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POPULAR COMMUNICATIONS

DECEMBER 2013

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Radio Takes a Holiday

Gift Ideas for Communications Hobbyists, p. 10 & 14

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POPULAR COMMUNICATIONS

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ON THE COVER

Ol' Saint Nick is a great guy, but he's no mind reader. Time is running out for communications hobbyists to get their holiday wish list to the jolly fellow in red. Stumped? *Pop'Comm* veteran columnists Bruce A. Conti, WPC1CAT, and Gordon West, WPC6NOA, have a full bag of gift ideas — most quite inexpensive — aimed to please! See pages 10 and 14. You'll also find holiday-related stories throughout December's *Pop'Comm* in the hope they help get you in the holiday mood. From all of us at *Pop'Comm:* ***Season's Greetings!***
(Cover image courtesy of Shutterstock)

COLUMNS

DEPARTMENTS

Tap into secret Shortwave Signals

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

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

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MFJ-1800
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Compact Active Antenna

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Plug this *compact* MFJ all band active antenna into your receiver and you'll hear strong, clear signals from all over the world, 300 KHz to 200 MHz including low, medium, shortwave and VHF bands. Detachable 20" telescoping antenna. 9V battery or 110 VAC MFJ-1312B, $15.95. 3⅛x1¼x4 in.

Eliminate power line noise!

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$69.95

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

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EDITORIAL
Tuning In

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

Season's Greetings: May Your Days Be Merry and Quiet

Well, having just pushed away from the Thanksgiving table and shaken the after effects of tryptophan overdose ... *zzzzzzzzzz*, we're on that runaway freight called "The Holidays."

Hanukkah came early this year: November 27 to December 5. Christmas, of course, is the 25th. Kwanza is December 26 to January 1. And there's New Year's Day, a Wednesday, to kick off 2014.

Heads-up: Your daytime SWLing success on New Year's 2014 may be in inverse proportion to how much plasma TV pollution is invading your RF space. Why? *Are you ready for some football?* You better be. There are four — count 'em, *four* — college bowl games starting within an hour of one another on January 1. *(**YIKES:** Check out the plasma pigskin panic at <http://bit.ly/174KHHp>. – KPC6PC.)*

He's Home for the Holidays, and Beyond

Jon Kummer, WA2OJK, has returned to CQ Communications as advertising manager for all its magazines: *CQ, Pop'Comm, WorldRadio Online,* and *CQ VHF*. Many readers, and certainly advertisers, will remember Jon from his previous posts with the company and from his presence in the booth at the Dayton Hamvention®. Jon is also publisher of *Antique Radio Classified* <http://www.antiqueradio.com>, a position he'll carry on in addition to his new advertising duties here.

We're very glad he's back. You will be, too. We know how much readers rely on advertising to make good choices on communications gear and accessories, and how much advertisers appreciate having a means to reach communications hobbyists — both in print and digitally.

Jon's "home for the holidays," and for a lot longer than that. *Hooray!*

Pop'Comm On the Web: This Just In ...

Monthly publications are always pressed to achieve goals of timeliness and relevance, especially on "breaking news." In this digital age, though, that's where the Web comes in.

You might want to bookmark *Pop'Comm On the Web,* which now features daily updates on shortwave, scanner monitoring, amateur radio, and the information sprawl of worldwide hobbyist communications, via *Southgate ARC News.* Link to: <http://www.PopCommMagazine.blogspot.com>. You'll find the feed right at the top of the blog.

Also, if you haven't bookmarked the *CQ Newsroom,* please do. It is regularly updated with the major communications stories of the day, <http://www.CQNewsroom.blogspot.com>.

Hope Yule Like It

In the spirit of the season, December's *Pop'Comm* features several holiday-related stories to get us "in the mood." May we especially commend Gordon West, WPC6NOA's, and Bruce A. Conti, WPC1CAT's, radio-themed holiday gift ideas beginning on pages 10 and 14, respectively — great, inexpensive ideas from two experts. Other columnists, too, are doing their part to "make your yule time bright."

Shannon Huniwell, WPC2HUN, is still in the throes of deep reporting on a nostalgic piece for *Shannon's Broadcast Classics,* so 15-year-old Ryan Archer, KPC6KPH, is pitching in this month. He's got a yuletide tale told to him by his late great-grandfather, Herbert "Roary" Wallace from Christmas Eve 2010. It's warm and fuzzy and amazing. *Don't miss it.*

From All of Us ...

We wish the warmest, most peaceful and joyous holiday season to all of you — readers and advertisers — from the whole *Pop'Comm* crew:

Ryan Archer, KPC6KPH; Bruce A. Conti, WPC1CAT; Rob de Santos, K8RKD; Gerry Dexter, WPC9GLD; Bill Hoefer, KPC4KGC; Tomas Hood, WPC7USA; Shannon Huniwell, WPC2HUN; Kirk Kleinschmidt, KPCØZZZ; Bill Price, N3AVY; Cory GB Sickles, WPC2CS; Bob Sturtevant; KPC7RBS; Jason Togyer, KB3CNM; CQ Communications Publisher Dick Ross, WPC2A; Editorial Director Rich Moseson, WPC2RIY; *Pop'Comm* Associate Editor Jason Feldman, WPC2COD; Advertising Manager Jon Kummer, WA2OJK; all the talented people who produce and distribute *Pop'Comm,* and yours truly. See you *next year!*

– Richard Fisher, KPC6PC/KI6SN

The Weirder Side of Wireless, and Beyond

Compiled by Richard Fisher, KPC6PC

Shutdown: When the FCC's Away, Pirates Will Play

The *SWLing Post's* Thomas Witherspoon notes "at least seven pirate radio loggings here in North America on Wednesday, October 1 — the first day of the U.S. government shutdown. This is a remarkable number of pirate loggings for a weekday night."

When Witherspoon saw a message from *"Pirates Week's"* Ragnar Daneskjold, it all became clear: The FCC announced "activities other than those immediately necessary for the protection of life or property will cease."

Yo, ho, ho and a bottle of RF! Or, as one *SWLing Post* reader pointed out, "pirates will 'play while the (FCC) cat is away.'" *(**VISIT:** The SWLing Post at <http://swling.com/blog>. **MORE:** On Ragnar Daneskjold's "Pirates Week" at <http://bit.ly/19VvgCe> – KPC6PC.)*

Art Bell talks about New Show Interview by George Knapp YouTube

Photo A. This issue of *Popular Communications,* perhaps from a millennium long ago and far away, popped up as a prop in a recent interview of Art Bell on Las Vegas' KLAS-TV, 8 News <*http://bit.ly/18u5tTF*>. The first reader to identify what month and year the cover appeared wins a digital subscription or extension to *Pop'Comm.* No kidding! Write <editor@Popular-Communications.com>. *(Internet screen grab)*

Pop'Comm Becomes a Piece of Art's Art

We don't know how deep legendary talk host Art Bell had to dig to find *Pop'Comm's* cover story on *one of his previous* returns to radio, but we thank him for adding it as a prop in a recent TV interview with 8 News' I-Team in Las Vegas. *(**WATCH and LISTEN:** To the KLAS-TV report at <http://bit.ly/18u5tTF>, **Photo A**. – KPC6PC.)*

Wife to Cosmonaut-Ham: 'Quit, and Get a Better Job'

Russian cosmonaut Colonel Yury Lonchakov, licensed radio amateur RA3DT, has quit the space business to become a gas industry worker. His wife, Tatiana — an ex-airline flight attendant — allegedly pressured him "to get a better job."

According to an Internet report on *MailOnline,* as a gas company worker, Lonchakov is expected to make "more than double his (annual salary)" as that of "commander of the flight to the ISS in May 2015." He was "one of Russia's most senior cosmonauts ... a veteran of three earlier flights." *(**FULL STORY:** <http://dailym.ai/17sInx4>. – KPC6PC.)*

For Vin, It's Less Weird, More Amazing

Legendary Dodger baseball sportscaster Vin Scully, who was born 86 years ago November 29 in the Bronx, New York, re-upped with the club in August for the 2014 season — a history re-making event for this *amazing* longest-running baseball broadcaster. It will be his 65th season on radio and TV with the Dodgers. *(**FULL STORY:** <http://lat.ms/19cLRmh>. – KPC6PC.)*

C-Note Sweetness, and That's a Lot of 'The Bull'

"Phil," unemployed in Oregon, found that life was even sweeter than he'd hoped after returning from Walmart with a box of Snickerdoodles — with a $100 bill stuffed inside!

"When he tried to return the cash, Walmart's management told him to keep the money and said they suspect it was left by a Good Samaritan for someone who might need a break," according to *The Huffington Post* <http://huff.to/18ugm7X>.

"Phil's" message to the kind soul: "I hope someday to be able to do what you did."

Turns out the not-so-random act of kindness was part of a promotion by Portland FMer "98.7, The Bull" — part of its "$1,000 Dollar Cash Cow ... Listen every hour, all 1,000-song weekend to win up to $1,000," <http://www.987thebull.com>.

Radio.About.com's Corey Deitz spilled the beans. *To which we say: Moooooo,* not *Boooooo*. *(**FULL STORY:** <http://radio.about.com>. – KPC6PC.)*

December's Contributors

Items for this month's "Unwired" were gathered from sources including The SWLing Post, Southgate ARS News, MailOnline, Los Angles Times, Huffington Post, Corey Deitz and other published reports. – KPC6PC.)

Radio Elves

Holiday Encore from the Elf Club

As we have in years past, for your entertainment pleasure we offer you a YouTube video featuring titans of radio history — Marconi, Fessenden, Armstrong, DeForest, and Sarnoff — in an homage *to "Oh, Christmas Tree,"* specially performed for the holidays. *Season's greetings!* *(**WATCH and ENJOY:** <http://bit.ly/rkU3li>. – KPC6PC.)* *(Internet screen grab)*

Communications News, Trends, and Short Takes

Compiled by
Richard Fisher, KPC6PC

Yaesu's *'System Fusion'* Introduced @ Seattle Conference

Yaesu has introduced *System Fusion,* "the latest links in its chain of new products aimed at the VHF and UHF digital voice market" at the TAPR Digital Communications Conference held recently in Seattle, Washington, according to an ARN report.

"The new product line uses the previously-introduced C4FM/FDMA mode (integrated) in the company's FT-1DR handheld and FTM-400DR mobile digital and analog dual band transceivers, coupled with its soon-to-be-released DR-1 dual mode repeater. It will also have an optional interconnect to the Internet using a standalone HRI-200 Wires X interface unit," *Amateur Radio Newsline* (ARN) reported.

"Yaesu's *System Fusion* repeater differs in one important way from most previous entries into the ham radio digital marketplace as it retains traditional FM interoperability along with C4FM/FDMA digital voice operation. This, according to Yaesu, means that both analog and digital users can share one repeater and communicate with each other."

Yaesu Executive Vice President/North America Dennis Motschenbacher, K7BV, made the presentation. *(**WATCH and LISTEN:** To K7BV's explanation of "System Fusion" at <http://bit.ly/1c51z7P>. – KPC6PC.)*

Photo A.
Philip Marnick, the UK's Ofcom Group Director in charge of spectrum. *(Internet screen grab)*

Ofcom Names New Spectrum Director in UK

Philip Marnick, a 27-year veteran of wireless communications in the United Kingdom, has been named Ofcom Group Director in charge of spectrum <http://www.ofcom.org.uk>, **Photo A**.

"Spectrum is the airwaves over which all wireless communications operate and Ofcom is responsible for its management. Mobile phone networks, TV and radio broadcasting, wireless Internet, Sat-Nav, air traffic control, and the emergency services are just some of the services that use spectrum," officials in the UK said.

Before his appointment, Marnick was with UK Broadband where he served as Chief Technology Officer. Ofcom's Spectrum Policy Group "is responsible for setting and implementing the strategy for managing spectrum, which involves clearing, awarding, and licensing it."

U.S. Government Shutdown Forces AFN Broadcast Reductions

The American Forces Network's Pacific transmitting site at Diego Garcia was forced to reduce radio broadcasts due to the U.S. government shutdown that began October 1. According to the *SWLing Post* <http://swling.com/blog> and AFN's *Facebook* page <http://on.fb.me/16GHaor>:

"In light of the government shutdown, because of mandatory staff reductions at the AFN broadcast center, AFN will reduce television services to the news and Pentagon channels only. AFN radio will carry some football games live on the voice. We'll keep you updated as the situation progresses." AFN Diego Garcia broadcasts on 12,579 kHz and 4,319 kHz.

Swedes Granted Access to 472-479 kHz @ 1-Watt EIRP

Swedish radio amateurs have been granted access to the 472- to 479-kHz band with a maximum radiated power of 1-watt EIRP, (Effective Isotropic Radiated Power) <http://bit.ly/1bviEVr>, *Southgate ARC News* reports.

"Apparently Sweden is too close to Russia to permit 5-watts EIRP," according to the posting.

Scientists Puzzled By Cause of Reduced Solar Activity

Subdued solar activity has brought forth comparisons of the current cycle to the *Maunder Minimum* — the prolonged sunspot minimum "from about 1645 to about 1715 when sunspots became exceedingly rare, as noted by solar observers of the time. These minimums are believed to have coincided with the coldest period in the last millennium," according to a report on *Amateur Radio Newsline* (ARN). *(**IN DEPTH:** Read more on the Maunder Minimum at <http://bit.ly/19lNFqW>. – KPC6PC.)*

Giuliana DeToma, a solar scientist at the High Altitude Observatory in Colorado says, though, the unusually low number of sunspots in recent years is not a *Maunder Minimum* because "researchers do not know how or why the *Maunder Minimum* started. As such, they really cannot predict the next one."

Other solar experts think the downturn is linked to a phenomenon called the Gleissberg Cycle, <http://bit.ly/1g3M1B9>, citing "a lack of amplitude modulation of the 11-year Schwabe Cycle <http://1.usa.gov/15IOwqI>, which predicts a period of weaker solar activity every century or so." If true, the Sun could be abnormally quiet through 2020. Stay tuned.

December's Contributors

Sources for information in this month's InfoCentral include Amateur Radio Newsline, Southgate ARC News, The SWLing Post, and SkyNews.com.au. – KPC6PC.)

Capitol Hill And FCC Actions Affecting Communications

Compiled by Richard Fisher, KPC6PC

Congress Calls for Navy Yard Shooting EmComm Investigation

Two members of the U.S. Congress sent a letter to Lawrence Strickling, Assistant Secretary for Communications and Information at the Department of Commerce, and Federal Communications Commission Acting Chairwoman Mignon Clyburn calling for an investigation of "possible communications systems failures for first responders during the deadly shootings" at the Washington Navy Yard on September 16. The gunman and 12 victims died in the incident.

U.S. Representatives Henry A. Waxman and Anna G. Eshoo, both California Democrats, were responding to "reports indicating that due to faulty radios, some first responders had to resort to their personal cells phones and 'runners' to communicate as the tragedy was unfolding."

*(**FULL STORY:** Read the text of the Congress members' letter at <http://1.usa.gov/19hQkYp>. – KPC6PC.)*

Medical Center Cited for Alleged Relay Station in Water Tower

Atlanticare Medical Center EMS, of Egg Harbor Township, New Jersey has been hit by the FCC with a $4,000 Notice of Apparent Liability for allegedly operating radio transmitting equipment on 154.4825 MHz from an unauthorized location.

According to *Amateur Radio Newsline,* citing Commission documents, "the Enforcement Bureau's Philadelphia Office received a complaint of interference from Sunshine Communications in Philadelphia, alleging that an unidentified digital transmitter was causing harmful co-channel interference." Using direction-finding equipment, agents traced the signal to "a mobile relay station operating from a water tower in Hammonton, New Jersey."

"The agents conducted an inspection of the radio transmitting equipment, which was located inside the water tower," according to a report. With the assistance of a Town of Hammonton employee, the agents soon confirmed that Atlanticare was operating a mobile relay station." Atlanticare holds a license for Private Land Mobile Radio Station WQME366, but the license "did not authorize operation of a mobile relay station from the water tower."

Atlanticare was given 30 days to respond to the proposed fine. *(**IN DEPTH:** Due to the U.S. Government shutdown at press time, we are unable to provide a link to FCC documents about this case. Please Google "Atlanticare Medical Center EMS FCC" for background and possible updates. – KPC6PC.)*

Commission Denies Request to Encrypt Emergency Communications

A rule-making request from a Massachusetts radio amateur who had asked the FCC to amend the Part 97 Amateur Service rules to permit the encryption of certain amateur communications during emergency operations or related training exercises has been dismissed by Commissioners.

In denying RM-11699, filed earlier this year by Don Rolph, AB1PH, the FCC concluded that while the proposal "could advance one purpose of amateur radio in its value to the public that it would at the same time undermine other characteristics and purposes of the service. Therefore the FCC says that it agrees with those who filed comments opposed to the concept of encryption and turned away the request," according to published reports.

Tower Lighting Failure Brings $20K NAL from FCC

The FCC issued a $20,000 Notice of Apparent Liability for Forfeiture (NAL) to an Alaskan telecommunications company for tower lighting violations. Telecom Law Monitor identified the company as General Communications, Inc.

"The NAL cited the owner's failure to visually monitor obstruction lighting on a daily basis or to maintain a functioning alarm system," according to a posting on Lexology.com. "In response, the owner acknowledged the violation and stated it had identified the source of the problem to be a failing capacitor on the system's control board. It then replaced the failing component and installed a remote monitoring and alarm system for the antenna structure."

According to the Lexology report, "the base fine for failing to comply with tower lighting and monitoring requirements and for failing to provide notification of extinguished lights is $10,000. The NAL stated that the fine was increased to $20,000 as part of the FCC's policy of fining "large" companies larger dollar amounts to ensure that the fine 'is a deterrent and not simply a cost of doing business.'" *(**FULL STORIES:** Lexology's report is at <http://bit.ly/GzSkQ1>; Telecom Law Monitor, <http://bit.ly/19m2vNZ>. – KPC6PC.)*

APCO Endorses Cell Site 'Transparency' in Wake of Disasters

The Association of Public-Safety Communications Officials (APCO) has come out in support of FCC considerations to "expand transparency when a disaster strikes the wireless communications infrastructure."

APCO President Gigi Smith said the organization is "pleased that the Commission is initiating a proceeding to consider whether wireless service providers should be required to publicly disclose the percentage of cell sites within their networks that are in operation during and immediately after disasters." *(**FULL STORY:** <http://bit.ly/15LXldV>. – KPC6PC.)*

December's Contributors

Sources for information in this month's Washington Beat include the U.S. Congress, Amateur Radio Newsline, TelecomLawMonitor.com, Lexology.com, APCO, and other published reports. ***– KPC6PC***

Standby for the New Shortwave World Order

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

In November's *Horizons* we reviewed how we reached the point where most of the major and many of the lesser shortwave broadcasters have disappeared from the airwaves.

With the calendar about to turn over another year, more broadcasters will disappear in 2014. Is there a future for shortwave broadcasting?

In terms of the situation as it existed in the early 1980s, the short answer is probably no. The unique historical circumstances that made it possible for more than 150 countries to be on the air at that time will likely not be repeated. Whatever factors we blame for the decline of shortwave broadcasting and listening, it's hard to see many pleasant scenarios where the broadcasts resume.

"Nature abhors a (radio) vacuum. It's a certainty that with bandwidth demand expanding all the time, uses will be found for the shortwave spectrum."

I'll allow there are a few you can construct — economic collapse, world war, global disaster, and so on — but all of them have even worse downsides. The uncertainty of the solar cycles and the prospect of an extended period of low solar activity make prospects for another rise in high broadcast activity unlikely.

The upside, though, is that nature abhors a (radio) vacuum. It's a certainty that with bandwidth demand expanding all the time, uses will be found for the vacated spectrum. Those uses will be more varied and complex than exist today.

The unique characteristics of shortwave propagation all but guarantee that creative inventors will find a way to use it. Nowhere else in the electromagnetic spectrum can you find wavelengths that can propagate across the planet, behave in unique ways during daylight vs. darkness, and require surprisingly little power to be effective. Your "miles per watt" are never higher than with shortwaves.

It's also a certainty that governments will find ways to use this spectrum. We can only hope they do so in an intelligent and mutually beneficial way. The nature of the world situation and the future communication needs cannot be foreseen. As a result of that, a few governments will wisely maintain some shortwave broadcast capability for many more years.

Radio is unique in that it does not respect arbitrary human borders and divisions and nowhere more so than in the shortwave spectrum. Every day, radio amateurs prove it by communicating in literally dozens of modes and methods from almost every point on Earth.

Individuals will play an on-going role in using shortwave. This will happen not only with radio amateurs chatting with one another, but in disaster communications where shortwave provides flexibility not possible with more recent methods such as mobile phones.

There is, in fact, no reason that small public service and non-commercial broadcasters could not use shortwave, even in less developed parts of the world.

The most likely result will be that uses will be found for the bands in modes that have yet to be invented. An example of this type of use is "near field communications" or NFC, which utilizes spectrum near 14 MHz for very short-range communication.

While the first obvious choice for bandwidth at a range of only a few inches might be in the 10-plus GHz range, the power required for that is prohibitive. In contrast, in the 14 MHz range it can be achieved with milliwatts. Here it is inches per milliwatt rather than miles per watt that are important. Many future uses of the shortwave bands may be in similar not yet obvious applications.

Those readers over the age of 60 have had the unique experience to have lived through an era when shortwave was the most important form of international broadcasting. They may also have lived through its rise and its fall.

The final chapter has yet to be written. What can we see on the horizon is a much more diverse and different landscape where broadcasting is but one part of many uses of the band.

Do you have a new use for shortwave communications? Drop me a note and share with me your thoughts and ideas. Until next month ... – ***K8RKD***

CQ 2014-15 calendar

15 months of value
January 2014 through March 2015

$10.95 plus shipping

Fifteen spectacular color images of some of the biggest, most photogenic shacks and antennas from across the country and. . . new this year. . . we've included three Classic Radio and three CQ Contest pictures for good measure! These six shots, along with nine interesting and diverse Amateur Radio Operator's shacks from various locations across the country, comprise what we're sure you'll agree is our best calendar to date!

As in the past, calendars include dates of important Ham Radio events, major contests and other operating events, meteor showers, phases of the moon, and other astronomical information, plus important and popular holidays.

CQ's 15-month calendar (January 2014 - March 2015) is truly a must have!

Order yours today!

Shipping charges: USA $3; Canada/Mexico $5;
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Santa, Here's My Wish List!

Gordo's Strategies and Ideas: Great Gifts for the Radio Hobbyist

By Gordon West, WPC6NOA/WB6NOA

OK, here's the plan: There is no shame in strategically placing your holiday "wish list" in high-traffic locations to get the biggest bang *for your loved ones'* buck. That's the way this gift-giving thing works, right? Sure, it's nice to give. But it can be just as blessed to receive. *Yeah!*

How about putting your radio wish list:

- On the handle of the 'fridge.
- On the bathroom mirror.
- Near the Cheez-Its — *Yummmmmmmm.*
- On your friend's steering wheel.
- Taped to the TV remote ...

You get the idea, right? Now, what to put on this most-important list? Here is *Gordo's Santa Wish List* for 2013:

Inexpensive Antenna Analyzers

If the $350-and-up antenna analyzers would not be the pick hit of Santa's list, *how about around $100? Brand new!* Check out these goodies from MFJ Enterprises' line-up:

- The 1.75- to 30-MHz MFJ-207 Antenna Analyzer is an affordable $109.95 <http://bit.ly/16zYlkt>, **Photos A** and **B**.
- The $99 VHF model MFJ-208 covers 138 to 156 MHz <http://bit.ly/16JlPot>.
- For about $20 more, choose the MFJ-219B, covering 420 to 450 MHz UHF <http://bit.ly/14I2LJC>.

MFJ had these three analyzers in their lineup even before their exotic $350-and-up units. Each has a tuning dial as well as the SWR analog meter that takes a nosedive when the antenna you are testing is at resonance. The little 9-volt battery is built in.

Is your homebrew 40-meter/15-meter ham dipole spot on for resonance? Simply run the coax into your SWR analyzer and sweep the tuning knob near the frequencies the antenna is designed for.

Photo A. An oldie but definitely a goodie, the MFJ Enterprises MFJ-207 Antenna Analyzer is an excellent and affordable test instrument that won't break your bank. Check it out at <http://bit.ly/16zYlkt>. *(Photography courtesy of WPC6NOA)*

"From affordable antenna analyzers to goodies for your shack wall, super antennas, pet finders, and wireless microphones ..."

When the SWR meter dives back to the start pin, you know the antenna is tuned. The scale on the front of this device will give you an approximation on what frequency the dip is occurring, and if your nearby radio is turned on, you can SPOT the exact frequency by hearing the flea-powered signal from the analyzer come over the radio's no-antenna-connected receiver.

For VHF or UHF you will know within a couple hundred kHz where your J-pole is resonant.

My HF and VHF $99 analyzer is more than 15 years old, *and going strong.* While I have more expensive analyzers, this is the one I start with because it is easy to use, accurate, and always gives me a quick look at my antenna handiwork. Visit: MFJ Enterprises at <http://www.MFJEnterprises.com>. There's something there for everyone to like.

Radio Document Plaques

If you are a radio amateur, how about this? Have your official FCC license displayed in gold tone on a wooden plaque. If you have a *Pop'Comm Monitoring Station* identification sign like me — WPC6NOA — this deluxe plaque will boldly display your shortwave and scanning hobby certificate of registration, **Photo C**.

The husband and wife team at Ham Crazy will personalize with laser printing just about anything with your name and callsign or special ID.

To see all the items available to show off your radio callsign or monitoring ID sign, go to <http://www.hamcrazy.com> and see what Craig and Holly have *just for you.*

The Super Antenna is Back

Dr. Vern, retired from dentistry, is an avid RVer and hiker and is always ready for adventure. He began by building his own antennas. I took his 3-element portable down to T-32, Christmas Island, and never missed a contact on HF.

Well-known operator and DXer Chip Margelli, K7JA, takes Dr. Vern's slider coil Super Antenna north to Alaska, always making contacts.

The Super Antenna vertical just needs a good ground plane — which is easily achieved by the Super Antenna swivel universal mount and C-clamp.

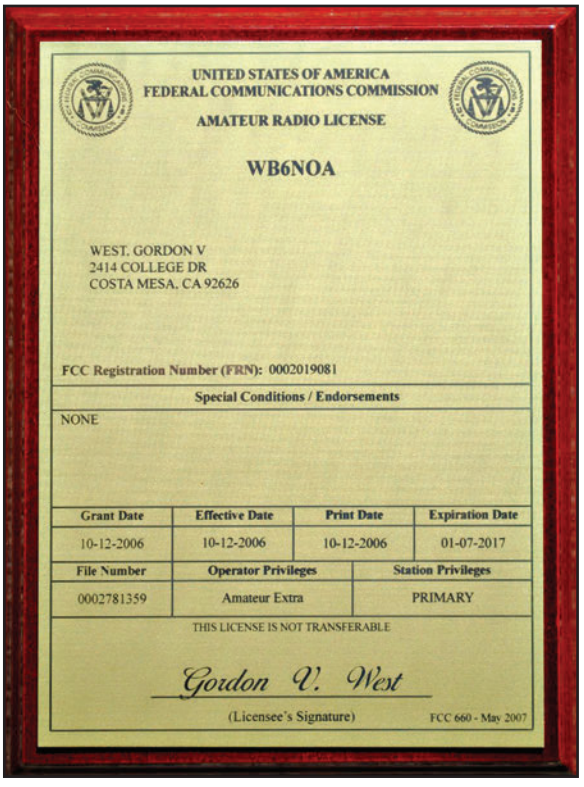
Attach the mount, screw on the antenna, run coax to your radio, dial in your favorite frequency, and then slide the adjustable coil hugger until you hear the noise peak on receive. *Congratulations!* You are on the air and ready for action. For a complete view of products and prices, visit: <http://www.newsuperantenna.com> **Photo D**.

Animal Lost and Found ... Radios, Too!

Suzy West, N6GLF, and I are pet lovers. All pets at our house get outside privileges. When Fluffy and Fido can't be seen around nighttime closedown, we don't panic.

Each pet has its own 222-MHz, 1-milliwatt, 20-millisecond tag collar, **Photo E**. Our sensitive receiver with a Moxon direction-finding antenna can track down the four-legged escapee up to a block or two away, **Photo F**.

Photo B. With the MFJ-207, "simply run the coax into the analyzer and sweep the tuning knob near the frequencies the antenna is designed for," writes WPC6NOA. "When the SWR meter dives back to the start pin, you know the antenna is tuned."


UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

AMATEUR RADIO LICENSE

WB6NOA

WEST, GORDON V
2414 COLLEGE DR
COSTA MESA, CA 92626

FCC Registration Number (FRN): 0002019081

Special Conditions / Endorsements
NONE

Grant Date	Effective Date	Print Date	Expiration Date
10-12-2006	10-12-2006	10-12-2006	01-07-2017

File Number	Operator Privileges	Station Privileges
0002781359	Amateur Extra	PRIMARY

THIS LICENSE IS NOT TRANSFERABLE

Gordon V. West

(Licensee's Signature) FCC 660 - May 2007

Photo C. Ham Crazy's Craig and Holly "will personalize with laser printing just about anything with your name and callsign or special ID." Visit <http://www.hamcrazy.com>.

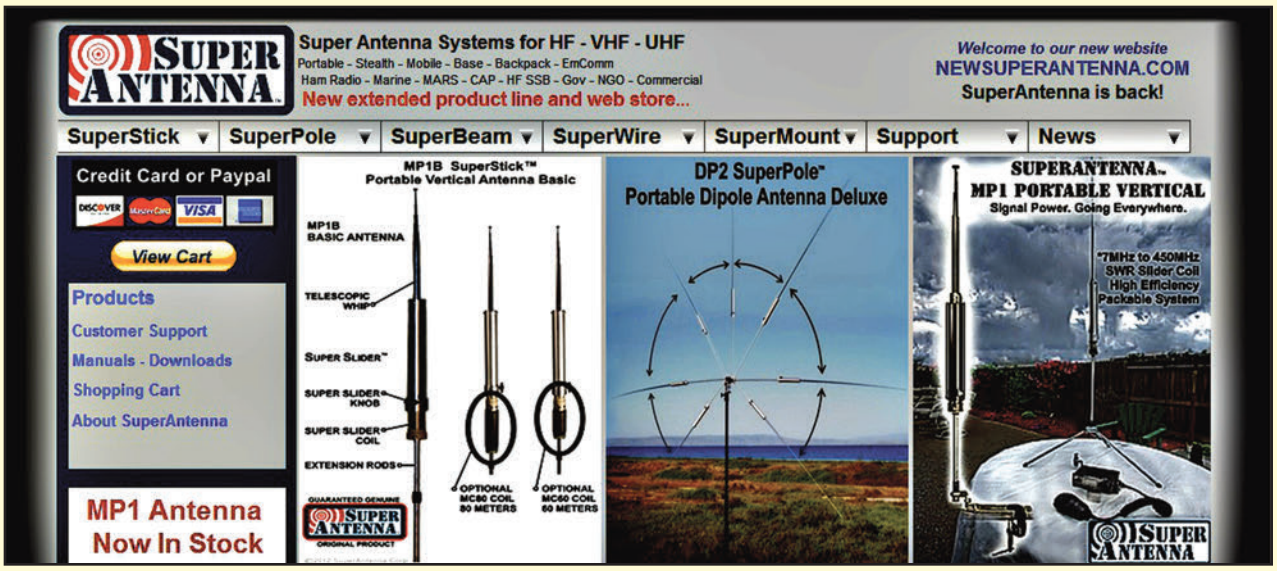


Photo D. Visit the Super Antenna website for a rundown of products and prices at <http://www.newsuperantenna.com>. *(Internet screen grab)*

This pet tracker system is the brainchild of Spence Porter, WA6TPR, of Communication Specialists in Orange, California. He produces tags for all domestic pets and various species of wildlife.

You can even tag your favorite possessions, such as radios or jet skis. The tags run for about a month on a common CR2032 battery. The ham tags work on the 222-MHz band, interstitial to FM channels. It takes the Comm-Spec CW receiver with a hot GasFet front end to hear the tags anywhere from a minimum of two blocks up to 2 miles in the open.

For what you're getting, the system is not very expensive — around $300 for the receiver, Moxon directional fold-up antenna, and one pet transmitter tag.

Additional pet Tags on different 222-MHz channels are only $50 each. All tags include your FCC amateur radio callsign to specifically meet the rules.

These tags are also great for T-hunting

Photo E. This small ticker-tag is a 222-MHz, 1-milliwatt, 20-millisecond tag collar that has a variety of uses for the communications hobbyist. Put one on Fido, and you're likely never to have a lost dog again. Visit Communications Specialists' website at <http://www.Comm-Spec.com>.

Photo F. A Moxon direction-finding antenna is part of Communications Specialists' flea-power, 222-MHz radio system. The antenna folds up nicely when going portable.

training, too. The Moxon antenna design is not only powerful on receive, but *kid-safe* as well. There are no sharp ends.

To see the complete line of inexpensive tracking transmitters and receivers, visit the Communications Specialists' website: <http://www.Comm-Spec.com>.

Heil Wireless Microphones

Audio legend Bob Heil, K9EID, founder of Heil Sound, frequently received requests for a Heil Wireless Microphone PA system. To avoid the new common wireless mic frequencies, and to go digital on the transmission path, Bluetooth™ was chosen.

Photo G. The Heil Wireless PA System features a Bluetooth™ receiver that plugs into the 0.25-inch phone jack on any PA system or audio equalizer.

The Bluetooth™ receiver plugs into the 0.25-inch phone jack on any PA system or audio equalizer, **Photo G**. A Bluetooth™ plug-in goes into the bottom of Heil's popular PR22 mic — or any Heil microphone — with its three-pin connector, **Photo H**. A simple power-on routine links the receiver to the Heil microphone and your audio sounds as good as if you were tethered by an actual microphone cord.

The 20- to 30-foot range between mic and the sound system input is generally sufficient for most forums, gatherings, and classrooms.

This new series of wireless Bluetooth™ adaptors is just rolling out, so for details, visit <http://www.heilsound.com>.

Also, check out Bob and me with our special hosts as we conduct the weekly Ham Nation podcast, Wednesday evenings, at 9 p.m. Eastern, 6 p.m. Pacific, and 0200 UTC Thursday. Go to <http://www.TWIT.TV/hn.com>

Photo H. "A simple power-on routine links the receiver to the Heil microphone — and your audio sounds as good as if you were tethered by an actual microphone cord," writes WPC6NOA.

Holiday Goodies for the AM Broadcast Band DXer

By Bruce A. Conti, WPC1CAT

"For the AM DXer, there is a whole radio dial of gift options for this year's holiday season. Here are some ideas bound to please any listener."

T'was the night before Christmas when all through the house, not a DXer was stirring, not the click of a mouse.

Aerials were hung from the chimney with care, and a beacon warned Santa that wires were there.

Antennas! Receivers! Transformers, and amps! Logs, lights, tower sites, yippee! It's the annual holiday wish list from Broadcast Technology!

Enhanced CCRadio

The new CCRadio-2E, **Photo A**, is billed as the premium radio designed for long-range AM reception and emergencies. The E is for "Enhanced" and the 2E is now better than ever with wider audio frequency response for a crisper and cleaner sound from AM broadcasts.

The original CCRadio-1 was upgraded to the CCRadio-2 after completion of the switch from analog to digital TV in the U.S. The circuitry and reception challenges of digitally made TV audio impractical for a portable radio, so the VHF analog TV audio band of the CCRadio-1 was replaced with VHF amateur radio, thus the CCRadio-2 was born.

I've always liked the hefty and rugged retro design of the CCRadio, reminiscent of the old lunchbox style portable radios of the '60s and '70s. In addition to excellent AM broadcast reception, the auxiliary line input and output jacks of the CCRadio-2 are my favorite features. I use it as an amplified external speaker, plugging the laptop audio output into the stereo line input of the CCRadio-2 for software defined radio listening. It sure beats the weak headphone output of the laptop.

The CCRadio-2E is a complete redesign of the circuitry with a new chipset inside, but it's still the same outside, offering AM/FM broadcast, weather radio with a basic alert function, the 2-meter VHF ham band, five user-assigned preset buttons, and an alarm clock.

AM performance is still optimized by the patented twin-coil ferrite internal antenna. Previously designed for AM talk radio with limited audio bandwidth, now the CCRadio-2E produces fuller sound for listening to AM radio broadcasts of nostalgia and oldies music no longer found on FM.

