothing ventured, congratulations go to Bob Brossell who was finally able to pry a QSL from opposition broadcaster Radio Asena. It took a dozen or so reports but he finally got an apologetic reply from the radio's director' Mr. Amanuel Eyasu, who was impressed with Bob's determination and his refusal to give up.

Mr. Eyasu says he'd "be happy to respond" to the many such requests he receives but his duties (he is a volunteer) leave him little extra time for such replies. As I've said so many times' when it comes to the subject of your QSL efforts: "never give up!"

## August's Newslines

**Novaradio Relogio** — you might remember it as **Radio Relogio Federal** from way back — is active again on 4905 from Rio de Janeiro. I don't know its current schedule, but when it was last active in early summer of 2008 its hours were 0730 to 0300. I wonder how this semi-commercial time station knows when it's time to sign-on?

**Radio Gazeta** from Sao Paulo has reactivated its 15325 frequency and has been heard with religious programming in PP around 1800 and later.

Another apparently new opposition broadcaster is **Radio EYSC** (Eritrean Youth Solidarity for Change) broadcasting in Tigrinya from Wertachtal on 11810 Tuesdays and Fridays from 1730-1800.

Transmissions of **Radio Taiwan International** and **KBS World Radio**, once relayed

from the Babcock/BBC Skelton site on 3955, have now been transferred to Wooferton.

The RFI/TDF Montinsery site in French Guiana was scheduled to be shut down this past April. In addition to **Radio France International**, the action has affected **Radio Japan**, which used the French Guiana site for transmissions to North America, which have now ended. *Good grief!*

Mexico's **Radio Mil**, 6010, has returned after a year of silence, but is suffering QRM from the co-channel Colombian.

English from the **Voice of Mongolia** has been rescheduled to the inconvenient hour of 0900-0930 on 12085

**ZBC Radio**, Zanzibar (11735) is back on the air after a brief absence, noted by G.I.G. reporter Mark Coady.

### 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



Districts and divisions of Puntland (Somalia).

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by Mark Francis, KI0PF



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post? It's your turn to grace these pages! (SFX: foot tapping impatiently.)

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

**ALASKA**—KNLS, Anchor Point, 7355 at 1220 airing *Focus on the Family* and 1234 on the Bible's teaching on evil spirits. (Sellers, BC)

**ANGUILLA**—University Network, 6090 at 0515 with Melissa Scott, 11775 at 1300 with Pastor Scott. (Maxant, WVA)

**ALBANIA**—Radio Tirana, 9850 at 0144 with W and domestic news, ID at 0149. (Coady, ON)

**ALGERIA**—Radio Algerienne, 9390 with Qu'ran at 2010. (Brossell, WI)

**ARGENTINA**—Radio Argentina al Exterior, 11710.8 at 0200 with SS news f/by *The English Connection* opening with news. (Coady, ON) 0202 speaking of damage to several key cities due to recent flooding. (Rippel, VA) 0204 with W doing sign on greetings and a pgm preview. (Sellers, BC)

**ASCENSION ISLAND**—BBC-South Atlantic Relay, 15400 at 1820 discussing African politics. (Fraser, MA) 1955 with *In the Balance* on Capitalism vs. Communism. (Parker, PA) 17830 at 1703 with world news. (Brossell, WI)

**AUSTRALIA**—Radio Australia, 6150 at 1330 with *Saturday Night Country* songs and an interview. (Sellers, BC) 6150-Shepparton at 0906 with talk by M/W in Tok Pisin, sports at 0918 and an ID, //9710; 9475 at 0842 with features, ID, pgm promos, and news at 0900. (D'Angelo, PA) 6150 at 1146 with *PM* news magazine. Fair under Cuba, 9965 via Palau at 1327 in Mandarin with an interview, W with ID at 1328, //11660, 19000 at 0247 with interview on changes to Australia's corporate taxes and policies, and 21740 at 0006 with small talk and into jazz music. (Coady, ON) 15400-Shepparton at 2157 with news headlines to 2300 close. (Brossell, WI) 11945 on children's rights, 12065 (nf) with news at 1201, and 15515 on PSP-COPD illness. (Maxant, WV)

Northern Territory Shortwave Service, 2484-Katherine at 1006-1040 but only with threshold audio. (Wilkner, FL) 4835-VL8A, Alice Springs, at 1336 with a W hosting country and bluegrass things. (Sellers, BC) 1300 with a world news bulletin. (Brossell, WI)

HCJB Global, 15340-Kununurra at 1228 with its IS and EE sign on. (Handler, IL) 15400 at 1235 with gospel songs. (Maxant, WV)

**AUSTRIA**—Adventist World Radio, 11955-Moosbrunn at 2126 with W closing transmission f/by music and carrier termination. (D'Angelo, PA)

**BANGLADESH**—Bangladesh Betar, 15505 with IS at 1358 and sign on at 1400. IS also at 1513 and sign on in Hindi at 1514. (Handler, IL) 1423-1430\* with local vocals

## Help Wanted

We believe the Global Information Guide — after month — offers more logs than any other monthly SW publication! Approximately 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 me at <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*

and W in (I) Urdu, closing down with ID and anmts. (D'Angelo, PA)

**BELARUS**—Radio Belarus (t), 11730 at 2257-2300\* with W vocal. Terminated at 2300 so I missed any s/off ID or anmts. (D'Angelo, PA)

**BOLIVIA**—Radio Mosoj Chaski-Cochabamba, 3310 heard at 1010 in Quechua. (Wilkner, FL)

Radio Yatun Yura-Yura, 4717 in SS at 0136 with M host and another reporting on phone. (Sellers, BC)

Radio Lipez-Uyuni, 4785.8 at 0950 in SS. (Wilkner, FL)

Radio Santa Cruz-Santa Cruz, 6135 in SS at 0116 with many IDs and ads, including one for a bank, plus music bridges. (Sellers, BC) 1000 with SS ID. (Wilkner, US)

Radio Panamericana-La Paz, 6105.4 at \*1049-1110 in SS, but weak and not heard daily. (Wilkner, FL)

**BOTSWANA**—VOA Relay, 4930 Mopeng Hill at 0300 with OC, ID and IS loop before the hour and into *Daybreak Africa* with African-accented M and news, 15580 at 1922 with *International Edition*. (Coady, ON) 12080 in FF at 2017 and 15670 in PP at 1825. (Brossell, WI)

**BRAZIL**—Radio Municipal-San Gabriel (p), 3375.1 at 1000-1020 with M and music. (Wilkner, FL)

Radio Caiari-Puerto Velho, 4785 at 1010 with partial ID and rooster crows. (Wilkner, FL)

Radio Clube do Para-Belem, 4885 at 0210 with M talk. (Parker, PA)

Radiodifusora Roraima-Boa Vista, 4878.5 at 0932 with Brazilpops, M talk, more vocals and later listener phone calls. (D'Angelo, PA) 0954 with Brazilpops and ballads, M DJ, ID, and promos at 1000. (Coady, ON)

Radio Inconfidencia-Belo Horizonte, 6010 with M who sounded like a preacher. //15190. (Sellers, ON)

Voz Missionaria-Camboriu, 9665 with M talk over soft music. (Parker, PA)

Radio Cancao Nova-Cachoeira Paulista, 9675 heard at 0415 with '70s soul sounds. (Parker, PA)

Radio 9 de Julho-Sao Paulo at 0357 with M ancr and slow ballad. (Parker, PA)

Radio Nacional Amazonia-Brasilia, 11780 at 0331 with lively anmt for upcoming music pgms and "Nacional" ID. Hi-Fi-type audio. (Parker, PA) 2214 with talks. (Brossell, WI)

Radio Brazil Central-Goiania, 11815 at 0234 with Brazilian pops hosted by M with talks, IDs, jingles. W with news at 0256, //4985 was covered by noise. (D'Angelo, PA)

**CANADA**—Bible Voice Broadcasting, 15215 via Wertachtal in EE at 1734 with old time hymns. (Parker, PA)

CFRX-Toronto, 6070 on an upcoming exhibition there. (Maxant, WV)

CKZN-St. John's (Newfoundland), 6160 on imports and exports. (Maxant, WV)

CHU-Ottawa, 7850 at 0520 and 14670 at 1305. (Maxant, WV)



Here's a recent QSL for China Radio International's English service from Baoji received by D'Angelo.

