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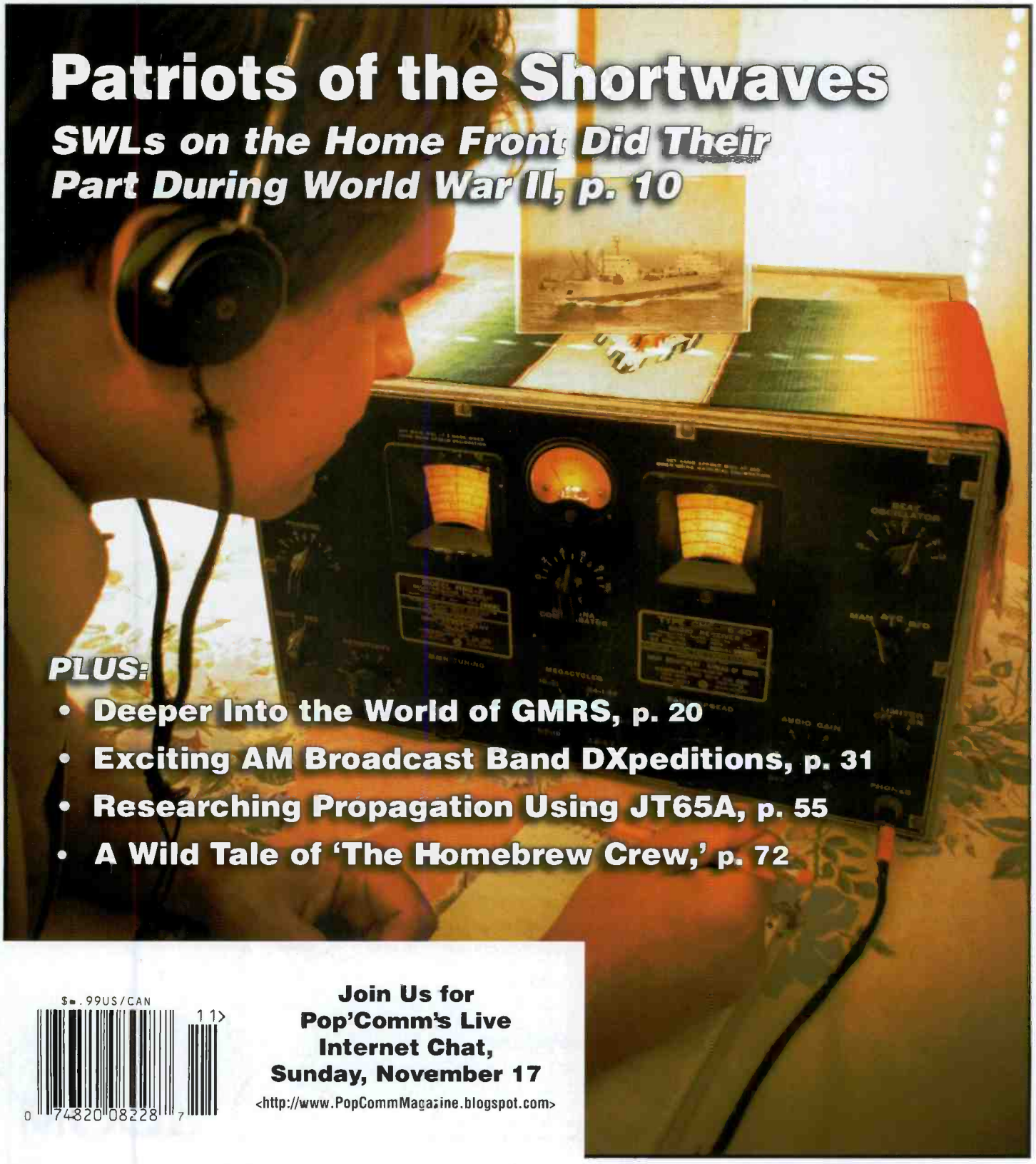