"There are many changes that have been made to this radio," adds Jarl Johansen of C.Crane

Photo A. The CCRadio-2 is not only an excellent portable AM receiver, it serves as an amplified external speaker for a laptop SDR. *(Courtesy of WPC1CAT)*

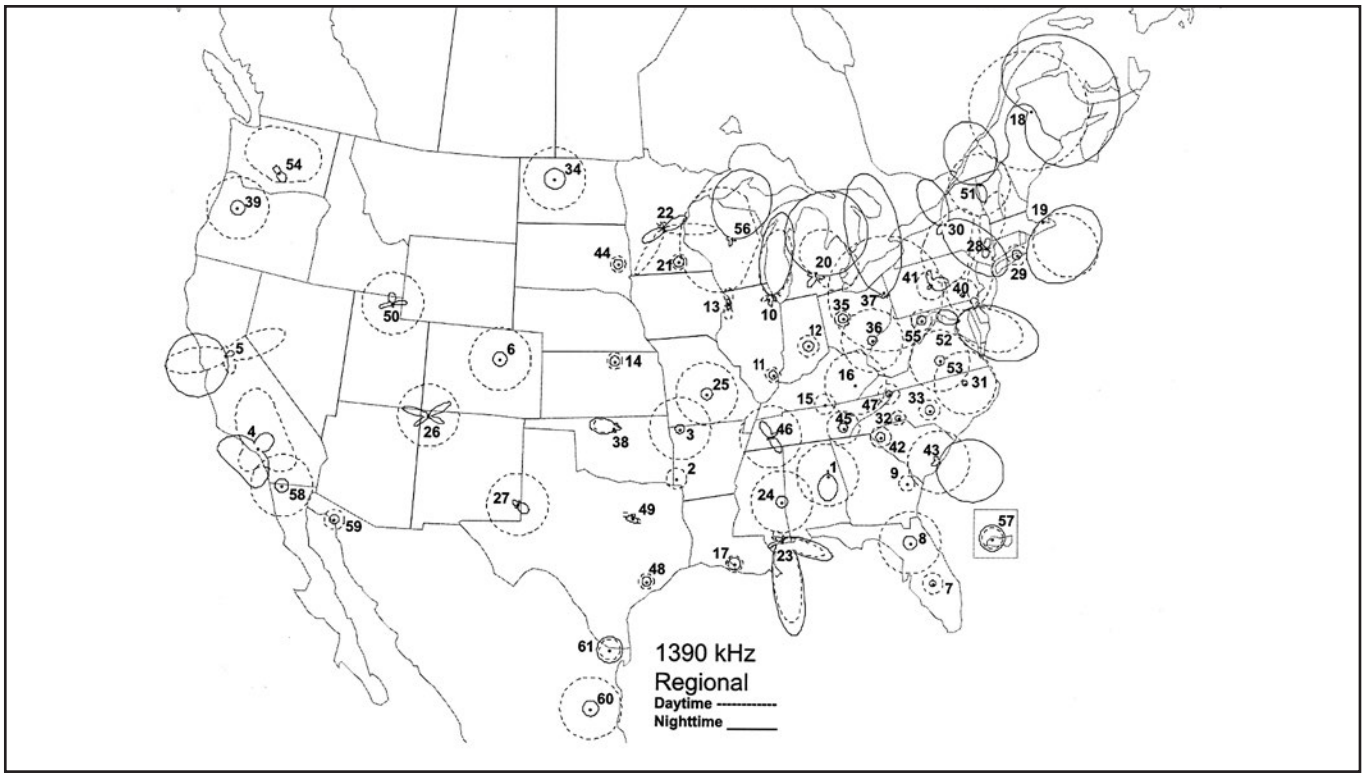


Photo B. A sample page from the *NRC AM Station Antenna Pattern Book* shows the relationships between all the radio stations on 1390 kHz, especially in the congested east. *(Courtesy of the National Radio Club)*

Company. "The AM, FM, and weather bands of the updated radio are using digital CMOS ICs from Silicon Labs. The weather band is using a separate IC to keep the Weather Alert functional regardless of the band you may be listening to. The VHF band is still analog with PLL tuning."

The CCRadio-2E is powered by 120-volt AC with a provided power cord, or by four D-size batteries (not included).

*(**COST:** $159.95 from C.Crane, <http://www.ccrane.com>. – WPC1CAT.)*

AM Radio Log

Following the traditions of Radex Magazine and White's Radio Log, the National Radio Club (NRC) publishes the AM Radio Log annually — a compilation of U.S. and Canada AM radio station information unavailable from any other single source.

The compilation is the result of tracking FCC data and DXer input through the pages of the club's *DX News* magazine and the International Radio Club of America. The NRC also provides updates for the *World Radio TV Handbook.*

Each station listing in the log contains a wealth of information, including slogans, network affiliations, postal addresses, and formats — all to aid in identifying distant signals. A separate listing of AM stations by frequency provides the callsigns and frequencies of FM translator relays, something I've found most useful with so many AM stations promoting FM simulcasts these days.

This year's Log is dedicated to a new level of cooperation between DX clubs, demonstrated through a multi-club convention held over the summer. Hosted by the Minnesota DX Club, members of the National Radio Club, DX Audio Service, International Radio Club of America, and the Worldwide TV FM DX Association participated in a first-ever jointly produced "learning and sharing" event.

This initiative of cooperation is set to continue next summer with another joint convention already in the works.

The AM Radio Log is loose-leaf, three-hole punched, 274 pages.

*(**COST:** $28.95 from the NRC at <http://www.nrcdxas.org>. – WPC1CAT.)*

AM Antenna Pattern Book

The National Radio Club's AM *Station Antenna Pattern Book*, **Photo B**, is an excellent companion to the AM Radio Log, or by itself an extraordinary reference for broadcast DXing.

Photo C. Here is the K1FZ Pennant Antenna Transformer with an F-type connector. *(Courtesy of Clark Electronics)*

Formerly known as the *Night Pattern Book,* it now contains both the day and night antenna patterns of AM radio stations in the U.S. and Canada, plus select Caribbean and Mexican patterns. Each page plots all the patterns for a single frequency on an outline map of North America. Separate maps contain plots of Alaska and Hawaii patterns.

Most AM radio stations decrease power or use a directional pattern at night — or both — to reduce sky wave interference with other stations. The U.S. is especially unique in that regard, as some transmitter sites produce extremely tight patterns with as many as 12 towers in an array. Each map shows how the antenna patterns interact with each other on a frequency, which can help to predict what stations can or cannot be received at a particular location.

Like the *AM Radio Log*, the *AM Antenna Pattern Book* is loose-leaf, three-hole punched, and 239 pages. *(**COST:** $28.95 from the NRC at <http://www.nrcdxas.org>. – WPC1CAT.)*

RF Matching Transformers

When it comes to antennas, it's the one question I'm asked most often, "Where can I get one of those matching transformers for a broadband loop antenna?"

Indeed, finding an RF matching transformer that meets the very specific requirements of a loop antenna like the Delta, Flag, Pennant, or SuperLoop can be difficult. The inherently low-noise performance of a loop is significantly degraded if there's a common physical ground connection between the high- and low-impedance windings of the transformer.

Unfortunately a common internal ground connection is typical of "baluns" available from amateur and shortwave radio retailers. Such baluns are great for ground-referenced antennas like a longwire, Beverage, or dipole. However, a loop is a floating antenna that depends upon isolation from ground.

Clark Electronics of Belfast, Maine, has come to the rescue with the K1FZ Pennant Antenna Transformer, model KB-5, **Photo C**. It features a 900-ohm, low-capacitance primary antenna connection specifically designed to match broadband loop antennas, with less than 6-pf inter-winding capacitance for minimum common mode transfer and best ground independence.

The KB-5 is available with SO-239, BNC, or F-type coax connectors.

*(**COST:** $70 from Clark Electronics at <http://www.qsl.net/k1fz>. – WPC1CAT.)*

RF Amplifiers

Often DXers just don't have enough real estate available to erect a full-size, 100-foot Delta or SuperLoop antenna. However, loop size is no longer a limiting factor with the low-noise broadband RF amplifiers available today. Units from Clifton Laboratories and Wellbrook Communications can make a 10-foot loop perform like a 100 footer.

Model FLG100LN from Wellbrook in the United Kingdom provides a high impedance match to terminated loop antennas along with a high-gain, low-noise amplifier. Per the Wellbrook design notes, the FLG100LN uses a low capacitance 4:1 (1,200 to 300 ohm) antenna matching transformer to galvanically isolate the antenna from the feeder, resulting in an equivalent capacitance of 10pf. This approach offers much better isolation than an FET buffer and transmission line balun.

Poor isolation can degrade the antenna pattern. The amplifier section uses eight JFETs in a parallel push-pull configuration with noiseless transformer feedback resulting in a much lower amplifier noise floor. This lower noise floor is achieved by dynamically decreasing each JFET source resistance from approximately 60 ohms to 4 ohms. The theoretical noise figure is 0.1 dB excluding other circuit losses.

The second order intermodulation performance of a wideband amplifier is very important because sum and difference signals especially from high-power AM radio stations can produce IMD (intermodulation distortion) way before the third order IMD is noticeable.

Most commercial wideband amplifiers generate quite high second order IMD. The FLG100LN is specifically designed to reduce intermodulation products to a minimum. Second and third order intercept points are typically +90 dBm and +42 dBm respectively, thus the level of the intermodulation products is generally below the atmospheric and man-made noise level.

The FLG100LN amplifier is ideally suitable for low output loop antennas such as the Double Half Delta Loop (DHDL), Double Delta, and Bowtie, typical of "split" loop configurations that are effectively two loops on the same axis running in anti-phase to produce a tighter unidirectional beam. However the

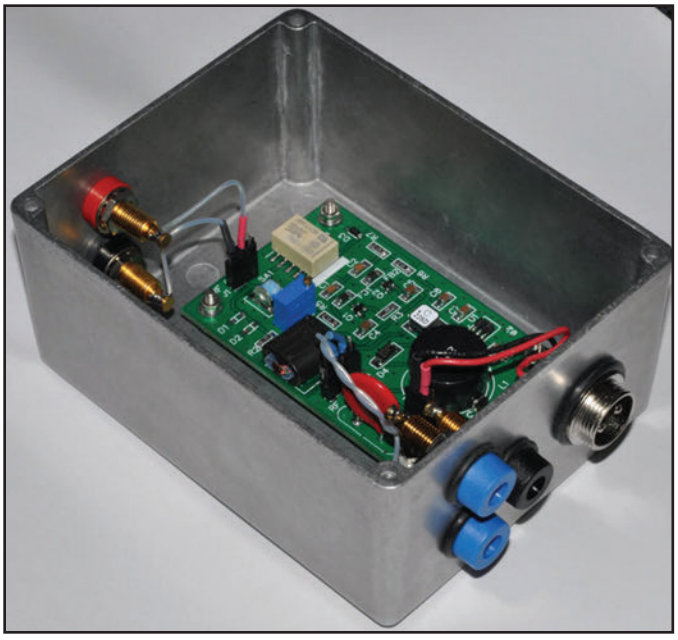


Photo D. The Clifton Labs Model Z10130A RF amplifier is available as an economical kit or fully assembled. *(Courtesy of Clifton Labs)*

Photo E. The Black Diamond "Storm" LED headlamp is powerful enough to shed new light on any project. *(Courtesy of Eastern Mountain Sports)*

FLG100LN works great with single loop antennas, too. Amplifier gain is specified 22 dB at 1 MHz. The FLG100LN is powered by an included external supply, but be sure to specify the North American model when ordering.

*(**COST:** $253.97 from Wellbrook Communications at <http://www.wellbrook.uk.com>. – WPC1CAT.)*

A less expensive alternative to Wellbrook is the Model Z10130A, **Photo D**, from Clifton Labs, a complementary symmetry junction FET amplifier based on designs implemented by Dr. Dallas Lankford for Delta antenna arrays. The amplifier is powered by an external DC supply (not provided) of 12.6 to 28 volts at approximately 28 mA. But, upon request, it can be outfitted with a low dropout 10-volt regulator to operate with an external supply as low as 10.8 volts.

*(**COST:** The Z10130A is available in kit form for as little as $35, or assembled for $150 from Clifton Laboratories at <http://www.cliftonlaboratories.com>. – WPC1CAT.)*

Headlamp

If you enjoy do-it-yourself electronics projects like the Clifton amplifier, then you may have noticed the inverse relationship between eyesight and component size. As eyesight naturally weakens with age for many of us, electronic parts seem to get smaller and smaller. While reading glasses or a magnifier can restore acceptable vision, more often than not it's poor lighting that makes a job impossible.

Broadcast engineers have long known that LED headlamps are great for lighting up a work area, especially inside a cramped and poorly lit transmitter cabinet. With concentrated bright light aimed from your head to wherever you look, there's no more fumbling with a flashlight or lamp while working inside tight spaces.

The same holds true when working on tiny electronic assemblies. No more cross-eyed positioning of a magnifier lamp or trying to aim a penlight to get the lighting just right without casting shadows, when an LED headlamp can shed plenty of bright white light on a project. A headlamp is also great to have when making outdoor antenna repairs at night.

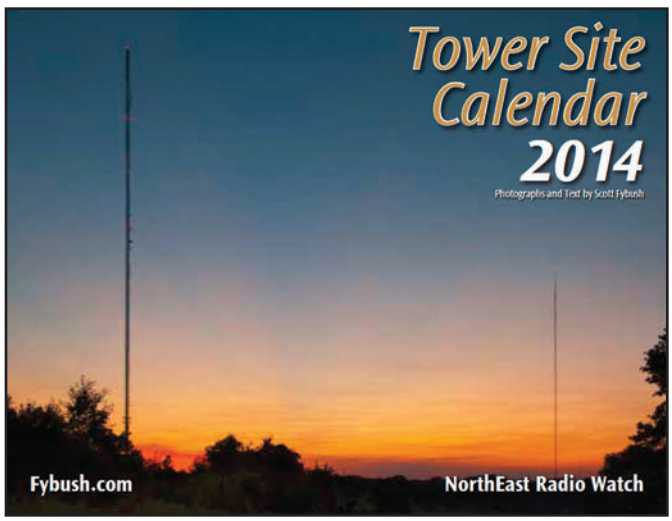


Photo F. The Crestwood, Missouri, combiner system is home to 11 of St. Louis's FM radio stations, and it's featured on the cover of the *2014 Tower Site Calendar*. *(Courtesy of Scott Fybush)*

Headlamps designed for outdoor adventurers serve the purpose really well. The "Storm" LED headlamp from Black Diamond is a good example, **Photo E**. It emits up to 100 lumens of light, enough to illuminate any project.

Powered by four AAA batteries, the Black Diamond Storm is available in two colors, orange and black.

*(**COST:** $49.95 from Eastern Mountain Sports at <http://www.ems.com>. Get the black unit, as the translucency of the orange plastic case is reported to produce an additional distracting glow. – WPC1CAT.)*

Tower Site Calendar

Scott Fybush of WXXI has done it again with the *2014 Tower Site Calendar.* The collectible 13th edition of the 12-month wall calendar boasts a full-color photo of a well-known transmitter site every month. This year's pinups include the iconic towers of Catalina Island, a combiner system in St. Louis, the twin towers of KNRS in Salt Lake City, and a historic rooftop site in Jamestown, New York.

"Some people may think all radio towers look alike, but the Tower Site Calendar shows every year that it's not the case," says Fybush, who has worked in radio and television news for more than two decades. The calendar began in 2002 as an outgrowth of his weekly industry news column, *NorthEast Radio Watch,* and its offshoot, *Tower Site of the Week,* a feature at <http://www.fybush.com>.

"It has developed a passionate following in the broadcast engineering community," Fybush said. "Engineers are notoriously underappreciated for the hard work they do. The calendar is one way I can help show some recognition for their design and maintenance of the infrastructure that allows all of us to have easy access to radio, TV, and cell phones."

*(**COST:** $18.50 plus shipping, exclusively from <http://www.fybush.com>, and if you missed any of the previous years' calendars, some are still available at reduced prices. – WPC1CAT.)*

If the calendar pictures aren't enough to satisfy your appetite, then be sure to check out the *"I Take Pictures of Transmitter Sites"* group on Facebook at <http://on.fb.me/15pqKuc>. Snakes in transmitters, glowing vacuum tubes, historic sites, troubleshooting tips, towering heights, and broadcast modernity ... there is plenty of eye-candy for the broadcast enthusiast.

– 73 and Good DX! WPC1CAT

This Month in Broadcast History

75 Years Ago (1938): Lux Radio Theater presented Disney's "*Snow White and the Seven Dwarfs"* live from the Music Box Theatre in Hollywood on the NBC Blue Network. Walt Disney was interviewed as part of the broadcast. Coincidentally, after anti-trust lawsuits forced NBC divestiture, in 1943 the Blue Network was sold to ABC, which was then acquired by the Disney Company in a 1995 media mega-merger deal. *(**WATCH and LISTEN:** To a CBC interview featuring Walt Disney, talking about "Snow White" at <http://bit.ly/17ZF6EV>, **Photo A**. – WPC1CAT.)*

50 Years Ago (1963): "Louie Louie" by The Kingsmen topped the Hy Flyin' music survey on 1470 WWHY Huntington, West Virginia. *(**WATCH and LISTEN:** To The Kingsmen perform their mega-hit on television's "Shindig!" <http://bit.ly/15pyaxH>, **Photo B**. – WPC1CAT.)*

25 Years Ago (1988): On Christmas Day after more than three decades of jamming, Bulgaria was the last of the Soviet Bloc nations to finally stop interfering with reception of Radio Free Europe. This was shortly after Czechoslovakia ended jamming of Radio Free Europe and Deutchlandfunk broadcasts.

Photo A. Walt Disney talks with the Canadian Broadcasting Corporation about the challenges of producing "*Snow White and the Seven Dwarfs*" and other animated films from the classic Disney collection. Visit <*http://bit.ly/17ZF6EV*>. *(Internet screen grab)*

Photo B. The teenage television classic "Shindig" featured The Kingsmen performing "*Louie, Louie*" before a live audience in the 1960s. *(**NOTE:** The fancy footwork during the guitar solo <http://bit.ly/19wrVdP>. – KI6SN.)* *(Internet screen grab)*

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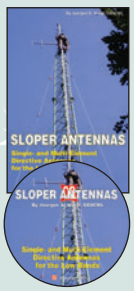

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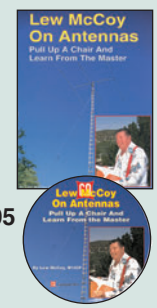
by Lew McCoy, W1ICP



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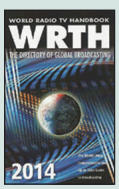

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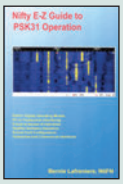

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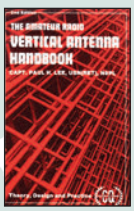

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Photo A. When he was 16, Bob King, G3ASE, became a Volunteer Interceptor for Britain's Radio Security Service during World War II — among the many station monitors helping in the war effort using an Eddystone All World Two regenerative receiver, shown here at the left. *(Courtesy of G3ASE)*

The Secret Listeners of 'Box 25, Barnet'

By R.B. Sturtevant, KPC7RBS/AD7IL

From time to time in the British Isles, residents of homes that existed during World War II find antennas built into their house. Many were installed so covertly they went unnoticed for decades.

Who put them there? Were they used by enemy agents to send radio messages to the Nazis and receive sabotage instructions? Where did these secret antennas come from?

To begin to unravel the mystery, we must go back to 1939 when hostilities were escalating in Europe. Everyone in Britain was either preparing to fight a war or trying to stop one. Wireless had not played a significant role in World War I. It was sure to play a major part in the next one.

"This became one of the most important postal addresses for British Intelligence in World War II — and radio amateurs were the key."

One concern was that of foreign agents using transmitters to send military secrets and defense plans out of Britain.

How many foreign agents were there? Where were they hiding? How could they be found? Wouldn't the military soon be occupied with other jobs, and if so, who would find the illicit radio transmitters operated by enemy agents?

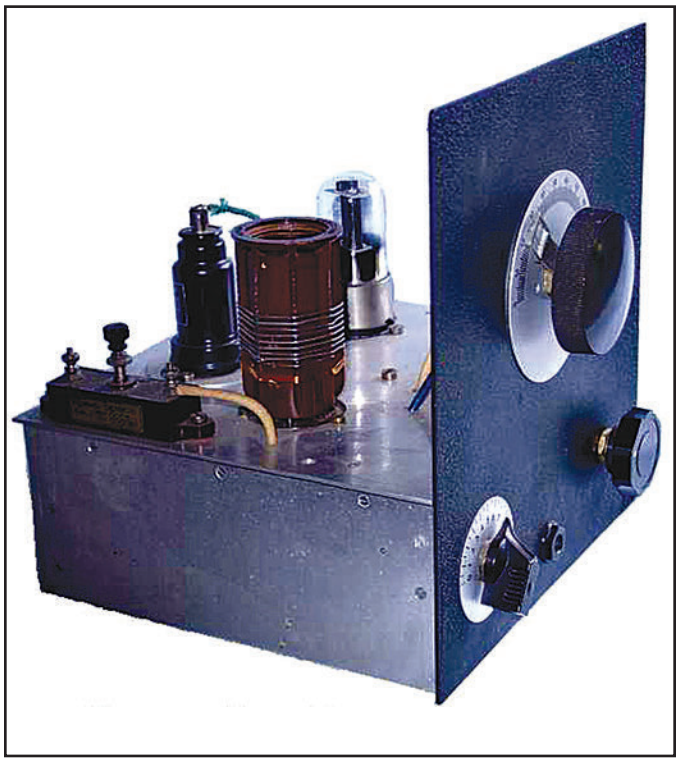


Photo B. The Eddystone All World Two two-tube receiver covered "15.5 to 52 meters (19.3 to 5.8 MHz) with two coils provided," and featured Eddystone "Slow Motion Bandspread Tuning." *(Courtesy of G3ASE)*

These and other questions fell to Military Intelligence 5, or MI5 — the British equivalent of the United States' FBI Counter Espionage Unit, among other things. *(**IN DEPTH:** Learn more about MI5 at <http://bit.ly/198B8XH>. – KPC7RBS.)*

The value of radio communication during war was still a somewhat new concept in those days. There were very few people capable of hunting down enemy transmitters, and certainly not many in MI5.

To develop a group of radio experts to handle this specialized program, MI5 created the Radio Security Service. In the summer of 1939 MI5 officials met with Arthur Watts, President of the Radio Society of Great Britain. The question put to Watts: *"Could radio amateurs take on the most secret work of locating enemy transmitters inside the British Isles?"* Watts answered, "Yes!" leading to a board of the RSGB undergoing security checks and beginning to operate as Volunteer Interceptors (VIs) for the RSS.

The early offices of the RSS were near London, inside one of the most notorious prisons in Great Britain — Wormwood Scrubs. Maintaining RSS's "cover" was no problem.

The Mysterious *'Box 25, Barnet'*

As the story goes, the only space available for RSS offices was in Wormwood Scrubs' unused first-floor cells. They were used by the RSS for quite some time. Later they moved to better accommodations at Arkley View Manor, *Box 25, Barnet* — a postal address in a part of London.

As you will see, *Box 25, Barnet* would become one of the most important mailing addresses in the British Intelligence effort of World War II. But it was about all most VIs knew about

the organization and its leadership — just enough information to enable the radio monitors to mail their all-important enemy intercept reports to people who could interpret them.

Recruiting VIs went slowly at first. Only those who were recommended by established VIs were recruited. They had to undergo a background investigation and required to sign documents of the Official Secrets Act. The VIs were then forbidden to tell even members of their own families what they were doing with their radios.

Starting with only the Board of the RSGB, the number of VIs grew to as many as 2,000 operators, but no more than 1,500 to 1,700 were on duty at any given time.

Some were veterans too old for this war. Many were teenagers not old enough for military service. Some were ordinary workers who put in a second shift at their radios. But they were all radio amateurs.

Most were given cover assignments as members of the Royal Observer Corps — a*ircraft spotters* — even if they couldn't tell a Stuka Dive bomber from a B-17. Until the organization's existence was declassified in 1979, most people never even knew there was a Radio Security Service or Volunteer Interceptors.

As war was declared in September 1939, all amateur radio operators were required to turn in crystals and transmitters and stay off the air "for the duration." Most amateurs of the era were using separate receivers-transmitter combinations.

Photo C. A "powerful 2-valve (tube) receiver with bandspread tuning," the Eddystone All World Two regenerative was designed for "battery operation," as described in this World War II-era advertisement. *(Internet screen grab)*

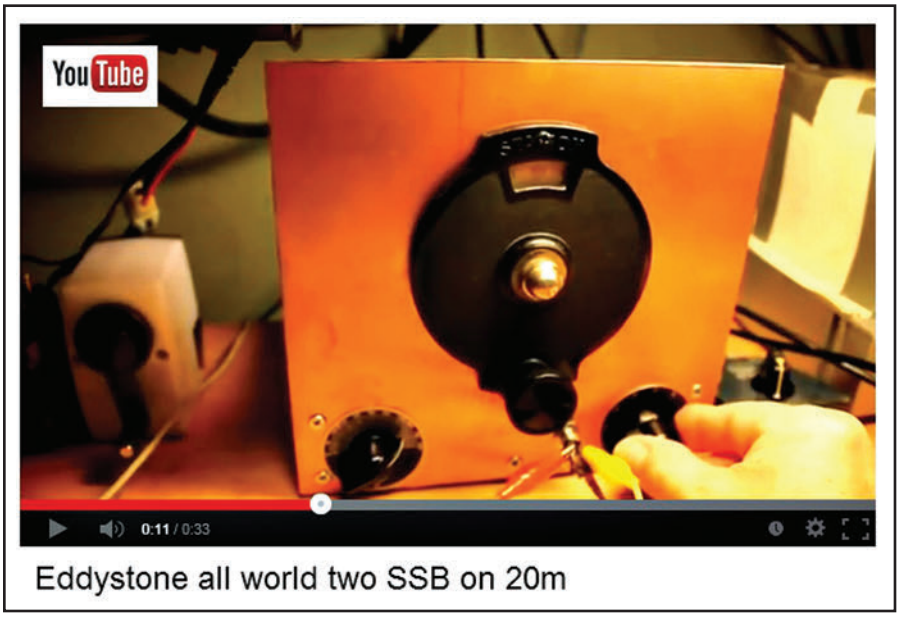


Photo D. Volunteer Interceptors, recruited by Britain's Radio Security Service around the time of World War II, often used the UK-made Eddystone All World Two receiver — popular among shortwave listeners and radio amateurs of the era. *(**WATCH and LISTEN:** To a replica of an Eddystone All World Two regenerative receiver in action at <http://bit.ly/1avfksw>.) (Internet screen grab)*

British Volunteer Interceptor Bob King, G3ASE

When Bob King was 16, he became a VI and would go on to spend four-and-half years in the Radio Security Service, stationed in the village of Arkley in the London borough of Barnet.

On his QRZ.com page, G3ASE writes, "there I examined logs from our intercept stations to determine which transmissions were German *Abwehr* and wanted. These were identified, if possible, for the group and service or perhaps a new service set up by the Germans. The procedure was based on ham chat abbreviations with rarely any indication that they might be German," G3ASE said, **Photos A**, **B**, **C**, and **D**. He lives in Huntingdon, England.

"We penetrated the whole German intelligence service and had control of many agents sent here with very significant effects on the outcome of the defeat of Germany and Italy. In addition to our full-time stations — almost entirely manned by amateurs — there were around 1,500 VIs listening in their own homes and in complete secrecy. There was no public knowledge of this until a BBC broadcast in 1970."

Getting Down to Business

In the beginning, VIs quietly turned in their transmitters and kept their receivers handy — many hams monitoring from attics or sheds in the garden. Most VIs put in several hours every day or night after their "real job."

They would monitor their assigned frequency to pick up anything that didn't fit the authorized radio traffic formats. Some VIs, while doing their monitoring duties, would suddenly find themselves surrounded by police constables and members of the Home Guard. The radio

Photo E. This vintage picture was taken from the rear of Arkley View Manor, secret home of Britain's Radio Security Service during World War II, and with the mysterious postal address *Box 25, Barnet.*
(Internet screen grab <http://bit.ly/16wj0wO>)

amateur had been turned in by neighbors on suspicion of being a Nazi collaborator.

Fast talking was required because the VIs couldn't tell the authorities what they were doing. It took "thinking on their feet," and perhaps a Royal Observer Corps identification card and uniform or a Special Constable badge. This was difficult because other members of those recognizable organizations didn't know them.

Mission 'A' Accomplished — Now to Mission 'B'

By 1940 it was clear there were no signals coming from inside Britain. Any spies had been captured and executed or convinced by MI5 to work for the Allies. The VIs had finished their job.

But they were picking up plenty of signals from Nazi intelligence networks in France, Holland, Belgium, and in other occupied or neutral countries and sending them to Arkley View Manor's *Box 25, Barnet,* **Photo E**. Rather than disband the dedicated and unpaid VIs, they were given another task: hunt down German Intelligence stations working on the continent under the auspices of the *Abwehr* (German military intelligence) or the SD (Nazi Party intelligence).

Involved in the intercept game, as well, were full-time operators of the General Post Office who had monitored the airwaves for years. It was discovered, however, that amateur radio operators were more successful at digging weak and distorted signals out of the background noise than many other non-ham monitors.

GPO operators were used to dealing with powerful equipment used under ideal conditions. The VIs for years had been used to building their own low-power sets and working under adverse propagation conditions. Their experience digging out difficult signals was invaluable. They were judged to be better at this work than the "professionals."

Most of the German Intelligence stations were using agent codes worked out with pencil and paper — or messages from an Enigma code machine. In order to break the German codes, the people at Bletchley Park, Britain's code breaking center, needed thousands upon thousands of coded messages. Breaking any code requires as many examples as possible to show patterns in the messages.

Relentless Dedication

The VIs stood watch 24 hours a day. From 6 a.m. to 5 p.m. the concentration was on 5.5 to 9 MHz. From 5 p.m. to 6 a.m. it was 3 to 6.5 MHz. Each VI was given specific frequencies to search. Each time a VI found a sending station, he would note the time, frequency, and coded message being intercepted. As the sending station became more familiar to the VI, a description of the sound of the station's signal or the Morse hand of the sender — his "fist" — would be added to the log.

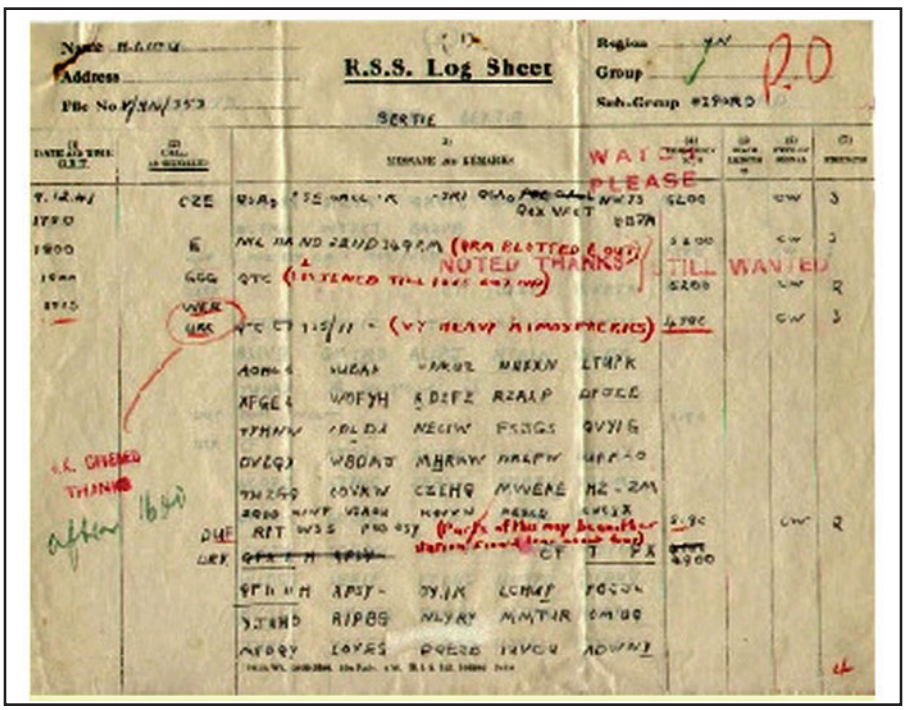

R.S.S. Log Sheet

Photo F. This VI log, submitted to the Radio Security Service, shows "ham chat" was used by Nazi operators, such as SRI, PSE CALL, NW, 73. But the three-letter callsigns, such as CZE, and five-letter code blocks were anything but amateur.
(Internet screen grab <http://bit.ly/16wj0wO>)

By the end of the war, RSS was able to compile a card file on specific German radio operators. This allowed the British to trace the movements of different units by the notes they had of the radio operators "fist" attached to those units.

The logs, composed of many message sheets, were mailed to the anonymous address *"Box 25, Barnet"* — even placed in double envelopes to add security.

And the Mail Pours Into '*Box 25*'

At first, on an average day, *Box 25, Barnet* would receive up to 300 logs — containing up to 50 sheets of interception reports, **Photo F**. They would be collated and cross-referenced with direction-finding reports (DFRs) from stations around the British Isles. Among the notations, the time each message was received was the most important element. Transmission time, frequency, and notes about the sender's hand or signal characteristics were often the only threads to tie many messages to a single station.

The VIs, of course, never knew what kind of traffic they were picking up or where it was coming from. Everything they heard was in code and their only job was to accurately copy the traffic coming through the crackling air.

For hours and hours they would sit listening to what sounded like gibberish to most people. Yet their record for accuracy was first rate.

Without these VI radio amateurs, the Allies wouldn't have found the Nazi intelligence nets as quickly as they did. The operators provided most of the early volume of traffic needed to break the Enigma codes, as well. In time, many of the military-aged VIs were called to duty to do the same job in the service.

One bedridden veteran of World War I was sent a letter of thanks for his mastery of intercept work and the volume of his production. In reply he wrote: "You may not know that owing to close acquaintanceship with a landmine in the last war, I am completely paralyzed from the arms down, and in my arms I have not enough strength to roll a bandage."

The VIs drove themselves to great lengths with genuine willingness and enthusiasm for the job to accomplish their unspoken duty. Their only "payment" was use of a government-supplied National HRO receiver, **Photo G**. These "Lend-Lease" U.S. radios were available for the VIs to buy at reduced price for personal use after the war.

Finally, Public Recognition

The first official mention of the VIs and RSS was in 1979 when BBC did a broadcast special about them. In that program, Colonel Maltby, controller of the RSS, said "I don't think anything but death or great unconsciousness would make them miss a schedule."

The Nazis did not make it easy for them. The VIs had to deal with intelligence stations that changed their call-signs frequently — often *daily.* Target stations often talked to each other on different frequencies, each sending on one and receiving on the other. They also changed frequencies often, sometimes several times a day. One station sent out a "sign off" then waited for some time before coming back on the air with its traffic. The German Intelligence nets were aware there may be operators listening in.

Astounding Numbers

By August 1941 some 23,000 logs arrived at *Box 25, Barnet* for the month, comprising 10,000 sheets per day. As the war went on, the numbers rose. By the end, 268,000 decrypts were stored in the files at Bletchley Park.

All these messages were received from 78 secret German Intelligence stations at the end of 1941. The number increased to 147 by the end of 1942 and more after that.

Churchill once said, *"Never, in the course of human events, have so many owed so much to so few."* He was, of course, speaking of the fighter pilots of the RAF. He might, however, have just as well been referring to the Volunteer Interceptors of the Radio Security Service. They listened and told the enemy's secrets to Allied planners — *even though nobody knew they were there.*

Photo G. National HRO superhet receivers covering 1.7 to 30 MHz with four plug-in coils, were issued to Britain's VIs to intercept enemy signals from 1941 to 1945. They were imported from the United States under a Lend-Lease agreement set up by President Roosevelt. After the War, VIs were allowed to buy the receivers at a reduced price. *(Internet screen grab from RadioBlvd.com <http://bit.ly/1fuT8oy>)*

'Old Tech is Good Tech,' So Let's Make the Most of It

... and More on the Hy-Gain SPT-500 Super-Penetrator Vertical

By Cory GB Sickles,
WPC2CS/WA3UVV
<wa3uvv@gmail.com>

"Take a few moments to reach out and get to know more about your neighbors. Perhaps you can help someone begin to enjoy two-way radio."