**CHAD**—Radio TV du Chad, 6165 at 2234 with Afropops and hילה songs and M DJ in FF. (Coady, ON)

**CHINA**—China Radio International, 9720 at 1202 with talks in (l) Tagalog. (Brossell, WI)

China National Radio, Xyzang PBS, 4920-Lhasa at 1223 in (l) Tibetan, Voice of the Strait; 4940-Fuzhou at 1225 with talks in CC; CPBS-Beijing, 6030 at 1312 with talks in CC; and 7265-Beijing in CC at 1243. (Brossell, WI) 11710-Shijiazhuang at 2216-2240 with CC talks and their familiar theme music, ID at 2230. (D'Angelo, PA)

**COLOMBIA**—Alcaravan Radio-Puerto Lleras, 5910 at 0235 with M SS ancr, music, and formal ID at 0333, f/by Latin vocals and another ID at 0345. (D'Angelo, PA)

**CUBA**—Radio Havana Cuba, 5040 at

2336-0000 with EE pgm on stamp collecting and a science and technology feature. Into SS pgmng at 0000. (D'Angelo, PA) 11760 in SS with a Raul Castro speech and a less than enthusiastic applause. (Parker, PA) 13780 at 1400 with ID and news, then a fiery speech by an irritated M. (Fraser, MA)

**Diego Garcia**—AFN/AFRTS, 12579u at 1121-1141 with music and DJ. (Handler, IL) 2300-0100 with stock market news and a vocal. (Wilkner, FL)

**DJIBOUTI**—Radio Djibouti, 4780 in AA at 0321 with M and apparent religious talk. Fair, with CODAR and UTE QRM. (Coady, ON)

**ECUADOR**—HCJB, 11920 via Nauen with W in PP f/by an accordion ballad. (Parker, PA)

**EGYPT**—Radio Cairo, 9965 at 2251 with

M/W talks accompanied by some instl music. Booming signal but almost no audio. (D'Angelo, PA)

**ENGLAND**—BBC, 11855 via Moldova in Farsi at 0340. (Parker, PA) 11890-Thailand Relay on Egyptian democracy at 1417. (Brossell, WI) 12095-Oman Relay at \*0259 open with "BBC World Service, the world's radio station," time pips, and news, f/by *Newsday* at 0306. (D'Angelo, PA) 0300 with M/W with pgm promos, then man with BBC news; 15755-Thailand Relay with *Business Matters* at 0345. (Coady, ON) 15310-Oman Relay at 0236 with two M discussing Iran. (Sellers, BC) 15520 with sports pgm. (Maxant, WV)

**ERITREA**—Voice of the Broad Masses, 4700 at 0307 with the 2<sup>nd</sup> pgm, HOA male and lively W vocals; 7175 in local language at 0256 with IS and ID loop to 0301 then M talk and apparent news, then HOA vocals at 0303; 9705 also 2<sup>nd</sup> pgm at 0300//4700 in apparent Amharic with an IS, fanfare, and apparent news, into HOA vocals at 0302. (Coady, ON)

**ETHIOPIA**—Radio Ethiopia, 9705 Gedja in vernacular at 0410 with indigenous music. (Parker, PA) 1240 on Italian society. (Maxant, WV)

**EQUATORIAL GUINEA**—15190 at 1650 with a sermon. (Brossell, WI)

**FRANCE**—Radio France International, 15300 in FF with a Bob Marley song. (Parker, PA)

**GABON**—Africa No. One-Moyabi, 9580 at 2320 in FF with W ancr and pops. Heavy QSB. (Parker, PA)

**GERMANY**—Deutsche Welle, 9470 on truth in news reporting. (Maxant, WV) 12070-Rwanda Relay in (l) Hausa at 1826. (Brossell, WI) 15275-Rwanda Relay in FF at 1753. (Parker, PA)


**GREECE**—RS Makedonias, 4750 at 2234 with Greek music and m ancr with GG talk, Closedown and NA at 2252. (D'Angelo, PA)

**HAWAII**—WWVH, 5000 at 1122 with W time anmts, as strong as WWV. (Coady, ON)


**INDIA**—All India Radio, 6030-Delhi in (l) Hindi at 1249. (Brossell, WI) 9445-Bengaluru, 2208-2230\* with M ancr with EE commentary, f/by ID for the General Overseas Service, W with a feature on Indian culture, M with closedown ID, and anmts at 2229. (D'Angelo, PA) 9705-Panaji (Goa), at 2329 with W and sub-continental vocals. (Coady, ON) 11620-Bengaluru in Urdu at 0245 with "Bollywood" music at 0245, 11740-Panaji (Goa) with M in Dari and "Bollywood" music at 0323, 11985-Delhi in Tamil at 0020. Strong carrier but audio washed out by conditions. (Parker, PA) 11670-Bengaluru with general overseas service at 2228, closing EE by W; 13605-Bengaluru at 2443 M ancr and into music; and 13670 at 1201 in (l) Tamil to sign off at 1215 when they went into (l) Telugu bcst. (Handler, IL) 11670-Bengaluru at 2204. (Brossell, WI)

Athmeeya Yatra Radio, 15235 at 1517 with talks in (p) Hindi. (Brossell, WI) 15390-

**DXERS UNLIMITED**  
**ONLINE!**



*Hear Arnie's welcome message*



*The Sunspots Are Back!*

Re: Reply to Reception Report: Radio Havana Cuba, on 23 March 2013 from 2336 to 0000 UTC on a frequency of 5,040 kHz

From Prof. Arnaldo Coro Antich [coro@enet.cuhide](mailto:coro@enet.cuhide) details

To [rdangelo3@rdangelo3@aol.com](mailto:rdangelo3@rdangelo3@aol.com), [rdangelo@firstenergycorp.com](mailto:rdangelo@firstenergycorp.com)

Dear Richard:

Thanks for the nice report of our Saturday evening local time English program on 5040 kHz, our only 60 meters Tropical Band frequency so far.

The 5040 kHz transmitter is running 100 kiloWatts and uses an NVIS antenna system, that meaning that the antenna is close to the ground and radiates mostly at a very high departure angle to provide the Near Vertical Incidence Skywave propagation mode for short distance coverage, mainly to the Cuban archipelago and nearby Antilles.

You can pick us with a much more strong signal on 6000 kiloHertz later in the evening when we beam a signal to the East Coast of North America with a 250 kiloWatts transmitter using a high gain 4 X 4, 0.5 curtain array, beaming to 010 degrees at the center of the antenna's horizontal radiation pattern.

Our 6165 kiloHertz signal is beaming to an azimuth of 340 degrees, with another 100 kiloWatts transmitter and a similar curtain array that has the center of the beam to the Central North America. It is very interesting to learn that a minor vertical departure angle lobe of the Tropical Band Antenna was reaching you so well at this time when the daily solar flux was barely 100 units. In a few weeks, May 1st, our station will be celebrating its 52nd year on the air, and for me it is a very moving moment, because as a very young radio technician I was involved in the installation and start up of our station from the beginning of 1961, when we tested the Onda Corta Experimental Cubana on both 6000 kiloHertz and 11760 kiloHertz, using a Gates Radio Company 1 kiloWatt AM short wave transmitter and a half wave dipole antenna for the 49 meters band frequency, and a Brown Boveri 10 kiloWatts short wave transmitter with an array of two phased dipoles on 11760 kiloHertz. Later that year we were able to install and start up a Brown Boveri 100 kiloWatts transmitter and also put up several antennas, including rhombics beamed in several directions. We did not use curtain arrays of dipoles at that time!!!

At this moment I enjoy very much sharing my time between engineering and journalism, as the Senior Advisor/Consultant to the Director General of the station and the senior science, technology and the environment journalist of RHC. Our station has moved gradually towards incorporating the present day digital technologies, and we have a website <http://www.radiohc.cu> that is available in several languages.

Due to the lack of bandwidth due to the US technical, financial, economic and travel blockade, our streaming audio has to be restricted to a minimum possible bit rate, and despite that sometimes its reception is not as good as it should be. I must add that your name has been seen by yours truly in many short wave radio related publications.

Yours truly  
Prof. Arnaldo Coro Antich \* AKA Arnie Coro \*  
Senior Advisor/Consultant to the Director General  
Frequency Manager  
Senior science and technology editor  
Radio Havana Cuba

P.S. Maybe one day you will like to learn more about the history of our station and its role in the international broadcasting scene.

Radio Havana Cuba's Arnie Coro is featured on this friendly reply to D'Angelo's reception on 5040.



Paul Gager (Austria) got this nice QSL from the Voice of Turkey.



Adventist World Radio issued this QSL card, commemorating its first broadcast of the Radio Monitor's international program, now called "Wavescan" hosted by Adrian Peterson.