Patriots of the Shortwaves

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- **Exciting AM Broadcast Band DXpeditions, p. 31**
- **Researching Propagation Using JT65A, p. 55**
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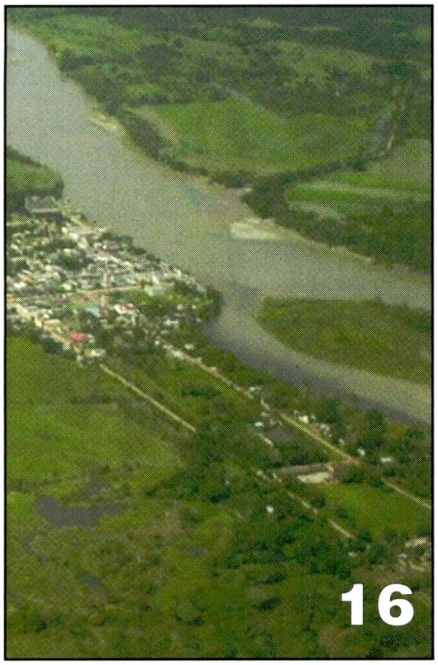

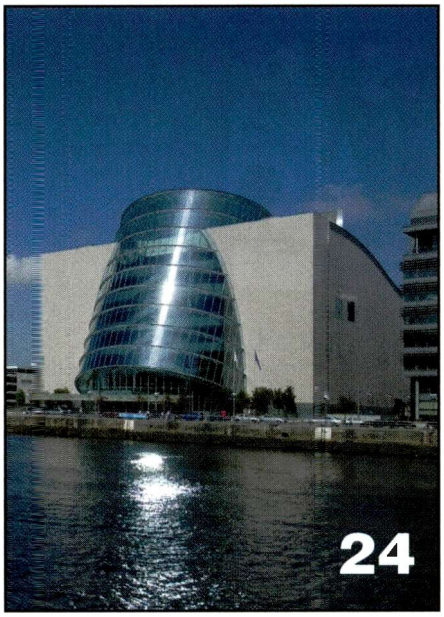

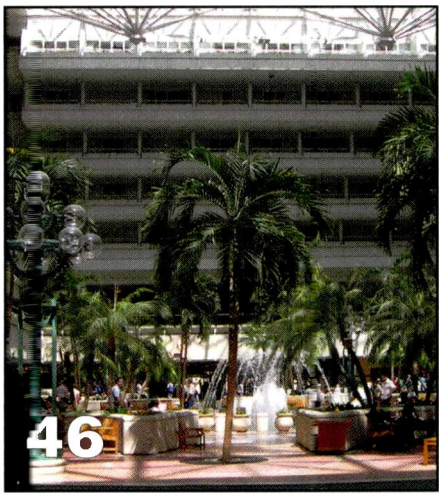

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ON THE COVER

Shortwave listeners across the United States tuned faithfully to broadcasts from Berlin and Tokyo for news of prisoners of WWII — put on the air by the enemy in an effort to demoralize American families back home. But these dedicated SWL "message relays" carefully took down the information, put it in a letter or postcard and sent it off, giving a morale boost to the GIs' loved ones who received them. The second edition of Laura Spahr's "*World War II Radio Heroes – Letters of Compassion*" tells this little-known story of SWL patriotism. See page 10. *(Photography by John Fisher, KPC6JF; and Ryan Archer, KPC6KPH)*

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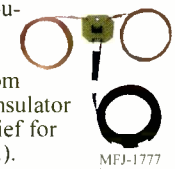

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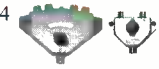

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A publication of

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

Popular Communications (ISSN-0733-3315), Vol. 32, No. 3 published monthly by CQ Communications, Inc., 25 Newbridge Road, Hicksville, NY 11801. Telephone (516) 681-2922. FAX (516) 681-2926. Web Site:<http://www.popular-communications.com/> Periodicals Postage Paid at Hicksville, NY and at additional mailing offices. Subscription prices (payable in U.S. dollars): Domestic—one year $34.95, two years $62.95, three years $91.95. Canada/Mexico—one year $44.95, two years $82.95, three years $121.95. Foreign Air Post—one year $54.95, two years $102.95, three years $151.95.

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Printed in U.S.A.

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

EDITORIAL
Tuning In

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

SWL History That Should Not Be Lost to Time

Our cover story this month is the tale of hundreds of ordinary American shortwave listeners who served their country on the home front by relaying U.S. POW messages broadcast from Berlin and Tokyo during World War II. Intended by the enemy as a demoralization campaign, you'll see it didn't work out that way.