We start this month with an update on an antenna — the Hy-Gain SPT-500 Super-Penetrator 5/8-wave, 10/12-Meter Vertical I got from MFJ Enterprises for a long-term review, **Photo A**.

One of my goals in the coming year is to upgrade my CB setup to a new rig and antenna. Well, the antenna part is already done. As a number of you have asked for a recommendation on a base antenna with some gain, I can enthusiastically tell you to get one of these.

It went together easily, was quick to tune up, and seriously outperforms my previous antenna. If you're a ham — as many readers of this column apparently are — and you've been looking for a good vertical for 12 or 10 meters, consider it an added bonus.

*(**NOTE:** Hy-Gain is a sister company of MFJ Enterprises, Inc. Visit <http://www.mfjenterprises.com>. – WPC2CS.)*

Is Super-Penetrator Illegal for CBers? Not Likely

On the Hy-Gain SPT-500 website, <http://bit.ly/1dOuMC3> you'll notice a disclaimer about using it with CB: "This antenna is illegal for 11-meter use," **Photo B**.

The reason is the radiator length is more than 20 vertical feet. However, as explained in the FCC's CB rules and regulations, **Figure 1**, if you mount the SPT-500 such that it doesn't extend more than 20 feet above "the highest point of the

Photo A. Here's a close-up of the mounting hardware for the Hy-Gain SPT-500 Super-Penetrator vertical at WPC2CS in Southern New Jersey. The base of the antenna was mounted significantly below the peak of his home's roof to comply with FCC CB antenna height rules. *(Courtesy of WPC2CS)*

precipitation static, giving an extremely low noise antenna capable of high power.
SPT-500 is specifically designed to accept AM-FM-SSB-DSB signals with low loss.
Handles 1.5 killowatts. This antenna is illegal for 11 Meters use.

SPT-500 Antenna Specifications	
Gain (dB)	5.3 dB
SWR (at resonance)	Less than 1.2:1
Nominal input impedance	52 Ohms
Lightning Protection	DC Ground
Height	Twenty-two feet, six inches
Radial Length	Eight feet nine inches
Wind (Survival)	80 MPH
Accepted mast size	1 ¼" to 1 ⅝" OD

Photo B. Specifications for the SPT-500 are shown in the Hy-Gain online catalog. To make it stand out, we underlined in red the company's warning about using the antenna on the Citizens Band. Mounted properly, however, *CB and More's* Cory GB Sickles, WPC2CS, believes this vertical falls within FCC rules. *(Internet screen grab <http://bit.ly/1dOuMC3>.)*

building or tree on which it is mounted, or 60 feet above the ground," you will be perfectly within the law.

*(**IN DEPTH:** See FCC Part 95.408, "[CB Rule 8] How high may I put my antenna?" at <http://bit.ly/1dPmvgX>, **Figure 1**. – WPC2CS)*

In my case, that meant mounting it a few feet off my roof's center. As I've never seen nor read about an FCC field engineer using an inclinometer <http://bit.ly/18aIgWo> to determine a CB antenna's height, I think it's good to be careful and compliant — but don't cheat yourself out of this nicely-performing radiator.

The SPT-500 is a distant cousin of the Hy-Gain Penetrator, dating back to the 1970s, **Photos C** and **D**. Through 40+ years of use and improvement, the Super-Penetrator carries on the legacy of a great design — *no doubt about it.*

Being Neighborly in the Face of Solitude

If you look at the architecture of homes in any neighborhood, you can get a feel for when they were built. My childhood home had a small flower bed, structured around what remained of a coal chute. Built sometime in the 1930s and in western

§ 95.408 (CB Rule 8) How high may I put my antenna?

(a) *Antenna* means the radiating system (for transmitting, receiving or both) and the structure holding it up (tower, pole or mast). It also means everything else attached to the radiating system and the structure.

(b) If your antenna is mounted on a hand-held portable unit, none of the following limitations apply.

(c) If your antenna is installed at a fixed location, it (whether receiving, transmitting or both) must comply with either one of the following:

(1) The highest point must not be more than 6.10 meters (20 feet) higher than the highest point of the building or tree on which it is mounted; or

(2) The highest point must not be more than 18.3 meters (60 feet) above the ground.

(d) If your CB station is located near an airport, and if you antenna structure is more than 6.1 meters (20 feet) high, you may have to obey additional restrictions. The highest point of your antenna must not exceed one meter above the airport elevation for every hundred meters of distance from the nearest point of the nearest airport runway. Differences in ground elevation between your antenna and the airport runway may complicate this formula. If your CB station is near an airport, you may contact the nearest FCC field office for a worksheet to help you figure the maximum allowable height of your antenna. Consult part 17 of the FCC's Rules for more information.

Figure 1.

Pennsylvania, coal was the go-to fuel for heating homes.

I can still remember the sight of occasional soot from some nearby chimneys before they converted to oil or gas. If it snowed, PennDot didn't "salt" the road, it used coal and coke ash, thus turning it from brilliant white to dirty gray with each passing truck.

Another "tell" to a home's age is whether there's a front porch and, if so, how big it is. Up until the late 1950s or early 1960s, homes had large front porches where families would sit in warmer weather, relaxing with the big tube-radio playing through an open window.

Perhaps your home was close enough to others that you could chat with neighbors late into the evening. Only the sporadic glow of a lit cigarette gave visual indication that someone was there.

Homes built after this time had smaller and smaller front porches, until it became just a few steps. Folks weren't spending as much time outside. Why? Blame *Uncle Miltie, Playhouse 90,* and *Your Show of Shows.* Yes, television had become widely entrenched in American homes and families were staying inside, fully engaged with the black and white images glowing forth.

As central air conditioning became more affordable, windows were kept closed and in many areas, no one bothered to put out the summer chairs and tables anymore. As neighbors passed away, friends moved and grown-up children left home, the relationships with the new occupants of those homes was never quite as intimate.

Breaking Down Barriers with Two-Way Radio

Sadly, it's safe to say that today many of us don't know very many of our neighbors, let alone their names or "back stories." Along with television, we now have computers, tablets, and other things to pull our attention.

Amateur radio and CB give us some opportunity to make new friends, whether in foreign countries or nearby towns. Many two-way radio enthusiasts may know those people better than their own neighbors. I suspect I'm guilty of this, too. What may be really shocking is that there could be other amateur radio operators or CBers just a short walk from your home.

Recently, I got a call from a fellow member of a business networking group I belong to. She remembered that I "fooled around with shortwave radio" and thought I might be a good person to talk to. Seems she had a nearby neighbor whose wife recently passed away and now seldom leaves the house — partially because he is sight-impaired. He used to have a technical job and might be interested, as she put it, in "talking on the radio."

It's funny how certain things seem to enter your life in "packages." Just a few days before, I'd received an email from a reader who let me know he enjoyed ham radio, CB, and *Pop'Comm's CB and More.* He also went on to tell me that he was sight-impaired and reads *Pop'Comm* in Braille. I sent back a reply with a few questions, which he was happy to answer.

With an introduction from this lady, I met with her neighbor and we talked for a while. While he wasn't interested in studying for an amateur radio license — even with extra help — he *was interested* in the ease and simplicity of CB, and might enjoy having a shortwave radio or scanner.

WPC2CS to the Rescue

I returned a few days later with a spare 23-channel CB transceiver and power supply, plus some feed line and a simple antenna. I hooked it all up and let him know there was a "dead spot" between channels 22 and 23. This way he could turn to the "dead spot" and then count the clicks from a known point to get to the channel he wanted.

We spent a few minutes going over procedures and how to make a call or join a conversation. Then, I left him on his own.

A week later, I checked in with him to see how it was going. He had become active on a couple of channels, made some friends and one of them was stopping by to drive him to a breakfast the group has each Saturday.

To make a long story short — *which I rarely do* — he's now pretty active on the air and has a bit of a social life again. Through radio, he reaches miles away from his home and has some new buddies to hang with. What about the loaner radio, power supply, and antenna? It's his now, and I hope he enjoys it for many years to come.

Confusion on the Legality of 23-Channel CB Radios

I also got a recent email from "Joe in Jackson, TN" asking if 23-channel radios were legal to use. He was concerned about type acceptance and the FCC rule that prohibited the continued manufacture

Photos C and D. The SPT-500's distant cousin — the Hy-Gain Penetrator — dates to more than 40 years ago — showing the staying power of a good antenna design. It was featured in a full-page advertisement in the September 1972 edition of *S-9* magazine on page 41. *(Courtesy of S-9 magazine)*

and sale of such radios, back in the late 1970s. It's a good question as there does seem to be some confusion.

When the band expanded to 40 channels, some other transmitter characteristics were changed, as well. In order to force manufacturers to discontinue making the older specification transceivers, they enacted a law prohibiting their sale. The intention of that was not that you couldn't pass on your used, type-accepted 23-channel rig to someone else — you just couldn't sell them "new." So, it doesn't mean you can't buy one at the local thrift store — *I do it all the time* — or hamfest or CB coffee break. Just don't start going into commercial production of a 30+ year old design!

As I've written about before, such rigs can be easily obtained for $10 and a pulled computer power supply for $5. Grab some coaxial cable (50 or 75 ohm) and make a vertical wire dipole and you have a complete station for well under $50. The one I recently gave away cost me less than $40, but it proved to be worth so much more to someone else.

Things to Think About for 2014

As this year ends and another begins, please take a few moments to reach out and get to know more about your neighbors. Let them know more about you. Ask one of them about "the old guy down the street." Perhaps with a little time and a few dollars, you can help someone begin to enjoy the hobby of two-way radio.

While taking a walk around your neighborhood, see if you notice an old ground plane on a roof or short tower. Maybe it's an opportunity to spark someone's interest — once again — in getting back on the air.

Are you a radio amateur? Member of a club? Maybe asking at a meeting for anyone's spare CB radio and an extra power supply will reward you with some gear. *(**NOTE:** More than half of emails to "CB and More" come from CBers who are also hams. – WA3UVV.)*

Antennas are easy to make. If someone really gets into CB, then let them buy a better antenna and offer to install it.

Perhaps they'd be interested in becoming a ham. I'll bet almost every ham out there has at least "one too many" 2-meter FM rigs they're not using. If they won't admit to it, their spouses will ...

It could even become a club project. If nothing else, you'd get to know some of your neighbors better. Plus, they'd get to know you.

Good Tidings for the Holidays

Finally, if you find you have an extra seat at the table this holiday season, maybe there's a neighbor or club member who would enjoy spending some time with you and your family. I'm sure it would be a nice experience for all of you.

*I hope the coming year is one of happiness, good health, and some enjoyable time for you on the radio. Stay tuned, I have some interesting things planned to keep you busy in 2014. – **WA3UVV.***

Is Russia's *Buzzer* a Doorbell to Doomsday?

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

"The Russian government has never officially acknowledged ownership or existence of the station. It is shrouded in mystery."

Between 20 and 22 times each minute the loud sound of a buzzer pierces the shortwave airwaves. Coming from Russia on 4625 kHz, are these broadcasts part of the tripwire used to direct Russian forces to launch a nuclear strike, or are they simply part of a benign scientific research project?

The station was nicknamed *"The Buzzer"* by shortwave radio listeners. It has been reported in use since the 1980s. Mostly operating 24 hours a day, it occasionally goes off the air — perhaps for maintenance or perhaps for other reasons. The loud sound of the buzzer infrequently is replaced by short voice transmissions, in Russian.

Neither the current Russian government nor its predecessor, the Soviet government, has officially acknowledged ownership or existence of the station. There have been several theories advanced as to its purpose.

One of the more popular theories is that the station is part of the Russian nuclear command and control system. The buzzing tone serves as a channel marker — transmitted to stake a claim to a particular frequency so that others are dissuaded from using it. By protecting the frequency from use, it would be available in times of crisis to transmit nuclear launch codes or messages to strategic military forces. *(**LISTEN:** To "The Buzzer" transmitting on 4625 kHz in this YouTube video <http://bit.ly/1bG9Vm0>, **Photo A**. – WPC9JXK.)*

There has also been speculation that *The Buzzer* is part of the Russian "Dead Hand" nuclear launch control system. Like almost everything else connected to *The Buzzer,* there is controversy about the existence of the "Dead Hand." The system came to light during the Soviet era. It was supposedly created to trigger the launch of a nuclear retaliatory strike in the event that the Soviet Union sustained a nuclear attack.

The system was reported to be semi-automatic, launching the nuclear strike if a wide variety of seismic and other sensors detected a nuclear attack. Yet the few statements about this system have been contradictory. Two high-ranking Soviet officials stated the system existed and was operational. Whether it was kept in use 24/7, or only during crisis is not clear. Two other high-ranking Soviet officials said that, although the "Dead Hand" system was proposed, it never

Photo A. Based somewhere in Russia, everything about *The Buzzer* is cloaked in mystery. Listen to its ear-jarring broadcast on 4625 kHz, captured in this YouTube video <http://bit.ly/1bG9Vm0>. *(Internet screen grab)*

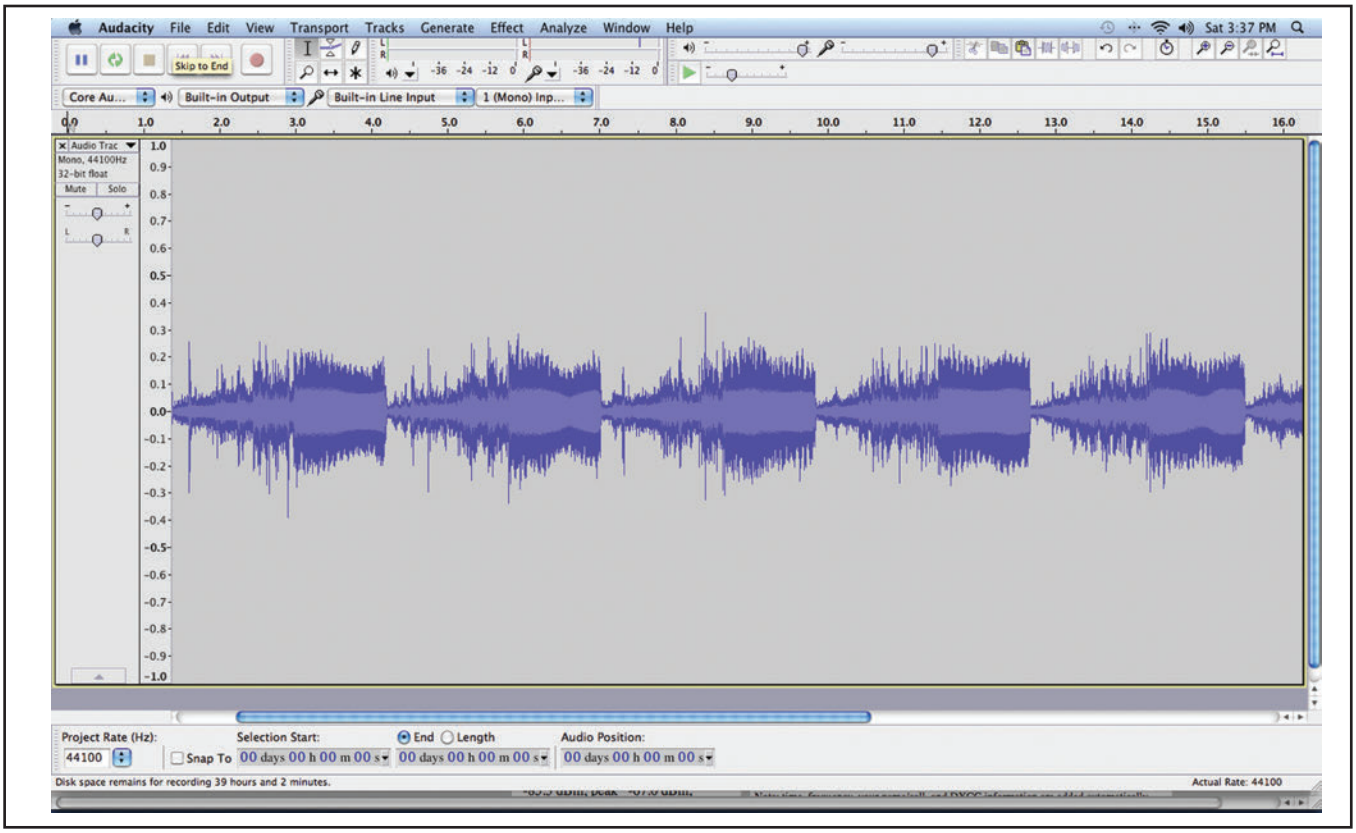


Photo B. Here's a graphic depiction of an audio recording of about 15 seconds of *The Buzzer*. You can see five distinct buzzing tones. The audio recording was made using Audacity® version 2.0.3. ***(NOTE:** Audacity® software is © 1999-2013 Audacity Team. It is free software distributed under the terms of the GNU General Public License. Audacity's® website is <http://audacity.sourceforge.net>. The name Audacity® is a registered trademark of Dominic Mazzoni – WPC9JXK.)*

became operational. Whether the system did exist in the Soviet era, and if so, whether it is still operational has not been publicly confirmed, **Photo B**.

Another theory advanced is that *The Buzzer* is used as part of the Russian military's emergency mobilization scheme. If the frequency is used for those critical command and control types of purposes, then protecting it from use by others is critical.

Under that scenario, perhaps *The Buzzer's* broadcasts serve as a placeholder, protecting the frequency from use by others. *The Buzzer's* piercing tone can be replaced by voice and data communications when needed. This theory is supported by reports of infrequent cessation of the buzzing tone replaced by Russian language voice messages. It lends some credence to the channel being used for emergency communications, which by their nature, tend to be infrequent.

A more benign explanation was published in the *Russian Journal of Earth Sciences*. It reported on an observatory doing HF doppler ionospheric research using the frequency of 4625 kHz. Is *The Buzzer* the broadcasting station to which they refer? If so, then perhaps it is connected with a scientific ionospheric study. However, if the buzzing sound is used for ionospheric research, what is the purpose of the infrequent Russian voice broadcasts from *The Buzzer*?

Just Where Is *The Buzzer?*

It seems as though almost everything about *The Buzzer* is surrounded in controversy and mystery. So why should its location be any different? **Photo C**.

Originally it was pinpointed as transmitting from a location near Povarovo, Russia — a small city located about 25 miles (40 km) northwest of Moscow. It lies along the M10 highway, which links Russia's two largest cities — Moscow and St Petersburg, which are about 400 miles apart.

This original site was visited several years ago by a group of enthusiasts and found to be an abandoned military facility. However, it was reported that they located evidence of the former operation of the radio transmitter, including a radio log linking the site to *The Buzzer*.

But that leads to another question: if *The Buzzer* is an important link in either the Russian military command or Russian emergency communications, wouldn't you think that something as key as a radio log would have been removed or destroyed rather than being left so it could fall into the hands of outsiders?

Perhaps the log was missed and left accidentally during *The Buzzer's* move from the site, or maybe it was intentionally left as a "plant" containing misinformation to confuse outsiders.

In 2010, the transmitting site was apparently moved to the eastern portion of Russia. One possible location is Pskov, a town of more than 200,000 people located about a dozen miles from the Estonian border.

Pskov is also home to the Russian military's 76th Air Assault Division, which includes Air Defense, Airborne, Signals, and other military forces. In addition, heading west from Pskov, along Highway A212, is a secret Russian base that is said to include a large satellite dish as well as other communications equipment.

Whether *The Buzzer* transmits from, or near, Pskov or else-

where in Eastern Russia, is open to question, **Photo D**.

The Buzzer's Mysterious Callsign

It should be no surprise that even the callsign used by *The Buzzer* for its sporadic voice messages is shrouded in controversy.

Originally the infrequent voice transmissions were reported as using UVB-76. However, some say that the callsign was being misunderstood and it was actually UZB-76. Then, in 2011, the voice broadcast callsign changed to MDZhB. But it didn't end there. Since then, besides continuing to use MDZhB, there have been reports of other callsigns occasionally being used.

Mystery Wrapped in an Enigma

Whether *The Buzzer* is part of the system to launch a nuclear retaliatory strike, part of a military emergency communications system, being used for scientific ionospheric research or something else, the bottom line is it all remains a mystery, **Photo E**.

What's not a mystery is that it originates from Russia and broadcasts the loud buzzer sound, around the clock with occasional silent periods, and infrequent voice broadcasts.

Listen for The Buzzer

For those in North America, the best chance to hear *The Buzzer* is when the path between your location and Eastern Russia is in darkness.

If you happen to hear one of *The Buzzer's* broadcasts, send me your loggings for possible inclusion in future columns. Also, if you are a top Russian official and feel the need to unburden yourself of the secret behind *The Buzzer's* broadcast, drop me an email. Until then, the mystery of *The Buzzer* continues. *(**LISTEN:** To another audio-video capture of The Buzzer in this eerie YouTube video <http://bit.ly/1fDA0lT>, **Photo F**. – WPC9JXK.)*

Radio Free Chosun: An Opposition Voice Targeting North Korea

The Democratic People's Republic of Korea has raised saber rattling to a high art form. Its constant rhetoric directed against neighbor South Korea — and the United States — often fills the newspapers and even sometimes spills over into physical actions.

North Korea is a closed society and Americans seeking to travel to the country are subject to restrictions from both governments. The country is reported to be extremely poor, with the population being chronically underfed. The rule of law as known by Americans does not exist in North Korea. In addition, North Korea has long been accused of developing offensive nuclear capabilities and missile capabilities. Against that backdrop are more than a half dozen opposition stations directing shortwave broadcasts to North Korea, **Photo G**.

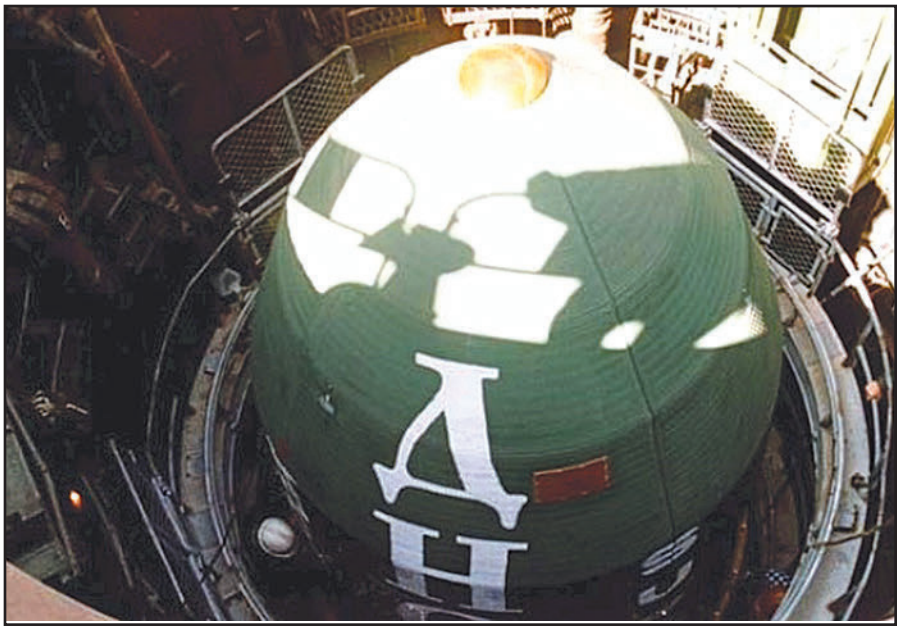


Photo C. Here's a Russian SS-18 Intercontinental Ballistic Missile silo located in the Ukraine. Some variants of the SS-18 ICBM could carry more than a half dozen nuclear warheads. This missile silo was part of those ultimately destroyed, pursuant to the arms control treaty. When fully deployed there were more than 300 SS-18 missile silos located both within the former USSR and allied countries. Many of these missiles have been deactivated, but some remain in active service. *(Courtesy of DTRA/SSC-WMD)*

Photo D. This is a Russian SS-24 ICBM missile silo. The three-stage missile carried up to 10 MIRV nuclear warheads. The last variants of the SS-24 ICBM missiles were reported to be deactivated in 2008. *(Courtesy of DTRA/SSC-WMD)*

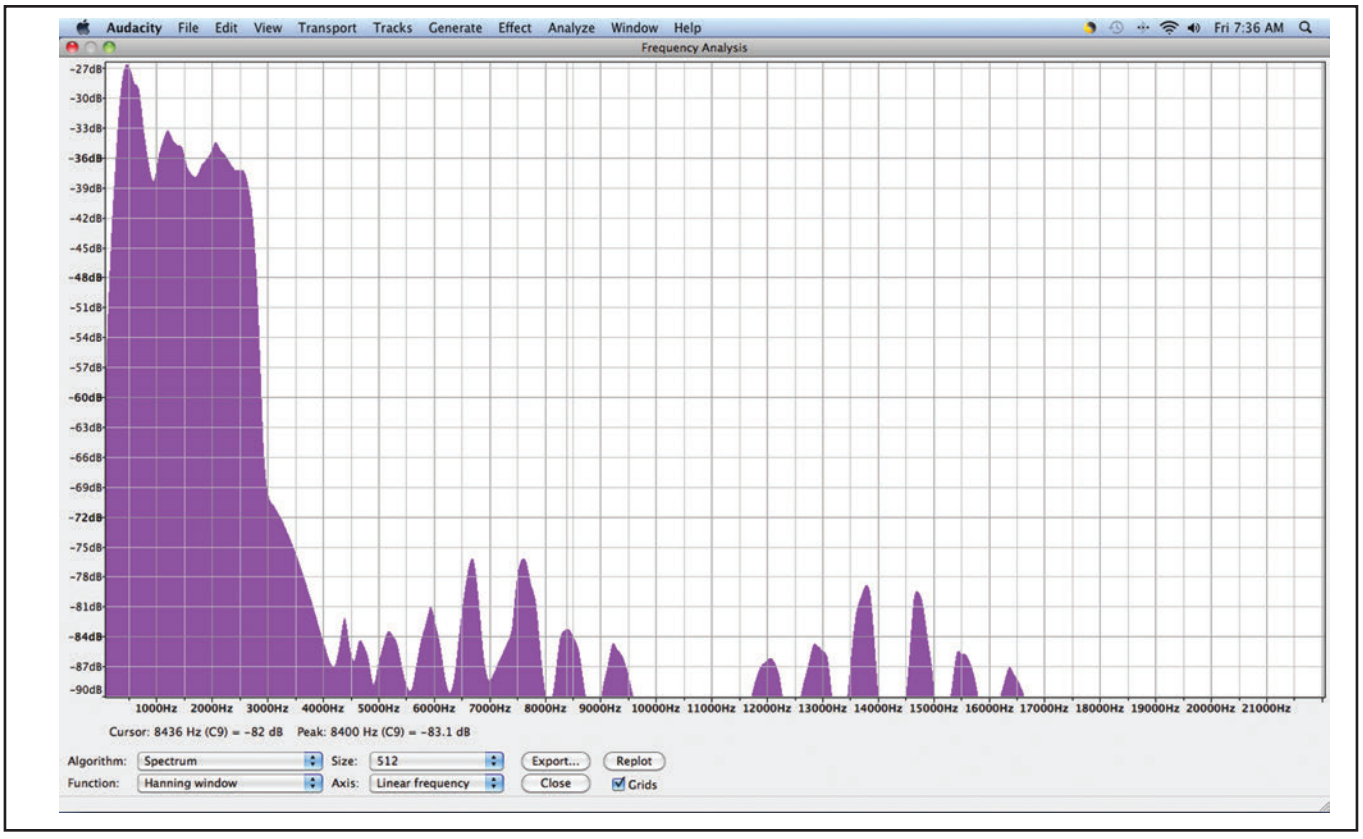


Photo E. A frequency analysis of The Buzzer's audio made using Audacity® version 2.0.3 gives a snapshot of its spectrum use. *(**NOTE:** Audacity® software is © 1999-2013 Audacity Team. It is free software distributed under the terms of the GNU General Public License. Audacity's® website is <http://audacity.sourceforge.net>. The name Audacity® is a registered trademark of Dominic Mazzoni – WPC9JXK.)*

One of them is Radio Free Chosun. *(**LISTEN:** To Radio Free Chosun broadcasting on 7505 kHz in this YouTube video <http://bit.ly/18ZQnlv>, **Photo H**. – WPC9JXK.)*

Funded, in part, by the National Endowment for Democracy, the station appears to deliver the news of the outside word and inform the citizens about the nature and actions of the regime in control of North Korea.

Begun in 2005, broadcasting 30 minutes daily, it now broadcasts for three hours a day in Korean from 1200 to 1400 GMT and 2000-2100 GMT.

According to an Internet page of the National Endowment for Democracy (NED), it is funding Radio Chosun with $80,000 to support the station's operations.

What is the NED? Founded in 1983, it is a private, nonprofit foundation. Its stated goals include strengthening and growth of democratic institutions around the world. To accomplish this goal, each year NED has been making more than 1,000 grants of various amounts, supporting projects and efforts of non-governmental groups in more than 90 countries that work for democratic goals, including promoting human rights, independent media and the rule of law.

As a non-government entity, NED can be more flexible and timely than governmental entities. Created jointly by Republicans and Democrats, it is governed by a board, with members of both

Photo F. Here is more audio of *The Buzzer,* posted in this eerie YouTube video <http://bit.ly/1fDA0lT>. *(Internet screen grab)*

Photo G. This map of North Korea appears in the Central Intelligence Agency's *2013 World Factbook*. *(Courtesy of CIA)*

political parties. It has maintained a high degree of transparency and accountability. Information about NED's grants and activities are posted on its website <http://www.ned.org>, **Photo I**. It has developed a relationship with Congress providing U.S. lawmakers with an annual appropriation of funds through the U.S. Department of State. NED also receives funding from non-governmental sources, including contributions from foundations, corporations, and individuals.

NED's independent Board of Directors, and not the U.S. government, controls how the funds it receives are spent.

For those who collect QSLs, Radio Free Chosun has been reported as verifying reception reports. Although I have not received a reply, perhaps my report was not received or perhaps the content was not sufficient.

Its email address is <rfchosun@rfchosun.org>. You might try its postal address: Radio Free Chosun, 3rd Floor, 384-20 Mangwon-dong, Mapo-gu, Seoul 121-821, Republic of Korea.

Listen on 7595, 11560, and 11540 kHz from 1200-1400 and 7505 kHz from 2000-2100. Remember that the broadcasts are in Korean and possibly using a transmitter site in Tajikistan. I'll keep readers posted on frequency updates.

And now on to a selection of loggings from our readers and contributors.

North American Pirate Station Loggings

All days and times are in UTC (GMT) and all frequencies are in kHz.

Blue Ocean Radio 6925 USB, 0610 Saturday. Bluegrass country, blues, Cajun music. Fair-poor. (Hassig-IL)

Blue Ocean Radio 6935 USB, 0717-0750+ Sunday. Nice blues, fiddle, country tunes by Hank Williams, Buddy Guy, etc. New email is: <oceanblueradio@gmail.com>. SIO 333 (Lobdell-MA)

Blue Ocean Radio 6940 USB, 0200 Saturday. Blues music. (Hassig-IL)

Blue Ocean Radio 13875 USB, 1858-1902 Friday. BOR testing here with blues music. SIO 222. (Lobdell-MA)

Boards Of Canada HF 6925 USB, 2333-0013+ Saturday. Played tunes by group "Boards Of Canada," fast IDs in Morse code As BOCHF. SIO: 333. (Lobdell-MA)

Captain Morgan 6925 AM, 0131 until 0150 sign off Monday. Nice selections of blues tunes, frequent ID and email address info. SIO 343. (Lobdell-MA) Also heard on 6924.9 AM 0134-0149 Monday. Nice program of blues including "got my mojo workin," off suddenly at 0149 after ID, near simultaneous sign off, similar sign off, equal signal strength and similar fades make me think Capt. Morgan and RF Whatever collocated and operated. <captainmorganshortwave@gmail.com>. Fair. (Hassig-IL)

CYOT 6949v AM, 2315 Sunday. Pop/rock song "working for the weekend," ID by female DJ distorted. Poor/weak. (Hassig-IL)

PBS-Pirate Broadcast System 6945 AM, 0136-0200* Saturday. Ending Sherlock Holmes Radio play, into music by Cyrus The Virus, Amethystium, Coffee Shop. ID just before QRT by male. SIO: 333. (Lobdell-MA)

Rave On Radio 6925 USB, from 0123 until 0149 sign off Monday. Rock tunes by Talking Heads, IDs. Email address before close down. SIO 232. (Lobdell-MA)

Radio Free Whatever 6945 AM, 0044-0037+ Wednesday. Old time radio shows with Mel Blanc, ads for Colgate Tooth Powder, Halo Shampoo. SIO 343. (Lobdell) Also heard 0056 until 0212 sign off Thursday. DJ Dick Weed played New Age mix of songs by Peter Namlook, Oslolulu, Holmes Ives. Off with the usual whispered ID. SIO: 343 (Lobdell-MA). Heard also 0125 Sunday. Sign on with old U.S.S.R. national anthem, rock music, <dickweeddj@gmail.com>. Poor/static. (Hassig-IL) Also heard 0137-0150 Monday. Country rock ballad, off suddenly at 0150 after ID, near simultaneous sign off, similar sign off, equal sig strength and similar fades makes me think RF Whatever and Capt. Morgan collocated and operated, <dickweeddj@gmail.com>. Fair. (Hassig-IL)

Radio True North 6925.1 AM, 0440 Saturday. Bits of audio, able to hear ID during fade up. <radiotruenorth@gmail.com>. Very poor-weak (Hassig-IL)

Red Mercury Labs 6935 USB, 0114-0124 Sunday. Willie Nelson "highwayman," punk rock tune. <redmercurylabs@yahoo.com.> Poor-much static. (Hassig-IL). Also heard 0228-0311+ Saturday. Playing various songs by Rage Against The Machine. Male DJ was moaning about a bad driver who he almost got into an accident with. SIO: 232. (Lobdell-MA) Also heard from 0245 until 0345 sign off. There was a break in transmission around 0300. Tuesday. Tunes by Cars, Green Day, Johnny Cash, Deep Purple. SIO: 333. (Lobdell-MA)

TCS Relay Service-The Crystal Ship 6925 AM, 0102-0120+ Thursday. ID, into classic rock tunes. Computerized IDs by YL. SIO: 333 (Lobdell-MA). Also heard from 0331 until 0341 sign off Wednesday. Noted a couple of tunes By The Comsat Angels and Wang Chung, ID, then off. SIO: 343. (Lobdell-MA)

TCS Relay Service-The Crystal Ship 6950 AM, 0208-0313+ Monday. Tunes by April Wine, Jefferson Starship, Nirvana SIO 343. (Lobdell-MA)

Undercover Radio 6925 USB, 0125 Sunday. Dr. Benway with story of robots building more robots in a barn, hair raising story of placing dipole antenna between chimneys on tall apt. building (which was aired last year). <undercoverradio@

gmail.com> Good to Fair signal. (Hassig-IL) Also heard KIPM/Undercover Radio 0202-0300 Monday. Excellent story titled "Accursed Galaxy" with Alan Maxwell relating a story of a polyhedron from space landing near his shack, calling a former college professor to help investigate it, voice from object speaking to them inside their heads etc., Dr Benway made announcement at end of broadcast <undercoverradio@gmail.com>. Good signal and excellent audio for SSB. (Hassig-IL) Heard also 0223 until 0259 sign off Monday. Dr. Benway with relay of KIPM's "The Accursed Galaxy." The story about an object that arrives from outer space and how to open it and what happens when it is opened. Classic KIPM. Bodacious Signal. SIO 555. (Lobdell-MA)

Voice of Bacon 6949.5 AM, 0120 Saturday. Various pop music and comedy bits. Poor-weak. (Hassig-IL)

Wolverine Radio 6945 USB, 0122-0205+ Sunday. Playing tunes with cities in song titles, such as Chattanooga Choo-Choo, Birmingham Bounce, El Paso, etc., Frequent IDs, no contact info. SIO 343. (Lobdell-MA)

Oceania Pirate Station Loggings

All days and times are in UTC (GMT) and all frequencies are in kHz.

Radio Totse (New Zealand) 6925 USB, 1048-1115 Sunday. Tuned in to SSTV image, then ID, into music. Very weak. SIO 141. (Lobdell-MA)

Clandestine and Opposition Station Loggings

All days and times are in UTC (GMT) and all frequencies are in kHz.