Nauen at 1344 ending pgm with ID, sked, another pgm hosted by M/W. A change over from the Tanghul and Thadou-Kuki languages. (Sellers, BC) 1519 in (I) Tamang with M in religious talk giving a postal address in Kathmandu, Nepal. (Coady, ON)

**INDONESIA** — Voice of Indonesia, 9526 at 1302, opening EE pgm at 1305 with ID, frequencies, pgm line up and news. Also heard on a Saturday at 1324, but no EE today, just Mandarin. (Sellers, BC)

Radio Republik Indonesia, 3325-Palangkaraya (Kalimantan), at 1312 in II with W in telephone interview; 1314 with a promo. Good and getting stronger, 4750-Makassar (Sulawesi) at 1335 with M on phone to W, laughter, singing, and light hearted talk; 4870-Wamena (Irian Jaya), at 1245-1302 with soulful contemplative songs in II; and 7275-Serui (Irian Jaya), (t) at 1148 with phone talk. Weak under ham QRM. (Sellers, BC)

**IRAN** — Islamic Republic of Iran Broadcasting (Voice of Justice), 11660-Zahedan in AA at 0250 with Qu'ran recitations. (Parker, PA) 13650-Sirjan at 0344 with W and EE news, f/by ID and commentary. Fair signal level, but deteriorating by 0410. (D'Angelo, PA) 15450 in (I) Malay at 1250. (Brossell, WI)

**JAPAN** — Radio Japan, 11795 via Palau with EE news at 1402, //15735. (Sellers, BC) 15375 via Uzbekistan at 1403 with M/W and

news in EE, //11705. (Sellers, BC & Coady, ON) 11665 at 2202 in JJ, 11945 via France in JJ at 1822 and 15190 via (now closed) French Guiana at 1208 on nuclear power plants there. (Brossell, WI)

Radio Nikkei-Japan, 6055 at 1426 with jazz, 9595 at 1211 in JJ with piano instls and W with ID at 1229, into JJ talk. (Coady, ON)

**KUWAIT** — Radio Kuwait, 15540 at 2055 with pops and M with s/off anmts at 2058, f/by marching band anthem at 2059, time pips, and "Huna Kuwait" ID at 2100 then into AA until finally off at 2115. (Coady, ON) 2002 in EE with pops and a safety anmt from the "Public Relations and Moral Guidance Department." (Parker, PA) 11750 at 2310-0000\* with M in AA talks and local music, ID, and closedown at 2359. (D'Angelo, PA)

**LIBYA** — Radio Libye, 11600 at 2022 with AA talks. (Brossell, WI)

**MALAYSIA** — Sarawak FM, 9835 (p) at 1145 in Bahasa Malaysia with W DJ and local ballads, folk songs, then possible Qu'ran recitations at 1158. M with talk at 1200 and back into a mix of ballads. (Coady, ON) 1233 with M in Bahasa Malay talking about Islam. (Sellers, BC)

**MYANMAR** — Myanmar Radio, 7200.1 in Burmese at 1124 with M and talks, SEA vocals, and W with possible ID. Weak with ham QRM. (Coady, ON)

**NEW ZEALAND** — Radio New Zealand International, 9655 at 1100 with time pips, news; 9700 at 0956 with M doing pgm promo, time pips to 1000 and "Radio New Zealand News at Eleven;" 15720 at 0300 with time pips and Pacific region news. (Coady, ON) 9700 at 0824 with *Dateline Pacific* from BBC, ID at 0857. (D'Angelo, PA) 9700 at 1010 with an eulogy for Margaret Thatcher. (Fraser, MA) 11725 at 0515 on politics and the green party; 15720 on rebuilding Christchurch and also rain on the south island. (Maxant, WV)

**NICARAGUA** — El Pascador Preacher, 8989u at 2305 with SS religion. (Wilkner, FL)

**NIGERIA** — Voice of Nigeria, 15120 at 0505 with letters pgm. (Maxant, WV)

**NORTH KOREA** — Voice of Korea, 9335 at 1315 but poor and just above noise level. (Maxant, WV) 9435 at 1308 in EE with choral, M with ID and news, //11710. (Sellers, BC) 11535 in (I) Mandarin at 2245. (Brossell, WI) 11710-Kujang at 1146 in FF to sign off including frequencies at 1156, re-open in KK at 11200, //11735 and 15180. (Handler, IL) 1710 at 1315 with news by a W then into martial music with a W host. (Fraser, MA)

**OPPOSITION** — Democratic Voice of Burma, 11595 (via Armenia) at 0007-0029\* with M/W in Burmese. 0024 with M, apparent ID, and closedown routine. (D'Angelo, PA)

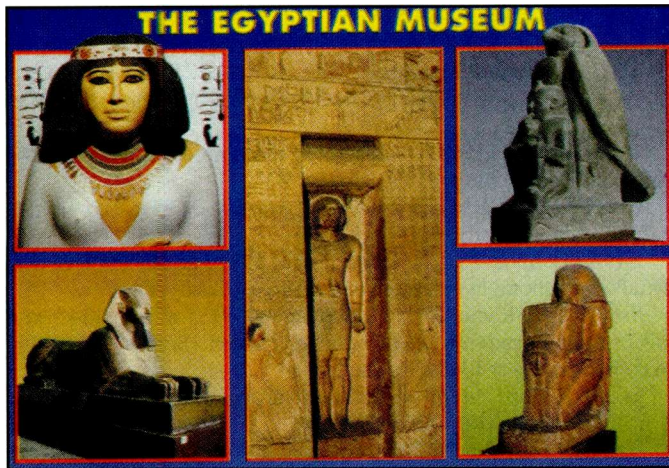
Voice of Oromo Liberation Front (Wertachtal to Ethiopia), 15315 at 1832-1900\* with talks in Hausa and mentions of Botswana and

## This Month's Winner

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

This month's prize winner is **Rich Parker** who is now enjoying Fred Osterman's book *Buying a Used Shortwave Receiver (a Market Guide to Modern Shortwave Radios)*, published by Universal Radio, your complete source for hobby radio equipment — from the antenna all the way down the line — Universal has it all. Check them out at <<http://www.universal-radio.com>>. You can order a print catalog right there at the site or, if you happen to be in the Columbus, Ohio, area you're welcome to visit them at 6380 Americana Parkway, Reynoldsburg, Ohio, and see it all in person.





One of Radio Cairo's QSL highlights items in the Egyptian Museum. (Courtesy of Michael Yohnicki)

Africa, SFX of cow mooing, and upbeat indigenous music. Ended with canned ID in Hausa over drumming and P.O. address. (Parker, PA)

Voice of Iranian Kurdistan (to Iran), 4869.7 (p) at 0259 in Kurdish with repeating woodwind tune and brief talk at 0230, then folk vocals to 0233, M with brief talk and Qu'ran. (Coady, ON) 4870 at 0230 battling with a jammer. (Wilkner, FL)

Fursato No Kaze, (Taiwan to North Korea), 9950 at 1334 (p) with phone interview, W with brief talk and into W chorale. (Coady, ON)

**PAKISTAN**—Radio Pakistan, 15265-Islmabad at 1741 with M in Urdu and Pakistani music. (Parker, PA)

**PALAU**—T8WH, 9930 at 1324 with a sub-continental accented preacher, another such at 1328, pgm close and ID for World Harvest Radio. (Coady, ON)

**PERU**—Ondas del Huallagua-Huabuco, 3330 at 1005 with M and music. (Wilkner, FL)

Radio Bethel-Arequipa, 2330-0000 but not heard in a while. (Wilkner, FL)

**PHILIPPINES**—Far East Broadcasting Co., 9400 monitored at 1107 in Mandarin with M talk over W ballad, M/W on phone; 9795 at 1114 in (I) VV with M/W talk, orchestral hymn, and female vocals at 1116. (Coady, ON) 11985 via Ascension with talks in (I) Pulaar. (Brossell, WI)

**PIRATES**—XFM, 6950 at 0255 with pops and ID: "Broadcasting

in C-QUAM stereo from the United States to the world, this is XFM Shortwave." (Coady, ON)

Radio Appalachia, 6935.3 at 0102 with M and live audience, apparent Grand Old Opry song. Off suddenly at 0107. (Hassig, IL)

Wolverine Radio, 6925u at 0129 sign on with test, then big band and swing music, blues, and songs about the wind. (Hassig, IL) 0240-0258 with rock and various vocals and M ancw with station IDs. FAX xmsn just prior to close at 0257. (D'Angelo, PA)

Rave on Radio, 6925u at 0117 with rock, old ads, and pops. I emailed them at <raveonradio@gmail.com>. (Hassig, IL)

Grizzly Bear Shortwave, 6930 at 0150 with a song about a grizzly bear and old blues songs. (Sellers, BC) 6935u at 0230 with M and ID and into obscure pops. (Rippel, VA)

Power Line Radio (Netherlands), 6305 heard at 0115-0200\* with pops and lots of great IDs. Reports to <radiopi@hotmail.com>. (Rippel, VA)

Dit Dah Radio, 6925u at 0011-0036 on with what sounded like a Dylan number, Morse code, heavy metal, more Morse, "calling CQ," SSTV, and FAX transmissions. (Hassig, IL)

WPON, 6925 at 0056-0133 poor and weak with bits of talk about government activities, rap songs, and siren SFX. (Hassig, IL)