Details are captured in *"World War II Radio Heroes – Letters of Compassion"* by Lisa Spahr. Her fascinating book's second edition was released this summer.

To get an appreciation for just how difficult copying these messages could be, listen to the Radio Tokyo broadcast made on behalf of U.S. POW Private Milton G. White — heard by B.O. South of San Francisco, and relayed to the White family in Wilmington, North Carolina. *(LISTEN: <http://bit.ly/15vcs0L>.)*

Spahr is leading a campaign to get Congressional recognition for the 280+ shortwave listeners she's identified who copied these messages and sent them on a postcard or letter to the POW's family — most often complete strangers.

If these patriotic SWLs felt duty bound to write POW families at the time, shouldn't it be *our duty* to write Congress and the President in support of Spahr's campaign? *Yes!*

Finding Your Contacts in Washington, D.C.

If you are compelled to do so — or if there are other communications issues you'd like to petition Washington, D.C. about — here's an easy, step-by-step for doing so:

Link to the *USA.gov* page where you'll begin your search for the information pages of the legislators you will contact <http://1.usa.gov/1eaEujg>.

Click the link for the House of Representatives. Let's say, for example, I live in the southeast Florida city of Homestead, near the Keys. My ZIP is 33030. Enter that at the top right of the page and press GO. The result gives me two *possible* representatives — one from the 26th District; another from the 27th because 33030 crosses both. I type in my street address and it shows which of those two represents where I live — the one from the 26th District.

From there it's a simple matter of linking to the legislator's Web page and following the instructions for contacting by postal service, email, phone, or fax.

In some cases, you'll be asked for your nine-digit ZIP Code. It can be found easily by linking to the USPS's <http://bit.ly/vZ9ba7>. It took me just a few seconds to determine mine: 92506-3562.

You'll go through a somewhat similar drill for contacting your Senators and the President. Starting at the USA.gov page <http://1.usa.gov/1eaEujg> is the key.

To get a sample letter supporting Spahr's campaign to get Congressional recognition for the World War II shortwave message relays, visit her *POW Letters* blog at <http://bit.ly/18oBWsQ>. Lisa will send you one she drafted that can be used over your signature.

Other POW Message Documentation

By the way, to see what others have documented regarding the little-known World War II effort visit:

- Al Young's collections of shortwave letters at <http://bit.ly/138WYMf>. Scroll down to the section titled "Shortwave Radio Message."
- Jerry Berg's "DX History" website <http://bit.ly/14g46cB> and click on *POW Monitoring* in the menu near the top.

It would be a shame if this important chapter of shortwave history were lost in a cloud of time.

Pop'Comm-WRO Live Online Chat, November 17

Don't miss this month's *Pop'Comm-WRO* Live Online Chat beginning at 8 p.m. Eastern time on Sunday, November 17. It will be casual, fun, and laid back. *Everyone is welcome.*

At chat time go to <http://worldradioonline.blogspot.com>, check in and get in on an hour of fun. See you there!

– Richard Fisher, KPC6PC

The Weirder Side of Wireless, and Beyond

Compiled by
Richard Fisher,
KPC6PC

Facebook Friend? 'Terroristic Threats and Acts' Alleged By Radio Host

ACT I: Darnell Tyray Chambers allegedly posts on Facebook that if he sees Austin Rhodes, afternoon host on WGAC in Augusta, Georgia, he will slap him.

ACT II: Authorities are notified.

ACT III: The 25-year-old Chambers is arrested and charged with making *terroristic threats and acts.*

ACT IV: A $2,600 bond is set while Chambers sits in the Columbia County Detention Center.

CURTAIN: Stay tuned. Exciting updates when available.

*(**FULL STORY:** <http://bit.ly/1735YU4> – KPC6PC.)*

1902: Sears Helps Crank Up the Ol' Morse Code

Waaaay back in the day, folks wanting to learn Morse code needed only to turn to their post office for help.

The Omnigraph was a Morse code training device that was offered for sale through the Sears catalog as early as 1902. There were both hand-cranked and clock-driven models.