Radio Echo of Hope 3985 at 1220 Saturday. Korean, man giving speech, with occasional ham QRM, noise jamming here and on //6003, 6348. Very poor. (Sellers-BC) [Targeting North Korea-WPC9JXK)

Voice of the People 3480 at 1216 Saturday. Choir. Also on //3912, 4450, 4557, 6518, 6600. Fair. (Sellers-BC) [Targeting North Korea presumably from Goyang South Korea-WPC9JXK]

Spy and Numbers Station Loggings Station Loggings

All days and times are in UTC (GMT) and all frequencies are in kHz. Unless otherwise noted, the station name uses the Enigma2000 designator set forth in their control list. The probable originator of HM-01 is the Cuban Direccion de Inteligencia (DI) Havana.

Photo H. Listen to Radio Free Chosun on 7505.1 kHz as received by a Bulgarian SWLer in this YouTube video <http://bit.ly/18pTmWm>. *(Internet screen grab)*

HM-01 on 9065 AM from 0846-0847 Monday. Female synthesized voice in Spanish with a five-digit number alternating with RDFT data transmissions. Excellent signal and good modulation. Nothing heard on any other known HM-01 frequencies. (From an Anonymous Contributor-USA)

HM-01 on 11435 AM at 1615 Sunday. Single five-digit number in Spanish by a mechanical synthesized female voice alternating with a Recumbent Digital File Transfer (RDFT) mode data broadcast. (Barton-AZ)

HM-01 on 11435 AM Cuba at 1623 Saturday. Single five-digit number in Spanish by a mechanical synthesized female voice alternating with a Recumbent Digital File Transfer (RDFT) mode data broadcast. Very good signal and audio levels. (Barton-AZ)

HM-01 on 11635 AM at 0803 Saturday. Female synthesized voice in Spanish with a five-digit number alternating with RDFT data transmissions. Excellent signal and good modulation. (From an Anonymous Contributor-USA)

HM-01 on 11635 AM 1830 Friday. Single five-digit number in Spanish by a mechanical synthesized female voice alternating with a RDFT mode data broadcast. Good signal. (Barton-AZ)

HM-01 on 12180 1033 in progress to 1057 GMT sign off in progress // to 11635 with much stronger signal. (Barton-AZ)

HM-01 on 14375 AM from 0539-0540 Saturday. Female synthesized voice in Spanish with a five-digit number alternating with RDFT data transmissions. Fair to poor signal due to interference (static). Nothing heard on any other known HM-01 frequencies. (From an Anonymous Contributor-USA)

HM-01 on 17480 AM at 2200 on Tuesday with broadcast preamble consisting of a series of five-digit numbers being read in Spanish by a female mechanical synthesized voice with five-digit number grounds and digital data. Very good signal. (Barton-AZ)

New Star Broadcasting/Star Star Radio (Enigma2000 Designator V13) on 13750 from 1300 sign on, until 1312 when I stopped listening. They signed on with flute music followed by two female announcers in Mandarin. After initial talking they apparently broadcast numbers. Voices sounded natural and not mechanical or robotic. Sunday. (From an Anonymous Contributor-via Hong Kong)

Unusual Station Broadcasts

All days and times are in UTC (GMT) and all frequencies are in kHz.

UNID "The Eggbeater" 9000 at 1522 Sunday. Strong pulses for 30 seconds,

Photo I. To access the National Endowment for Democracy (NED) website — which is helping fund Radio Free Chosun — visit <http://www.ned.org>. (*Internet screen grab)*

then taking 3 minutes off. Repeating. Also some sweeping ionospheric sounder signals heard before and after each burst. (Barton-AZ)

UNID on 9123 1430 Wednesday. "Bonker" loud. "bonkers" (formerly "raspers" ref. Harry Helms) are the stations that sound like two pieces of metal or two glass bottles being hit together ... think those are believed to be linked digital naval transmissions… ?" Signals from shipboard sources and some from the San Diego area? (Barton-AZ) *[Is anyone aware of the source and purpose of these broadcasts? – WPC9JXK]*

UNID on 15650 at 1625 Thursday. *BRAAAAAAAAP* blasting right over the Voice of Greece, heard underneath with Greek music. I have dubbed the station "The Eggbeater" because it sounds like the helicopter noises heard in the movie *Apocalypse Now*. The strong rapid pulses likely are Over The Horizon Radar (OTHR) signals. (Barton-AZ) [If you can identify the source or the purpose of any of these unidentified broadcast, drop me an email with the information. – WPC9JXK <stevenhandler-popcomm@yahoo.com>]

December's COPS Contributors

I wish to thank this month's loggings and QSL report contributors, Rick Barton-AZ, William Hassig-IL, Chris Lobdell-MA, Harold Sellers-BC, and Anonymous Contributor(s).

That's a Wrap for This Month

Thank you for reading this month's COPS column. If you would like to contribute Clandestine, Opposition, Pirate, or Spy and Number Station loggings, information or QSL reports for possible inclusion in this column, please send them to me at <stevenhandler-popcomm@yahoo.com>. Until next month, good listening. ***– Steve Handler, WPC9JXK***

IN GEAR
Power Up

By Jason Feldman, WPC2COD

Photo A. Yaesu's new FTM-400DR shows off its 3.5-inch full-color TFT screen. The mobile dual-bander is Yaesu's latest entry into its System Fusion digital operating system. *(Courtesy of Yaesu)*

Yaesu's Long Awaited FTM-400DR Makes its Debut

Yaesu's ambitious new digital operating system called System Fusion, has taken another step toward completion with the introduction of the FTM-400DR, a mobile dual-band C4FM FDMA/FM transceiver.

The most obvious new feature is the 3.5-inch, full-color TFT liquid-crystal display. It's also a touch screen. All of the radio's controls can be accessed through the screen. In addition, the display can show off a plethora of varying modes from the standard band scope to APRS, navigation, altitude, direct frequency input, and clock timer.

But the screen is not just limited to the standard ham radio functions – it can display high-resolution photographs, as well. However, with the optional MH-85A11U microphone, the FTM-400DR can transmit photos with a touch of a button. Simply connect the microphone to the radio, press the microphone shutter button, and then press the transmit button and it will be shared with other C4FM/FDMA digital transceivers. The image data also retains a time record and GPS location data of the snapshot so it will be easy to navigate to that picture location by using the track back function. Users can also observe whether the other station successfully received the transmitted data. All of the data is stored on a high-capacity micro SD card so you can recall and send that data from the card at anytime. Your PC can also view the photos.

The FTM-400DR utilizes Automatic Mode Select (AMS) that can, as the name implies, select between three digital and one analog voice mode. The AMS function instantly detects what mode the received signal is using and switches to that mode enabling hands-free operation.

Inside the FTM-400DR is a double-conversion super heterodyne receiving circuit that can pick up the 2-meter and 70-cm amateur bands along with wideband from 108 to 999.990 MHz (NOTE: Excludes the 800-Mhz U.S. cell phone band). It can output the signal to a 3-watt speaker or an 8-watt external speaker jack.

Capable of 50-watts output, the FTM-400DR can select four different transmitting modes: V/D (Voice/Data simultaneous mode), Voice FR (Full-Voice Rate Mode), Data FR (High-Speed Data Communications), and Analog FM.

In V/D mode, the digital voice signal is transmitted in one half of the bandwidth. Simultaneously the other half of the 12.5-kHz bandwidth channel is used for error correction of the voice signal and other data.

While in Voice FR mode, the full 12.5-kHz bandwidth is used to transmit digital voice data only. The increased bandwidth will allow high-quality voice communication according to Yaesu. In Data FR mode, the full12.5-kHz bandwidth is used to transmit high-speed data. The transceiver automatically switches to Data FR mode when transmitting snapshot pictures taken with the microphone.

In order to ensure backward compatibility with the non-digital world, the FTM-400DR includes an analog FM mode for when weak-signal strength causes the audio to drop out in digital mode you can still communicate up to the borderline of the noise level. Plus with the use of a low-power circuit design, it provides greater efficiency than the digital mode.

However, with the V/D mode there are a few tools that you can take advantage of to enhance your experience. One function is the Digital Group Monitor Function, which automatically checks whether members registered to a group are within communication range, and displays information such as the distance and orientation for each callsign on the screen. Not only does this useful data enable you to see what friends are in communication range, it also tells you where all the group members are located. Additionally, this function can be used to send text messages and image data between group members.

For outdoor enthusiasts, the radio includes a built-in GPS which enables smart navigation and a backtrack function. The back-track function enables navigation to a registered point. To do this, register your starting point before departure and the distance and orientation from the current location will be displayed on the screen.

Weighing in at 2.64 pounds, the radio FTM-400DR includes a DTFM microphone, mounting bracket, bracket for controller, a 10-foot control cable, a PC connection cable, and a 13.8-V DC power cable. Optional accessories include the microphone with the snapshot camera, vacuum cup mount bracket, high-powered speaker, and the voice guide unit. The voice guide unit announces your current operating frequency, band change, and APRS messages. You can record up to 5 minutes of received signals, or continuously record the last 30 seconds of received calls.

Yaesu said the MSRP of the FTM-400DR is $850. For more information on the FTM-400DR, contact: Yaesu USA, 125 Phyllis Drive Cypress, CA 90630. Phone: (714) 827-7600. Website: <http://www.yaesu.com>.

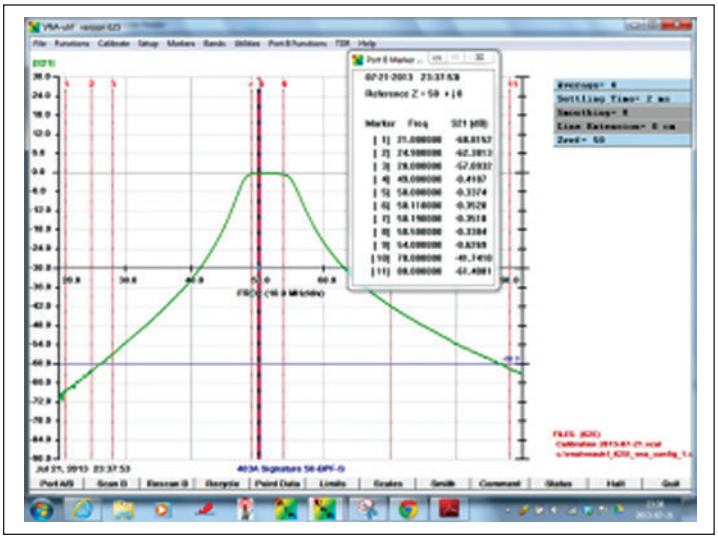
Two New Products From InnovAntennas (But They're Not Antennas!)

UK-based InnovAntennas has added two new products to its lineup—specialized cables for Spid rotators and a full line of 4O3A bandpass filters.

The custom-made, 4-conductor cables include two 14-gauge conductors for powering the motor and a two-conductor twisted pair of 20-gauge wires as control lines. Housed in a direct-bury/UV-stable jacket, the cable may be used for runs of at least 200 feet with all Spid rotators (which InnovAntennas also sells) as well as other brand rotators. The cable—Model CAB-SPID—sells for $0.89/foot plus shipping in the U.S.

If you're encountering RF interference problems on your station receiver, InnovAntennas is now stocking the full line of 4O3A bandpass filters. As an example, the 6-meter version has only 0.35 dB of insertion loss at 50.110 MHz, but provides over 60 dB of rejection at 88 MHz, the beginning of the FM broadcast band. The filters are available for all bands from 160 to 6 meters.

For more information, contact InnovAntennas America, Inc., 479 South 16 1/2 Road, Glade Park, CO 81523; call (888) 998-8541, or visit <http://innovantennas.us>.



Frequency response plot of the 4O3A 6-meter bandpass filter from InnovAntennas. (Courtesy InnovAntennas)

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

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

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

UTC	Freq.	Station/Country	Notes
0000	7350	China Radio International	
0000	5990	China Radio International, via Cuba	SS
0000	11595	Democratic Voice of Burma, via Armenia	Burmese
0000	8989u	El Pascador Preacher, Nicaragua	SS
0000	4905	Radio Anhuanguera, Brazil	PP
0000	11855	Radio Aparecida, Brazil	PP
0000	4985	Radio Brazil Central	PP
0000	5980	Radio Chaski, Peru	SS
0000	4915	Radio Daqui, Brazil	PP
0000	6155	Radio Fides, Bolivia	SS
0000	11680	Radio Havana Cuba	FF
0000	15485	Radio Pakistan	
0000	4940	Radio San Antonio, Peru	SS
0000	9690	VOA, Sao Tome Relay	
0100	7445	BBC, Oman Relay	Dari
0100	6050	HCJB, Ecuador	Quechua
0100	6010	La Voz Concencia, Colombia	SS
0100	4864	Radio Alvorada, Brazil	PP
0100	11815	Radio Brazil Central	PP
0100	4885	Radio Clube do Para, Brazil	PP
0100	4915	Radio Difusora Macapa, Brazil	PP
0100	4925	Radio Educacao Rural, Brazil	PP
0100	11795	Radio Exterior Espana	SS
0100	11830	Radio Havana Cuba	SS
0100	9760	Radio Sultanate of Oman	AA
0100	5110	WBCQ, Maine	
0100	9975	KVOH, California	EE/SS
0100	11905	Sri Lanka Broadcasting Corp	Hindi
0200	6070	CFRX, Canada	
0200	5025	Radio Rebelde, Cuba	SS
0200	6135	Radio Santa Cruz, Bolivia	SS
0200	7295	Islamic Rrepublic of Iran Broadcasting	Tajuk
0200	9465	Voice of Turkey	Uighur
0300	9530	Adventist World Radio, via France	Tigrinya
0300	9500	BBC, England	
0300	7120	Radio Hargeisa, Somalia	Somali
0300	5010	Radio Madagasikara, Madagascar	Malagassy
0300	4976	UBC Radio, Uganda	
0300	3240	TWR, Swaziland	vern
0300	3320	Radio Sonder Grense, South Africa	Afrikaans
0300	4780	Radio Djibouti	AA
0300	7260	VOA, Sao Tome Relay	
0400	4950	Radio Nacional Angola	PP
0400	6160	CKZU, Canada	
0400	6090	Radio Amhara, Ethiopia	Oromo
0400	4775	Trans World Radio, Swzailand	GG, others
0400	4930	VOA Botswana Relay	
0400	4840	WWCR, Tennessee	
0500	5040	Radio Havana Cuba	SS
0500	7275	Radio Tunisianne	
0500	9535	Radio Algerienne, via France	AA
0500	6090	University Network, Anguilla	
0500	7250	Vatican Radio	Albanian
0500	15120	Voice of Nigeria	
0500	5935	WWCR, Tennessee	
0800	3330	Ondas del Huallagua, Peru	SS
0900	4990	Radio Apinte, Suriname	Dutch
0900	4910	Radio Logos, Peru	SS
0900	6010	Radio Mil, Mexico	SS
0900	6155	Super Radio Deus e Amor, Brazil	PP
1000	2485	ABC No.Territory Svc., Australia	
1000	5910	Al Caravan Radio, Colombia	SS
1000	5952	Emissora Pio XII, Bolivia	SS
1000	4825	La Voz Selva, Peru	SS
1000	4805	Radio Amazonas, Brazil	PP
1000	12080	Radio Australia	Tok Pisin
1000	4955	Radio Cultura Amuata, Peru	SS
1000	5039	Radio Libertad, Peru	SS
1000	3310	Radio Mosoj Chaski, Bolivia	SS
1000	3375	Radio Municipal, Brazil	PP
1000	3205	Radio Sanduan, Papua New Guinea	Tok Pisin

UTC	Freq.	Station/Country	Notes
1000	4826	Radio Sicuani, Peru	SS
1000	4790	Radio Vision, Peru	SS
1000	4717	Radio Yura, Bolivia	SS
1000	4747	Radio Huanta dos Mil, Peru	SS
1100	4835	ABC North Territory Svc., Australia	
1100	5765u	Armed Forces Network, Guam	
1100	4750	Bangladesh Betar	Bengla
1100	11875	China Radio International	Mandarin
1100	11925	China Radio International	RR
1100	11955	China Radio International	
1100	11945	Radio Australia	
1100	13830	Radio Free Asia, via Tajikistan	Tibetan
1100	4781	Radio Oriental, Ecuador	SS
1100	4775	Radio Tarma, Peru	SS
1100	4055	Radio Verdad, Guatemala	SS
1100	11945	Radio Veritas Asia, Philippines	Mandarin
1100	5020	Solomon Islands Broadcasting Corp.	
1100	11710	Voice of Korea, North Korea	FF
1100	3365	Radio Milne Bay, Papua New Guinea	Tok Pisin
1200	9410	China National Radio	CC
1200	9520	China National Radio	CC
1200	17490	China Radio International	
1200	9960	Khmer Post Radio, to Cambodia	Khmer
1200	9390	Radio Thailand	
1200	9920	Far East Broadcast, Philippines, via UAE	vern
1300	9720	Adventist Wold Radio, Guam	RR
1300	13362	Armed Forces Network, Guam	
1300	15505	Bangladesh Betar	Urdu
1300	11535	Denge Kurdistani, to Iran	Kurdish
1300	15575	KBS World Radio, South Korea	
1300	6130	Lao National Radio	Laotian
1300	12085	Radio Australia	
1300	13780	Radio Havana Cuba	SS
1300	9780	Radio Japan	JJ
1300	11705	Radio Japan, via Palau	II
1300	9795	Radio Thailand	JJ
1300	9835	Sarawak FM, Malaysia	Malay
1300	17530	Vatican Radio	
1300	15115	VOA, Thailand Relay	Mandarin
1300	9525	Voice of Indonesia	II
1400	15410	China Radio International	Mandarin
1400	9835	Radio Japan	JJ
1400	5940	Radio Australia	
1400	6135	Radio Australia	
1400	11615	VOA, Philippines Relay	Mandarin
1500	11835	Radio Australia	
1600	15260	Adventist World Radio, via Austria	Urdu
1600	11635	BBC, Oman Relay	
1600	11875	China Radio International	RR
1600	17650	Islamic Republic of Iran Broadcasting	
1600	15585	Radio Exterior Espana	SS
1600	15410	Radio Farda, Lampertheim Relay	Farsi
1600	17615	Radio France International	FF
1700	17670	All India Radio	Hindi
1700	15230	Channel Africa South Africa	
1700	15275	Deutsche Welle - Rwanda Relay	FF
1700	17630	Radio France International	FF
1700	15300	Radio France International	FF
1700	15540	Radio Kuwait	Urdu
1700	11975	Radio Romania International	Romanian
1700	15570	Vatican Radio	
1700`	11795	VOA, via Vatican	
1800	11525	Bible Voice Broadcasting, via Bulgaria	
1800	11820	BSKSA, Saudi Arabia	AA
1800	12045	Deutsche Welle, Germany, Rwanda	Hausa
1800	13650	Radio Kuwait	AA
1800	11720	Radio Pilippinas	
1800	11835	Voice of Turkey	GG
1900	11610	Adventist World Radio, via Germany	AA
1900	17885	BBC, Ascension Relay	Hausa
1900	17795	BBC, England	
1900	11695	China Radio International, via Albania	
1900	15710	Radio Cairo, Egypt	Hausa
1900	11600	Radio Libya	FF
1900	15690	Radio Taiwan International	FF
1900	15580	VOA Relay, Botswana Relay	
1900	15630	Voice of Greece	Greek
2000	11670	All India Radio	Hindi
2000	11730	Islamic Republic of Iran Broadcasting	FF
2000	11750	Islamic Republic of Iran Broadcasting	
2000	11740	Radio Algerienne, Algeria	FF
2000	11765	Radio Algerienne, via France	
2000	15200	Radio Cairo, Egypt	
2000	15130	Radio Japan	JJ
2000	11850	Radio Japan, via Madagascar	FF
2000	15140	Radio Sultanate of Oman	AA
2000	11625	Vatican Radio	
2000	11855	VOA, Sao Tome Relay	Hausa
2000	11635	Voice of Korea, North Korea	KK
2000	11840	Voice of Vietnam, via England	VV
2000	11735	ZBC Radio, Zanzibar	Swahili
2100	11810	BBC, Ascension Island Relay	
2100	11630	China National Radio	Mndarin
2100	11865	Deutsche Welle, Germany, Rwanda Relay	
2100	7495	Radio Algerienne, via France	AA
2100	17550	Radio Kuwait	AA
2100	11780	Radio Nacional Amazonia, Brazil	PP
2100	9480	WTWW, Tenessee	
2200	11620	All India Radio	
2200	11710	China National Radio	CC
2200	12080	Islamic Republic of Iran Broadcasting	AA
2200	11810	KBS World Radio, South Korea	
2200	11730	Radio Belarus	Russian
2300	4218	Armed Forces Network, Diego Garcia	
2300	11795	Radio Romania International	SS
2300	9655	Radio Romania International	SS
2300	4451	Radio Santa Ana, Bolivia	SS

Plane Sense for the Holidays: Hope Yule Like it!

By Bill Hoefer, KPC4KGC

"Christmas, Bethlehem, Santa Claus, North Pole ... if you dig deep enough there's an aviation connection to all of these U.S. cities."

We're fast swinging into the holidays, so this month — from an aviation perspective — we'll take a look at cities with names in keeping with the season.

By the way, even though you might not be close to the airports mentioned in *Plane Sense,* you can always listen online at either <http://www.liveatc.net> or <http://www.radioreference.com>. And a comprehensive list of codes for facilities around the world can be found at <http://bit.ly/MGUk8P>.

One more thing: We use a lot of abbreviations in aviation communications. Bookmark *Aviation-terms.com* as a quick reference <http://bit.ly/15t2mYL>.

So, here's a bit of holiday aviation data I hope *yule* find useful.

Christmas

There are sure a lot of towns named Christmas in the United States. Unfortunately, I couldn't find any with an airport.

Take Christmas, Florida, for example. It doesn't have a flight facility of its own, but is just 25 miles from Orlando Sanford International.

Christmas, Michigan is 34 miles from Sawyer International. We're not aware of an airport in Christmas, Mississippi. But there's a Christmas Airport in Shelby.

There's Christmas Hills, Victoria, Australia, and two Christmas Islands near Australia. One Christmas Island has an airport but no communications outlet. There's Christmas Island, Nova Scotia, Canada, as well. But I can't find a communications outlet there, either.

Bethlehem

Moving on to Bethlehem: there are numerous cities in the U.S. with that name, as well:

The Bethlehem in Connecticut is about 60 miles from Bradley International Airport in Windsor Locks.

In Georgia, Athens-Ben Epps Airport is nearest Bethlehem — 27 miles.

Louisville International Standiford Field, **Photo A**, is 31 miles away from Bethlehem, Indiana and 40 miles from Bethlehem, Kentucky. How's that for a *two-fer?*

Philadelphia International Airport is 87 miles from Bethlehem, Pennsylvania.

You'll drive 89 miles to Lebanon Municipal Airport from Bethlehem, New Hampshire.

South Albany Airport is in South Bethlehem, New York.

Photo A. Louisville International Standiford Field is just about midway between two Bethlehems — one in Indiana and the other in Kentucky. We wonder if that confuses UPS drivers on deliveries — especially at holiday time. *(Courtesy of Wikimedia Commons)*

Photo B. Holiday displays for Hanukkah and Christmas brighten the terminal at Pittsburgh International Airport. *(Courtesy of Wikimedia Commons)*

Bethlehem, North Carolina is a shade below 100 miles from Piedmont Triad International Airport in Greensboro.

Saint Bethlehem, Tennessee is just 8 miles from Ferraraccio Field.

Meanwhile, you'll drive about 60 miles from Bethlehem, West Virginia to Pittsburgh International Airport, **Photo B**.

Santa Claus

In Arizona, Santa Claus is near Laughlin/Bullhead International in Bullhead City — 23 miles away.

Owensboro-Daviess County Regional Airport is 39 miles from Santa Claus, Indiana.

There are 35 airports within 50 miles of Santa Claus, Georgia <http://bit.ly/180XywN>, **Photo C**. The nearest is Vidalia Regional, about 3 miles from the center of the city.

Tracking Santa

As always, the people at NORAD (North American Aerospace Defense Command) will be tracking the whereabouts of Santa and his reindeer via RADAR. Get the latest updates at <http://www.noradsanta.org>, **Photo D**.

The North Pole

I'll never forget where I was on September 11, 2001: Northway, Alaska (PAOR/KORT). I was working at the seasonal flight service station, which was attached to the Fairbanks (PAFA/KFAI) station, just five hours northwest of Northway.

When I was driving there, I passed through the town of North Pole. *Yes, Virginia, there is a North Pole — and it's in Alaska,* **Photo E**.

I won't go into the story of how the city changed its name to North Pole in an unsuccessful bid to attract a toy factory. But it's a beautiful little city anyway.

So, let's look at the airports in and near North Pole:

The main airport, which also provides approach control services into the area is Fairbanks International. The identifiers are both KFAI and PAOR. While the K prefix is used for other U.S. airports, those in Alaska and Hawaii have their own prefixes

Photo C. If you're ever in Santa Claus, Georgia and need to fly somewhere, you're in great luck. There are 35 airports within 50 miles of the city. Visit: <http://bit.ly/180XywN>. *(Internet screen grab)*

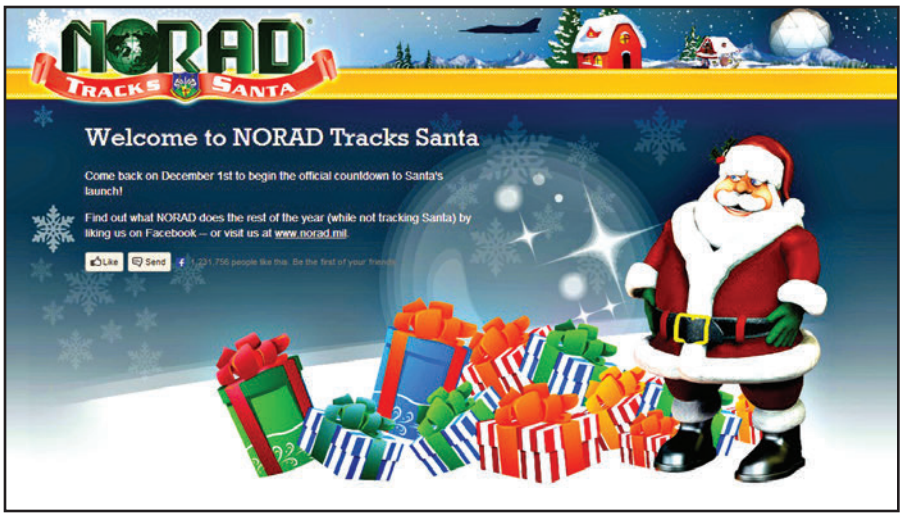


Photo D. RADAR operators at the North American Aerospace Defense Command (NORAD) will be tracking Santa and his reindeer on Christmas Eve. It's a longtime holiday tradition. Get updates at <http://www.noradsanta.org>. *(Internet screen grab)*

for international use. All in Alaska start with PA and Hawaii with PH.

Fairbanks International has two asphalt runways that are used year round: 02L/20R (11,800 by 150 feet) and 02R/22L (6,501 by 100 feet). What makes Fairbanks unusual are two other runways that are used primarily in summer or winter:

Runway 02W/20W is a water runway to accommodate the many seaplanes in use in Alaska. It is 5,400 by 100 feet.

During winter there's runway 02/20 — a gravel strip that's primarily used for planes with skis. It's 2,900 by 75 feet. The water runway can be used as ski strip during the winter, as well.

Passenger and cargo airlines flying through Fairbanks include Air North Chartering and Training, Alaska Airlines, Bettles Airlines, Condor, Delta Airlines, Era Airlines, Everts Air Cargo, FedEx, 40-Mile Air Ltd. (which I've flown on in state), Frontier Airlines, Frontier Flying Service, Japan Airlines, Northern Air Cargo, Shared Services Aviation, Warbelow's Air Adventures, and Wright Air. Besides the normal Boeing 737, 747, 757 and MD-11's you can find old McDonnell Douglas DC-3, 6, and 7 prop jobs.

Photo E. *Plane Sense's* Bill Hoefer, KPC4KGC, passed through North Pole, Alaska on his way to a flight control duty assignment in 2001. As you can see, it can be a pretty chilly-looking place. *(Courtesy of Wikimedia Commons)*

Scanning the North Pole

There are a handful of private airports in the North Pole area. I'm not sure what airport Santa uses. I think it's classified, but my money is on the Bradley-Sky Ranch Airport (95Z).

It's the only one with a runway long enough for the sleigh and reindeer. Runway 15/33 is 4,100 by 60 feet and is a gravel runway.

The only frequency I find is 122.8 MHz, but he may be running encrypted or digital. I don't know.

Scanning Near the North Pole

If you're in the area and would like to listen in, here are the main Fairbanks frequencies:

- Fairbanks Tower: 118.3, 257.8 MHz
- Fairbanks Ground: 121.9
- Fairbanks Approach: 118.6, 125.35 (180-359), 126.5 (360-179), 363.2 (180-359), 381.4 (360-179)
- Fairbanks Departure: 125.35 (180-359), 126.5 (360-179), 327.1, 363.2 (180-359), 381.4 (360-179)
- Clearance Delivery: 127.6
- TRSA IC: 125.35 (180-359), 363.2 (180-359)
- ATIS: 124.4
- TRSA: 126.5 (360-179), 381.4 (360-179)
- Emergency: 121.5, 243.0

Of course, you'll recognize the emergency frequencies of 121.5 and 243.0 MHz — they're universal. You may notice some duplication frequencies. The sectors are divided into east and west.

Rest assured: The airspace is cleared for Santa's departure and arrival every Christmas Eve.

Military Aviation in Alaska

The military is big in Alaska. In *Plane Sense* in 2001 I did a piece on military training southeast of Fairbanks and north of Delta Junction (D66). There are two military facilities in the Fairbanks area — Ladd Army Airfield (PAFB) and Eielson Air Force Base (PAEI).

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 – General aviation air-to-air communications
- 123.025 – Helicopter air-to-air communications
- 123.450 – 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. Santa Claus waves from a military helicopter on a visit to the children at Camp Pendleton in the California desert. Rudolph and the other reindeer had to stay home. *No snow, no sleigh* — at least this time. *(Courtesy of Wikimedia Commons)*

Eielson, located southeast of North Pole, is home to the 354th Fighter Wing, part of the Pacific Air Forces 11th Air Force. It is home, as well, to *Red Flag-Alaska,* a training exercise for joint offensive counter-air, interdiction, close-air support, and large force employment in a simulated combat environment.

As it was explained to me in 2001, Red Flag was located to Eielson after Clark Air Base, Philippines was shut down in 1991 following the Mount Pinatubo volcano eruption, **Photo F**. The Air Force may be returning to Clark AB, but that could be another story for another time.

Some of the flying tenant units at Eielson include: the 354th Operations Group (Tail Code: AK), 354th Operations Support Squadron, 18th Aggressor Squadron (F-16s), 3rd Air Support Operations Squadron, 353rd Combat Training Squadron, and the 168th Air Refueling Wing, Alaska Air National Guard (KC-135 Stratotanker).

Scanning Eielson AFB, Alaska

Here's where to listen at Eielson:

- ATIS: 119.9, 273.5 MHz
- Eielson Tower: 127.2, 352.05
- Eielson Ground: 121.8, 275.8
- IC: 126.5 (360-179), 381.4 (360-179)
- Clearance Delivery: 343.7
- CP (Have Quick): 289.4 IGLOO
- SFA: 118.6X, 259.1X, 318.2X, 320.1X, 322.3X
- 168 ANG Ops: 238.3, 293.6
- RDR SFA: 118.6, 259.1, 318.2, 320.1, 324.3
- PMSV: 346.6
- WING Ops: 259.5 IGLOO
- PTD: 139.3, 372.2
- SUAIS Radio: 125.3 (Range CTL)
- SOURDOUGH: 139.6, 359.15

Some military aircraft utilize VHF civilian frequencies and, of course, there are the occasional non-military aircraft that are flying through. They are *usually* contract aircraft. Sometimes Civil Air Patrol are allowed permission to land there for CAP exercises or static display during the facility's Open House.

Scanning Ladd Army Airfield, Alaska

Six miles east of FAI is Ladd Army Air Field (PAFB/KFBK), formerly Fort Wainwright, **Photo G**. Ladd, originally Fairbanks AFB, was named after Major Arthur K. Ladd who was killed during a training accident in South Carolina in 1935. It was part of the Army Air Corps and then the Air Force in 1947, primarily for testing aircraft and equipment in a cold environment, as

Photo F. This S-3B Viking taxis down the runway at Eielson Air Force Base after arrival to take part in the massive military training exercise *Red Flag-Alaska.* *(Courtesy of Wikimedia Commons)*

well as housing fighter-interceptor squadrons during the Cold War and reconnaissance.

In 1958 the base was returned to the Army as there was little need for two full Air Force bases just 30 miles apart. Units today still maintain military readiness and many have seen service in the Middle East.

Like Fairbanks, Ladd has parallel runways but not for what you'd expect. Runway 07L/25R, the main runway, is 8,575 by 150 feet and concrete. The parallel 07R/25L is 7,280 by 75 feet and also concrete, but is used only by helicopters, and then only under VFR conditions.

Listen to Ladd operations:

- ATIS: 134.25 MHz
- ASOS: 119.025
- Ladd Tower: 125.0, 241.0, 40.8 FM
- Ladd Ground: 121.7, 261.3
- IC: 125.35 (180-359), 363.2 (180-359)
- Emergency: 121.5, 243.0
- PAR: 121.3, 134.1, 237.5
- Base Ops: 118.9
- OPNS: 121.7, 40.8 FM
- Range CTL: 38.3 FM
- PMSV: 128.8, 342.5
- CTAF: 125.000

True Story: What's in a Name?

Daily I deal with plenty of foreign pilots whose command of English is not necessarily the best. However I also deal with many British pilots who have problems with U.S. native Indian names.

Many of the towns in Florida are based on Seminole: Okeechobee, Micanopy, Tampa. One town, Kissimmee (KISM), is a prime example. Is it pronounced *KISS-im-ee,* or *kis-SIM-ee.* Legend has it that two British pilots were having a heated discussion on the city's pronunciation. While driving on US-192 they decided to have it cleared up, so they pulled into a restaurant parking lot and walked in.

Approaching the lady behind the counter, one said — in a lovely British accent — "We'd like you to tell us clearly and concisely how you pronounce this place." She looked at them puzzled, leaned over the counter and said slowly, *"Bur-ger King."*

Wheels Down

That's it for this month. For now, keep listening up, and hope you enjoy the holidays. See you in 2014! – ***KPC4KGC***

Photo G. F-82 fighter aircraft sit on the runway at Ladd Army Airfield, Alaska in this vintage photograph — circa 1952. *(Courtesy of Wikimedia Commons)*

Speak Now: The Finer Points of Transmit Audio — Part II

By Kirk A. Kleinschmidt, KPCØZZZ/NTØZ

"Achieving great sounding TX audio can be a complex process — especially when optimizing characteristics for the task at hand."

Despite a few ad hoc "standards," to some degree TX (transmit) audio quality is somewhat subjective. Everyone has different ears and different neurology, and we all have at least slight variations in "what sounds good."

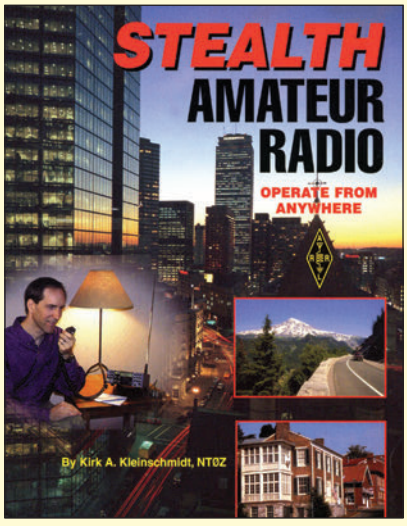
I first touched on this subject earlier this year in *Ham Discoveries*. (***BACKGROUND:*** *Read "Speak Now: The Finer Points of Transmit Audio," in the July 2013 edition of Pop'Comm beginning on page 49,* ***Photo A****. – KPCØZZZ.)*

In balancing our individual listening factors, though, you can't argue too much with the physics of transmitting human speech to human ears via AM or SSB.

After more than 100 years, we know a lot about what it takes to do it right, but putting all of the pieces together can still be frustrating. When it comes to TX audio, we all want a simple thing, but it can become very complex in practice: Great-sounding TX audio that's optimized for the task at hand. How we achieve that varies widely from voice to voice, rig to rig, and so on. This month's column adds to the material discussed in the July 2013 issue — microphones, connectors, and impedance matching.