Radio Cinco de Mayo, 6925u with Mexican rancheros and SS ID f/by rock and polkas. (Hassig, IL) 0022 with M and SS IDs and email as <radiocincodemayo@gmail.com>, hosting pgm of Mexican hat dance things. (D'Angelo, PA)

Data Fox Radio, (o) 6930.9 at 0001 with M/W with some sort of drama discussion f/by some vocals. ID at 0014 and gmail address. (D'Angelo, PA)

**ROMANIA**—Radio Romania International, 6030 in FF at 2104. (Brossell, WI) 7430 at 2208 on recycling toys for a children's hospital in Bucharest. (Coady, ON) 9770-Galbeni in RR at 0400 with time pips and talks in RR and 11955-Tiganesti on a film festival at 0024. (Parker, PA) 13800 at 2035 with news, travel pgm, music, and sports. (Erickson, MA)

**RUSSIA**—Voice of Russia, 4960 via Tajikistan at 1310 talks in (I) Pashto/Dari. (Brossell, WI) 9560-Novosibirsk at 1123 with W hosting *Music and Musicians* pgm. (Coady, ON) 9645 via Moldova at 2244 criticizing non-traditional marriage. (Parker, PA) 9900 via Armenia at

## In Times Past

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

Radio Luxembourg, Jinglyster, on 6090 at 0440 in GG and English on November 21, 1971

Rich D'Angelo got this QSL from Bayrak Radio Television in Iskele, (Turkish Republic of ) Northern Cyprus, received by Rich D'Angelo for his December reception on 6150.

1411 with discussion on former Prime Minister Margaret Thatcher, //11530, 12030, and 15670; 15670-Novosibirsk with classical music, VOR promo, ID, and then frequencies, but very poor. (Sellers, BC)

**SAO TOME**—VOA Relay-Pinheira, 4960, // 9885 via Botswana at 0400 with OC, ID, IS, and *Daybreak Africa*, African-accented M with news and pgm hilights. (Coady, ON) 9885 in FF at 2020. (Brossell, WI)

**SAUDI ARABIA**—15435, //15225 at 1601 in AA with M and apparent news headlines, brief fanfare and into Copacabana-type music bridges and M talk. (Coady, ON) 1700 with AA talks. (Brossell WI)

**SEYCHELLES**—BBC-Indian Ocean Relay Station, 12095 with world news at 1630. (Brossell, WI) 15420 at 1740 with *Sportsworld*. Weak and noisy. (Coady, ON)

**SINGAPORE**—BBC-Far East Relay, 11685 in Burmese at 1411. (Brossell, WI)

**SOLOMON ISLANDS**—Solomon Islands Broadcasting Corp., 5019.9 in (p) Tok Pisin at 1054 with M and barely discernible talk, then island music from 1059 to 1102 when they joined Radio Australia news, (Coady, ON)

**SOMALIA**—Radio Hargeisa, 7120 at 0330 in Somali with marching band anthem, ID, and talk f/by Qu'ran recitations. (Coady, ON)

**SOUTH AFRICA**—Channel Africa, 7230 at 0535 on Mandela's health. (Maxant, WV) 15235 in FF at 1633. (Brossell, WI)

Radio Sonder Grense, 3320 at 0315 in Afrikaans with classical music and M host. (Coady, ON)

**SPAIN**—3350-Costa Rica Relay at 0431 with SS and pops, ID by W, and M/W talk in SS. (Coady, ON) 15385 at 1440 in (I) Sefardii. (Brossell, WI)

**SRI LANKA**—Sri Lanka Broadcasting Corp., 9770 at 0126 with a choral song, children's choral anthem, and M at 0130 sign on with ID, TC, and into oldies songs; 11905 in (I) Tamil at 0138 with W talk, sub-continental vocals at 0143; 15745 at 0126 with choral song, 0130 M opening the "All Asia Service" and into an oldies song. (Coady, ON)

**SOUTH KOREA**—KBS World Radio, 15575 at 1349 listing popular features they had broadcast over the past year. (Coady, ON)

**SUDAN**—Radio Omdurman, 7205 at 0303-0321 with M and news in AA, f/by music pgm. Poor and mainly covered by hams. (D'Angelo, PA)

Radio Miraya, 11560 at 0410 with M and slow, deliberate EE news, singing ID, and some promos. (Coady, ON)

**SURINAME**—Radio Apinte, 4990 heard at 0434 in DD with W talk, W vocals. (Coady, ON)

**SWAZILAND**—Trans World Radio, 4775v at 0427 in GG with M talk, into choral hymn, more talk at 0429. (Coady, ON)

**TAIWAN**—Radio Taiwan International, 9735 in II at 1245 with talk over music and frequent mentions of Taiwan. (Sellers, ON) 11785 in (I) Indonesian at 1445. (Brossell, WI)

Sound of Hope, 11765 at 1635 in Mandarin with W ballad, M talk over soft piano. (Coady, ON)

**THAILAND**—Radio Thailand, 9390 at 1230 in EE with fanfare, sign on, sponsor, and W with news. (Sellers, BC) 15275 at 0200 with ID for WCNA, W with news. (Coady, ON)

**TURKEY**—Voice of Turkey, 9515 at 0304 with W and news. (Coady, ON) 9665 on their refuge problem at 0440. (Maxant, WV) 9830 at 2250 with W reading European news and 9875 at 1855 with a letters pgm. (Fraser, MA)

**USA**—Voice of America, 5745-Greenville at \*0230-0258\* with *Radio Gram* pgm, (D'Angelo, PA) 9510-Philippines Relay at 1251 with news story, markets report. Shown as Sat/Sun only. (Sellers, ON) 11750-Philippines Relay at 1238 with *International Edition*. (Coady, ON)

Radio Free Asia, 9355-Northern Marianas in (I) Mandarin at 1707; 9605-Northern Marianas in Mandarin at 1613; 11945-Northern Marianas in Mandarin at 2021; 11995 at 2135 (I) Korean at 2135; and 12035 in (I) Uighur at 1628. (Brossell, WI) 9455 via Northern Marianas in CC at 2242 with /W talks. (Parker, PA)

Radio Farda, 9760 via Lampertheim at 0406 with dance music. (Parker, PA) 15690 via Germany in (I) Farsi with lively ME vocals at 1605. (Coady, ON)

Radio Marti, 9565-Greenville at 2314. (Parker, PA)  
Adventist World Radio, 9770 in Dyula at 2017; 15270 in (I) Punjabi at 1514; 15480 via South Africa in AA at 2020. (Brossell, WI)

Radio Payam-e-Doost (via Moldova to Iran), 7460 at 0246 with W in (I) Farsi, music at 0249, more talks at 0304. (D'Angelo, PA)

WINB, Pennsylvania, 9265 with religious talk heard at 2235. (Parker, PA)

KJES, New Mexico, 7555 at 0210 with SS talk, children reciting and W with ID prior to close at 0230\*. (D'Angelo, PA) 11715 with children talking about beasts and birds. (Maxant, WV)

WEWN, Alabama, 15610 with a mass service. (Maxant, WV)

**VATICAN**—Vatican Radio, 0645 in AA at 0422 with talks and music bridges. (Parker, PA) 11625 at 2025 urging people to share the love of God. (Brossell, WI) 15570 with IS at 1729 and opening in EE. (Handler, IL)

**VIETNAM**—Voice of Vietnam, 9640 via Wooferton at 0103-0127\* with EE news and final ID f/by instls until the carrier was cut. (D'Angelo, PA) 9840 at 1300 sign on music and into Turkish. (Handler, IL) 12005 via England at 0213 with W explaining one of their holidays. (Sellers, BC) 12020 at 1241 with brief piano music, talk on Chinese-Vietnamese relations with a simultaneous translation. (Coady, ON)

And that'll do it for this month, except to thank the stalwarts who came through with the logs this time. Namely: Harold Sellers, Vernon, BC; Rick Ericksberg, Springfield, MA; William Hassig, Mt. Pleasant, IL; Rich D'Angelo, Wyomissing, PA; Mark Coady, Peterborough, ON; Robert Fraser, Belfast, ME; Steven Handler, Buffalo Grove, IL; Chuck Rippel, Chesapeake, VA; Richard Parker, Pennsburg, PA; Charles Maxant, Hinton, WV; Robert Wilkner, Pompano Beach, FL; and Robert Brossell, Pewaukee, WI.



**DX World Guide**  
By Franz Langner, DJ9ZB

Known throughout the DX and DXpedition world as a meticulous and tireless operator, Franz Langner, DJ9ZB, is also noted as one of the most knowledgeable individuals in Amateur Radio in terms of documenting DXCC entities. This is the third edition in his series of books bearing the title *DX World Guide*, first published in Germany in 1988, and then in a second edition, also in Germany in 1997. This edition is the first to use color throughout, and includes information on well over 300 DX entities. Whether used as a desk reference for the DXer of any level of proficiency or as a "wish book" for DXers just starting his or her DXCC journey, the new *DX World Guide* is a worthy and pleasant companion.