Beginning in 1912, amateur radio operators had to be licensed. As part of their license testing, they had to be able to send and receive Morse code. In 1912 they had to be able to do that at 5 wpm. This was raised to 10 wpm in 1919, 13 wpm in 1936, and 20 wpm in 1951 for the top tier.

Of course, the Morse requirement for hams is now long gone. We'll have to check with Sears to say the same about the Omnigraph.

Ant-ie Climactic Research Has Critters on the Air

Ants — 1,000 of them — are being outfitted with tiny radio transmitters to try to understand how they commute between their vast network of nests, the BBC has reported.

"The cutting-edge experiment in communication and conservation is being conducted by Samuel Ellis, a biologist at the University of York," the BBC said. "The three-year project is being conducted at the Peak District National Park's Longshaw estate in Derbyshire."

You will recall, of course, that the pioneering work in using RFID on the bitty critters was done in 2008-09 at Bristol by Samuel Ellis's supervisor Dr. Elva Robinson "and it may be assumed Samuel is using similar equipment. Elva used a RFID microtransponder (500 x 500 x 120 um) with a unique ID that was affixed to the thorax of every worker ant in each colony."

The BBC further reported that the RFID reader "consisted of a laser that provided energy (35 mW) to the passive tags, and an antenna to detect the radio identification signal. The laser modulation frequency is 1 MHz and the wavelength is 690 nm." We suspect officials at all levels assure no ants were harmed in the conduct of this experiment. *(**FULL STORY:** <http://bbc.in/1a0EY8G>. **PREVIOUS REPORT:** Unwired carried an earlier report on ant-ie matters from other BBC reporting <http://bit.ly/1fuiZaN>. – KPC6PC.)*

U.K. Scouts Put Big Chill on Amateur Radio

Participants in a recent Scout Youth Council survey in Hampshire, England made a list of scouting activities ranked from *Seriously Uncool* to *Sub-Zero.*

"The young people involved put amateur radio in the top rated Sub-Zero category along with quad biking, parachuting, and scuba diving," according to an Internet report.

The survey's findings appear in the May/June 2013 edition of *HartBeat,* the newsletter of the Odiham Scout District. See the full results at <http://bit.ly/15ATdzo>.

*(**CRITERIA:** The survey's four categories – Seriously Uncool, Uncool, Cool and Sub-Zero are based on those used on the Cool Wall in the BBC TV show Top Gear <http://bit.ly/1a0FzHz>. – KPC6PC.)*

The bottom line: Amateur radio isn't just cool, it's *sub-zero.*

Sea-Less and Wireless: A Lighthouse in the Middle of 'Down Under'

Southgate ARC News reports from Australia:

There is an interesting story of how Alice Springs, in one of the driest parts of Australia, deserves a registration this year in the International Lighthouse and Lightship Weekend, <http://bit.ly/18Bph47>.

Greg Mair, VK8GM, explains that with the help of the Henley-On-Todd team, a lighthouse has been built to promote the spirit of amateur radio and lighthouses.

The Alice Springs lighthouse is joining nearly 500 others around the world this year and is certain to attract the attention of local, national, and international news media.

Australia with 62 and Germany 61 remain the leaders, followed by the USA (46), England (34), Argentina (24), Malaysia, Sweden and Netherlands (15), Scotland and South Africa (14), Canada (13), and Ireland (10).

Organizers expect many more registrations in the annual fun event that publicizes both the old sea-going navigation methods and portable amateur radio.

If you want to register a lighthouse, lightship, or marine beacon for August 2014, visit the website <http://www.illw.net>.

November's Contributors

Items for November's "Unwired" were gathered from sources including the Columbia County (Georgia) News-Times; Southgate ARC News; FCC; Jim Linton, VK3PC; and other published reports. – KPC6PC.)

Communications News, Trends, and Short Takes

Compiled by
Richard Fisher, KPC6PC

Seattle TV News Report Explains LPFM License Stampede

In the walk-up to the October 15 opening of the FCC's application window for thousands of 100-watt low-power FM (LPFM) licenses, KING5.com in Seattle carried a news report about non-profit "Hollow Earth Radio" as an explanation to viewers about what all the excitement in the world of community radio is all about. *(**WATCH, LISTEN, and READ:** Check out deejay Jesse Boggs and read the full KING 5 News story at <http://bit.ly/135uN0I>, **Photo A**. – KPC6PC.)*

Voice of Russia Ending Shortwave Broadcasts in January

The Russian government's international radio broadcasting service *Golos Rossii* — Voice of Russia — will terminate its shortwave broadcasts January 1.