Before we get too far, it's important to remember that when it comes to TX audio, one size doesn't fit all. Broadcasting and ragchewing, to some extent, emphasize clarity and fidelity, but contesting and DXing rely mostly on clarity, with fidelity taking a back seat.

The punchy, focused sound of a signal crafted to — above all else — break through a crowded pileup, isn't the same audio you'd typically enjoy for extended ragchews with your buddies. It's effective for DXing and contesting, but it's outright annoying for "easy listening."



About the Writer

Since writing his first Ham Discoveries column for Pop'Comm in 1989, Kirk A. Kleinschmidt, NTØZ/KPCØZZZ, has written more than 300 columns and feature articles about amateur radio. In addition to editing "The ARRL Handbook" and serving as QST's Assistant Managing Editor, Kleinschmidt is author of "Stealth Amateur Radio," available at <http://www.stealthamateur.com>.

Plenty of Puzzle Pieces

Even if we know the sound we're aiming for and our exact usage scenario, accommodating all of the variables required to achieve "perfect audio" can be overwhelming. Here are some important points to consider.

Voice types: Deep, booming male voices contain audio frequencies and amplitudes that are much different from higher-pitched female voices. Every voice is unique, but some voices are easier to reproduce faithfully via SSB. Voice types in the middle of these two extremes are a lot easier to work with. I often have difficulty understanding kids and females on SSB, even though in "real life" it's no problem at all. I'm not being ageist or sexist — it's just the way it is. Processing these voices for perfect SSB transmission often requires extra effort.

Microphone types: Mics come in a variety of designs — including dynamic, electret, crystal, and so on — in a variety of characteristic impedances, with a variety of connectors. For optimal results your radio must be designed to work with your mic, or you'll be behind from the get-go.

Microphone elements: Mics can be designed for a broad frequency response (stage or broadcast mics) or a much narrower "communications grade" response (telephones, aircraft radios, and so on). You can restrict or modify the response of a wide-range mic but you can't practically "expand" the frequency response of a communi-

TWO-WAY RADIO
Ham Discoveries

Speak Now: The Finer Points of Transmit Audio

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

"For me, several experiences over the years have highlighted the importance of using the correct microphones for the tasks at hand."

No matter how far into the digital revolution we venture, the quality and performance of the remaining analog station parts are as important as they ever were — perhaps even more so. Until you can directly *speak digital,* a quality microphone and the chops to use it and adjust it correctly will make or break the quality of your transmitted SSB, AM, or FM signals.

After the microphone does its job, the remaining audio and RF systems may include the magic of digital signal processing, but it takes the entire transmit chain to produce high-quality audio. A lot of money isn't necessary, but a bit of work and experimentation usually are.

Live and Learn

For me, several experiences over the years have highlighted the importance of using the correct microphones for the tasks at hand. As a teenager, one of my Elmers had a pair of Drake Twins — separate transmitter and receiver boxes for high-frequency (HF) amateur use — that I would occasionally borrow for working SSB DX contests. I didn't have an external VFO to allow my Tempo One to work split on 80 and 40. All these years later I'm still grateful that he was so enthralled with his new Drake TR-7 hardware that he actually let me — a kid — borrow the B-Line boxes, **Photo A**.

The venerable Drake transmitter had a classic Astatic D-104 crystal microphone, **Photo B** — and I was surprised that it sounded so good on the tube-powered Drake, but not very good at all on my solid-state Ten-Tec transceiver. Understanding the basics of microphone impedance and the differences between high-impedance tube amps and low-impedance solid-state amps was still in my future.

As a radio-oriented individual, one of the first things I did as a college freshman was to volunteer as an announcer at the school's FM radio station. At this point, most of my "transmit audio" efforts had been focused on properly tuning up my HF transceiver, not overdriving the speech amplifier and balanced modulator, and properly loading the fragile TV sweep tube finals so they wouldn't melt — and cost me money. The complexity, and my budget, didn't leave room for "extras" like impedance matching, equalization, and compression.

'Father of Broadcast Audio Processors'

What did get me thinking about the "finer things of transmit audio," however, was the station's chief engineer, who introduced me to his prized Orban Optimod, **Photo C**. Known as the "father of broadcast audio processors," the

Photo A. This advertisement, from the June 1968 edition of *CQ* magazine, announced the new Drake B-Line, featuring the R-4B receiver and T-4XB transmitter, which would go on to be very popular choices for the radio amateurs of the time. They are still prized as pieces of vintage gear today. *(Courtesy of CQ)*

Photo A. The first part of *Ham Discoveries'* look at transmit audio appeared in the July 2013 edition of *Pop'Comm,* beginning on page 49. *(Courtesy of CQ Communications)*

cations mic. You can sense the difference immediately when, in movies or TV shows, a conversation between two people switches from "real life" to "on the telephone."

Microphone positioning: How a mic "sounds" with your particular voice can vary widely with how it's positioned relative to your mouth (and, secondarily, to how you speak). Placing the mic right in front of your mouth, for example, often emphasizes "plosives" (P and B sounds), while placing it off to the side can eliminate these issues and produce a much more natural sound (while perhaps attenuating sibilants, or "S" sounds).

How you talk: Speaking with a wide dynamic range (softly, loudly and everything in-between) is great for classical music announcers, but you'll have better results as a radio amateur if you apply a little "built-in AGC," keeping your voice output level and well-modulated. You don't have to sound like a Top 40 disc jockey, but a bit of extra, steady modulation works wonders.

Speech amplifiers: It's not talked about much, but the characteristics of your rig's speech amplifier can help or hinder your efforts to achieve the best possible TX audio. In some rigs, especially older rigs, the speech amp is almost an afterthought, but its frequency response and distortion characteristics can be important — especially if they're bad.

Microphone EQs: Many newer radios, especially those with TX DSP, incorporate full-range audio equalizers right in the radio. Lacking external, dedicated controls, these can be difficult to adjust on the fly, but can really compensate for "other issues" in the audio chain. Internal EQs are desirable, but external EQs are often easier and more convenient to adjust.

Speech processors: Many rigs have built-in audio or DSP speech processors. A little compression goes a long way. Too much compression really spoils the soup and makes your signal sound like the PA system on a submarine.

TX mixer: Once your rig's audio, whatever shape it's in at this point (influenced by all preceding factors), gets converted to RF in the TX mixer, it's still far from being free from undue influence. The accuracy and fidelity of the TX mixer (linearity, distortion, amplifier class, harmonic content, etc.) directly colors your TX audio. High performance circuits are desirable at this stage of the game.

TX IF filters: Conventional transmitters use crystal IF filters (one or more) to directly shape the bandwidth (and hence, the audio frequency response) of transmitted SSB signals. In most cases this is a "non-negotiable, law of physics" factor: If your rig's TX IF and filter is designed to pass audio signals from 300 to 2,700 Hz, signals outside that range will be greatly attenuated.

TX drive and carrier power: Too much drive and too much carrier power make it difficult or impossible to achieve perfect SSB signals. If we had oscilloscopes built into our rigs, we'd see the horrors of this immediately.

RF amplifiers: internal and external: The linearity and distortion charac-

Audio Excellence Resources

A detailed and informative presentation on SSB bandwidths and TX equalization by Bill Leonard, NØCU, can be found at <http://bit.ly/193Jpw3>.

Useful commercial sites:

- W2IHY Technologies: <http://www.w2ihy.com>
- Heil Sound: <http://www.heilsound.com>
- NU9N's ESSB Hi-Fi Audio: <http://www.nu9n.com> Aimed primarily at "enhanced," high-fidelity SSB. Includes a gigantic collection of information and links about SSB equalization and set up.

teristics of your radio's TX RF circuits (or external linear amplifier) affects the "sound" of your transmitted signal. Manufacturers have been paying more attention to these circuits lately, as TX IMD and other "TX cleanliness" factors are ways to differentiate elite-grade rigs from the masses. In-depth reviews in *QST* and elsewhere are now detailing TX IMD and related characteristics, making it easy to spot expensive radios that have awesome, high-performance receivers but bargain-basement transmitters.

This list, as big as it is, isn't exhaustive. There are other factors to consider, but I'm sure you get the idea. You can't even rely on the SSB monitor built into higher-end transceivers. It only samples the TX audio before it's converted to RF — useful, but not a complete picture.

Tune Up and Test, Test, Test!

Before optimizing your SSB TX audio, make sure your rig is in good working order and that you are familiar with how to use it, tune it up (if necessary), and access any and all controls relating to TX audio (gain, bandwidth control, processing, and so on). Read the manual, and *then read it again*.

Make sure your microphone is of good quality, has a response that's appropriate for your needs (ragchewing, DXing, contesting), and can be appropriately connected to your radio.

For initial tests, use a dummy load. Don't test on the air, especially on an open band, unless your callsign happens to be "TEST."

If your rig has internal EQs, set them for a "flat" response. Turn off any speech processing for now.

Make sure your TX is tuned up and set an RF power output to a point that is well below the rated maximum — to minimize IMD, splatter, and the chances of overdriving the RF amplifiers.

Scour your rig's user manual to learn how to adjust your mic gain for proper modulation. When transmitting, the meter on your rig can usually be switched to "ALC mode," which helps you set the audio/modulation levels properly. This is a critical adjustment. If you mess up here, everything else gets worse.

Too little modulation reduces RF output power, while too much causes distortion. You want the sweet spot, which is what the ALC meter will help you achieve.

At this point you should have a properly adjusted microphone/radio, transmitting a clean SSB signal into your dummy load. If you have a second receiver and a pair of headphones you can listen to your own signal.

Turn off noise blankers and receiver-based DSP to provide an "undoctored" signal. Remember: This is the "baseline sound" for your particular voice, microphone, and radio, with no EQ and no processing (remember that the sound can be "colored" by the particular receiver you're using). At this point, some setups sound great. If so, congratulations. If not, there's work to be done.

Improving your baseline sound involves adjusting the audio equalization settings of an internal or external equalizer and, optionally, adjusting your radio's TX bandwidth, which is adjustable on many DSP-based radios. The EQ settings required to improve "your" sound will vary according to your voice, your mic, and your rig. Experiment with the EQ settings as you transmit to get a feel for the changes that may be required.

In general, for ragchewing or other "full sound" applications, you want a reasonably flat response from 200 to 2,800 Hz. For

DXing and contesting a 400- to 2,600-Hz response works best, with boosts of 4 to 10 dB at 1,600 and 2,100 Hz. Your particular mic will affect these settings, so you really do have to test, test, test.

Once you have the sound (or sounds) dialed in from your perspective it's time to enlist an on-air helper or two to get some feedback and make further adjustments. Initial on-air tests with local hams on a dead band are best. If your helper is experienced in these matters, that's all the better. Remember to keep your RF power output within specs, and to keep your ALC settings "spot on" throughout your tests.

After your EQ settings are dialed in, you may want to add a bit of compression (no more than 6 dB, *please*) to increase average power. With compression on you may have to readjust your mic gain/ALC settings. Have your helpers listen carefully while making compression adjustments. A little goes a long way, and you don't want to spoil all of your hard work by adding too much processing.

Thanks for Listening

These are just the basics, of course, but if you follow these relatively simple steps you will be way ahead of the game when it comes to generating a sweet SSB signal. Or, as reader Paul Courson reminded me, a sweet AM signal! Praised by many, demonized by others, mostly over bandwidth issues, real or imagined, it's safe to say that no other group has worked so hard to produce "perfect TX audio."

Take a listen any evening near 3885 kHz to see (hear) what I mean.

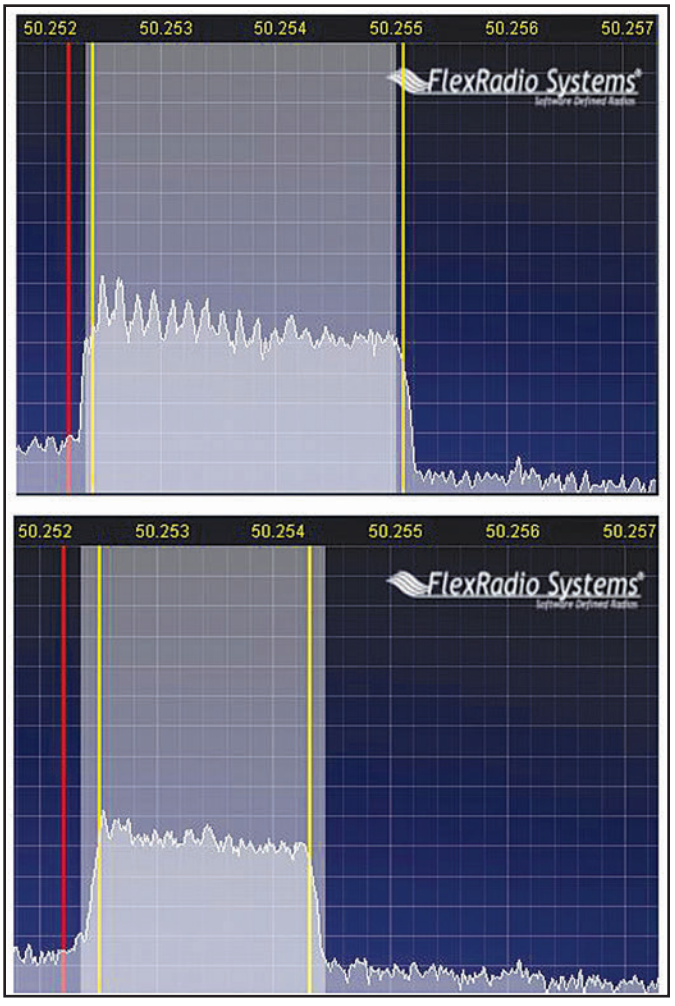


Photo B. Most conventional radios use fixed-bandwidth crystal filters to define their TX bandwidths, but DSP-based rigs and SDRs can offer adjustable TX bandwidths (in addition to audio equalization and speech processing). Shown here is the 6-meter SSB TX output of my FLEX-1500 transceiver (before optimization). The top trace shows a typical output bandwidth of about 3 kHz. The bottom trace shows a narrower output that may prove useful for QRP contesting. *(Courtesy of KPCØZZZ)*

Photo C. Even if your rig has an internal EQ, W2IHY's *8-Band Audio Equalizer and Noise Gate* is pretty much the gold standard when it comes to amateur radio audio processing. The EQ provides many additional functions, which you can explore at <http://www.w2ihy.com>. See the stellar reviews for this unit at <http://bit.ly/1fHRsFN>. *(Courtesy of KPCØZZZ)*

SPURIOUS SIGNALS By Jason Togyer KB3CNM
popcommcomic.blogspot.com

December 1922: Why Junior Doesn't Ask Santa for a Radio Anymore

By Henry L. Arthur
Radio Broadcast magazine,
December 1922

"Many a gift has been damaged beyond redemption by an overzealous dad who felt the only way to present it on Christmas morning was 'in operation.'"

Gone are the days when the indulgent parent persuaded Santa to bring the Christmas mechanical and electrical toys to the house a week in advance.

Santa has learned that many a dad has ruined an expensive railroad outfit or high-grade radio set before it ever reached the hands of the family young hopeful, who, no doubt, could have uttered the magic *"Open Sesame"* before the damage was wrought, **Photo A**.

A failing, common to many fathers, is that which impels them at every opportunity to show their youngsters how to do things better, especially the so-called "technical" things. It is safe to say that few there are among the dads who would permit their boys to connect an electric train circuit, fly a new kind of kite, shoot a new rifle, or cut with a new jackknife, without first unloading a certain amount of superfluous parental instruction.

The Overzealous Dad

Not that we revel, particularly, in the fact that there are certain lines of endeavor in which Young America can offer some real pointers to the older generation but, as we have said, many an otherwise useful Christmas gift has been damaged beyond redemption by an overzealous dad who felt that the only way to present the gift properly was to have it in operation on Christmas morning.

And further does it not frequently happen that the ruler of the roost is somewhat keen about electrical toys himself and has a sneaking idea that he will get as much genuine fun from the gift as his son?

Photo A. "Many an otherwise useful Christmas gift has been damaged beyond redemption by an over-zealous dad." *(Images and captions from Radio Broadcast magazine, December 1922)*

How many nights does the receiving outfit, given a boy for Christmas, do extra duty for the "governor" after the boy has been tucked in bed or is doing his lessons. How many times has an anxious youngster had to stand patiently by, waiting for a chance to listen-in while the donor of the set listens to a concert under the guise of "adjusting it, so the boy won't have any trouble with it?"

Most of the boy's trouble is getting near enough to the new wonder to become even casually acquainted with it. His joy of possession is sometimes reduced by having it too well "adjusted" for him.

Rolling Their Own

So the day has come when the boys are no longer waiting for Saint Nick to bring them receiving sets to which their title is not entirely clear. They are making their own and are doing a mighty fine job of it, **Photo B**. Among the articles made by boys in the grammar and lower high-school grades and exhibited at many of the county fairs this year has been radio equipment of various sorts, and most of it compared favorably in design and workmanship with the devices offered for sale by the best manufacturers.

The boys recognize a good design very quickly and lose no time in duplicating it, whereby they gain the large difference between the cost of their apparatus and the cost of commercial sets, to say nothing of considerable pleasure and knowledge, **Photo C**.

A Boon to Manual Training Classes

It is doubtful whether a better practice could be established than having the manual training classes in our schools take up the building of radio sets, since this work offers opportunities for study and development otherwise impossible. The fact of the matter is, no work is hard that is interesting, nor does one learn much when the work is irksome. Many an idle period was spent in the school carpenter shop in days gone by when the class simply couldn't work up a lot of enthusiasm over making a pair of book ends or a miniature table.

In a well-equipped school shop a boy may learn some very helpful facts about short cuts in

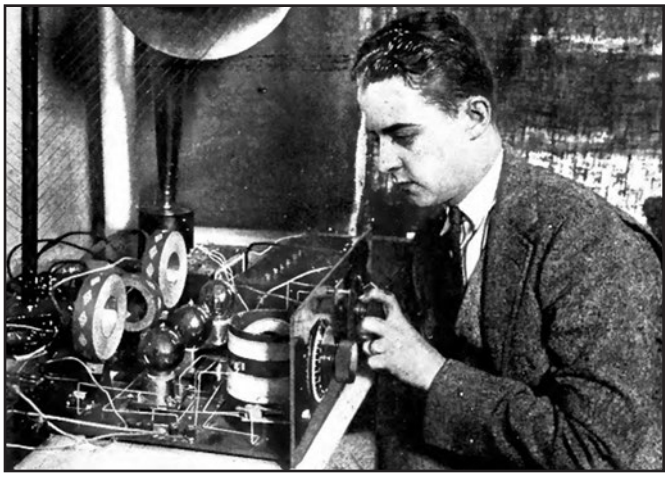


Photo B. "The most critical of circuits does not intimidate the American Youth, and wrinkles he is sometimes responsible for sometimes find their way into the design of commercial equipment. This boy made the three-tube super-regenerative receiver he is operating."

several trades, if instruction in radio is adopted, **Figure 1**. For instance, he learns:

- About carpentry and cabinet making and wood-staining and finishing by making the cabinet for his receiver.
- Something of wood turning by making the rotor balls for variometers or the wooden discs used for tuning-coil ends.
- How to measure and lay out his work accurately when planning the receiver panel.
- The proper way to use drills and taps and dies and how to work with brass, copper, nickel, slate, and bakelite.
- How to use a soldering iron and a blow torch; how to make electrical machines from diagrams which would have been unintelligible to his father at the same age.
- How to reason for himself by improving upon or altering a design to suit his particular purpose, or to reduce the cost of the material that he must have. By comparing the prices of parts and raw materials he secures a knowledge of comparative values never to be had from books.

In short, he learns much that will help him in later years — learns it thoroughly because he is interested, because he wants to learn.

Young Builders' Impressive Craftsmanship

Radio sets made by boys are usually anything but amateurish. As a rule, youngsters can discuss the reasons for and against a certain arrangement in the language indulged in only by engineers a few years ago, and the test of their knowledge is seen in their work.

The cabinet making is generally of a very good grade and boys show great patience in acquiring just the desired finish for their handiwork.

This interest is nation-wide and increases with the opening of every broadcasting station. Boys on the West Coast and in the South are busily engaged in making receivers to hear the broadcasting, and the programs to be available this winter are the best in radio's rapidly moving career.

Photo C. "A boy built this outfit for $27.80. It is a three-circuit regenerative detector with detector and two-stage amplifier and would cost between $100 and $130 if purchased ready-made."

Some idea of the activity of boys in and around Chicago may be had from Mr. George P. Stone's article: "Radio Has Gripped Chicago" which appeared in the October issue of *Radio Broadcast.*

Radio Construction: Growing Interest in the Garden State

The activity in New Jersey may be judged from the following paragraphs taken from *School and Society* for July 15, 1922:

"Several years ago radio sets were made in the manual arts departments in the schools of this state, but the boys' interest could not be sustained so long as only the dot-and-dash system of signals was available.

Now the opportunity of hearing the actual voices, words, songs, and music of the best kind has taken this project out of the more experimental stage and made practically every boy anxious to build and own a wireless set for his own use.

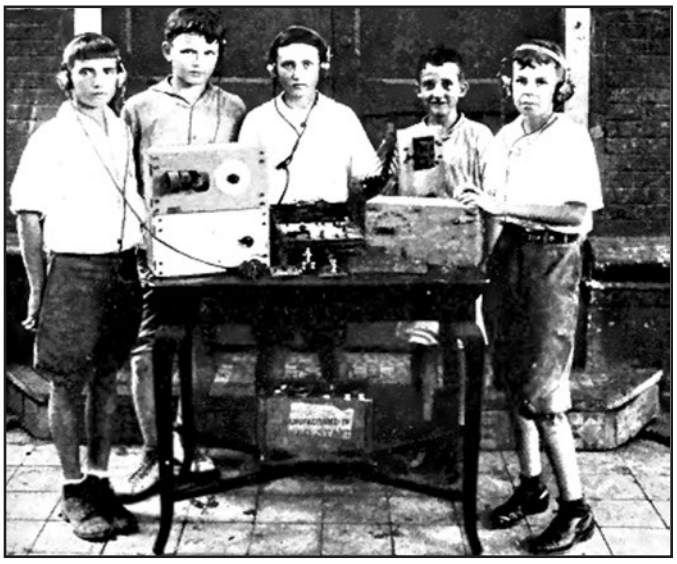


Photo D. "American boys in the Philippines are progressing very rapidly in acquiring real technique in homemade sets. They are handicapped somewhat by being so far from the source of supply and large broadcasting stations, but their work is already quite creditable."

New Members: *Pop'Comm Monitoring Station* Community

Here are the newest 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

Thomas Root, **KPC8GCC**, Flushing, MI; Richard Christensen, **KPC1FB**, Russell, MA; Bob Ricketts, **KPC7RAR**, Portland, OR; Kelley Law, **KPC7KAL**, Fountain Hills, AZ.

WPC Prefixes

Also: Gary Easter, **WPC5EWT**, Katy, TX; Steven Abernathy, **WPC6SAA**, Ewa Beach, HI; Joseph Sasgen, **WPC7NV**, Spring Creek, NV; Scott Vawter, **WPC6SEV**, Morongo Valley, CA; Ron Shire, **WPC8APZ**, Toledo, OH; John Walton, **WPC7JCW**, Moscow, ID.

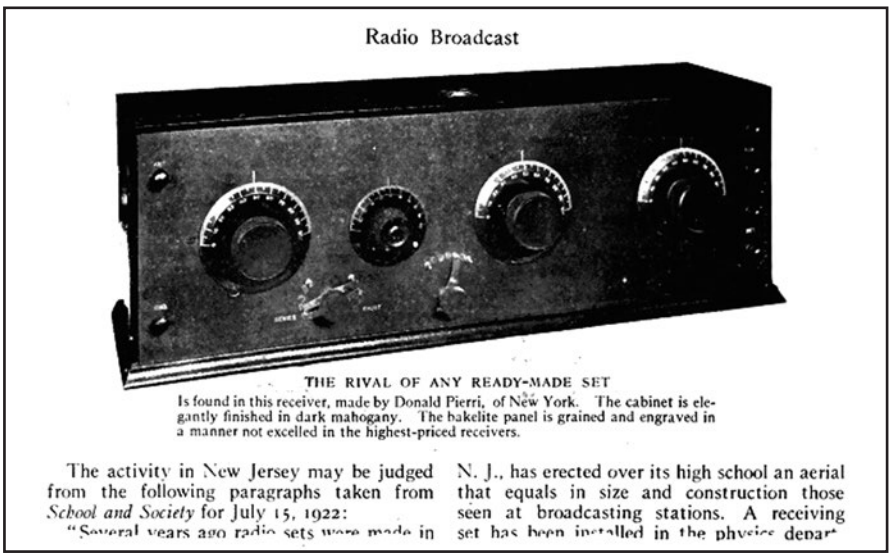
For complete information on the Pop'Comm Monitoring Station Program and to join, visit Pop'Comm Monitors On the Web: <http://popcommmonitors.blogspot.com/>.

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

Every effort has been made in schools throughout New Jersey to give boys a chance to design and build radio sets. The shop teachers have made a special study of radio construction; and boys have been given an opportunity to make various types of wireless sets. Schools have installed large radio sets.

Montclair, N. J., has erected over its high school an aerial that equals in size and construction those seen at broadcasting stations. A receiving set has been installed in the physics department, and at the last meeting of the Board of Education money was voted for the purchase of a sending set. Many of the high-school boys are licensed radio operators. In the manual arts department of the grammar schools of Montclair more than 600 wireless sets have been made.

"A report from Jersey City states that 655 radio sets have been built by upper-grade boys, while in the Hoboken high and junior high schools during this year 350 wireless sets have been made. The boys in the Bayonne public schools have made 249 sets, and it is reported that all of them are working.



Radio Broadcast

THE RIVAL OF ANY READY-MADE SET

Is found in this receiver, made by Donald Pierri, of New York. The cabinet is elegantly finished in dark mahogany. The bakelite panel is grained and engraved in a manner not excelled in the highest-priced receivers.

The activity in New Jersey may be judged from the following paragraphs taken from *School and Society* for July 15, 1922:

"Several years ago radio sets were made in N. J., has erected over its high school an aerial that equals in size and construction those seen at broadcasting stations. A receiving set has been installed in the physics depart

Figure 1.

Photo E. The caption of this somewhat fuzzy family photograph of kids listening to a crystal radio set in front of the Christmas tree reads *"Santa tells a Christmas story ..."*

"A great deal of attention has been given to the study of wireless in the public schools of East Orange. In the elementary schools 750 crystal sets have been constructed by boys taking shop work. The high-school boys have made 327 crystal receiving sets, 29-tube outfits with one and two-stages of amplification, and one sending set is nearly completed.

"The city of Elizabeth was among the first places to encourage boys in building radio sets, and thus far, 251 sets have been made in the manual arts departments of the grammar schools. More than l00 sets have been made by the boys in the vocational schools.

"Interest in this project has been encouraged in places quite close to broadcasting stations, and in virtually all of the school shops of the Newark public schools one may see boys working on wireless sets. More than 500 sets have been completed by the boys during their manual training period. Kearny and Nutley public schools have given their boys an opportunity to use the manual training departments for the construction of radio sets, and report that nearly 300 sets have been completed.

"Boys working on radio sets have not limited their time to school hours, but have worked with their shop instructor after the close of the regular school day, and many of the instructors report that a great deal of work has been done after school hours. Boys are learning more through wireless about electrical circuits, batteries, the telephone, and other phases of electricity, it is asserted, than textbooks can ever hope to teach."

What It All Means

A more fitting tribute to Young America's interest in radio than this report could hardly be imagined.

It means that the boys are learning a lot that is good for them and there is less time for their minds to cultivate, or even pay attention to that which is bad they are keeping pace with every improvement in the art and by reason of their knowledge are making it necessary for those manufacturers who can reasonably expect to stay in the business to supply nothing but the best equipment, **Photo D**.

The boys are providing entertainment for many a household. They deserve the encouragement of every dad in our land. It looks as if radio will solve, for thousands of parents this year, the problem of selecting Christmas gifts for their sons, **Photo E**.

WPC8DMD, Madison Heights, Michigan

This SWL Monitor Loves Listening to Distant Radio Amateurs

It was a long time ago that Darwin McDonald, WPC8DMD, developed an interest in shortwave radio. He's not shy about telling you he's 64 years old.

Among his other interests are reading Popular Communications and CQ magazine. He is an avid follower of "Ham Nation" on TWiT TV<http://twit.tv/hn>.

Are you as proud of your shortwave or scanner monitoring post as WPC8DMD? 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 Darwin McDonald, WPC8DMD

At age 64, I have been a shortwave listener for 56 years — getting my start at about age 8. My listening post is in Madison Heights, Michigan.

For me, there's nothing better than listening to DX ham stations. I love "Ham Nation" on TWiT.tv and am a big fan of *CQ* and *Pop'Comm.*

Here's a rundown of the radios and accessories you can see in the accompanying photographs.

"For me, there's nothing better than listening to DX ham stations"

Shortwave Radios

- DX160 Receiver
- DX200 Receiver
- DX302 Receiver
- Drake R8A

Photo A. Darwin McDonald, WPC8DMD, holds down the fort at his Madison Heights, Michigan shortwave and scanner monitoring post. *(Photography courtesy of WPC8DMD)*

Photo B. A Pioneer reel-to-reel tape recorder towers over WPC8DMD's shortwave and scanner monitoring position. He has been a monitor for 56 years.

- Sony CRF330 Receiver
- Sony ICF580

Scanners

- BC796D
- BC780HLT
- BC800XLT
- BC895XLT
- 400-Channel Pro2005
- Pro-7A VHF Crystal
- Regency VHF/UHF
- Cobra CB
- Several Handheld Scanners
- Pioneer Reel To Reel

Antennas

- Two trap Verticals
- Two 800-MHz Beams
- VHF/UHF/800 Beam
- Two UHF/VHF/800 Discones
- Vertical Channel Master
- One 120-foot-long wire, oriented north/south

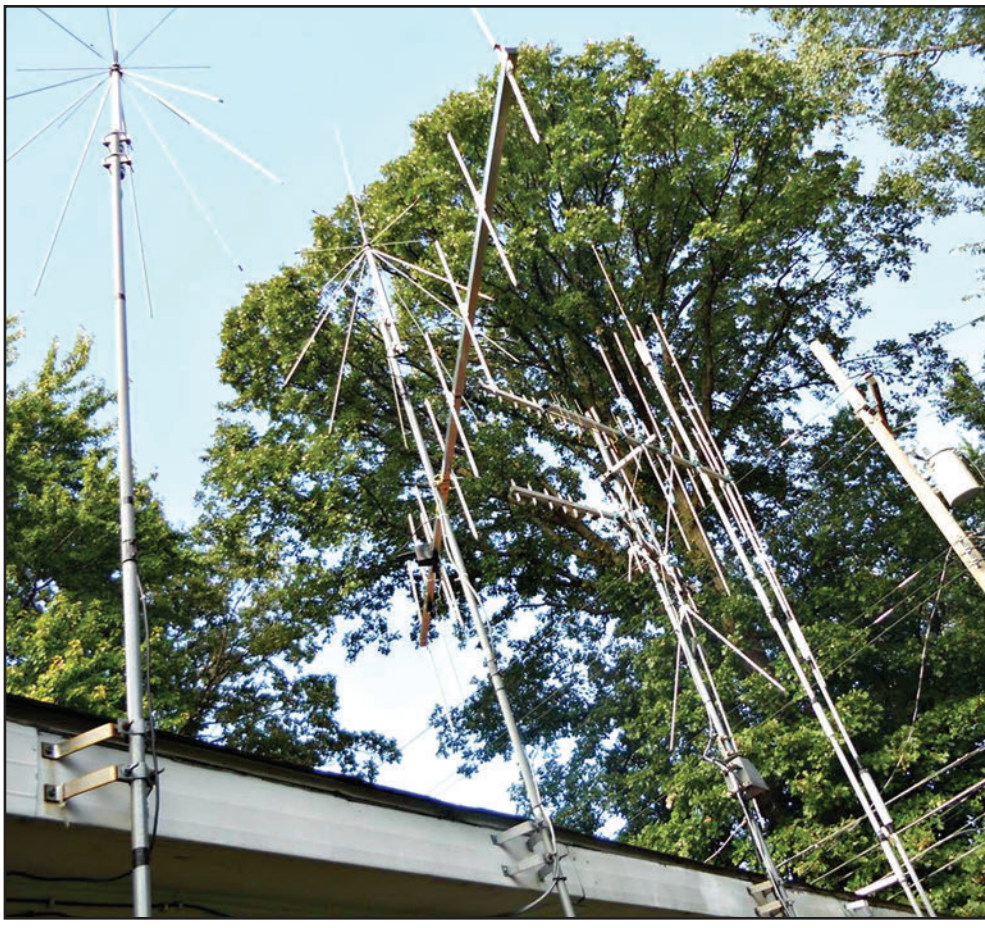


Photo C. WPC8DMD's antenna "farm" strikes a busy pose against the background at his Madison Heights, Michigan listening post.

Researching Propagation Using JT65A, Part II

By Tomas Hood,
WPC7USA/NW7US

"This month, let's take a more practical look at how we use JT65A ... a weak-signal mode that is gaining in popularity on all of the HF bands."

For the last few months, *The Propagation Corner* has been issuing a challenge to the reader: become an amateur research scientist involved in radio propagation — become a radio pioneer.

In November's *Pop'Comm,* we explored the weak-signal mode known as JT65A, a mode engineered specifically for weak-signal communication. *(**NOTE:** November's 'Propagation Corner' began on page 55. – WPC7USA.)*

We looked at how effectively this unique mode can extend your radio signal far beyond the range of voice (SSB) or even Morse code (CW) transmissions.

This month, let's take a more practical look at how we use JT65A. For illustration, we'll use an application of one of the JT65-HF software branches. *(**IN DEPTH:** Visit <http://nw7us.us/jt65a.html> for the latest information on available versions. – WPC7USA.)*

The Standard JT65A QSO — The Expected Exchange

As we discussed last month, the JT65A digital communications protocol as invented by Joe Taylor, K1JT, relies in part on redundancy. But, it also requires adherence to a standard set of QSO exchanges. There is an order and timing for each exchange element in a JT65A QSO.

There are actually three variants of the JT65 protocol: JT65A, JT65B, and JT65C. The latter two are simply wider-bandwidth versions of JT65A, and are used when VCO drift is too high to allow JT65A to decode; typically this happens on VHF and above. Since HF usage of JT65 is accomplished with JT65A, this is the only variant we will discuss in this column.

JT65 uses a 65-tone MFSK modulation scheme with constant-envelope sinusoidal tones sent over 126 contiguous time intervals, each with a length of 0.372 seconds. Tone changes between time intervals are phase-continuous, perhaps to minimize spectral re-growth created by sharp transitions in the time domain.

QSOs are conducted on alternating minutes, referred to as "even" or "first" period (:00, :02, etc.) and "odd" or "second" period (:01, :03, and so on). Transmissions begin at 1 second after each minute and last for 46.8 seconds, during which 378 bits are sent. Decoding starts at 47.8 seconds and, depending on factors such as the speed of your computer's processor and the width of your decode window, usually takes about 1-4 seconds.

This makes for an interesting operating experience because during a QSO, only 8-12 seconds every 2 minutes require action on the part of the operator, during which you must activate the next message sequence before the start of the next sending period. This is why some operators do not like JT65A, as they prefer a digital mode that supports free-form textual conversations. JT65A is a "slow" mode, but, allows for DXing very weak signals on noisy and variable-condition radio propagation paths. On the plus side, this leaves the operator a lot of time to do other things.

Inside a JT65 Signal

JT65A transmissions include a sync tone which is sent multiple times during the period, at a frequency of 1270.5 Hz above the rig's dial frequency. The frequency of this sync tone is referred to as the "DF" (differential frequency) and 1270.5 Hz is known as "DF = 0." DF is varied by software, so there's usually no need to adjust your rig's dial frequency or RIT/XIT settings. We'll look more closely at DF later in this article.