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## 'Catcher's' Red Radio

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

*“Well, I'd like to take one of old Ike's #@!&\* four-irons and ram it down your \$#&%@# throat! Do you hear me? . . . I'm asking you a question old man!”*

From his supine vantage point in the bulbous back seat of an abandoned Plymouth, Getty Davis heard something incredibly strange. Somebody was approaching, recklessly crunching dry leaves carpeting this normally forgotten stretch of Tennessee woods several miles from Chattanooga. And whomever it was apparently had some kind of tinny-sounding portable radio tuned to a CBS news broadcast. Getty scooted-up a bit and cocked his left ear toward an ad-hoc arrangement of bullet holes long ago blasted through the rear passenger side door. Yes, someone was trudging conspicuously and talking even louder as if to be commenting on whatever the announcer said.

“Oh, President Eisenhower is on a golfing vacation, is he?” the younger voice on the path sassed the man on the radio. “Well, I'd like to take one of old Ike's #@!&\* four-irons and ram it down your \$#&%@# throat! Do you hear me?” he demanded. “I'm asking you a question old man!”

After whomever the intruder was posing the query again and even more forcefully, Getty

creaked open the junked car's door and burst forth with his hands up. “Dddd'da ya mean me?” the frightened youngster stuttered.

A well-dressed teen, except for his crimson baseball cap donned backwards, stopped cold. “Scared me,” he noted. “I didn't expect anyone to be around here.”

Maybe five seconds of silence ensued as the boys sized-up each other.

“Can't reveal my actual real name, the older one then offered, but we'll get along OK if you call me Catch.” He pulled a dog-eared paperback from his jacket pocket. “Catch is short for my real nickname, Catcher, like the kid in this book I'm not supposed to be reading. He and I are a lot alike. Both of us have serious issues with our male parental authority figures.”

“Huh?” the smaller fellow shrugged, happy to be able to safely lower his arms.

“Can't stand my old man . . . you know, the Big Daddy-O, also known as father,” the teen clarified. “He's the one I was therapeutically addressing a moment ago.” Dear old Dad is a CBS — emphasis on the last two letters — newscast-

**Photo A.** When Plymouth designed its 1941 line, arguably none of the company's engineering visionaries imagined that one of their vehicles would wind up abandoned and as the impromptu “club house” of a rural Southern teen. This ad notes Plymouth's Fashion-Tone interior as being a “miracle of color and fabric [resulting in] sumptuous two-tone upholstery!” Getty Davis smiles that his Special Deluxe '41 Plymouth's seating didn't look very miraculous by the time he discovered the old car, but was still more comfortable than sitting in the woods where the vehicle had been junked. I asked Getty if the car had a radio. “Somebody had stripped it and much of the other instrumentation out of the dashboard,” he remembers, “but after Catcher gave me the little red radio, I could turn that sad sack of a four-door sedan into a concert hall.” Getty says that WDOG was so close by that he got good reception, even if his transistor set's 22.5-volt battery was on its last DC legs.



### Here's the "One" for '41



It's a PLEASURE to remind you that this stunning new 1941 Plymouth—so beautiful, so long, wide, low-swinging—is a low-priced car!

Inside, you'll find a glamorous new Fashion-Tone Interior—a miracle in color, fabric, appointments. And you'll discover a new delight in Plymouth's new 4-way Step-Up in Performance...giving you new mastery of hills and traffic!

And, for 1941, Plymouth announces Powermatic Shifting...a new Oil Bath Air Cleaner that adds to engine life and economy...new Engine Bearings which are 2 to 3 times longer-lived...new Ignition

See the Brilliant New Plymouth...Magnificent new Artistry of Design... New Powermatic Shifting...New 4-Way Step-Up in Performance... New Fashion-Tone Interior... 19 Great Advancements!

Protection to assure fast, easy starts\* See and drive this Big Beauty today at your nearby Plymouth dealer. Plymouth Division of Chrysler Corporation.

**OTHER NEW FEATURES**

- NEW COUNTERBALANCED TRUNK LID—goes up or down easily at a touch.
- NEW SAFETY RIMS ON WHEELS—prevent “blowing” of the tire in case of blow-out or puncture at high speeds.
- NEW SEALING throughout body against dust, water, heat and noise.
- CHOICE OF 11 BRIGHT NEW COLORS at no extra cost. New 2-tone color combination available on the Special De Luxe Sedan.

**Try Powermatic Shifting**—see revolutions in driving effort—with actual elimination of clutch at the shifting moment of normal driving.

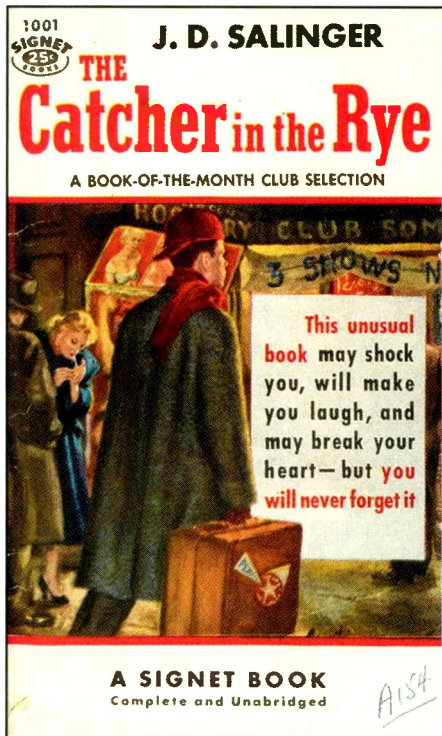
**Fashion-Tone Interior**—a miracle of color, fabric, appointments. Imagine—sumptuous interior upholstery in the Special De Luxe Plymouth.





**4-Way Step-Up in Performance**—giving you increased horsepower and torque—more transmission and new axle ratios. Drive this traffic master.





**Photo B.** One of the early “Catcher in the Rye” covers from a paperback edition shows the novel’s main character, Holden Caulfield. Our story’s Catcher or Catch fancied himself to be the real life version of author J.D. Salinger’s edgy teen. Reportedly, Catch did resemble the book cover’s kid, wore a red hat, had a wealthy but distant parent, and disliked the boarding school foisted upon him. Salinger doesn’t mention little transistor radios in his famed work, though one plays large in our Catcher’s tangential account of Chattanooga’s WODD 1310 AM.

er up in New York. Always on the go. So he conveniently packs me off to boarding school here in wonderful Tennessee. Gave me this ridiculous little red plastic thing so I can be with him in spirit — every hour on the hour.”

Catch pointed at the smallest radio that the other kid had ever seen, then switched it back on in order to demonstrate. “It’s the latest thing, a Regency transistor portable,” he noted without bragging. “Runs on a battery about the size of one of those little soap bars you get in a hotel bathroom.”

Getty had never stayed at a hotel, but imagined that any battery designed to fit in Catch’s red radio must be pretty shrimpy.

“Here,” Catch announced and tossed the Regency Getty’s way. As if manipulating a curve ball, Catch had rolled the volume control thumbwheel during his pitch. While in flight, the radio revealed that it was tuned to “1310 on the dial, W-D-O-D in Chattanooga,” then issued a weather forecast.

“Wow!” the younger fellow wheezed, after the radio landed in his cradled palms. “Must cost an expensive bunch of dollars!”

“My Dad said it’s worth over 50 bucks,” Catch indicated in a way that sounded like he thought it represented a crying shame that his father had blown so much cash on such a device but

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*Regency*

**\$49.95**  
less battery

Uses tiny transistors . . . no bulky tubes, combines amazingly compact size, high performance

- First truly personal radio! Weighs only 12 ounces, measures 3" x 5" x 1¼". Slips in pocket or purse, available with leather carrying case. Genuine superheterodyne circuit; astonishingly clear tone . . . through acoustically-baffled speaker or tiny earphone. Shock-resistant, virtually service-free . . . engineered for life-time performance. Uses standard 22½ V. battery. Smart plastic case in black, ivory, mahogany, olive green, mahogany or olive green. See it! Hear it! Get it!

REGENCY DIVISION, I. O. E. A. INC., INDIANAPOLIS, INDIANA

Goes anywhere . . . plays everywhere!

In tune with outdoor living!

Year's most exciting new gift ideal!