According to the online journal Digit.ru, the shortwave service is closing "due to funding cuts," Voice of Russia deputy director Natalya Zhmai wrote in a letter dated August 15 to Andrei Romanchenko, head of the Russian Television and Radio Broadcasting Network (RTRBN)."

"Voice of Russia, established in 1929, currently uses RTRBN transmitters to broadcast to foreign countries using short and medium waves," the posting said.

"After the shortwave service goes off the air, only three low-power, medium-wave transmitters will be used to broadcast to other countries," an industry source told Digit.ru. The broadcasts will mostly use FM band transmitters based abroad, the source said.

*(**FULL STORY:** <http://bit.ly/1dczsVm>. – KPC6PC.)*

LISTEN: To Pirate BOCHF Between the 49- and 41-Meter Bands

Thomas Witherspoon, editor of *The SWLing Post*, <http://swling.com/blog> reports that "during a very active night of pirate radio activity, BOCHF (the Boards of Canada HF) crept onto the airwaves, this time on 6,920 kHz USB."

During the transmission he heard the Scottish electronic duo's albums *Tomorrow's Harvest* and *In a Beautiful Place Out in the Country*.

And how did it sound? "Combining the music of the Boards of Canada with the sonic texture of the shortwave ether is a winning combination, in my opinion," he posted.

Witherspoon said not to take his word for it: "Take a listen yourself," <http://bit.ly/14l92Yj>. *(**SPOOKY:** Eerily through the static, the Morse at the beginning of the recording says: "BOCHF BOCHF BOCHF Remember Waco BOCHF BOCHF BOCHF." At 12:27 minutes, Morse repeats the first message, adding: "1/9/2013 It's a beautiful place out there." The audio concludes with several digital signal broadcasts. – KPC6PC)*

Photo A. KING5.com in Seattle gave viewers an inside look of what newcomers to the region's FM spectrum will be like after the FCC issues thousands of Low-Power FM (LPFM) licenses in the region and across the nation. *(**WATCH and LISTEN:** <http://bit.ly/135uN0I>. – KPC6PC.) (Internet screen grab)*

FCC Nails Texas CB Store, Alleging Uncertified Amp

This from Amateur Radio Newsline:

"The FCC appears to be hot on the trail of anyone who is selling uncertified gear capable of operation on the 11-meter, Class D Citizens Radio band."

According to ARN's Heather Embee, KB3TZD, a Commission citation has been issued to Radio Master CB Shop in Rockwell, Texas.

In February, "agents from the FCC's Dallas office inspected the Radio Master CB Shop at a TravelCenters of America truck stop ... At that time they observed a used Palomar model 250 external RF amplifier offered for sale. The agents noted that the unit did not have a FCC identification number to confirm that the particular amplifier had been granted an FCC certification.

"In its citation released [in August] the FCC says that under its rules, any external RF power amplifiers capable of operating in that spectrum may not be offered for sale unless they have first been authorized in accordance with the agency's rules. The unit in question was not so authorized."

RSGB Funding to Support Long-Term RF Noise Floor Study

A proposal for funding to underwrite the long-term understanding of the RF noise floor has been approved by the Radio Society of Great Britain's Legacy Trustees, "managing the legacy provided by the late [radio amateur] Ken Rowell, G5RL."

According to a report from the RSGB general manager: "The funding provides for Web support for the Noise Measurement Campaign, announced in the July 2012 edition of the RSGB's publication *Radio Communications* magazine, and data collection for one or more such projects at the University of Leicester." *(**IN DEPTH:** Link to the RSGB story at <http://bit.ly/1e7FMyh>. – KPC6PC.)*

November's Contributors

Sources for information in this month's InfoCentral include Radio Moscow, Digit.ru, Southgate ARC News, The SWLing Post, and KING5.com.