The actual number of message bits per transmission is 72, with the rest coming from the Reed-Solomon RS(63,12) forward error correction (FEC) code. Reed-Solomon codes are very effective at reducing bit errors and are widely used in consumer electronics for CDs, DVDs, Blu-ray discs, in data transmission technologies such as DSL and WiMAX, and in ATSC (digital TV) broadcast systems. The RS(63,12) code consists of a set of "codewords" (groups of bits), and every codeword in RS(63,12) differs from every other one in at least 52 places. This means that it's nearly impossible, even in cases of very low SNR (signal-to-noise ratio), for any JT65A sequence to be confused with another.

The redundancy ratio is 5.25-to-1 which, when combined with the FEC, results in a very robust transmission that functions well even in the presence of heavy QRM and QSB; only 20 percent of the 47.8 second message must be received to yield a valid decode, and the SNR can be as low as -24 dB! A transmission can be heavily corrupted, and very weak, but if the software

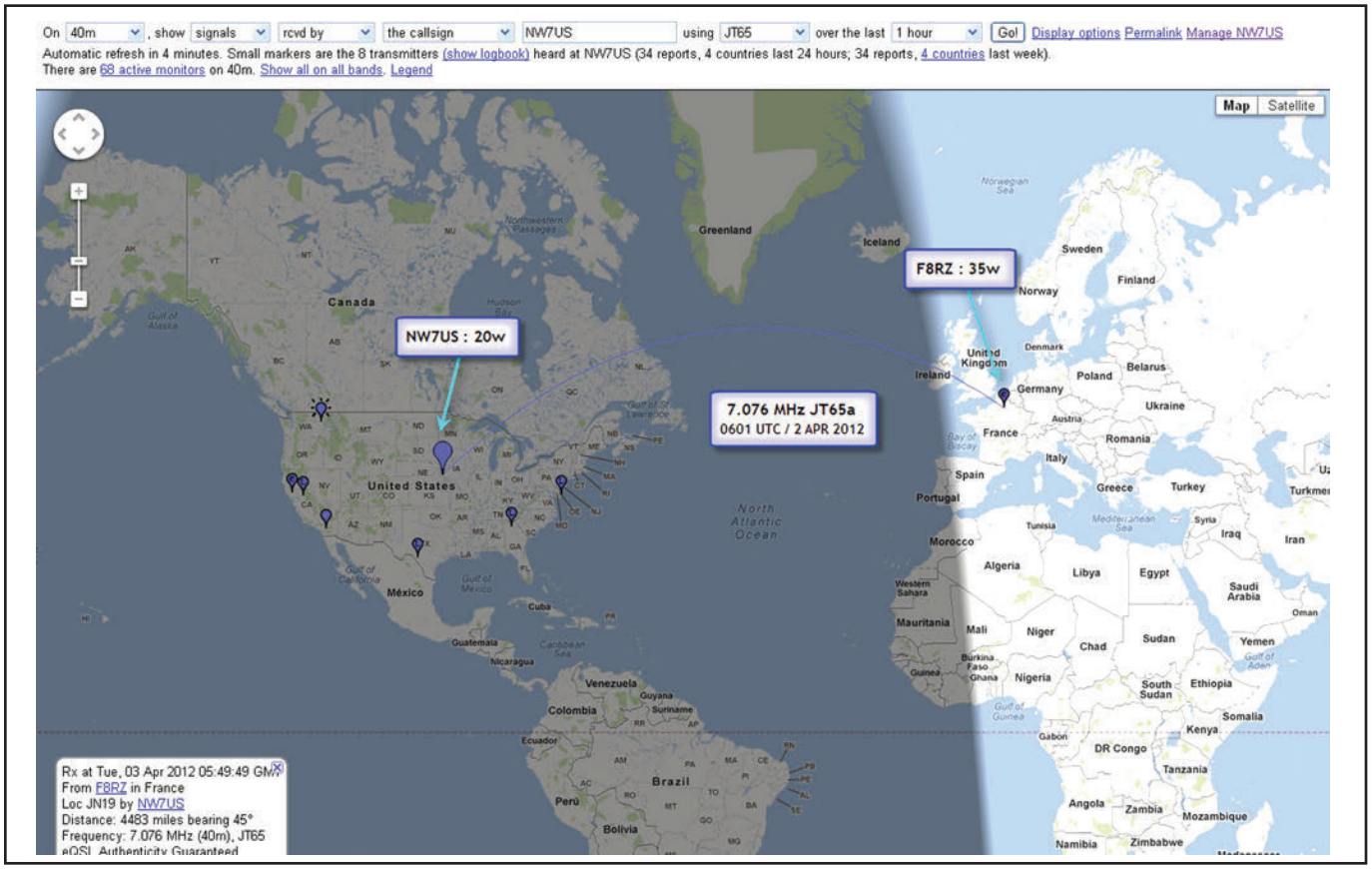


Figure 1. A mapping of the two-way JT65A QSO between NW7US (Nebraska, USA) and F8RZ (France) on 40 meters. The power used at the NW7US station was 20 watts, while F8RZ was running 35 watts. These mappings are only possible if you use the standardized exchanges defined for the JT65A protocol (see text).
(Courtesy of NW7US, using the PSKReporter mapping service at <http://pskreporter.info>)

decodes successfully, then the decoded data is virtually guaranteed to be valid.

The JT65A QSO

The JT65 protocol makes use of compression to pack as much info into the period as possible, but even with compression, a maximum of 13 characters can be sent in a random-text message. Supported characters are limited to 0-9, A-Z (caps only), space, and some punctuation (+-/? — not including parentheses).

A standard JT65 QSO contains everything necessary for a valid QSO: callsigns, grid squares, and signal reports. The standard QSO requires 6 periods (i.e., 6 minutes). (See **Figures 1-4**) and proceeds like this:

- CQ K1JT FN20 (First station calls CQ — note that grid square is included in CQ)
- K1JT NW7US EN11 (A second station answers CQ with grid square)
- NW7US K1JT –18 (CQ station sends signal report)
- K1JT NW7US R–16 (Answering station sends "R" + signal report)
- NW7US K1JT RRR (RRR indicates that the R + signal was received OK)
- K1JT NW7US 73 (RRR was received OK — end of QSO)

You may have noticed that some of these messages contain more than 13 characters. This is because the JT65 protocol uses a few clever tricks to increase the data compression efficiency, but only if the message is written in a standard pattern, such as those shown. The 13 character-per-message limit applies only to random text.

Some JT65A ops have taken to using their 73 sequence to offer information on their setup, so it's not uncommon to see "K1JT NW7US 73" replaced with "OCF25W NW7US" (indicating 25W on an off-center-fed dipole) or "3EL10W NW7US" (indicating 10 watts on a three-element beam). Sometimes when people are having trouble, you will see messages such as "CHECK CLOCK" or "NO COPY QRZ?" The use of "TU7" (short for "thank you and 73") has been gaining popularity.

It should be noted that the worldwide reverse beacon network will only upload received messages if they're in a standard pattern. Thus if you write "GUD LUK NW7US" or "CQ EU NW7US" the reverse beacon network will ignore the message and you won't see yourself on the spotting lists or maps, **Figure 1**.

Using JT65A On the Air

Once you have your soundcard interfaced, your computer's clock accurately set — *see November's Part I* — and understand the odd/even QSO pattern, you're close to making your first QSO.

Using JT65A on HF is fairly straightforward. It's very much like PSK31 in that there is a waterfall display of signals in the audio passband. Recall from earlier discussion that by default,

Optimum Working Frequencies (MHz) - For December 2013 - Flux = 132, Created by NW7US

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

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

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

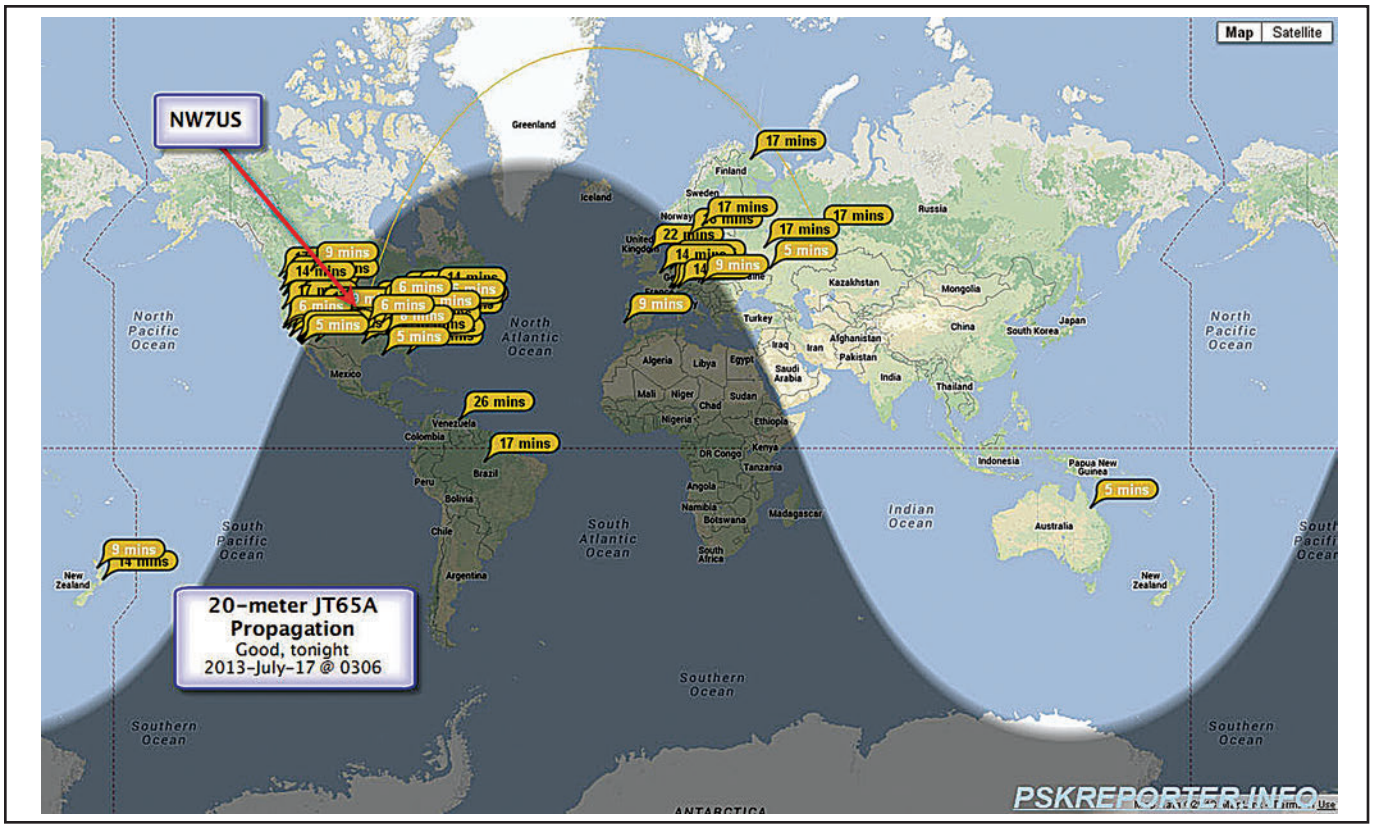


Figure 2. Here is another example of the PSKReporter mapping of stations reporting hearing the JT65A signal from NW7US. This illustrates how useful this model is for checking on propagation on a given band (in this case, 20 meters). *(Courtesy of NW7US, using the PSKReporter mapping service at <http://pskreporter.info>)*

JT65A transmissions occur at a "DF" (differential frequency) of 1,270.5 Hz above the rig's dial frequency; this point in the waterfall is referred to as "DF = 0."

However, the DF can be adjusted in software to zero-beat with signals above and below this frequency. So a station transmitting at 830 Hz above dial frequency would be said to be at "DF = -440."

Transmission of the 65 JT65A tones occurs within a bandwidth of just under 175 Hz, but in practice ops will try to keep their DFs at multiples of 200 Hz to avoid overlapping interference. That being said, using multiples of 200 Hz is not a hard and fast rule, and you will see QSOs at almost any point in the waterfall.

All of the current JT65-HF software versions (there are several different concurrent development branches offering a different "flavor" of the JT65-HF program) will decode all messages in the 2,000-Hz receive bandwidth "window" — which is shown on the "waterfall."

When using the JT65-HF software, you'll need to adjust your thinking about the waterfall display. Clicking on the waterfall will adjust the TX and RX DF, and you can add the target's callsign and signal report manually into text fields, but there is another way. Let's say that I just decoded a CQ from Valery, RW6BN, in Russia at DF = -332, and want to respond.

Rather than click the waterfall, write "RW6BN NW7US EN11" in the random text field, select the proper even or odd period, and click "Enable TX" (all of which would be hard to do within the 10 or fewer seconds I have between decode and the start of the next period).

Alternatively, I can double click on RW6BN's message in the decode window. This adjusts the TX and RX DF to match RW6BN's DF, generates a standard message, populates the signal report field, sets the even/odd period to be the opposite of RW6BN, and activates "Enable TX."

My message back to Valery will begin automatically at the beginning of the next period. Valery will double-click my message to him, which will generate his response to me with a signal report, and automatically set the software to begin a reply transmission at the right moment. I will then click "Send Report," Valery clicks "Send RRR," and I will either click "Send 73" or enter a message like "DPL50W NW7US" field in place of a 73. For those of you who don't type very fast, *this is a great mode!*

Exercising 'Best Practices'

Aside from standard amateur practices, using JT65A on HF requires a few additional considerations for best practice operation. This is mostly due to the sensitivity of the JT65A decoder. Excessive power, splatter, poorly-filtered TX audio lines, etc., can create interference for ops hundreds or even thousands of miles away.

The JT65 decoder also expects to see the received signal level remain within a fairly narrow range of +/- 5 as viewed on the audio input level meter. Sometimes we see new ops getting started with JT65A who think that to work DX they need to run QRO (high power), which is simply not true. In fact, doing this creates havoc for other users because the QRO signal will often overload the decoders of everyone within 1,000 miles.

Fifty watts ERP is usually more than enough to work anywhere, presuming that propagation exists. WY5R has a con-

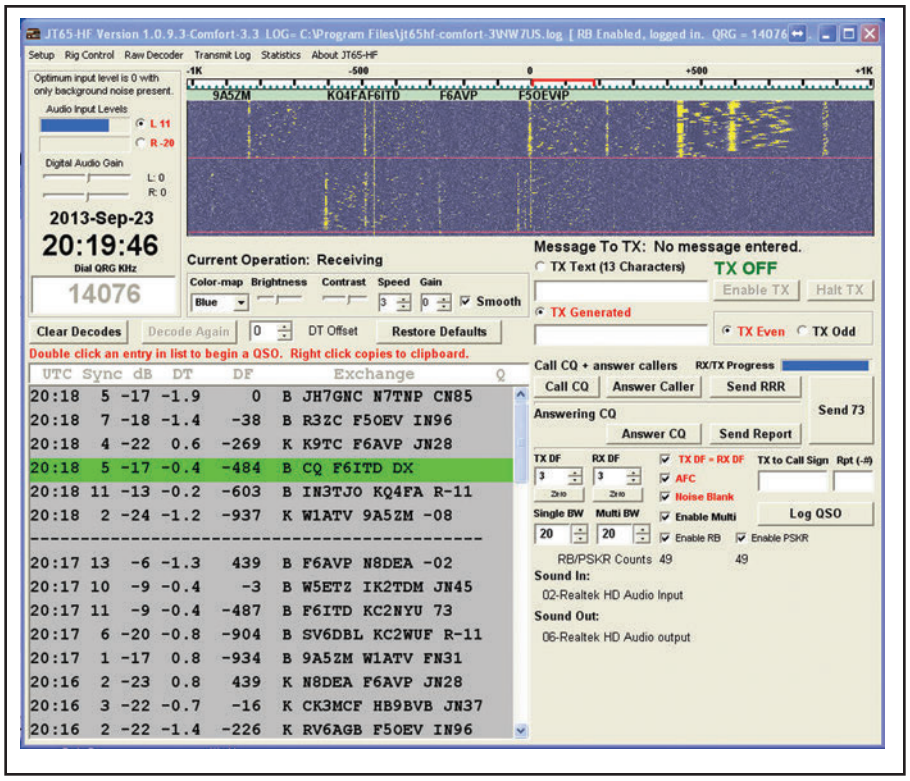


Figure 3. This screen shot of the JT65-HF (Comfort branch), running on 20 meters, shows a lot of DX stations on the waterfall at the station of NW7US. *(Courtesy of NW7US, using the JT65-HF software. See <http://nw7us.us/jt65a.html> for links to download pages.)*

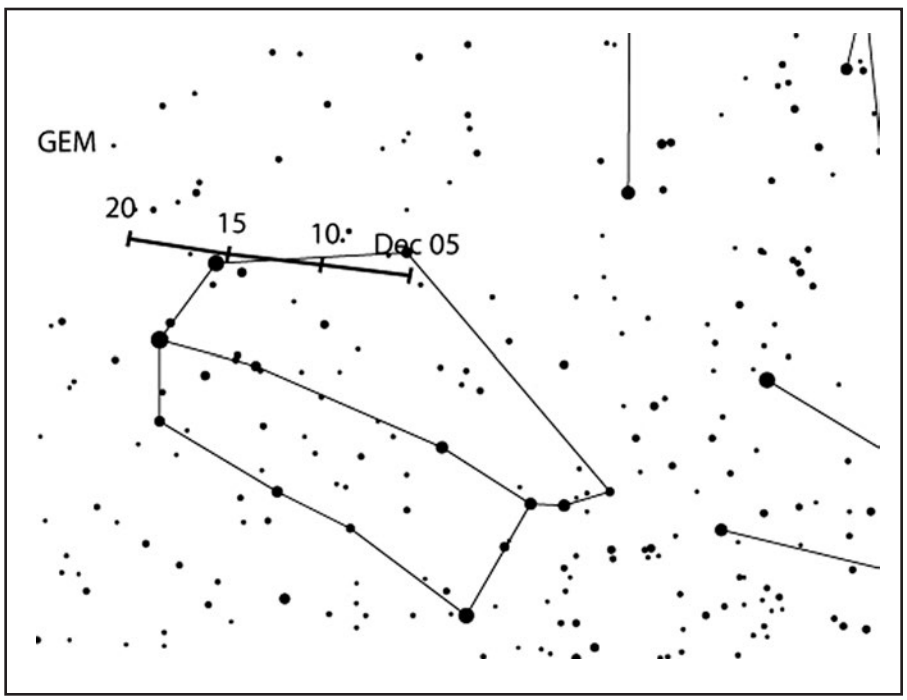


Figure 4. The Geminids meteor shower is probably the most reliable of the major annual showers presently observable. Well north of the equator, the radiant rises about sunset, reaching a usable elevation from the local evening hours onwards. In the Southern Hemisphere, the radiant appears only around local midnight or so. *(Courtesy of <http://www.imo.net>)*

firmed contact with ZS2ACP (South Africa) in February 2010 from Amarillo TX on 40 meters using 5 watts. ZS2ACP gave WY5R an initial signal report of -10 dB, which meant that WY5R could have reduced his power by 10 times or more and still remained well within the margin for a reliable decode. Texas to South Africa using 500 milliwatts on 40 meters — *talk about QRP!*

Stories like this are fairly common in the JT65A community. Do keep in mind, however, there might be times when higher power results only in a weak signal, too. One time, I had to use a full 100 watts on 40 meters, to be heard by a station in South Africa just enough to decode. Any less power, and the QSO would not have occurred.

Hardware settings are largely similar to other digimodes like PSK31: Set the rig to max power, upper sideband, no compression or equalization, and then adjust the audio levels from the PC during transmit to control RF power out. Adjust the audio levels to control power out rather than the rig's RF power control because at lower RF power levels, the ALC is more likely to kick in and you'll start splattering.

Owners of the Elecraft K3 should note that when running digimodes the first five bars on the LCD scale labeled "ALC" are technically just an indication of audio drive level, like a VU meter. The bars after the first five do indicate ALC. So K3 owners should ensure they are showing no more than 4 or 5 bars on the ALC meter during JT65A transmit.

Be sure to check the manufacturer's rating for your rig's recommended duty cycle; JT65A transmissions are a continuous sinusoid, which lasts for about 48 seconds. Most rigs are rated for 50 percent duty cycle, which means that if yours is rated for 100 watts SSB, you should keep the RF power out to 50 watts or below.

On the receive side, some care should be taken to maintain an audio level that's as close as possible to zero on the audio input level meter. This is usually set on a quiet channel, or during the 10-second pause between periods, presuming no other signals such as Olivia, RTTY, etc., are present. If you've set your receive audio level to zero and then find that the level exceeds +5 during someone's transmission, you'll probably be OK, but if the signal gets over +10, the decoder will start having trouble and so you'll want to consider adjusting the receiver gain or even activating some attenuation.

It is important to remember that JT65A is an FSK mode in that it transmits distinct single tones from a tone set of 65 values. But, JT65A is not transmitted using your transceiver's FSK mode! JT65A, using whatever software you choose, uses AFSK. *This is a critical distinction*. Please be sure to avoid ALC action if possible with an AFSK signal. Much like any other audio input to an SSB transmitter, JT65 can generate a poor signal if your transmitter is over-driven.

JT65A is a weak signal mode that is gaining in popularity on all of the HF bands; at times, you will find more JT65A stations operating than PSK31. Because of its effectiveness with weak signal decoding, you need to rethink your power levels. Often a few milliwatts will do amazing things. Some situations call for much higher power levels (I've had to use 100 watts on only a very few worldwide DX QSOs), but in day-to-day HF usage, a maximum of 10 to 20 watts is probably enough, if not too much.

Of course, it is assumed that you are using a no-loss antenna system; the critical idea is that your station's effective radiated power (ERP) is not too high. This is why stations that are operated at low power (QRP), using the most meager antenna systems (a short wire, no counterpoise, matched with a lossy antenna tuning circuit), inside a first-floor residential environment still can work DX on JT65A. Be sure to look for latest version information and other helpful resources at <http://nw7us.us/jt65a.html>.

Next month, we're going to take a look at the newer software offered by Joe Taylor, K1JT, along with a look at the new JT9 protocol, which, like JT65A, allows you to learn about the real day-to-day conditions for radio signal propagation around the world via the ionosphere.

HF Propagation for December

December 21 marks the start of winter, with the Sun sitting at its yearly southern-most point in the sky. This is the day with the shortest daylight period of the year for observers situated north of the equator. This is the Winter Solstice <http://en.wikipedia.org/wiki/Solstice>.

It is because of this seasonal Northern-Hemispheric dark period that many listeners throughout the Northern Hemisphere enjoy actively chasing medium-wave (MW) DX of AM broadcast stations from all over North, Central, and South America, and from Europe and Asia. This is the season when it is easier to catch such difficult signals, because it is during this season when conditions are most favorable to propagation of this spectrum of the radio frequencies. Shortwave DX is hot, too, especially on the mid- to low-HF bands from early evening until late at night, and then again from early morning through high noon.

Long hours of darkness make for a less-energized ionosphere. Since the *D*-region of the ionosphere is less ionized during the winter, medium wave and the lower shortwave frequencies are generally less absorbed by the *D*-region than during the summer season. Because of this, medium-wave frequencies are propagated by the *E*- and *F*-regions better during the winter than during the summer. Additionally, the seasonal decrease in weather-related noise makes it easier to hear the weaker DX signals on the lower frequencies. With thunderstorms few and far between, storm-related static and noise is greatly reduced.

Seasonally, the geomagnetic activity tends to quiet down during the winter months. The most active geomagnetic seasons are centered on the two equinoxes, in the spring and autumn. We are also in a rather dismal level of the current solar cycle, and that means very few flares occur, and therefore, very few if any shortwave fadeouts. This results in more stable and reliable propagation on the shortwave spectrum, especially on the lower frequencies.

December is well enough past the autumnal equinox and the associated peak auroral activity to support transpolar propagation. With this overall reduction of geomagnetic activity and the decrease of radio signal absorption comes more stable high-latitude propagation.

Medium-wave DXers enjoy catching broadcast station transmissions from over the North Pole. Shortwave DXing over high-latitude paths becomes exciting, even if the higher frequency bands might be dead.

Fairly good DX openings are expected on 19 and 16 meters, remaining open towards the west during the early evening. Nineteen meters will be the hottest daytime band, while 22 and 25 meters will become a close second. These start with early morning openings in all directions until about an hour or two after sunrise, and then remain open into one place or another throughout the day until early evening. When conditions are good (days with low geomagnetic activity, and higher solar sunspot activity), 22 through 16 meters are likely to remain open towards the south and west from early evening until about midnight.

The best band for around the clock DX will be 31 and 25 meters. Twenty-five meters continues to be an excellent band for medium distance (500 to 1,500 miles) reception during the daylight hours, with 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.

From midnight to sunrise, 41 and 31 meters promise some of the hottest nighttime DX during December. The first DX openings should be toward Europe and the east during the late afternoon, then move across the south through the hours of darkness, while remaining open into most parts of the world. Just after sunrise, openings will be more in a westerly direction. Low seasonal noise will make DXing a pleasurable endeavor.

For short-skip openings during December, try 90 through 41 meters during the day for paths less than 250 miles, and 90 down to 120 meters at night for these distances. For openings between 250 and 750 miles, try 41 meters during the day, and both 90 and 120 at night. For distances between 750 and 1,300 miles, 22 through 31 should provide daytime openings, while 41 down to 90 will be open for these distances from sunset to midnight. After midnight, 90 meters will remain open out to 1,300 miles until sunrise. Try 31 and 41 meters again for about an hour or so after sunrise. For distances between 1,300 and 2,300 miles, openings will occur on 22 through 16 meters, with fewer on higher bands, during the daylight hours. During sundown to midnight, check 22 through 41 meters for these long-distance openings, and then check 41 down to 90 meters after midnight until sunrise. Try 41 and 31 meters again for an hour or so after sunrise.

DX openings on 120 and 90 meters during the hours of darkness and into the sunrise period, with considerably decreased static levels, are a sure bet during the longer hours of darkness in the northern latitudes.

Look for openings toward Europe and the south from the eastern half of the United States and towards the south, the Far East, Australasia, and the South Pacific from the western half of the country. Ninety meters should peak towards

Europe and in a generally easterly direction around midnight, and then open in a generally western direction with a peak just after sunrise. The band should remain open towards the south throughout most of the night.

Medium-wave DX Season

This time of year is also the season when we experience an improvement of radio wave propagation below 500 kHz and the medium-wave broadcast band. The medium-wave (MW) broadcast band refers to the frequencies between 530 kHz and 1750 kHz.

The Low Frequency (LF) range is the band of frequencies between 30 kHz and 300 kHz. Very Long Frequencies (VLF) are those ranging between 3 kHz and 30 kHz, though the practical lower edge of the VLF band starts at 10 kHz. Medium Frequencies (MF) range from 300 kHz to 3000 kHz.

Radio waves in the Low- and Very-Low Frequency (LF and VLF) spectrum propagate differently than those of the Medium Frequencies and above. Between 300 kHz and 520 kHz, the lowest part of the Medium Frequencies (MF) and just below the MW broadcast band, the characteristics of propagation is a mix between those of the lower HF spectrum and those of LF.

The VLF and LF bands are usually referred to as the longwave (one word) bands. The VLF band goes from 10 to 30 kHz, and the LF from 30 to 300 kHz. During the winter season, medium-wave transmissions can be heard over much greater distances than during the summer season.

When is the best time to look for MW DX? The general rule is to start in the early evening, and to continue through the night and into the early daylight hours. As sunset approaches, the ionosphere starts to change. The *D*-region recombines and signals begin to punch through to the E- and F-layers, and distant propagation is more likely.

Most broadcast stations in the United States change from high power to low power after their local sunset. If you listen just prior to their local sunset time, their higher power will propagate well because of the characteristics of nighttime ionization. Thus, the idea is to maximize the degree of darkness at the station (and consequently, along the signal path from them to you) while they're on day power and pattern. The exception to this would be those cases where the power difference is small or none, but the nighttime pattern actually is more favorable to you.

At the same time, any station to the west that has a favorable nighttime signal in your direction (in other words, they have significant night power and no deep null antenna pattern aimed at you) is a potential sunrise target. *D*-region absorption increases rapidly when in direct sunlight, when the region east of your station begins to ionize, while west of you is still dark and free of *D*-region ionization.

For a period of time around your local sunrise the relative strength of stations to the west of you increases, while eastern stations will start to fade, allowing the western stations to emerge from underneath. On rare and exciting occasions, this period will last long enough for some western stations to go to their higher power and daytime pattern.

Here, as with sunset, the time of month can also be critical, as the more darkness on the path, the better. As sunrise times get later in the fall, the end of the month is preferable. In the spring, the beginning of the month is better. The longest hours of darkness fall toward the end of December on the 21st.

However, the shortest day of the year is not the day when the sunrise is latest and the sunset earliest. The latest sunrise times at mid-latitudes are right around December 30, while the earliest sunset times are usually between December 5 and 10. This means that December can be viewed as an "autumn" month in terms of sunrise DX, but should be considered more like January for sunset DX.

Propagation on VHF and Above

Quite a bit of meteor shower activity is expected this month, and this should result in improved conditions for meteor-scatter openings on the VHF bands for distances up to about 1,000 miles.

When a meteor burns up in the atmosphere, its intense heat creates an ionized trail, making it possible for radio signals to propagate off of the ionized trail much like they would off of the ionosphere. The annual Geminids meteor shower, which will appear from December 7 to December 17, will peak on December 12 to December 13. The maximum hourly rate may reach 120, this year.

Geminids is a great shower for those trying the meteor-scatter mode of propagation, since one doesn't have to wait until after midnight to catch this shower. The radiant rises early, but the best operating time will be after midnight local time. This shower also boasts a broad maximum, lasting nearly one whole day, so no matter where you live, you stand a decent chance of working some VHF/UHF signals off of a meteor trail. For a complete list of meteor showers in December, visit <http://www.imo.net/calendar/2013>.

A secondary seasonal peak in sporadic-E ionization should also result in some short-skip openings on low VHF between distances of about 800 and 1,300 miles. A rare occurrence of aurora during days of stormy geomagnetic activity is possible, providing some unusual short-skip openings on low VHF.

There are considerably less likelihood for Transequatorial (TE) VHF openings during December, but look for a possible opening between the southern states and locations deep in South America. The best time to look for these is between about 8 and 11 p.m. local time.

Don't forget to check out the *CQ VHF* magazine for more details on VHF propagation and conditions. If you use

Twitter.com — you can follow <@hfradiospacewx> for hourly updates that include the K index numbers (and, follow this columnist: <@nw7us>. 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 66.0 for August 2013, up a bit from July's 57.0 and from June's 52.5, yet weaker than 78.7 for May. The low for the month was 31 on August 26. The high of 105 occurred on August 21.

The mean value for August results in a 12-month running smoothed sunspot number of 58.4 centered on February 2013. Following the curve of the 13-month running smoothed values, a smoothed sunspot level of 79 is expected for December 2013, plus or minus 14 points. Have we seen the peak of Sunspot Cycle 24?

Canada's Dominion Radio Astrophysical Observatory at Penticton, British Columbia reports a 10.7-cm observed monthly mean solar flux of 114.7 for August 2013, just under July's 115.6 and still lower than 131.3 for May. The 12-month smoothed 10.7-cm flux centered on February 2013 is 118.0. A smoothed 10.7-cm solar flux of about 132 is predicted for December 2013.

The geomagnetic activity as measured by the planetary-A index (A_p) for August is 9. The 12-month smoothed A_p index centered on February 2013 is a steady 7.4. Geomagnetic activity should be much the same as we have had during November. Be sure to refer to the Last Minute Forecast at <http://sunspotwatch.com> (on the main page) for the outlook on daily conditions.

I'd Like to Hear From You

I welcome your thoughts, questions, and experiences regarding this fascinating science of propagation. You may email me, write me a letter, or catch me on the HF amateur bands.

On Twitter, please follow <@NW7US> and if you wish to have an hourly automated update on space weather conditions and other radio propagation-related updates, follow <@hfradiospacewx>.

I invite you to visit my online propagation resource at <http://sunspotwatch.com/>, where you can get the latest space data, forecasts, and more, all in an organized manner.

If you are on Facebook, check out <http://www.facebook.com/spacewx.hfradio> and <http://www.facebook.com/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 — *you* — to participate and share information, tips, DX spots, and photos of your antennas, radios, or your excursions into the field with your radio gear for that DX hunting trip.

Until next month,
73, Tomas, NW7US
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The Listening Post

... Not 'Global Information Guide?' What's Going on Here?

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

Huh? What's this? The Listening Post? That old moniker for this column dates to the very first issue of *Pop'Comm* in September 1983.

Call it fate or blind luck or, perhaps a kind move by Providence toward an old man as a reward for his three decades of service. Whatever the reason, the return of *The Listening Post* to the signature of this monthly visit is no less welcome, or appreciated. It's great to have that old friend at the top of this page again.

"The return of 'The Listening Post' to the signature of this monthly visit is welcomed! It's great to have that old friend at the top of this page again."

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Get out your board, cards, and dice. It's time to play "The Power Game."

Still more stations are turning on the big watts. This month we can run the gamut from "A" to "Z"!

Austria is now on the air with their 500 kilowatt transmitters. Initially, though, it wasn't aimed at all of their broadcast target areas, although it may well be so by now.

Bangladesh, a country never very well monitored in the United States, will be using 250 kilowatts by the end of 1983.

Little Bolivia, a country prized by DXers for its fascinating music and programming on several dozen low power outlets, may be taking a jump to higher power. The International Telecommunications Union reports that Bolivia has registered 100 kilowatts for use on two frequencies: Watch 9.505 on a 24 hour basis and 6.055 from 1200 to 0300 GMT. It could be some time before this becomes active, however.

Thailand is now reported to be on the air with 250 kilowatts for Radio Thailand.

And Zanzibar (part of Tanzania) has a new transmitting facility under construction with the aid of engineers from The People's Republic of China. We don't know yet when we can expect this one on the air. Our guess is it'll be at least 100 kilowatts and possibly 250 kw.

Meantime, Ghana is going in the other direction. The Ghana Broadcasting Corporation's equipment is in a poor state, as is that country's economy. Transmission time for the GBC is being cut back to save wear and tear on tired tubes.

Last month we reported the demise of Swazi Music Radio in Swaziland. It seems the announcement was a bit premature. It turns out that only part of the service is being cut back, so you should still be able to tune for this one.

Guide To English Shortwave Programs

A gremlin got to the address for this publication, which we mentioned a few months ago. The correct address is P.O. Box 8452, South Charleston, West Virginia 25303. The Guide is issued every month and subscription rate for one year is $15.00.

Mail Check

Phillip Lamb in Little Rock, Arkansas is another regular *POP'COMM* and Listening Post reader. He's just acquired a Hallicrafters S-107 receiver and is adding some new countries to his log.

Bruce DeShazo from Memphis, Tennessee uses a Panasonic RF-4900 and has been DXing for some twenty years. Also in his stable of receivers is a DX-160 and Kenwood R-300.

This QSL from Radio Finland International is one of a series.

Here's Bruce DeShazo relaxing in his shack in Memphis, Tennessee.

Gary C. Hickerson of Ft. Smith, Arkansas has acquired a new ICOM R-70 and reports his country total has "shot up" to around 150 heard.

Harold Ort, Jr., of Staten Island, New York has been out of DXing for some time but has now returned to the fold using a Kenwood R-600. Harold notes that he's "amazed at the modern technology" employed in the new receivers. Harold's a Sergeant in the U.S. Army.

Another eager *POP'COMM* reader is Roman Dementiuk of Newport News, Virginia, who's been a shortwave listener since 1968.

Roger James Schulter of Somonauk, Illinois is a newcomer just getting into shortwave and needs advice on receivers and antennas. Again, we have to say that we just can't give advice or recommendations on equipment.

Rules, Regulations, and Requests

Make no mistake—we enjoy hearing from our readers regularly! But please keep in mind that we need *detailed* loggings, not just country, frequency, and time. And speaking of time, please use Greenwich Mean Time in your reports.

Remember too, that we're dealing mainly in shortwave broadcast reception. *POP'COMM* has other columns for reports on utility stations and other types of transmissions.

This is your column, so let's see you in it! Your loggings, your QSL illustrations, photos of you in your shack, your comments and questions are welcome and sought! Lecture ends.

Listening Reports

Here's what's on. All times GMT.