**ACCESSORIES**

Leather carrying case has belt loops, pocket for earphone or spare battery. **\$3.95**

Feather-light earphone is no larger than a hearing aid, fastens comfortably to ear. **\$7.95**

**Photo C.** “Goes anywhere . . . plays anywhere! In tune with outdoor living! The year’s most exciting gift!” So touted the late 1954 introductory ad for the Regency pocket portable radio. Adding up the price of the radio, battery, optional leather case, and earphone puts ownership of the transistor experience on speaking terms with \$63, a lot of green for what many an early Eisenhower-era consumer would consider to be a novelty or rich man’s toy. Speaking of color, the initial run of Regency portables could be had in black, cloud gray, mahogany, olive green, or mandarin red — the hue of Catcher’s sudden gift to Getty. Regency’s Indianapolis-based maker later offered additional color schemes and even a few rare editions in clear plastic. High-end retailer, Neiman-Marcus offered its discriminating seekers of fashion electronics TR-1 versions imbued with iridescent hues and tiny sparkles of jewels. Even pish-posh watchmaker, Bulova, private-branded some TR-1’s in jewelry stores. Regency officials admitted that, unlike their clients Bulova and Neiman-Marcus, they were trying to avoid pricing that would only attract the diamond aristocracy, so priced the TR-1 at about half of what they’d need to get in order for the venture to be immediately profitable. **(NOTE: There’s a truly wonderful website devoted to preserving the history of “the world’s first pocket radio.” Enjoy it at <a href="http://regencytr1.com">**)

wouldn’t spend 10 percent of that on a phone call to his son. That reality hit Catch with another injustice. “All this radio talk and I don’t even know your name,” he said a bit apologetically.

“I’m Getty,” the kid divulged when handing back the Regency. “It’s short for Gettysburg.”

“As in the famed Civil War battle of 1863?” Catch surmised.

“The very same,” Gettysburg Davis nodded. They say my great-grandfather fought there with distinguished honor or something. I live over yonder with my Ma and sisters in a shack in them woods. This here junk car is kind of my personal hideaway. That’s why I was daydreamin’ there when you come by *discussin’* with your little red radio. Near scared the pants off’n me!”

## What A Day For A Daydream . . . And A Peek At Electronics’ Future

Both boys let out a laugh at the events leading up to their unexpected meeting. An unforeseen shower fast shifted their venue into Getty’s automotive retreat, where Catch soon had his host giving the red Regency a spin through its tuning dial and contemplating a future in radio.



**Photo D.** In this Indianapolis-based factory, Regency transistor radios were born during 1954. The first 25 used Texas Instrument-brand circuitry that worked great if all of the components were hand matched for congruity and maximum yield. Fast realizing that such tedious customization was no friend of the assembly line, Regency engineer Dick Koch came up with a new circuit that used the transistors for a double purpose and broadened their characteristic acceptance to the point where it became practical to build them in mass production. Texas Instruments liked Regency's design enough to buy the patent. Of the approximately 140,000 model TR-1 Regency 4-transistor radios that were produced, few made it in time for the 1954 Christmas gift-giving season. Apparently, the red one that Catcher gave Getty served as an exception. Reportedly, it had been some sort of promotion that Catch's father, a CBS Radio news broadcaster received and then — considering little more than a kid's toy or electronic gimmick not ready for prime time — had it sent to his son who spent the holidays at a swanky boarding school.

"I seen those towers where this station is coming from," Getty gestured at the Regency and then towards the rear window. "There's three of 'em standin' proud in back of the broadcast building down that road. Man, wouldn't I love to get on the mike and say something a DJ would say . . . 'Here's Nat King Cole with a smooth tune for you WDOD listeners on this fine fall afternoon, called Autumn Leaves.'"

Catch seemed to marvel at Getty's candidly enthusiastic audition. "I think you've got potential to spin the hit parade of top tunes," he smiled. "Me? I'm just a privileged kid who isn't fortunate enough to possess any dreams like that. I'd just be happy if my father would let me come back home." During his musing, Catch had absentmindedly snapped the back cover from the Regency, unveiling its colorful network of wires and gizmos.

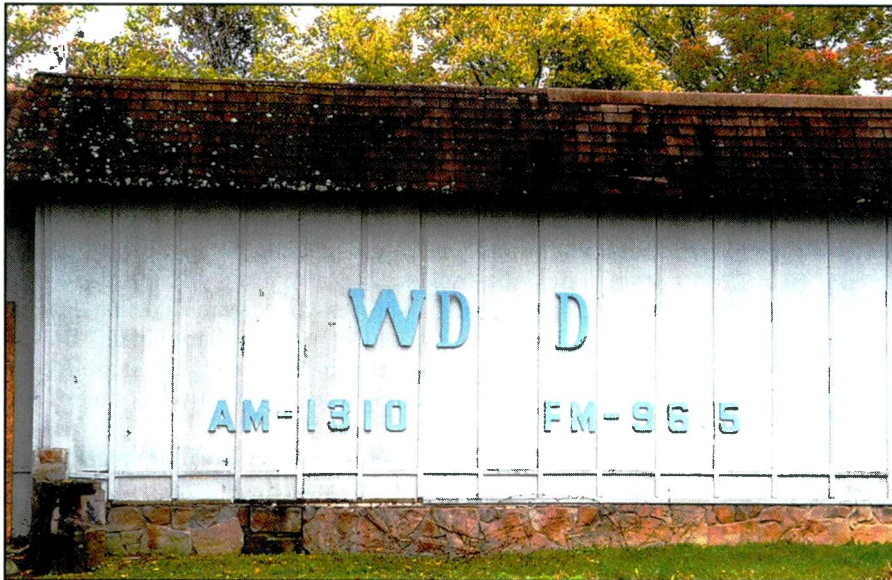
"There's the battery," he indicated with a forefinger. "And these are the magic transistors that take the place of tubes."

There were four of them. Catch knew that much, but didn't grasp what all the fuss over the miniscule things was all about. In early 1955, neither did many of the established engineers at major electronics firms like RCA. Most were quite satisfied with vacuum tubes, technology that had become trustworthy, smaller, inexpensive, and easy for consumers to test and replace when necessary. Tubes were sort of carbon paper compared to fledgling photocopyers.

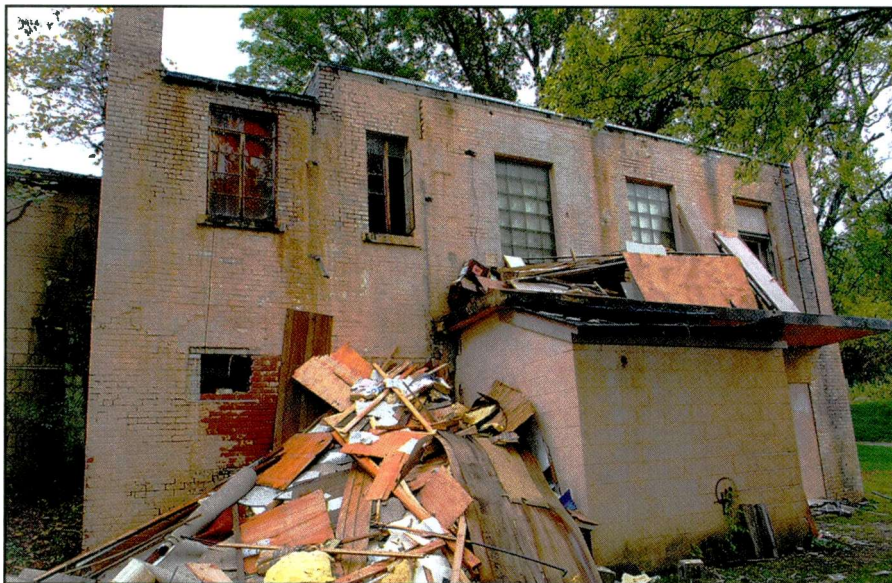
There was a noted transistor proponent in the majors, however. IBM's head, Thomas Watson, Jr., got hold of a Regency TR-1 and linked the compact radio's spirit to the kind of computer development he envisioned. *As of June 1958*, he decreed in a prescient memo, *IBM will make no computers that require tubes*. IBM lore recalls the mandate causing consternation in "Big Blue's" engineering department. Watson emphasized his point by handing a TR-1 transistor radio to the complainers.



**Photo E.** Perhaps tower riggers changing beacons on the triple stick WDOD array spied the stately Baylor School campus in the distance. It relates to this month's column in two respects: The boy who gave our story contributor, Getty Davis, a cutting-edge transistor radio was a Baylor student, albeit briefly; and Baylor officials purchased the WDOD transmitter site in order to have acreage for future expansion. That's the Tennessee River at left. The mist rising from the surrounding hills might be compared to the radio waves invisibly wafting from the now felled WDOD towers that once blinked majestically on the horizon.