Capitol Hill And FCC Actions Affecting Communications

Compiled by Richard Fisher, KPC6PC

Advocacy Group Asks DOJ's Help for Lower-Watt LPFM Stations

A low-power FM citizen's advocacy group that wants the FCC to license lower-watt broadcasters is keeping the pressure on for its cause, asking the Department of Justice (DOJ) to intervene on constitutional grounds.

Let The Cities In petitioned the commission earlier this year "to reconsider licensing LPFMs smaller than 100 watts," according to RadioWorld.com.

"The group believes licensing 1- to 10-watt stations — or at least below 50 watts — may be the only way to get more LPFMs licensed in some major cities, including New York, Detroit, and Pittsburgh."

The FCC said it didn't believe stations smaller than 100 watts would be economically viable and could interfere with new LPFM and full-power stations.

LTCI also requested the DOJ "to oppose the FCC's practice of allowing translators to be licensed at power levels lower than LPFM power levels, stating that this gives translators 'monopoly access to all of the precious urban frequencies below 50 watts.'"

*(**FULL STORY:** See <http://bit.ly/14JVVDA>. **BACKGROUND:** Visit <http://bit.ly/174d5lf >. – KPC6PC)*

Alleged FM Pirates Busted in Florida

Two alleged Miami pirate radio operators have been fined by the FCC. Bernard Veargis was assessed a $15,000 fine for operating an unlicensed radio transmitter on 91.7 FM. Gary M. Feldman was fined $25,000 for operating an unlicensed radio transmitter on 97.7 FM.

League: Keep Reins of Equipment Certification Process @ FCC

The ARRL is urging the FCC not to grant private organizations greater authority in certifying that RF devices comply with commission rules and do not cause harmful interference. According to the *ARRL Letter*, much of this work is already done by so-called "telecommunication certification bodies" or "TCBs," but under FCC oversight and following an initial FCC evaluation of new products.

LPTV Group Presses for Impact Study Before FCC Vote

A coalition of low-power TV licensees has threatened to sue the FCC if it does not conduct an LPTV impact study before final auction rulemaking is voted upon.

The *LPTV Spectrum Rights Coalition* is concerned about the FCC's re-packing of stations after incentive auctions, according to *Broadcasting & Cable*.

Acting FCC Chairwoman Mignon Clyburn said the commission is expected to complete that rulemaking by the end of 2013.

In a filing with the commission, the LPTV SRC said, "without a study being done prior to any final rule making and order, the Coalition will be forced to initiate legal action."

LPTV SRC represents members holding 550 licenses in 31 states. "While the act directs the FCC to ensure that it preserves the coverage areas and interference protections of all full-powers, it does not do the same for low powers, which are not eligible to participate in the auction." *(**FULL STORY:** <http://bit.ly/145VPYG>. – KPC6PC)*

Delay in Antenna Lighting Repair Prompts $15,000 Fine

The FCC has proposed a $15,000 fine against Union Broadcasting, Inc., "for failure to repair the lighting on its antenna structure for Sports WHB-A/Kansas City as soon as practicable."

According to *All Access Music Group*, the company said delays "were due to damage from copper theft and concerns about the repairs causing changes in the station's night pattern. The Commission responded that the lighting outage had gone on for two years and adjusted the fine upward as a result."

FCC Updates APCO on 911 Text and Reliability Issues

Issues regarding 911 services — specifically text-to-911 and 911 reliability — were in focus when the FCC's Deputy Chief of Public Safety and Homeland Security Bureau met with the Association of Public-Safety Communications Officials (APCO) in late August.

In December 2012, the FCC adopted a Notice of Proposed Rulemaking (NPRM) addressing issues around text to 911. David Furth explained that the four major carriers have agreed to be on board by March 2014, according to an Internet posting on *PoliceOne.com*.

"When a citizen sends a text to 911 in a region that does not support this technology, they [should] receive a message back advising them to use an alternate method to address the emergency," the report said. "Without the bounce-back feature, individuals would not receive a response and could assume their emergency is being addressed — while in reality their message went nowhere.

"As part of their voluntary agreement, the wireless carriers adopted a bounce-back element in March, and it should be implemented by the end of September 2014. The question that remains is how technological changes will affect this system." *(**FULL STORY:** <http://bit.ly/17okd6v>. – KPC6PC)*

This Month's Contributors . . .