Algeria Radio Algiers heard with rock music, English identification at 2000 followed by news on 15.215. (Hickerson, AR) At 2018 on 9.685 with English news and popular music. (Paszkiewicz, WI) Radio Algiers frequencies tend to vary. (Editor)

Antarctica Radio Nacional Arcangel San Gabriel, (Argentine government, Editor) heard with identification in Spanish at 0019 on 15.475. (Dementiuk, VA) Noted from 2350 to 0027 sign off with a lot of Identification announcements. Strongest ever heard here. (Hickerson, AR)

FEN in Japan's attractive QSL card, courtesy of Charles Ames, Grand Canyon, AZ.

Austria Austrian Radio heard with its DX program "Shortwave Panorama" on 5.945 at 0158. (Dementiuk, VA)

Australia Radio Australia heard on 15.115 from 0700 to 0800. (Schivo, CA) On 15.160 with English news read by a woman at 0502, at 0535 on 15.425 with cricket results. (MacKenzie, CA) On 9.770 to Asia noted after the 9.580 outlet to North America closes. Noted as late as 1500. (Lamb, AR) Program of rock music at 0037 on 17.795. (Dementiuk, VA)

Benin La Voix du Revolution from Cotonou heard on 4.870 at 2235 in local languages. African music, drums to sign off at 2300. (Hickerson, AR) The new regional outlet at Parakou on 5.025 heard at 0439 with local, disco and soul music, identification in French, weak signal. (Konen, WI)

Botswana Radio Botswana heard with its cowbells and farm animals sound effects interval signal at 0355 prior to sign on announcements in English at 0400 on 4.845. (Hickerson, AR)

Brazil Radio Nacional Brasilia noted at 0250 with a report on agriculture in Sao Paulo state. (Lamb, AR)

Canada CFRB, Toronto on 6.070 at 1323 in English with commercials, identification. (Hickerson, AR) Call letters on shortwave are CFRX. (Editor)

Central African Republic Radio Cen-

56 / POPULAR COMMUNICATIONS / *September 1983* THE MONITORING MAGAZINE

A look back 30 years to the very first "Listening Post" in September 1983.

Flashback: The Listening Post, September 1983

All of this serves as a good reason to look back at that first issue and things as they were then and some of the stations that were seldom, if ever reported, such as:

Radio Nacional Archangel in Argentine Antarctica; **La Voix de la Revelucion** in Benin; **Radio Centrafrique** in the Central African Republic; and clandestines **La Voz de Cuba Independente y Democratica**, **Radio 15 de Diciembre**, **La Voz de Sandino**, and **Radio Venceremos**.

There was also Colombia's **Radio Sutatenza**, **Radio Santa Fe**, **Radio Super de Medellin**, and **Radio Colosal**; and the Congo's **Radio Brazzaville**; the elusive, desirable **Radio Cook Islands**; the always near-impossible **Falkland Islands Broadcasting Station**; and the old standby **La Voz Evangelica** in Honduras.

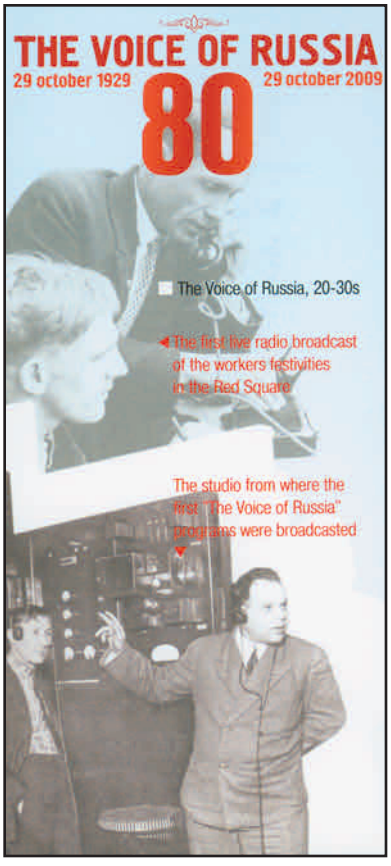
There was also **Radio Amman**, Jordan; **Voice of the People of Kampuchea**; **ELWA** in Liberia; **Radio Vilnius**, Lithuania; **Radio Malawi**, **Radiodifusion du Mali**, **Trans World Radio**, Monaco; the **Southwest Africa Broadcasting Corporation** in Namibia; **Radio Nacional**, Paraguay; **Radio Atlantida**, Peru; **Radio Polonia**, "Super Station" **KYOI** in Saipan; **Radiodifusion du Senegal**; the **Far East Broadcasting Association** in the Seychelles Islands; South Africa's **SABC** and **Capitol Radio** in South Africa's Transkei homeland; **Trans World Radio**, Swaziland; the wonderful **Radio Tahiti**; **Radio Tanzania**, **UAE Radio** in Dubai; **Radio Juventud**, Venezuela; and **Radio Candip**, Zaire.

Some were regulars. Some were rare. A few were an occasional piece of ear candy. *All of them* are much missed. It's hard to believe the shortwave bands were once so full of exciting sounds!

Collectively, that is a good capsule view of how things used to be. Things are much different today. It's no wonder that log reports are a bit down in recent months. Still, hope springs eternal, *and all that.* I'll press on if you will. *We're all in this together* ... and all that stuff!

Recent Shortwave-lets

- In mid to late August came word that the **Voice of Russia** will throw in the towel come the end of January. That's a shock about the equivalent of WYFR going silent — or the BBC ending its service to North America. The reason is that old nemesis "funding cuts." Who could ever have believed that the former powerhouse we once knew as Radio Moscow would ever encounter such a fate?
- There have been rumors about Canada's **CKZU** going off the air, but they seem to have been quite unfounded.
- As I warned recently, **Radio Australia** has, indeed, dropped its programming in Indonesian and Chinese. Why it is abandoning such a large audience is an open question. Maybe there is a sudden absence of shortwave receivers in those countries?
- **Radio Tele Candip** in Bunia, (DR Congo) on 5066 is apparently active again. It's being heard by some SW monitors around 0400.
- The *WRTH* reports that the shortwave transmitters in **Eritrea** have been off the air recently.
- The latest schedule for **Radio Sultanate of Oman** shows the station now using 13600 from 0200-0400, 15355 at 2200-0000, 9760 from 0000-0200, and 15560 at 1400-1500. The old standby 15140 is in use daily from 1500-2200. All this amounts to a welcome expansion of their service.
- A new postal mail address for the **Far East Broadcasting** is: P.O. Box 14205, Orticas Center, Paig City, Philippines.
- The High Frequency Active Auoral Research Program, more popularly known as **HAARP**, has shut down all its operations due to a lack of funding.
- **HCJB** has added another frequency to its German operation. 7365 should have your speaker bouncing with its bone crushing 100 watts. The site is Weenermoor in Germany's northwest. Programming will parallel the output on 3955.
- Last, there's been yet another loss: **Tom Christian**, **VR6TC**, the direct descendent of Bounty Mutineer Fletcher Christian, has passed away. Christian was known worldwide for his amateur radio activity from his shack on lonely Pitcairn Island in the South Pacific.



It used to be Radio Moscow, later the end of the U.S.S.R. brought about the Voice of Russia. Soon VOR will be gone too. Who would have thought such a thing could happen?

Your Contributions, Please

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

Also needed are spare QSLs or good copies you don't need returned, station schedules, brochures, pennants, station photos and anything else you think would be of interest. And how about sending a photo of you at your listening post? It's high time your picture graced these pages.

This Month's Catches for the Log

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

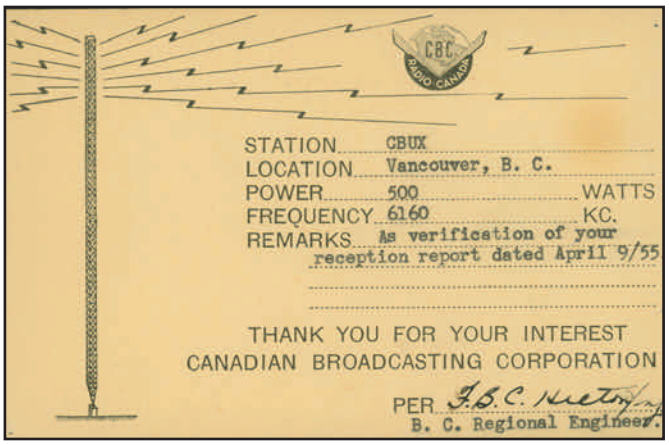
ALBANIA—Radio Tirana, 9850 at 0128 with IS, opening music and W with ID and news. (Coady, ON)

ALGERIA—Radio Algerienne, 7295 via France at 0434 with M and AA news, f/by ID, talks and recitations, 11985 via France at 0607 with recitations during the Holy Qur'an pgm. Carrier was cut at 0657 during another AA talk. (D'Angelo, PA) 9535 at 0459 with AA anmts over music, 0500 had W in FF and news. (Sellers, BC)

ANGUILLA—University Network, 6090 at 0735 with a Pastor Scott recording, and 11775 at 1315 with Melissa Scott preaching. (Maxant, WV)

ARGENTINA—Radio Nacional/Radio Argentina al Exterior, 15345 with talks in SS at 2302. (Brossell, WI)

AUSTRALIA—Radio Australia, 5995-Brandon with world news at 1133. (Brossell, WI) 11945-Shepparton at 0700 with Australian Network News read by a M. (D'Angelo, PA) 12085 at 1236 with a pgm of eclectic music. (Sellers, BC) 17795 at 0100 with the *Insiders*



Despite rumors to the contrary, Canada's CKZU in Vancouver has NOT ended its broadcasts on 6160.

political interview pgm and 21740 with a reporter being interviewed about federal election campaigning. (Coady, ON)

ABC Northern Territory Service: VL8T-Tennant Creek, 2325 at 1202 with live sports coverage,//2485 had only occasional bits of audio and 4835 was just poor to fair. (Sellers, BC) VL8A-Alice Springs, 4835 at 1215 with a documentary about blues singer Leadbelly. (Taylor, WI)

BOLIVIA—Radio Pio XII, Siglo Veinte, 5952.4 in SS at 0141 with 2 M in excited talk, with a W added at 0145. (Coady, ON)

BOTSWANA—VOA Relay, 4930 poor in static heard at 0447. (Parker, PA) 12025 at 0441 with EE news from Africa, M.E. and Asia. (Sellers, BC) 9815 in FF at 2110 and 12005 in (l) Bombara at 2143. (Brossell, WI)

BRAZIL—(all in PP – gld)

Radio Club do Para, Belem, 4885 at 0226 with talks. (Parker, PA) 0232 with M in excited talk and many mentions of Brazil. Fair with CODAR QRM and other UTES. (Coady, ON)

Radio Relogio Federal, Rio, 4905 (t) at 0227 with slow talk, M vocal and ancr. (Parker, PA)

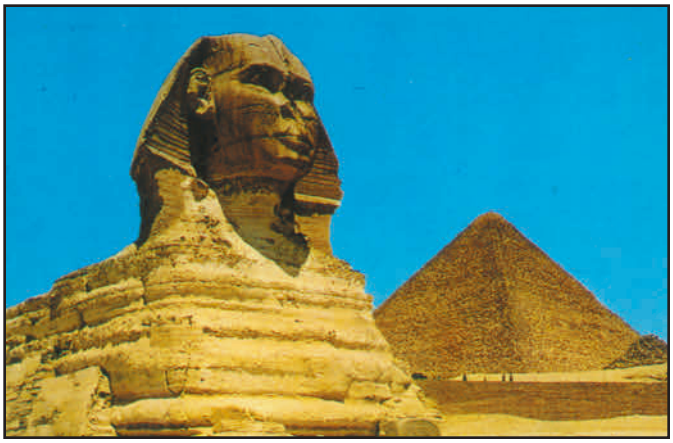
Radio Difusora Macapa, Macapa, 4915 with slow ballads at 0444. (Parker, PA)

Radio Itatiaia, Belo Horizonte, 5970 at 0307 with M talk in noisy conditions. (Parker, PA)

Radio Bandeirentes, Sao Paulo, 9645.6 at 0449 with M and slow guitar. (Parker, PA)

Voz Missionaria, Camboriu, 9665 with a slow ballad at 0441 and phone caller. (Parker, PA)

Radio Nacional da Amazonia, Brasilia, 11780 with pops at 0040-0112 hosted by M, nice formal ID at 0058. (D'Angelo, WI) Talks at 2300. (Brossell, WI)



Egypt is in the midst of a sea of troubles, as you can probably hear on Radio Cairo. *(Courtesy of Michael Yohnicki)*

Radio Brazil Central, Goiania, 11815 with futbol coverage at 0123. (D'Angelo, PA)

Radio Aparecida, Aparecida, 11855 at 0150-0158* with M preacher f/by some chanting and choir with organ. Maybe a technical problem as pervious night was going until past 0330. (D'Angelo, PA)

Radio Gaucha, Porto Alegre, 11915 at 0230-0303* with M hosting pgm of easy instls, 0259 ID and closedown anmts. Off w/out anthem. (D'Angelo, PA)

CANADA—CFRX, Toronto, 6070 at 0101 with a traffic report, ads and talk about Mayor Ron Ford. I have been hearing this off and on lately to past 0400. (D'Angelo, PA) 2315 with their version of 60 *Minutes* on using troops in Springfield, Mass. (Parker, PA)

CKZN, St, John's (Newfoundland), 6160 at 0740 discussing the Muslim religion. (Maxant, WV)

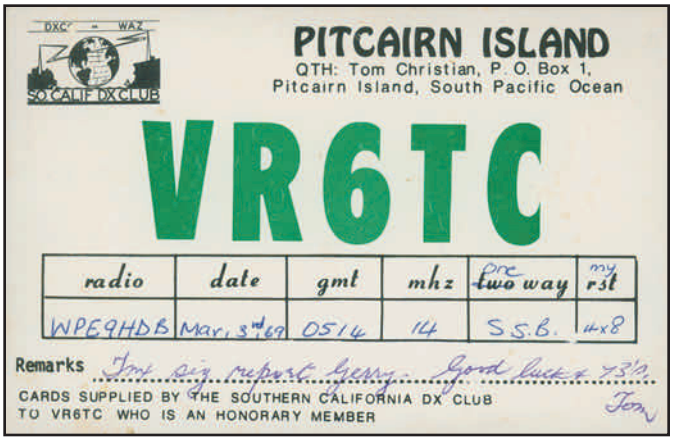
CHINA—China Radio International, 5990 via Cuba at 2339 with EE service, including sports. f/by other features and talk segments. Closedown was at 2359, f/by opening of the SS service. (D'Angelo, PA) 11875-Urumqi in RR at 1637, 13755-Kashi in Mandarin at 1543, and 15245-Kashi with *The Beijing Hour* at 1504. (Brossell, WI) 13719 at 0745 discussing the value of the Euro vs. the Yen. (Maxant, WV)

China National Radio, CNR-1, Hothot, 4800 at 1205 with M/W in Mandarin; CNR-6, 6165 at 1302 about equal to co-channel Thazin Radio (Myanmar); Nei Menggu PBS; Hothot, 9520 at 1332 with M/W in Mandarin. (Taylor, WI) 4940-Fuzhou in CC at 1139. (Brossell, WI) 6030-Beijing with talks in CC at 1220, 11710-Beijing at 2336 with CC discussion by several men, M/W ancrs with cuts to a recorded speech by M and a live crowd. 5+1 time pips at 2300 f/by W with ID and several anmts over CC instls. (D'Angelo, PA)

ECUADOR—HCJB, 3985-Germany at 0146 with music at a low level with their "Life FM" service, 6050-Pinchincha in (p) Quechua at 0315. (Parker, PA)

EGYPT—Radio Cairo, 11890 at 2113 with time pips, ID of "This is Radio Cairo." (Brossell, WI) 15710 at 1917 in (l) Hausa with M.E. instls and M with a talk. (Coady, ON)

Radio Polonia verified Paul Gager in Austria with this view of Warsaw.



A QSL from Tom Christian on Pitcairn Island.

ENGLAND—BBC Eastern Relay Station, Oman, 11675-Oman Relay with world news at 1633; 13825-Oman Relay in (l) Farsi at 0352; 15310-Thailand Relay at 1511 in (l) Farsi; and 15690-Wooferton in (l) Tamil at 1558. (Brossell, WI) 11750-Thailand Relay at 1235 profiling an educator from Vienna, 15385 at 0452 with a feature about food. (Sellers, BC)

CVC-The Voice, 6280 with an unmodulated carrier to 1401:30 when W came on in Hindi w/anmts over music. Heard a mention of "The Voice." (Sellers, BC)

ETHIOPIA—Voice of the Tigray Revolution, 5980 at 0256 in (p) Tigrinya, powerful O/C f/by repetitive instl anthem then (p) ID by M and into HOA music. (Parker, PA)

FRANCE—Radio France International, 11700-Issoudun at 0724 in FF to Africa with M ancr and instl music, ID and news headlines at 0729. (D'Angelo, PA)

GERMANY—Deutsche Welle, 9470 via Rwanda Relay in EE at 0422 reporting on 17th Century witchcraft persecution in Norway, //9810. (Sellers, BC) 9810 at 0402 with M/W and EE news f/by pgm previews. (D'Angelo, PA) 11865-Rwanda Relay on Internet use in Africa and 15275-Rwanda at 1943 on milk production in Africa. (Brossell, WI)

GREECE—"Free Hellinic Radio" (t) 15630 at 1330 in Greek. Fair signal but the modulation seemed to be a bit off making it difficult to distinguish individual words. (D'Angelo, PA) 1949 with an interview pgm in Greek. (Brossell, WI)

GUATEMALA—Radio Verdad, Chiquimula, 4055 at 0405 with children singing an anthem at 0407 to open carrier. They were gone when I re-checked them at 0414. S/off is listed for 0400 on Mondays only. (Sellers, BC) 0420 with children singing. (Maxant, WV)

INDIA—All India Radio, 4940-Guwahiti at 1232 in (l) Assamese with South Asian music hosted by a W. (Taylor, WI) 9690-Bengaluru at 1330 EE sign on of the General Overseas Service with ID, frequencies and meter bands, then into news. (Sellers, BC) 11620-Bengaluru at 2201 with M and news in EE, ID, discussion pgm, ID for the General Overseas Service at 2227 f/by closedown anmts then ended with a segment of Indian instl music. (D'Angelo, PA) 11620-Bengaluru at 0252 in Urdu with music and news. (Agnelli, FL) 11740-Panaji (Goa), at 0004 in Tamil with high-pitched string instls and then talk. (Coady, ON)

INDONESIA—Radio Republic Indonesia, 3325-Palangkaraya at 1336 with pops, tentative ID, and M/W ancrs and 4750-Makassar at 1318 with ancr and phone callers with much laughter and banter. (Sellers, BC) 3325-Palangkara at 1145 with M/W in II. (Taylor, WI)

IRAN—Islamic Republic of Iran Broadcasting, 11820 with news in AA at 0155, 12080-Zahedan in AA at 0147. (Agnelli, FL) 13785 in AA at 1200 and 15300 in (l) Hindi at 1509. (Brossell, WI) 15470 with commentary on the Afghanistan war. (Sellers, BC)

IRELAND—RTE-1 (Radio Teilfis Eireann), 17820 via Wooferton at 1345 with special pre-match coverage of the All Ireland Hurling Final. Also news headlines at 1400 and some local commercials. (D'Angelo, PA)

JAPAN—Radio Nikkei One, 3925 in JJ at 1219 with M//W talk, //6055 and 9665 and 3945 Radio Nikkei Two at 1213 with popular JJ songs, ID at 1216, QRM from a ham net. (Sellers, BC) 3925 at 1158 with western classical music and DJ host. (Taylor, WI)

KUWAIT—Radio Kuwait, 15540 discussing the Hungarian Hapsburg Kingdom in the 18th Century. (Maxant, WV)

MEXICO—Radio Educacion, Mexico City, 6185 at 0745 with SS Latin melodies. (Maxant, WV)

MICRONEISIA—The Cross Radio, 4755.4 at 1126 with an EE preacher. (Sellers, BC)

MOROCCO—Radio Medi Un, 9579.1 at 0504 in SS with M/W and news. (Sellers, BC) 2337 with M.E. vocals with news in AA beginning at 2357. (D'Angelo, PA)

NEW ZEALAND—Radio New Zealand International, 9700 at 0730 on rebuilding after their earthquakes, 11725 at 0739 on earthquake damage in the north island, 15720 at 0345 with W DJ playing U.S. numbers. (Maxant, WV) 11725 at 2102 with world news, then Pacific and regional news. (Coady, ON) 15720 at 0408 with a report on racism there. (Brossell, WI)

NORTH KOREA—Voice of Korea, (t) 3250-Pyongyang in KK at 1212, 9435 at 1325 in EE with M/W until 1325 then into a commentary. (Sellers, BC) 11710 at 1200 in KK with IS, W with ID, then NA, brief talk and into patriotic choruses. (Coady, ON) 13760 at 0425 with a vocal praising their great leader. (Maxant, WV)

KCBS, 2850-Pyongyang, at 1210 with M in KK. (Sellers, BC)

PBS, 3330-Pyongyang, with orchestra and choir at 1214. (Sellers, BC)

OMAN—Radio Sultanate of Oman, 9760 at 0002 with M ancr in AA talking over light instl music, pgm feature intro by W at 0012 f/by another M with talk and recitations. (D'Angelo, PA) 13600 at 0300 with Qur'an recitations. (Miller, GA) 15140 with AA talks at 2107. (Brossell, WI)

Help Wanted

We believe The Listening Post — and Global Information Guide month after month — offers more logs than any other monthly SW publication. (Just under 300 shortwave broadcast station logs were processed this month.) Why not join the fun and add your name to the list of The Listening Post reporters? Send your logs to Gerry Dexter, The Listening Post, 213 Forest St., Lake Geneva, WI 53147 or email them to <gdex@wi.rr.com>. See the column text for formatting suggestions.

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

Lonely Pitcairn Island in the South Pacific, once home to Tom Christian and some 50 other souls.

OPPOSITION—Salam Watandar (via Bulgaria to Afghanistan), 11545 at 0344 with M/W talks f/by IRRS ID inviting reports at 0359 before carrier was terminated. (D'Angelo, PA)

Radio Echo of Hope, 3985 (South Korea to North), with M and speech in KK at 1220. Very poor level. (Sellers, BC)

Voice of the People (South Korea to North), 3480 at 1216 with a choir, //3912, 4450, 4557, 6518, and 6600. (Sellers, BC)

Radio Inyabutatu (to Rwanda), (t) 17870 at 1702 shortly after 1700 for this Saturday only operation. Seemed to be continuous talks in unid language with poor signal and much noise. (D'Angelo, PA)

PAPUA NEW GUINEA—NBC-Madang, (New Guinea) 3280 at 1204 with the same NBC News as 3365. Off suddenly at 1205. (Sellers, BC)

NBC Bougainville, 3325 with pops at 1158, man in Tok Pisin at 1203, RRI-Palangkaraya audible underneath. (Sellers, BC)

NBC Northern, (New Guinea) 3345 weak at 1211 with music. (Sellers, BC)

NBC Milne Bay, 3385 at 1305 in EE and Tok Pisin with C&W pops and W about communications with listeners. (Sellers, BC)

NBC East New Britain (New Britain), 3385 at 1204 in Tok Pisin and EE with news, f/by music, later M hosting a phone-in quiz. (Sellers, BC) With island music. (Taylor, WI)

PHILIPPINES—Radio Veritas Asia, 15320 via Vatican in (l) Tagalog at 1552. (Brossell, WI)

PIRATES—Undercover Radio, 6925u at 0125 with Dr. Benway telling a story of robots building more robots and a repeat of a story on placing a dipole antenna on a tall apartment building. <undercoverradio@gmail.com>. Also at 0202 good with excellent audio, doing a story called the "Accursed Galaxy." (Hassig, IL)

Radio Free Whatever, 6925 at 0042 with frequent IDs and rock from DJ Dick Weed. (D'Angelo, PA) 0133 with country rock. Off suddenly at 0150. <dickweeddj@gmail.com>. (Hassig, IL)

The South African Broadcasting Corporation (SABC), one of the many now silent shortwave voices that were active in 1983.

Radio Mushroom, 6930 at 0039-0058 with M hosting familiar rock and giving frequent IDs and email address <raidomushroom@gmail.com>. (D'Angelo, PA)

Captain Morgan, 6924.9 at 0134 with a nice pgm of blues then off suddenly at 0149. Similar s/off and signal strengths make me think this and Radio Free Whatever are connected. (Hassig, IL)

Voice of Bacon, 6949.5 at 0120 but poor and weak with pops and comedy bits. (Hassig, IL)

Blue Ocean Radio, 6925 at 0610 with bluegrass, country, blues, and Cajun things. Also heard on 6940u at 0200 with blues, (Hassig, IL)

Radio True North, 6925 at 0440 but very poor. Only bits of audio were audible during the ID because of fade up. (Hassig, IL)

Red Mercury Labs, 6935u at 0114 with country song and punk rock, <redmercurylabs@yahoo.com>. (Hassig, IL)

Wolverine Radio, 6925u monitored at 0100 with strange goings on. (Hassig, IL)

CYOT, 6949 at 2315 distorted with pop/rock and W with ID. (Hassig, IL)

ROMANIA—Radio Romania International, 9655-Galbeni, 2338-2357* with W hosting features in the SS service, including domestic music numbers. ID and s/off anmts f/by IS from 2356. (D'Angelo, PA) 9770-Galbeni in RR at 0435 with pops. (Parker, PA) 11950 with talks in FF at 1640. (Brossell, WI) 11955-Tiganesti in FF at 0130. (Agnelli, FL)

RUSSIA—Voice of Russia, 9655 (via Moldova – gld) at 0250 with *Travelog* pgm. (Miller, GA) 11530 via Takikistan at 1224 with EE anmts f/by weather for various world cities. (Sellers, BC) 12060-Gavar in SS at 0145. (Agnelli, FL) 13805 in (l) Mandarin at 1157, 13860 also in (l) Mandarin at 1135. (Brossell, WI)

This Month's Winner

To show our appreciation for your loggings and support of this column, each month we select one *Listning Post* 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 *Listening Post* column. So, come on, send your contribution in today!

This month's prize winner is **Charles Maxant** of Hinton, West Virginia who collects a 2013 edition of the venerable *World Radio TV Handbook* the global guide to world broadcasting. If you're into world radio listening you absolutely have to have this on or close to your radio desk. Barely a day goes by when I do not reach for it to check something out. The Handbook is available from most radio hobby stores or any Internet book supplier or brick and mortar bookstore. If they don't have it, they can order it, so get your copy today and don't you dare tune another station without it.

The Congo's Radio Brazzaville was also active in 1983.

Radio Rossii, (p) 5040-Magadan in RR at 1240. Man in RR with vocals. (Sellers, BC)

SAO TOME—VOA Pinheira Relay, 6080 at 0308 with interview, but very weak. (Parker, PA)

SAUDI ARABIA—BSKSA, 9870 in AA at 2116. (Brossell, WI)

SEYCHELLES—BBC Indian Ocean Relay, 15420 at 1840 with *Have Your Say* pgm on violence against women and a British supermarket chain's decision to cover up sexually explicit magazines. (Coady, ON)

SOLOMON ISLANDS—Solomon Islands Broadcasting Corp., 5020 at 1145 with island music, 1151 with ID and list of meetings and events, then closing ID at 1159: "You have been listening to the Solomon Islands Broadcasting Corporation – Radio Happy Isles," f/by frequencies, NA, and close at 1200. (Sellers, BC)

SOUTH AFRICA—Channel Africa, 7230 at 0507 with an EE newscast. (Sellers, BC) 9625-Meyerton at 1342 in (l) Lozi language with many mentions of African place names. (Agnelli, FL)

SOUTH KOREA—KBS World Service, 15575 at 0250 in SS with a W talk and female vocals. Then an EE ID at 0300 and off. (Coady, ON) 1315 with news items. (Maxant, WV) 1357 on various cameras. (Brossell, WI)

SPAIN—Radio Exterior de Espana, 3350 via Costa Rica in SS at 0220 with talk. (Parker, PA) 17595 with PP talks at 2112. (Brossell, WI)

SRI LANKA—Sri Lanka Broadcasting Corp., 11905 at 0208 with a W and small talk about love, then into a Sinatra love song. (Coady, ON)

SURINAME—Radio Apinte, Paramaribo, 4990 at 0242 with music, but weak with not much audio. (Parker, PA)

TAIWAN—Radio Taiwan International, 6135 in listed Mandarin at 1145. (Brossell, WI)

In Times Past

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

Radio Balboa, Panama City, Panama, at 0050 on 22 January, 1955 in their Spanish language domestic service.

THAILAND—Radio Thailand, 9390 in EE at 1255 with ID and into closing news. Off at 1259:30. (Sellers, NC)

Bangkok Meteorological Radio (p), 8743u at 1024 tune in with signature tune beginning at 1031 then into voice but could not follow the coherent language due to heavy QRN. (Rippel, VA)

TURKEY—Voice of Turkey, 9515 at 0315 with *World Agenda* and *DX Corner* pgms. (Miller, GA)

UNITED STATES—Radio Free Asia, 13675 in (l) Mandarin at 1538 and 13830 in (l) Tibetan at 1200. (Brossell, WI)

Adventist World Radio, 11610 via Nauen in AA at 1914 with a mix of vocals, then W with talk and ID by M. (Coady, ON) 11955 via Austria with email and other contact info at 2125, 15260 in AA at 1935 and 15265 in (l) Punjabi at 1506. (Brossell, WI) 13830-via Tajikistan in (l) Tibetan at 1200. (Brossell, WI)

WRMI, Florida, 9955 with *The Mission Program at* 2215. (Maxant, WV) Good at 0430 off the back of their beam. (Parker, PA)

WRNO, Louisiana, 7506 monitored at 0215 with religious vocals. (Maxant, WV)

KJES, New Mexico, 11715 with children singing heard at 1320. (Maxant, WV)

WWRB, Tennessee, 5050 with bluegrass at 0219. (Coady, ON)

WHRI, Indiana, 15180 covering the Brickyard 400 auto race at 1702. (Coady, ON)

WEWN, Alabama, 11520 at 0340. (Maxant, WV)

KVOH, California, 9975 at 0242-0300 with vocals alternating with SS and EE IDs, requesting reports. (D'Angelo, PA)

VATICAN—Vatican Radio, 15570 on bishops and cardinals in Africa. (Maxant, WV) 15110 via Philippines in (l) Tamil at 1458. (Brossell, WI)

VIETNAM—Voice of Vietnam, 9849 with M and EE news, //12020, 12020 at 1138 talking about the Australian election. (Sellers, BC)

ZANZIBAR—ZBC Radio.11735 at 1900 in Swahili with time pips and W with apparent news. (Coady, ON)

And that's a wrap. Many, many thanks to the hollowing gentlemen who did the good thing this month: John Miller, Ochlocknee, GA; Rich D'Angelo, Wyomissing, PA; Harold Sellers, Vernon, BC; Mark Coady, Peterbough, ON; Chuck Rippel, Chesapeake, VA; William Hassig, Mt. Pleasant, IL; Charles Maxant, Hinton, WV; Richard Parker, Pennsburg, PA; Tony Agnelli, Weeki Wachee, FL; Mark Taylor, Madison, WI; and Bob Brossell, Pewaukee, WI.

Radio Cook Islands sometimes showed up on 5045 but it was even tougher to QSL!

New Procedure: *Pop'Comm* December 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 *Popular Communications Survey* 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.

Last, but not least: You can take this survey online. Link to <http://svy.mk/1brPD0g>.

With *Pop'Comm* being offered in both print and digital formats, I:

Stuck with the print edition 1
Changed to the digital edition 2
Take both edition 3
Am still considering what to do. 4

***Pop'Comm* is giving readers lots of links to supplemental information on the Web.**

I like that a lot. It's like having an even bigger magazine. 5
I find the basic information enough. Links don't interest me. 6
I use some links, but not others. I'm ambivalent 7

What supplemental content in *Pop'Comm* is most interesting? Choose all that apply:

Audio 8
Video. 9
In-depth background information. 10
All of the above 11
None of the above. 12

To which digital editions of CQ Communications magazines do you subscribe? Choose all that apply:

Popular Communications 13
CQ Amateur Radio (*CQ* magazine) 14
CQ VHF 15
WorldRadio Online 16
I don't subscribe to any digital edition. 17

Are you happy that all CQ Communications magazines are available digitally? Tell us why, or why not. (Use the comment line.)

Take This Reader Survey Online

You can now participate in this reader survey via the Internet. Simply link to *Pop'Comm December 2013 Reader Survey* at <http://svy.mk/1brPD0g>. It's quick and easy.

The Envelope, Please . . .

For participating in the *Pop'Comm Readership Survey,* the winner of a free subscription or extension is **George Sabino** of **Naperville**, **Illinois**. He took a few minutes to fill out our survey online, *and look what it got him!* To our question: "*What company or companies do you consider leaders in antenna design for the communications hobbyist?"* George said: Alpha Delta.

*Congratulations, and thank you, George! – **KPC6PC.***

POPULAR COMMUNICATIONS

Survey Response for Issue: _____

Circle the numbers below that correspond to your answers.
Copy and mail to: Popular Communications, 25 Newbridge Rd., Hicksville, NY 11801.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
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31	32	33	34	35	36	37	38	39	40

Comments:

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Name _____ **Call Sign** _____

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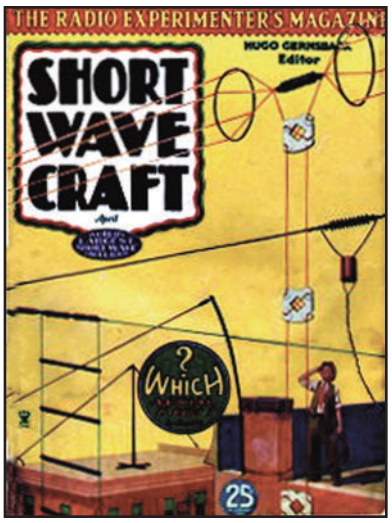
City _____ **State** _____ **Zip** _____

E-mail _____

A Christmas Story: Herbie, Dizzy, and the 'Hammarlund Flyer' Antenna



By Ryan Archer, KPC6KPH

"On the stretch between Fargo and Spokane, the boys let out every inch of antenna. 'That's when we really attcked the lower bands,' Pop recalled."

Around the holidays, Herbert "Roary" Wallace's yuletide tales never began, *"T'was the night before Christmas ..."* You'd more likely hear stories of the Kon-Tiki Expedition, Orson Welles' "War of the Worlds," Major Armstrong and FM.

In Pop's holiday tales, there were no stockings "hung by the chimney with care." That's kids' stuff, he'd say.

It was Christmas Eve 2010, two years before Pop died. A Franklin stove in the back corner of his radio workshop took the edge off the chill. We'd stacked orange tree wood a few feet high beside it. "That ought to be enough to keep us warm until Santa comes," Pop said with a wink. The Hallicrafters SX-99's dial lights gave off a warm glow from the bench, but the audio and RF were turned down. The only sound was the hiss and popping of the orange wood in the stove.

We settled into two stuffed chairs Granny had long ago exiled from the parlor. Just the two of us. And so he began ...

The 1939 International DX Alliance Convention

It was early 1939 and Pop was already obsessed with everything about radio. He was 17 years old, had a shortwave receiver and spent hours listening for "DX" deep into the night. He faithfully put aside 25-cents each month to buy a copy of Hugo Gernsback's *Short Wave Craft* magazine. Along with *Boys' Life* and the shortwave radio, they were Pop's only tickets out of Hammarlund, California — at least in his imagination. That is, until summer 1939.

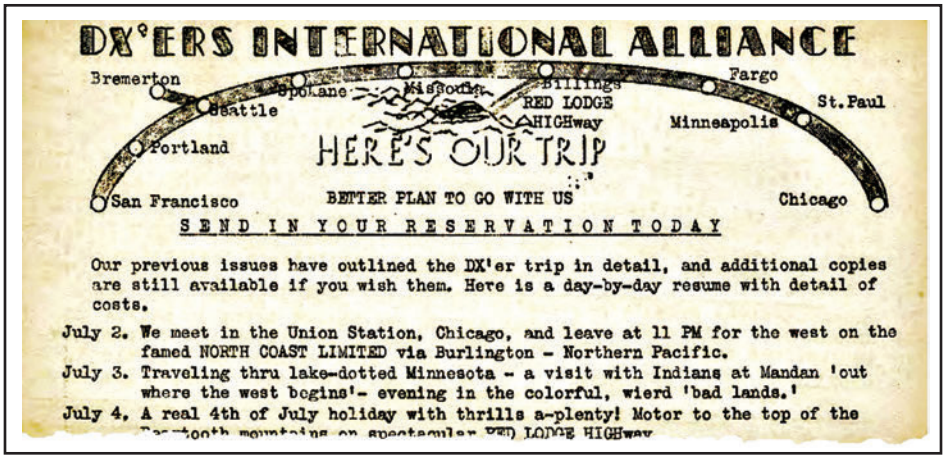
As Pop told it, about a year earlier he'd joined the International DX Alliance (IDA) — a group of shortwave listeners from around the United States and the world. Its monthly *Globe Circler* had "all the dope on who was hearing what, and where," Pop said.