**Photo F.** Just out of view and to the right of the remaining WDOD signage is a big blue dumpster. In the immediate left-hand edge of this shot there's evidence of a boarded-up front door. If we were to pull back a bit, expecting to see broadcast towers still standing guard over their transmitter's home, that, too, would prove disappointing. And, if as a station spotter's final test, one were to dial 1310 on a nearby car radio, only strains of electrical hash mixed with the occasional co-channel whisper would be heard. All of these serve as indicators that WDOD has joined the legion of other once-proud AM outlets that can now only be received by recollection. It should be noted that WDOD's 96.5 FM sister survives, though at another Chattanooga locale. (Photo by Chuck Pharis)



**Photo G.** Our story's Getty Davis came upon this sight in early fall 2011 and got a sudden sense of his own mortality. "More than a few times when I was a kid exploring the woods near WDOD, I'd get close enough to the station to imagine all of the broadcasting activities that were happening inside and dream about being on the radio," Getty reflected. "It was always exciting to see the three towers, too, because that's where the 'magic' radio waves were starting their flight. A few of them arrived at the antenna inside the little red Regency that Catch had given me . . . and that made me wonder what he was doing, wherever he was. This pile of WDOD's guts on the ground made me shudder and think about how much the world has changed since AM radio was king and WDOD was practically indispensable in the lives of many Chattanoogaans." Getty suggested that this picture be captioned, 86 years of Tennessee radio history gone out the window. (Photo by Chuck Pharis)

Texas Instruments felt its newly developed crop of fingernail-size semiconductors would quickly sway all of the leading radio makers to adopt its product. Tiny I.D.E.A. (Industrial Development Engineering Associates) was the only taker. Its Regency label had been marketing a successful line of tube-powered TV boosters and police radios. Sometime in early 1954, Texas Instruments easily talked I.D.E.A./Regency brass into a joint venture aimed at being first with a truly portable/versatile transistor radio — one that might become a household name via the approaching '54 holiday season.

An initial hand-crafted batch of Regency model TR-1 units sported Texas Instrument's circuit design, but proved so temperamental in production that a Regency engineer reworked the circuitry so that mass production with off-the-shelf transistors and such would be possible. Though even some veteran tech types believed the results represented simple ballyhoo of a passing fad, arguably the TR-1 demonstrated the first true space-age everyday miniaturized capabilities of electronics' future.

One could surmise that Catch was among the skeptical . . . Or perhaps the serendipitously found friendship represented greater value to him than did a milestone gadget. In any case, while he and Getty were swapping their inner secrets about life as they experienced it and, each in his own way, was encouraging the other to persevere, a slobbering, blubbering pair of hound dogs rumbled through the woods and began yelping at the '41 Plymouth hideaway. Not far behind, a heavysset, middle-aged man who sounded all out of breath came crunching through the leaves.

"Outta the car!" he demanded, as he knocked on the Plymouth's passenger side rear window with a stick.

"Hold your horses, man. I'm coming," Catcher eventually replied and then made it obvious to the sweaty guy and Getty that he would do so in his own good time.

"He's a school cop or some such keeper of wayward students," Catch gestured to Getty with his thumb. "How long you been tracking me?" Catch queried as he ambled to his feet on the leafy path next to the junk Mopar.

"Son, you been a heap o' trouble for me since you ran off from campus yesterday. Now let's go! I've got a school car up the lane a piece and you *will* get in it and be taken back to campus. There's a dean there who has a few choice words for you, I reckon."

The two had nearly disappeared into the trees when Getty heard Catch demand, "Wait a minute." Catcher ran back toward the Plymouth, waved to Getty and sent the Regency sailing toward the younger boy in a sort of softball pitch. "I want you to have this," he winked. "Dear old Dad will no doubt send me an even snazzier one before he ships me off to some stinkin' summer camp or maybe military school."

Getty caught the little red radio and stood there silently, at first, then protested that it was too expensive and modern to just give away. "Besides," he noted, "Nobody'd believe a boy like me has the money for something like this. They'd think I stole it."

"Hmmm . . ." Catcher considered and then called to the re-approaching and obviously aggravated truant officer. "Let me borrow that notepad that's sticking out of your shirt pocket."

"If I give it to you, then will you *please* get in my vehicle without any further incident?"

"Whatever you say, man," Catcher waved him off. Seconds later, he was vociferously jotting down a statement. The stub of the shrimpy yellow golf pencil that had been captive in the pad's spirals whirled as he wrote: *I, a Baylor student known by the nickname "Catcher," and temporarily of Chattanooga, Tennessee, do — of sound mind — bequeath to one Getty Davis of same city, a 1954 Regency portable radio unit — color: red. I am gifting Getty of my own free will. No mental coercion or firearms of any nature were used to cause me to enter into this decision.* He signed it, "Catch," and then convinced the deputy to apply his signature to the document.

"OK, OK . . . If it'll get you to hurry up and get in the school car, kid, I'll sign anything," the rumpled, frustrated fellow nodded.

Catcher ripped the slip of paper from the wire spiral, handed it to Getty, and silently saluted him farewell. "Thanks very, very much, Catch," Getty offered maybe 20 or 30 seconds later and felt nearly moved to tears. The older boy, walking away and then almost completely out of sight down the path, simply raised his arm in acknowledgment. Getty cradled his new radio and wondered if Catcher had any idea how much the little red plastic box meant to him.

For the record, one other well-known firm besides computer maker, IBM) embraced transistorization and raced to

adapt the youthful technology in an accepted consumer product. Raytheon had developed a version of a semiconductor circa 1953, but due to very conservative attention to quality control, came in a close second at the transistor radio introduction finish line (in February 1955 with its model 8-TP-1) several months after Regency. And while a few prescient American corporations started the wheels going on transistor radio's bandwagon, an obscure, hard to pronounce Japanese outfit put all of its energies into concocting an easy-to-use, solid-state, shirt pocket portable. Tokyo Tsushin Kogyo even had shirts with large pockets made for its sales reps so the company's 1955 debut model could easily fit inside. Tokyo Tsushin Kogyo also needed to resize its identity so that it could easily fit on the little radio's grill and would be a snap for coveted Western consumers to say. That's why Tokyo Tsushin Kogyo inaugural TR-55 got branded with the happily simple-sounding name, SONY.

### The Wonderful Dynamo Of Dixie

Until its 2011 passing into ether's oblivion, WDOJ enjoyed the status of never having had to assume the string of new identities with which long-lived broadcast outlets are often recast. Though later fancifully ascribed to Southern dynamos or even dynamite, the Chattanooga station's call letters were *randomly* assigned by the U.S. Department of Commerce during late winter 1925. That's when the Chattanooga Radio Corporation (CRC) also received the Government's OK to construct WDOJ as a 50-watt facility on 1170 kilocycles at Interstate Insurance Company headquarters.

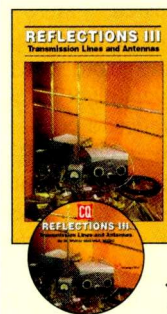
Atop the six-story building at 540 McCallie Street, CRC installed a Western Electric model 103-C transmitter and wire antenna strung between a pair of masts. A simple studio originated programming for WDOJ a few floors below. Admittedly, licensee Chattanooga Radio Corporation, whose main endeavor (according to Jan Lowry) was "a local retail radio parts and supplies store, established the station — originally operated on a part time schedule — as a novelty to stimulate sales of receivers built and sold by CRC."

WDOJ officially took to the airwaves on April 14, 1925 most probably with the era's typical radio fare of local singers and folksy informative talks. Sometime during the ensuing Christmas season,

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by Walter Maxwell, W2DU

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WDOJ was treated to a 10-fold power increase to 500 watts. 1926 milestones included the opening of an auxiliary studio in the Chattanooga Radio Corporation's storefront, a slight licensee name change to Chattanooga Radio Company. The following year saw the main studio relocated to the city's Hotel Patten and a frequency change, first to 1220 kilocycles, and a few months later up to 1230 kilocycles. In November 1928, WDOJ was once again directed — by the new Federal Radio Commission — to slide up the dial a bit to 1280.

The order preceded an earlier 1929 authorization granting WDOJ officials the ability to run 2,500 watts during the day and a full kilowatt at night. Jan discovered that this change involved installing "two steel lattice towers on the roof of the 12-story Hotel Patten" to accommodate heftier antenna wiring and a new transmitter there. The resulting bolstered signal attracted sufficient attention from executives at the fledgling Colum-

bia Broadcasting System for them to select WDOE as the Chattanooga CBS affiliate beginning in September 1929.

Columbia brass were especially pleased with their decision upon learning that WDOE was granted FCC permission to shift its transmission facilities to a new, less electrically congested "site at Brainerd Community (Hamilton County), Tennessee, some six miles from downtown Chattanooga." The venue got quickly treated to several upgrades: a boost to 5,000-watts daytime power in winter 1934 and the modern transition from horizontal wire to vertical radiation via a "new Truscon-brand, 325-foot self-supported steel tower." A studios/offices move from the Hotel Patten to the Chattanooga-based Hamilton National Bank came in 1940, the same year that WDOE was granted a nighttime power increase and an FCC thumbs-up to run a three-tower directional array after local sunset. Part of that deal included a modest move from 1280 to 1310 kilocycles, as part of late March 1941's widespread North American Radio Broadcasting Agreement frequency reallocation treaty.