*Sources for information in this month's Washington Beat include All Access Music Group, the ARRL, CQ Newsroom, Broadcast & Cable, PoliceOne.com, and other published reports. – **KPC6PC***

Alarming Disappearances on the Shortwaves

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

"To honor my Horizons 5th anniversary, we will be addressing a trend that began before this column debuted: Disappearing broadcasters on the shortwave bands."

This is my 60th column. That's five years of *Pop'Comm Horizons* keeping its eyes on the trends affecting the wide-open, ever-changing field of communications. It's been a very enjoyable ride, and I hope we've all learned something along the way.

To honor my *Horizons* 5th anniversary, we will be addressing a trend that began well before this column appeared, but continues to impact radio fans to this day: The disappearing broadcasters on the shortwave bands.

Let's go back to an era before some of the readers of this column were born when the bands were crowded and the concern was whether we could find enough frequencies to satisfy all the broadcasters and other users of the shortwave spectrum. That was at a time when even this magazine was not very old.

Dire predictions of declining conditions leading to increased interference were the watchword of the day. Aided by some strong solar cycles, shortwave broadcasts had expanded right through the 1960s and '70s. The big broadcasters — BBC, VOA, Radio Moscow, and so on — often used 10 to 20 frequencies at a time and might be serving different programs to various target areas simultaneously.

I took up the shortwave listening hobby in the late 1970s and immediately loved the idea that I could get news and information, unfiltered, from countries around the world. I never was much into collecting "QSLs" but I wrote to many broadcasters to offer program comments and get schedules and other information.

The bands were crowded and often at 0200 UTC on a typical U.S. evening every available channel in the 40-meter band had at least one broadcast on it. I say at least one, because it was not unusual for two to be interfering with one another due either to intent, accident, incompetence, or simply unusual propagation. A band scan back then might fill up several pages in a notebook on a typical night.

In the 1980s, I went to work for a major aerospace company. Along the line, I was given access to what you would now call "the Internet" so that we could send and receive files and use electronic mail. It was primitive and cumbersome, but it worked. Sending a message from a command line program was fraught with typos and errors, but if you were careful, it was a great way to get a message to where we wanted it to go.

Internet users in those days numbered in the thousands — not billions. Any concept, though, of delivering audio via this system would have been met with laughter. We were happy to get a computer file to where we wanted it to go. We were, to put not so fine a point on it, "state of the art."

These two unrelated parts of my life were about to converge and the upheaval was almost immediate. When the "World Wide Web" became the face of the Internet after the invention of browser software running on a home computer (anyone remember Mosaic 0.9?), it didn't take long for audio feeds to begin to appear. Real Networks and its audio tools was one of the first, quickly followed by many others. People the world over began to feed all kinds of audio over the Internet and a few radio stations were relayed — unofficially and officially. Streaming speeds were still slow since few listeners had broadband connections. Dial-up connections simply didn't work well for streaming. The potential was obvious, though, and adventurous station managers began to put programs out via the Internet.

From that cautious start in 1993 and 1994, it took surprisingly little time for the first impacts to be felt. In 2001, only six years later, the BBC dropped shortwave service to North America. It was the canary in the coal mine and as I write this, the successor to Radio Moscow known as Radio Russia has announced it will be dropping all shortwave by January 2014.

Once this happens, there will be limited BBC and VOA broadcasts to selected areas of Asia and Africa, but almost all of the names you would have recognized from 20 years ago will be gone from the air. Standard bearers like RCI, RN, and DW are already gone.

How did we get here? It would be easy to lay all the blame on that "Internet" thing, but that would be wrong. Other factors are in play. Shortwave was never cheap, as transmitters are powerful and consume huge amounts of electricity.

The "Cold War" ended, removing the political driver behind many state-owned or managed broadcasters. Technology moves on, and the world isn't a static place. ***(NOTE:** There was a world before shortwave broadcasts! – K8RKD.)* Audience measurement was always problematic. Hardcore listeners didn't write stations often enough and didn't cultivate new listeners into the hobby.

None of these give us much of a guide to the future. It is the future we are always concerned about here at *Horizons*. We'll tackle the future next month. Keep those circuit boards warm.