In early 1939, this "complete guide book for shortwave listeners" was carrying news items about a DX convention to be held in July. It would be in conjunction with the Golden Gate International Exposition on Treasure Island in San Francisco. "It was the West Coast's answer to the 1939 New York World's Fair," Pop said with an air of territorialism.

The convention would be the first of its kind anywhere, and Pop — even though he was just a teenager — wasn't going to miss it.

Dizzy Gillespie — 'No, Not *That* One'

For about six months, Pop had been pen pals with a boy his age living in Chicago: Dizzy Gillespie, "no relation to the famous jazz trumpeter," Pop said, even though I had no idea who he was talking about.


DX'ERS INTERNATIONAL ALLIANCE

Bremerton
Seattle
Spokane
Missoula
Billings
RED LODGE
HIGHway
Fargo
St. Paul
Minneapolis
Portland
HERE'S OUR TRIP
San Francisco
BETTER PLAN TO GO WITH US
Chicago

SEND IN YOUR RESERVATION TODAY

Our previous issues have outlined the DX'er trip in detail, and additional copies are still available if you wish them. Here is a day-by-day resume with detail of costs.

July 2. We meet in the Union Station, Chicago, and leave at 11 PM for the west on the famed NORTH COAST LIMITED via Burlington - Northern Pacific.

July 3. Traveling thru lake-dotted Minnesota - a visit with Indians at Mandan 'out where the west begins'- evening in the colorful, wierd 'bad lands.'

July 4. A real 4th of July holiday with thrills a-plenty! Motor to the top of the

Photo A. The International DX Alliance's *Globe Circler Tour* in 1939 would turn out to be the shortwave DXing trip of a lifetime for Pop and his friend Dizzy — both just 17 years old at the time. The train ride from Chicago to San Francisco became an SWLer's dream. *(Courtesy of Herbert Wallace)*

Photo B. The Ford tractor-trailer in this promotional film made in the early 1940s features a truck that was "the spitting image" of the rig Pop hitched a ride aboard on his "scenic route" to the Golden Gate International Exhibition — the West Coast's answer to the 1939 New York World's Fair. ***(WATCH and LISTEN:*** *<http://bit.ly/1eXbCNj>. – KPC6KPH.) (Internet screen grab)*

Dizzy was an avid SWL like Pop, and the son of a well-to-do *Windy City* family that made a more-than-comfortable living in the meat business. The boys traded letters every month, sharing details of their shortwave adventures and life in general. Were they *ever* going to meet girls? Sadly, they agreed: *Probably not!*

Anyhow, Pop, who Dizzy knew as Herbie, was crazy about the idea of attending the IDA Convention. Dizzy was, too.

All Aboard the *Globe Circler Tour*?

The organization had arranged the *Globe Circler Tour* — an IDA train trip from Chicago to San Francisco aboard the North Coast Limited — *just for the event,* **Photo A**.

*(**NOTE:** It was fun to think of Pop as "Herbie" when he told me this story. So for the remainder of this amazing tale, that's how I'll refer to him. – KPC6KPH.)*

The *Globe Circler Tour:* "That's how I will get there," Dizzy wrote Herbie. "Hey, why don't you come with me? I'm sure my dad would be happy to spring for another ticket so I'd have a traveling buddy."

Herbie was always up for an adventure, but would his mom and dad let him travel from Chicago to San Francisco on a train? Heck, they'd never been on a train themselves! And how would he get to Chicago to meet up with Dizzy?

For a moment, it boggled Herbie's mind, until he remembered ol' Mr. Cowan, the long-distance trucker who lived out on St. Barnabas Road. Herbie had delivered the newspaper to the Cowans each Friday morning for a couple of summers. In their weekly three-minute conversations, Herbie had learned Mr. Cowan made bi-weekly trips to Chicago with his tractor-trailer truck carrying all sorts of agricultural products from California's Central Valley.

Hitchin' a Ride

Herbie put a few drops of 3-IN-ONE® on his Schwinn Coaster's chain and pedaled the three miles to the Cowan place. Sure enough, *The Chi-Town Express,* as Mr. Cowan had painted on the driver's side door, was parked in the dirt yard in front of the house. ***(WATCH and LISTEN:*** *To a video produced by the Ford Motor Company in the early 1940s. Pop said the truck shown at about the 9:18-minute mark "is the spitting image of Mr. Cowan's "Chi-Town Express." Visit <http://bit.ly/1eXbCNj>,* ***Photo B****. – KPC6KPH.)*

Saying a silent prayer, Herbie timidly climbed the three steps to the porch knocked on the weathered screen door. "Say, you're our old paperboy, aren't you?" a pretty lady in a polka-dot dress asked. "Yes, ma'am," Herbie said. "Is your father at home?"

"Do you mean *my husband,* Jack?" she asked. "He's taking a nap."

Flush with embarrassment, Herbie felt like melting between the weathered planks of the porch. *"Oh, my gawd. She's his wife!"* was going through his mind as Mr. Cowan emerged from the shadows. "Who's this, Lou?" he asked his pretty wife.

"I'm Herbie Wallace," he chimed in, before she could tell Jack that this teen thought she was Jack's daughter. "Remember? I delivered *The Weekly Hammarlund* to you for a couple of summers."

"Oh, yes, indeed," Mr. Cowan said. "You're the one who plays around with all that wireless stuff. What can I do for you?"

Pop let out with a stream of consciousness that lasted about a minute — delivered in one breath: "*Yousee,myfriend DizzylivesinChicagoandwewanttoridethe traintotheIDAConventioninJuly ..."*

The strategy was to get the whole story "out there" so Mr. Cowan didn't have a chance to say no. Boiling it down — as the Cowans certainly had to — Herbie had one simple question: "Can I ride along in your truck to Chicago?"

Mr. Cowan looked at his wife. His wife looked back at him with a shrug. "Have you talked this over with your mom and dad?" Lou asked Herbie through the screen door.

"They said if it's OK with you, it's OK with them," he replied in a bald-faced lie.

"Jack, call Herbie's dad," Lou directed Mr. Cowan, "just to be sure."

Panic! ... Then Ecstasy

Herbie almost freaked. "Ugh, Mrs. Cowan, Mom and Dad are down at the feed store and won't be home for at least an hour." Another bald-faced lie, but Herbie's moral compass was already broken beyond repair. "OK, we'll call about four o'clock," she said.

Faint with fear, Herbie hopped on his Schwinn and pedaled like the wind. He *just had to* get to his parents before the Cowans did.

Arriving home, and after catching his breath, Herbie spewed forth with another stream of consciousness: *"Mr.Cowan —thenicemanonmyoldpaperroutesaid-he'dbegladtogivemearidetomeetDizzyin Chicago ..."*

Promptly at four o'clock Mrs. Cowan rang the Wallace's line, Alpine-65507. Herbie's mom answered. Although virtual strangers, the ladies quickly agreed that anything involving Herbie would not be left for the husbands to decide.

Photo C. Dizzy Gillespie's Hallicrafters SX-24 Skyrider Defiant receiver would be the workhorse of the self-proclaimed "Radio Boys" on their DXing rail ride to the International DX Alliance Convention. It was the first shortwave DXers convention ever, organizers said. *(**WATCH and LISTEN:** <http://bit.ly/16EREo7>. – KPC6KPH.) (Internet screen grab)*

After what seemed like an eternity, Herbie's mom hung up the phone and said that if all the logistics were worked out, it would be fine for him to ride *The Chi-Town Express* to Chicago. "Oh, and Lou (she was now on a first-name basis with the Cowans) gave me a brownie recipe you're going to love. With blueberries and oatmeal ... *can you imagine that?"*

For the next month, the phone calls to St. Barnabas Road and letters to Chicago were flying. Herbie's parents got to know Dizzy's mom and dad, and thanked them for the generosity they'd shown in underwriting their son's trip with Dizzy to San Francisco. Dizzy and Herbie were delirious with excitement.

A Wild SWLing Plan

In his letters to Herbie, Dizzy had lamented that while the *Globe Circler Tour* was bound to be fun, "six days on a train might get a little boring — especially at night."

"Why don't we do some SWLing along the way?" Herbie wondered. Dizzy had just gotten a beautiful Hallicrafters Skyrider Defiant SX-24 for Christmas. "Couldn't you bring it along?" *(**WATCH and LISTEN:** To a Hallicrafters SX-24 in action at <http://bit.ly/16EREo7>, **Photo C**. – KPC6KPH.)*

Dizzy thought that was a grand idea. "But what about an antenna?

"You just leave that to me," Herbie wrote in reply.

'Meet Me in Chicago'

The rendezvous with Dizzy was to take place at a street corner in the high-class Highland Park area of Chicago at noon, Sunday, July 2. "Highland Park?" Mr. Cowan said when Herbie first told him the destination. "That's 'The Ritz,'" he said, wiggling the pinky finger of his right hand in the air. "No wonder Mr. Gillespie thought nothing of paying your train fare."

The North Pacific Limited would pull out of Union Station at 11 p.m. of the day *The Chi-Town Express* was to arrive.

Jack and Lou were saying their goodbyes in the Cowans' yard when Herbie arrived on travel day. "Throw your stuff behind the left door in the back of the trailer," Mr. Cowan said, stealing one last kiss before following Herbie to the back of the truck to lock things up. "Hope you like the smell of almonds, 'cause that's what we're hauling."

'Drive With My Eyes Closed?'

Moments later, *"All aboard!"* Mr. Cowan shouted in a mock conductor's voice as he headed for the driver's seat of his mighty V-8 Ford. Herbie climbed into the passenger's side. "We're driving straight through, so sit back and relax. It'll be 30 hours on the dot. Would you like me to drive it with my eyes closed?"

"No, thanks," Herbie said, hoping Mr. Cowan was just joking. Mrs. Cowan blew kisses to the pair as they roared from the yard in a cloud of dust. All of this excitement, and it was only 8 o'clock in the morning.

Herbie wasn't good at doing arithmetic in his head, but as near as he could tell, Mr. Cowan had nailed the arrival time perfectly — even taking into account the time changes. Before they knew it, *The Chi-Town Express* had crossed into Nevada heading northeast. Then Utah, Colorado, Nebraska, Iowa and into Illinois. How quickly day had become night, and then day again.

Herbie had nodded off a few times. Thankfully, though, Mr. Cowan hadn't. For a kid who'd never been out of Hammarlund, Herbie sure got a crash course in U.S. geography, and sleep deprivation.

Introducing the 'Boomerang'

The boys had traded snapshots of one another so they'd be recognizable to each other at the rendezvous. And sure enough, there was blond, blue-eyed Dizzy, in an olive-colored long sleeve shirt and blue jeans waiting for the truck's arrival — right on time: high noon, July 2.

Pulling to a stop, Herbie bounded from the truck and after about 10 seconds of awkward *hello,* the boys were acting like old friends. "C'mon, Dizzy. Help me get my gear out of the back."

Unlocking the trailer, swinging open the right door first and then the left, Mr. Cowan looked at Herbie. "What in tarnation is that? One of those *'boomerangs?'"*

"No, it's a flying-wing glider," Herbie answered. "I made it myself."

"I thought you boys were taking the train to San Francisco, *not flying!"* Mr. Cowan said, afraid to ask any more questions. "Don't worry," Herbie said. "I'll tell you *all about it* when I get home to Hammarlund."

With a handshake and a promise to let Herbie's mom know he'd arrived safely in Chicago, Mr. Cowan fired up *The Chi-Town Express* and roared back toward the highway.

Dizzy grabbed Herbie's suitcase and they hustled off to the Gillespie mansion.

"Wow. How many families live in this place," Herbie asked, as they entered the gated driveway. "Just one," Dizzy said.

BOYS' LIFE

How to Build and Fly a Model Glider

By F. A. Collins

Photo D. The September 1931 edition of *Boys' Life* magazine was the inspiration for what would become the Radio Boys' Hammarlund Flyer Antenna. F.A. Collins based his 46-inch wingspan model glider on what was called "the flying wing." *(Courtesy of Herbert Wallace)*

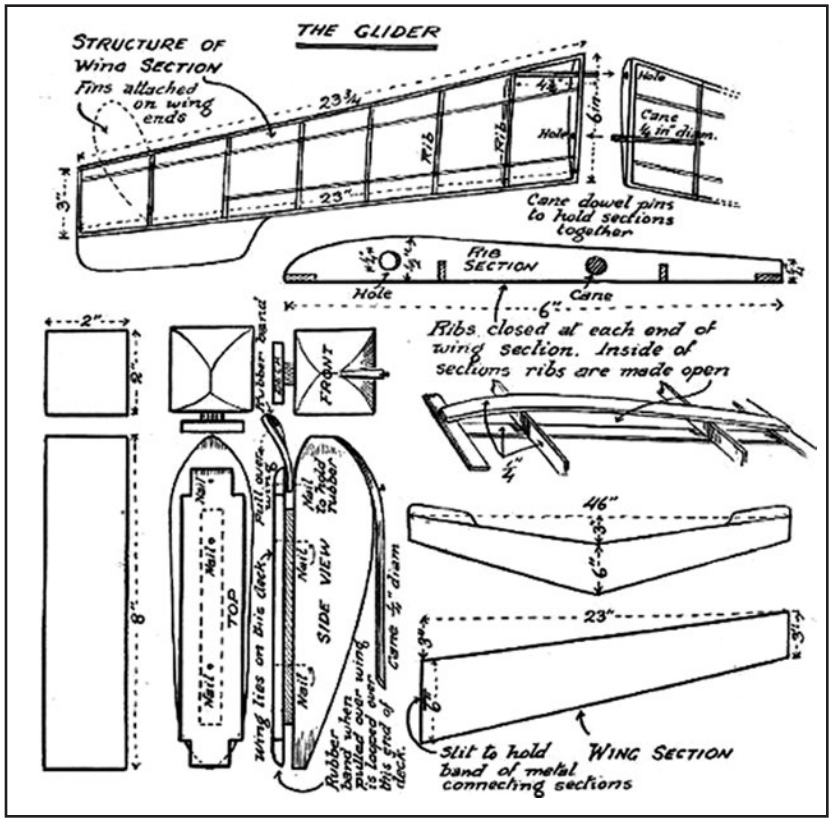


Photo E. A schematic drawing of sorts gave details on building the glider — which Pop followed precisely. He was only nine years old at the time. *(Courtesy of Herbert Wallace)*

"You could add 100 more rooms and it still wouldn't be big enough to get away from my sister."

This was the biggest house Herbie had ever seen. After meeting Dizzy's mom, dad, and sister, getting a tour of the place — including the tennis courts, swimming pool, and "guest quarters" — there was barely enough time for a quick dinner. Then it was off to Union Station in the family's touring car.

The North Pacific Limited, Track No. 9

After unloading the suitcases, shortwave receiver, and the "boomerang," the driver turned to Dizzy. "Master Gillespie directed me to give you this bit of spending money, with the admonishment not to blow it on candy and cigarettes."

"Thank you, Jeeves," Dizzy replied, doffing his cap in thanks. *(**REALLY?** The driver's name was 'Jeeves?' Pop, err Herbie, thought that character only appeared in the short stories of P.G. Wodehose. I guess art imitates life, and vice versa. – KPC6KPH.)*

"Thank goodness we're here a little early," Dizzy said. "It'll give you a chance to explain what that *'boomerang'* is for."

"First, let's find the North Pacific Limited," Herbie said. "Then it will all become clear."

The lady at the ticket booth pointed the boys to Track No. 9, "over there where that man is standing."

As Dizzy pushed the luggage cart, Herbie ran ahead and engaged the man at the train in quiet conversation. As Dizzy joined them ...

"OK, so it's all set. We can't thank you enough. You'll be in the history books, sir," Herbie said, bowing deeply to the man in the blue conductor's suit. "In the history books, I tell you!"

"What in the world was that all about?" Dizzy asked Herbie. *"That,"* he replied, "is about our shortwave antenna. The conductor said *we can do it,* and we didn't even need that 'spending money' to convince him!"

"Doooo what?" Dizzy demanded. And, at last Herbie was able to explain.

The 'Hammarlund Flyer' Antenna

When Herbie was 9, he'd gotten a subscription to *Boys' Life*. He wasn't a Boy Scout — in any sense of the word — but was fascinated by its features — articles on electricity, earth science, boating, and the like. But he especially liked its stories on radio and aviation.

There was a piece in the September 1931 *Boys' Life,* **Photos D**, **E**, and **F**, explaining how to "Build and Fly a Model Glider." Herbie painstakingly followed the instructions and came away with an aerodynamically perfect model with a 46-inch wingspan. It needed only the wind beneath its wings to stay aloft.

For several years he'd flown and perfected the "Hammarlund Flyer," as he called it, in honor of the unincorporated dust bowl where he'd grown up — coaxing the flying wing to ride the summer thermals swirling above town.

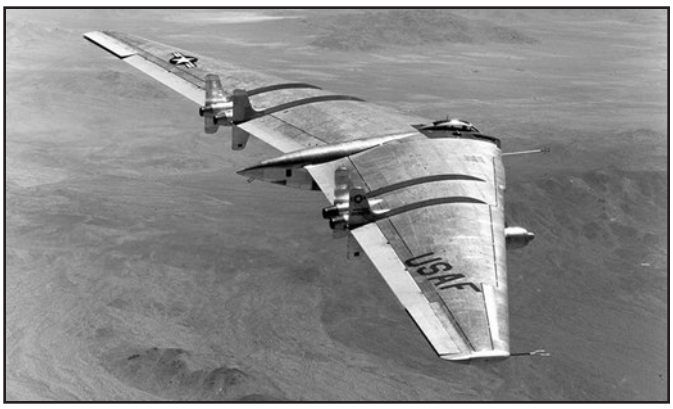


Photo F. This Northrop YB-49 Flying Wing bomber prototype could have been the heavy-metal twin of Pop's "Hammarlund Flyer" glider, made many years before this Department of the Air Force photograph was taken.
(Courtesy of Wikimedia Commons)

Photo G. The Pioneer Zephyr observation car shown here is just like the one Herbie and Dizzy "commandeered" for their rail trip on the North Pacific Limited to San Francisco in 1939. The rounded metal on the back of the car enclosed the "cubby hole" where the boys had their amazing SWLing adventure. The "Hammarlund Flyer Antenna" was released through an air vent on top of the car. *(Courtesy of Wikimedia Commons)*

"Dizzy, here's the deal," Herbie said. "I let the conductor know we're honest-to-goodness Radio Boys <http://bit.ly/1bpeZfo> and that we're on our way to San Francisco for the *first ever* shortwave convention. This is *history* in the making.

"There's a little cubby-hole in the rear of the North Pacific Limited's last car — the very observation car we're standing beside right now, **Photo G**. Mr. Conductor said it would be fine for the two of us to set up your SX-24 in there. There's a dynamo on one of the axles, so we'll have all the juice we need!"

Still bewildered, Dizzy asked playfully: "And what is the *boomerang* for?"

"Well," Herbie continued, "I wound about 150-feet of No. 26 wire onto my fishing reel. Each night after dark we're going to clip that wire to the nose of the "Hammarlund Flyer" and send her flying behind the train — reeling out our antenna as she flies."

Herbie went on to explain that the conductor would show them an air vent above the cubby hole big enough for these Radio Boys to launch the flying wing.

"That is *brilliant,"* Dizzy said, as Herbie pulled a ratty piece of paper from his back pocket to show a hand-sketched image of the flying-antenna design, **Figure 1**.

Off and Rolling

Minutes later, *"All Aboard!"* echoed off Union Station's sweaty concrete walls and the North Pacific Limited shuddered as it lumbered out of the station. Let the adventure begin!

The conductor had obviously taken a liking to these self-described Radio Boys, because he frequently checked in on both their SWLing cubby hole and their private berth nearby.

"Now listen here, men," he said. "In the first hour we make several stops, but after that it's smooth sailing all the way into St. Paul. The track has some twists and turns, so keep your tether short. From just outside Fargo, to Billings, Missoula and to Spokane, it's about straight as an arrow. You can run out as much antenna as you've got."

He cautioned the boys to "keep an ear out" for the sound of the train slowing down. "You'll get the hang of noticing it in no time."

After getting the Hallicrafters, headphones, and station log in place — along with the fishing reel and flying wing — the boys retreated to their private sleeping quarters to rest up before the night's SWL marathon to come.

At about 1 a.m., the conductor gently tapped on their door:

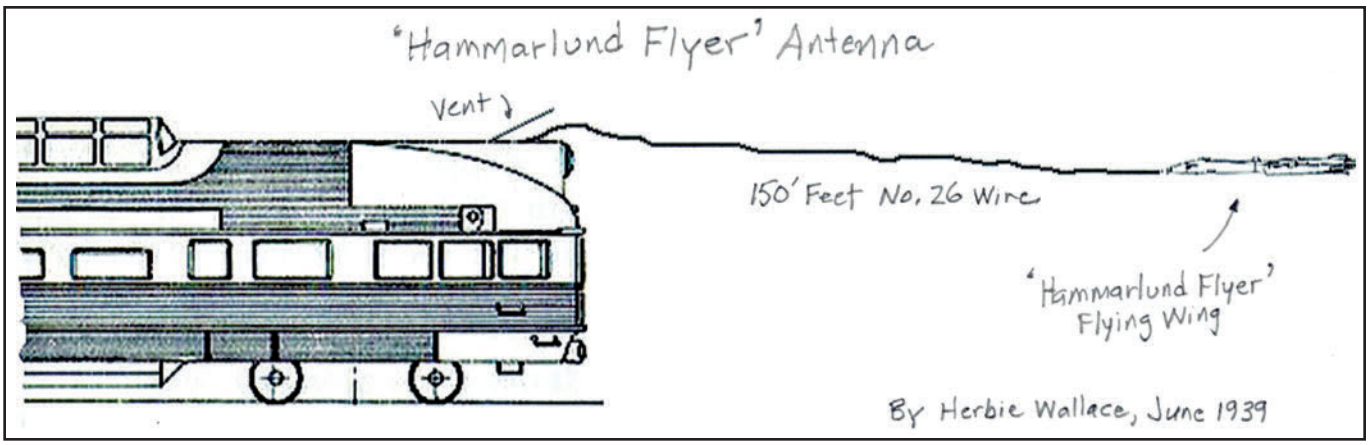


Figure 1.

"The coast is clear for running out your antenna. Time to hit the airwaves!"

"He's as excited as we are," Dizzy said.

Making It All Work

The cubby hole was softly bathed in incandescence from a 15-watt bulb on the far end of a wooden cantilever. The SX-24's dial lights were the perfect complement. "We can see a million stars," Herbie said, checking out the big sky from the aluminum observation car's back windows.

The conductor stuck in his head. "Up there. Turn the lever to the right and push. Your airplane should go through with room to spare."

The Radio Boys thought it best to alternate: one as radio man and the other as antenna flyer. Each would have his hands full.

A small aluminum shelf near the air vent would be a perfect perch for Herbie, who they decided would take the first half-hour shift as the antenna's pilot.

One end of a 6-foot long piece of insulated wire was connected to the SX-24's antenna post. The other was fitted with an alligator clip to attach to the wire drawn from the fishing reel. Once a comfortable length of antenna was reeled out, the pilot would attach the antenna lead to the antenna and keep an eye on the wire "flying" behind the train.

At about 25-feet distance, the flying wing was consumed in darkness, so the pilot just needed to assure the antenna wire was sailing horizontally about 12 feet above the tracks.

In the Air and On the Air

A metal stake was pulled vertical to prop open the air vent. Herbie securely fastened the end of the antenna to a metal grommet he'd bored in the nose of the "Hammarlund Flyer" and carefully worked the wing through the opening. It was a warm evening, even at these altitudes, and a rush of mountain air rejuvenated them both.

Herbie reeled out about a yard of antenna, crimping the wire closest to the wing's nose tightly in his hand. Inch-by-inch he cinched it through his palm until the wind flow lifted the glider. It was soaring along several feet from the air vent. Herbie released the brake on the fishing reel. Six feet. Nine feet ... 20, 30 ... "let's stop it there."

"Ready?" he whispered to Dizzy, who replied with a thumbs-up. Herbie attached the alligator clip. A blast of signals loud enough to be heard several feet from the headphones filled the cubby hole. "Holy cow," Dizzy said, reaching for the RF gain and audio knobs to bring the cacophony under control. "Forty-one meters, Herbie! Can you hear all of those stations?"

Indeed, a sweep of the dial revealed reception wall to wall. "Listen to that, Herbie," Dizzy smiled. A spot between ZFY, British Guiana (6.13 Mc.) and ZDE in Durbin, South Africa (6.15 Mc.) was "*soooooo* quiet. You can hear a pin drop, Herbie. That's one heckuva antenna, my friend!"

And so it went through the night. Dizzy turned out to be "a natural-born antenna flyer," greatly pleasing Herbie. "It's like you've been doing this all your life!"

Among the stations they logged along this amazing DX railway were:

- XGOA (9.72 Mc.), Chunking, China
- JIE3 (9.695), Tyurkei, Taiwan

- DJX (9.675), Berlin, Germany
- KGEI (9.67), San Francisco, California
- 2RO9 (9.67), Rome, Italy
- VLW2 (9.65), Perth, Australia
- PCJ (9.59), Huizen, Holland
- DXZ (9.57), Warsaw, Poland via Berlin
- RV15 (9.565), Khabarovsk, U.S.S.R.
- MTCY (9.545), Hsinking, Manchukuo
- JZI (9.535), Tokyo, Japan
- CSW8 (7.24), Lisbon, Portugal
- EAJ22 (7.14), Ovideo, Spain
- GRT (7.15), London, England
- YNOW (6.87), Managua, Nicaragua
- SUP2 (6.32) Cairo, Egypt
- HVJ (6.19), Vatican City
- TIRCC (6.185), San Jose, Costa Rica
- LRA2 (6.18), Buenos Aires, Argentina

The Radio Boys didn't let on to the other convention-goers about their DX adventures, not wanting to risk turning their North Pacific Limited listening post into a noisy *show and tell.*

Photo H. *The Globe Circler* was the popular monthly journal of the International DX Alliance, which had a major presence at the Golden Gate International Exhibition on San Francisco's Treasure Island in the summer of 1939. *(Courtesy of Wikimedia Commons)*

On the stretch between Fargo and Spokane, the boys let out every inch of their antenna, as the conductor had suggested. "That's when we really attacked the lower frequency bands," Pop recalled.

Herbie's flying wing glider performed flawlessly, although it narrowly missed a moose just north of Portland. "I don't know who was more scared," Pop said, "Dizzy or the moose!"

At the IDA International DX Convention

As we stoked the fire in the Franklin stove, Pop noted that "after this wild SWLing ride across the U.S. northwest, arrival in Oakland for the ferry ride to San Francisco was a bit anticlimactic ... I mean, here were Dizzy and me filling up one log page after another on the tail end of this marvelous locomotive with a flying antenna out of the back. Does it get any wilder than that?"

Just the same, the duo joined the crowd as probably the youngest IDA DX conventioneers — by at least 10 years.

"Here to learn something about wireless, are you, young fellas?" one old timer asked when Herbie and Diz stepped off the ferry at Treasure Island. "If he only knew what we'd been up to the last six nights," Dizzy whispered to Herbie with a wink, "that fossil would be *asking us* for SWLing tips."

A Long Day, Long Remembered

July 11, a Tuesday, had been set aside as "DXer's Day" at the Treasure Island IDA DX Festival, Pop recalled. *(**NOTE:** One of the things I loved so much about Pop was his attention to detail. He could remember days and dates like no one I've ever known. Even into his 90s, his power of recall was nothing short of amazing — a great quality for a radioman. – KPC6KPH.)*

According to the IDA's *Globe Circler,* **Photo H**, this was "to be a day long-remembered — a real DXer's outing." The event was hosted by the Golden Gate chapter of the IDA, under the chairmanship of G.C. Sholin.

"In addition to visits to outstanding points of DX interest, the committee hopes for a special broadcast over General Electric's new shortwave station W6XBE, with as many delegates taking part as possible."

Scheduled, as well, was "a real 'California Barbecue' to climax the day's activities ... special arrangements will be made for the entertainment for domestic and foreign members coming from long distances who will be visiting the Exposition for several days."

This all sounded great to Herbie and Dizzy — especially if there were some pretty girls at the barbecue.

The tour of W6XBE — conducted by Buck Harris, manager of the RCA exhibit of the Golden Gate Exposition — was thrilling. Neither of the boys had been in a real shortwave station. At 6:30 p.m., an

Photo I. This is a view of an air terminal building under construction on the Yerba Buena Shoals Fill — now known as Treasure Island in San Francisco Bay. After completion, the buildings were used as exhibit halls during the 1939 Golden Gate International Exposition. *(Courtesy of Wikimedia Commons)*

IDA DX Festival broadcast was made on 15.33 Mc. "directed to Latin America." It would be simulcast over KPO (680 AM, San Francisco).

"Gosh, this is quite the show," Dizzy said to Herbie. "I heard that any IDA member at the convention can stop in Salt Lake City on the way home to be interviewed on KSL. Can you imagine that, Herbie? The two of our voices riding the RF of that 50,000-watt cloud burner?"

They took in just about everything on the DX Convention's activities calendar:

- A visit to KFRC, San Francisco
- Tour of Chinatown
- Demonstration of a radio-controlled boat on the Treasure Island lagoon, **Photo I**.
- A visit to W6USA, "one of the largest, most complete and unique radio amateur stations in the world. Two complete rooms full of transmitters and receivers. All licensed amateurs will be welcome to use the equipment," the IDA literature noted.

It was an SWLer's marathon, Pop recalled. "Even Dizzy and I were bushed by the end."

A Sad Goodbye

Herbie hated to see Dizzy get in the Yellow Cab to the train station — his suitcase and SX-24 in tow. Who knows when they'd see each other again — if ever. "Hope to see you soon," Dizzy said, closing the car door and waving from the back seat as the driver pulled from the curb. Herbie started to tear-up. "What's the matter with me?" he thought. "Radiomen don't cry."

Boomeranging Back to Hammarlund

Hammarlund was only a few-hours east of San Francisco by automobile, so the plan was for Herbie to hitchhike home — a scenario his mom and dad agreed to grudgingly.

With his suitcase in one hand, and "Hammarlund Flyer" in the other, Herbie walked the few blocks to the main road east. With his thumb to the wind, it wasn't long before a mighty Ford tractor-trailer rumbled to a stop, the driver motioning Herbie to come aboard.

"Dang. Was hoping it was Mr. Cowan," Herbie said under his breath.

"Where you headed?" the driver asked as Herbie settled in. "And what's *that* thing? *A boomerang?"*

Ho, Ho, Ho — Is That Norm on the Chimney?

By Bill Price, N3AVY
(a.k.a Willie Lowman)

"With my trusty slingshot and fishing reel, we'll be stringing as much wire as our energy permits. OK, as much energy as Norm's energy permits."

Brrrrrrrrrrrrrr. This Virginia weather gets mighty — well, *sorta* — cold this time of year. Oh, the mountains west of Cowfield County get their share of cold and snow, but with rare exception, we get a few inches of snow and enough ice and freezing rain to make it fun to watch the drivers on their miserable long commutes.

It's probably safe to say that every major metropolitan area (not Cowfield county, but Washington, D.C. and vicinity) have too many drivers going too far too fast, with most starting late and hoping to make up time enroute.

I was like that when I first moved here to the beautiful Old Dominion, but I quickly learned to change my ways to avoid killing myself and others, and also to take the stress out of a 30-some-mile commute. *Each way.*

Slowing down, taking a two-lane road for most of the distance took a lot of the competition out of the commute. So did my decision to let at least 10 people pull out from driveways and side streets in front of me. I felt better after each trip.

But no more! Alas, the day I have worked toward has come. *I'm officially retired.* My breathing difficulties sort of forced it upon me, since I spent six months unable to work, attached to my life support hose.

First off, I save over $300 a month by not commuting. And as gas prices rose, I saved even more! I'm not sure I completely understand the math on that, but it makes sense to me.

And now I am a ham once again. First with a 2-meter handheld, and now with a lovely 2-meter mobile rig capable of 55 watts, which can be moved into the house if I feel like it.

Best of all, Norm is coming soon! I know it's a little chilly out there, but with my trusty slingshot and fishing reel, we'll be stringing as much wire as our energy permits. OK, as much energy as *Norm's* energy permits. And yes, the prognosis is that N3AVY will soon be on the air with his trusty key.

Truth be told, I still love listening more than transmitting, but every so often it'll be nice to jump into a conversation that interests me. I've also joined the Coast Guard Amateur Radio Club — and if any of you are both former Coasties and hams, I'll be glad to connect you with the powers that be of that organization.

Another old hobby of mine, dormant for 30-some years, is woodcarving. Dusting off and sharpening my old tools has brought some more fun to my sedentary lifestyle. I used to think hardwood was expensive in 1980, but today I think they're selling walnut by the ounce. Even basswood, which was once affordable, costs more for a nice, fat 10-footer than I once paid for a Buick. *OK, it was an old Buick, but still.*

And I am cleaning and organizing my office, which became a workshop and storage bin and eventually a warehouse. We're using a snow shovel to clean it out, and I have to go through the shovels-full picking out nuts, bolts, connectors terminals, bullets, and other items too valuable to toss.

The old laptop may move into the living room, freeing up some counter space for a ham rig or two. The giant 4 x 5 photo enlarger and contact printing box will go to some worthwhile charity, and the harmonica repair tools and parts will go to some other repairman.

Soon, the other women in my life — ages 8 and 4 — from across the way will be able to see some ham radio stuff. It may not be the same miracle that I saw when I was eight, since they take smartphones for granted and may not see the magic in talking to someone hundreds of miles away.

They are liable to ask me why I use Morse code when I could just call them on the phone — with unlimited long distance calling. I'll think of an answer by the time that happens.

All in all, it's a good life, and it has been for many years. It's too bad that Norm and Beezer don't live closer. If I can get a decent long-range forecast, I'm looking forward to a real, face-to-face meeting with my good friend David G., somewhere in eastern Massachusetts. He's not far from Boston, and I'm hoping to get scrod while I'm there. But not via a high-priced restaurant.

Y'all stay well and make the most of your holidays.

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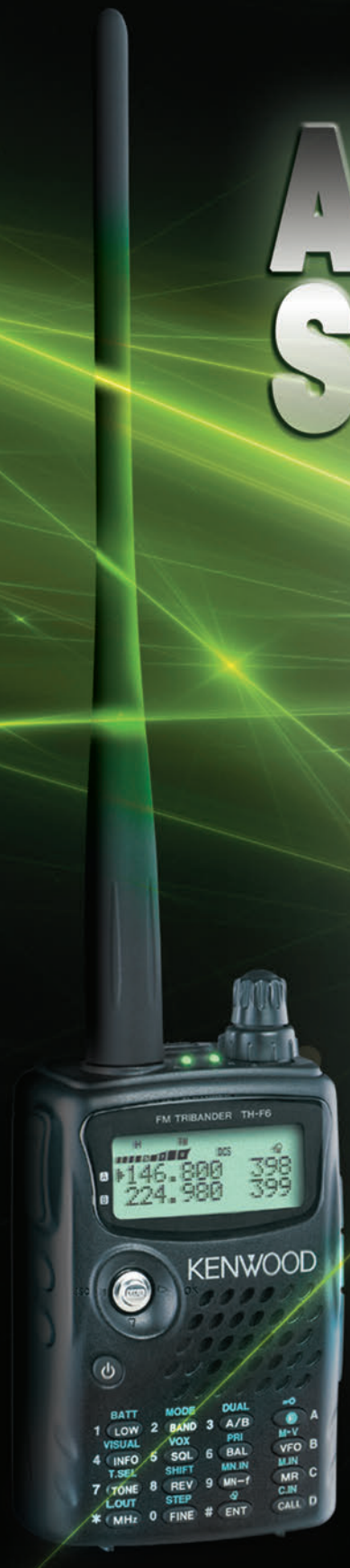

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[1]Note that certain frequencies are unavailable. [2]5W output

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