When WDOE debuted its triple-stick, 5,000-watt day and night signal during June 1942, the station did so from "a new site on Baylor School Road, west of downtown Chattanooga. While two of the self-supporting towers were new, WDOE's six-year-old Truscon 325-foot tower was moved from its old site to be the center of the new array."

The WDOE of our story's early-to-mid '50s era ran from 5:30 a.m. until midnight with a schedule of CBS network offerings, locally produced programs, and middle-of-the-road music. Sometime in 1960, the Baylor School Road transmitter site got rearranged and added onto so that it could accommodate studios. Within three years, WDOE's offices also left the Hamilton National Bank building and set up housekeeping at the transmitter/studio location.

Changes in the 5-kilowatt outlet's sound were evident with a 1965 swing to country and western fare. Evidence that bucolic C&W music and New York-savvy Columbia Broadcasting System content didn't congruently blend was seen in 1967 when folks running WDOE jilted CBS in favor of homegrown news/features. Five years later, the Chattanooga AM picked up ABC's Entertainment Network to reintroduce a sophisticated news gathering element to its 24/7 operating schedule.

By 1991, WDOE — which was slipping

behind an FM sister — began a series of changes, each intended to hold some audience ground and perhaps attract a few new listeners. Its quarter-century of locally-DJ'd country music conveyance ended with a switch to Satellite Music Network's *Stardust* "Adult Standards/Big Band" syndicated programming service. This fare off-of-the-bird got sandwiched between a concoction of beautiful music and talk shows. The latter became dominant in October 2005 when *Stardust* and the other music was abandoned so that progressive talk, including commentary from the politically left-leaning Air America could be tried. As was the typical experience of most stations attempting to generate a sustainable audience with progressives on the mike, WDOE realized that few were flocking to the format.

Hoping that some of the earlier *Stardust* fans would return to its moribund airwaves, WDOE officials quickly reintroduced "adult standards" music programming. This homebrew rendition of WDOE was branded "Ruby AM 1310," a moniker especially in keeping with any red radios receiving it.

### **One . . . Two . . . Hey, Weren't There Three Sticking Up There?**

Bad things can happen to good transmitter sites when nobody is checking the premises on a daily basis. Arguably, that started to happen at WDOE in 1999 after studios and offices were whisked away from the World War II-period transmitter building and established in "new quarters at 2615 South Broad Street, Chattanooga." Nobody was around "on Friday, June 24, 2007 when WDOE's middle tower fell over due to advanced age." Back at the studio, the modulation monitor got mighty quiet until engineers could rush to the transmitter site and jerry-rig the system into a twin stick array. Estimates for tower replacement sat on management's desk while it took down the Adult Standards format and replaced that fare with ABC Satellite Music Network's True Oldies in 2009. Ironically, oldies on WDOE only lasted about a year before the owners had WDOE simulcast "AM sister station WDEF's Sports Talk format supplied by Fox."

Whenever an AM duplicates another nearby Standard Broadcast facility, it means trouble is usually on the horizon. In this case, the expense of having to install a new tower and clean up any asso-

ciated engineering bugs likely to surface when mixing decades-old gear with contemporary equipment, coupled with doubts that WDOE would ever make a quick return to its profitable glory days, caused ownership to focus on the 22-acre transmitter site real estate rather than the signal. A \$600,000 purchase offer from "neighboring Baylor School" sealed WDOE's fate. Because the educators had no interest in resurrecting a dying AM radio station, WDOE was signed-off permanently on May 31, 2011. The FCC cancelled its license a few days later.

Getty Davis, long retired as a well-liked Indianapolis high school science teacher, happened to be visiting elderly Chattanooga relatives when he tried tuning WDOE on his Chrysler Crossfire's radio — "Just for old time's sake and just to see what format they were up to," he notes. That was around early October 2011.

"I figured something was wrong when there was nothing but gentle static on 1310 for two days in a row."

The topic came up in conversation with an octogenarian uncle who pulled an account of WDOE's demise for Getty from a stack of newspapers leaning by the kitchen door. As the relative welcomed a chance to get out of the house, Getty offered him a drive that included an investigative spin to the WDOE transmitter site.

"Once there, the gutted building and obvious absence of those three once beautiful broadcast towers cut me to the quick," Getty admitted. "On the way home, I shared with my old uncle the story about Catcher, his transistor radio gift, and what the constancy of WDOE and its majestic stand of towers had meant to me as an insecure kid. He listened intently and then remarked that the whole thing sounded like a chapter from some intricate novel. 'You ever hear from that Catch fellow?' he wondered.

"'Nope,' I replied."

"'Still got that little red radio?'" Getty's uncle asked after about five miles of silence. He was about to give the same answer as before. Instead, though, the question made Getty smile because no matter WDOE's passing, Catcher's fate, and the nearly six decades of history that had come and gone since he first heard the crimson Regency, Getty realized that it would always be an even brighter red and sound much clearer in his memory than it ever had in real life.

*And so ends another day of personal broadcast history in Pop'Comm.*



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## Unmasking the Masked Man, After Dark

By Bill Price, N3AVY

*“My BiPap machine has pretty good RFI suppression. It may disturb my ability to sleep, but it doesn’t cause interference to my Grundig.”*

**I**t was a dark and stormy night. I bet none of you readers know that I begin writing each column with those words. They get me engaged in the creative process. Most times, I have deleted them on the first “edit.” They are the famous words of Snoopy, and Edward Bulwer-Litton. The first is famous. The second never got beyond second base.

Since I have explained how you, too, can become rich and famous not only through your HPJIE\*, but as a highly skilled columnist, I feel that I constantly place myself in jeopardy — though not with Alex Trebek. As I correspond with more and more of you, I’ve had several good ideas for a column passed on from newfound friends. I see that Shannon Huniwell, WPC2HUN, has brought a 15-year-old writer on board. And his writing is pretty good, regardless of his age. (*SEE: Shannon’s Broadcast Classics, “The New Kid in Town,” May 2013 Pop’Comm, page 77. — N3AVY*)

I thought how it would be fun to build the little regenerative receiver featured in the May issue, but I know that it would soon gather dust as I deferred to my nice digitally tuned portables. A new problem has reared my ugly head. (*ASIDE: Is that a mixed metaphor? What’s a metaphor, anyway? — N3AVY*).

I am now sometimes allowed to exist without snorting oxygen through my little cannula — think of earphones for the nose. Of course, that is only when I’m wearing my stylish full face-mask which is only slightly less confining than the iron mask in Dumas’s tale.

I suffer from insomnia. Imagine wearing the headgear, which resembles a fighter pilot’s combination oxygen mask and microphone, when you’re trying to fall asleep. It’s every bit as comfortable as duct tape and a big funnel, with elastic straps. *Oh, and a hose.*

This array is conducive to giving up trying to sleep and trying other relaxing things at 2, 4, and 6 a.m. I often thank Marconi for inventing radio. I’m also pretty grateful that my BiPap machine (which not only pumps air *into* my face, but alternately sucks air *out of* my face) has pretty good RFI suppression. It may disturb my ability to fall asleep, but it doesn’t cause interference to my favorite Grundig.

And the wakeful nights give me new opportunities to practice my Morse code sending and receiving. My trusty old bug and oscillator get a good workout, as do the WIAW code practice broadcasts. Like most hams, I can send about twice as fast as I can copy.

My friend David G. in eastern Massachusetts (as opposed to *delta bravo* — not far from Chicopee) is helping me find a site or a program that will let me communicate via Morse code on the Internet. Since the ‘net already offers the more sophisticated methods of communication (RTTY, slow-scan TV, voice) it shouldn’t be too hard to make it give me the most basic method. Like real ham radio without the antennas.

And also back to CB, too! My tin (really steel) roof holds my ancient mobile CB antenna just outside my bedroom window, and my old Kraco rig works fine with a RadioShack® power supply. Here in Cowfield County, I’m less than a mile from a major truck route between two interstate highways. Like me, they’re up all night, too. Some are good for a quick hello. Others . . . well, I wish they wouldn’t drive out of range so quickly. An interesting cross-section of our population is moving our goods, and they can’t very easily call each other on their cell phones.

The May issue of *WorldRadio Online* had part of a feature that piqued my interest: Morse code via flashing light. Something still used by ships. When I was not standing watch in the radio shack on the Coast Guard Cutters Mackinac and Dallas, I would hang around with the quartermasters on the bridge at night. Most of them really hated the flashing light, but were very good with their flag-hoist communication and semaphore. I never had trouble using the flashing light for Morse code, because I just “heard” the flashes in my head.

One day in Gitmo during underway training with the Navy, a certain quartermaster swapped chambray shirts with me (our names and rates were stenciled on them) and I handled his flashing-light part of a procedural test. The ship rider was amazed. Later on, in the shack, that same ship rider — this time in the radio shack — commented that I looked like one of the quartermasters. “Yeah,” I said, “we get that all the time.”

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