Do you have an opinion, reaction, or story idea? I'd love to hear from you. Send me your thoughts and reactions using the method that works best for you. Until next month ... ***– K8RKD***

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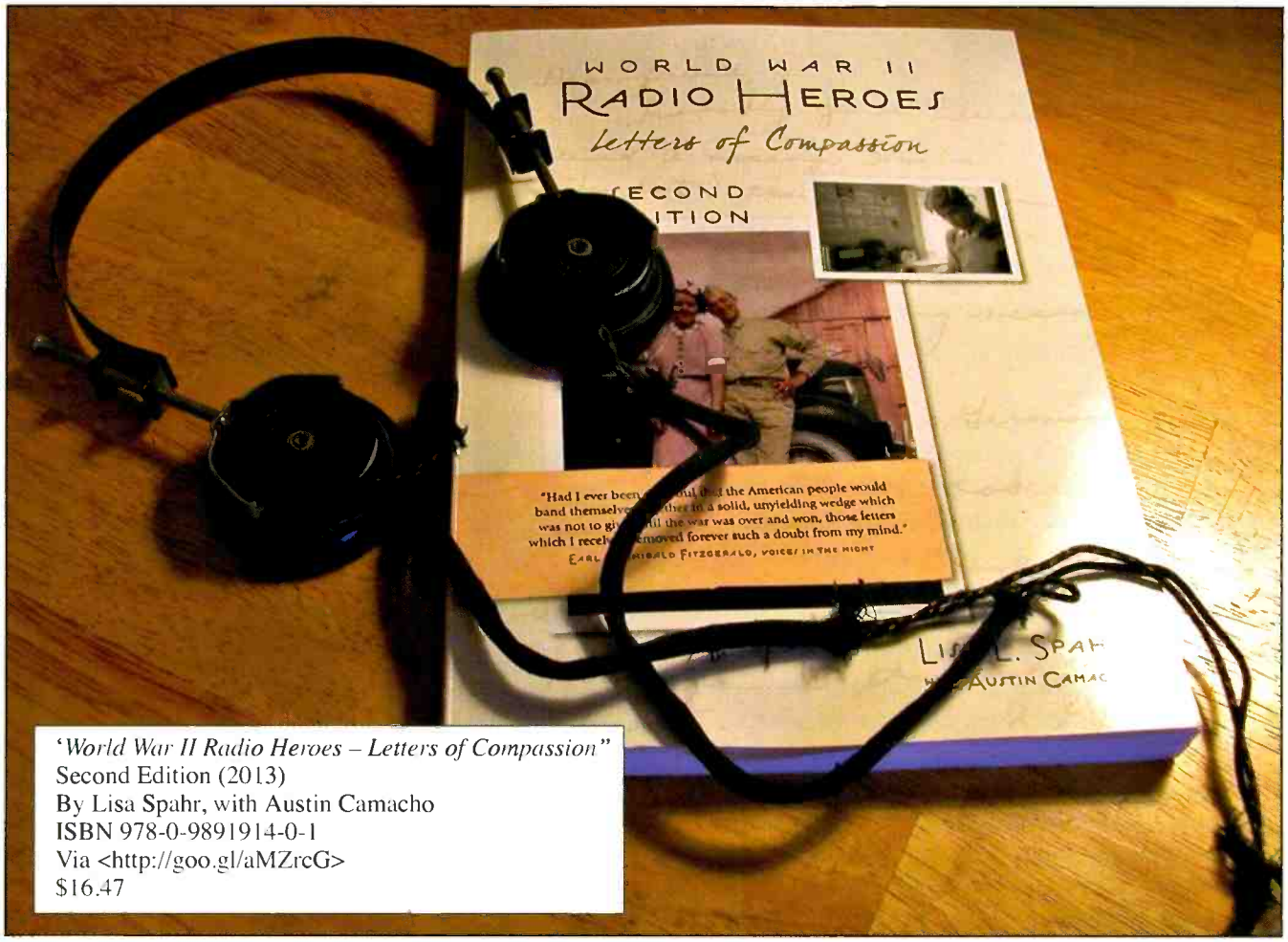


Photo A. The second edition of Lisa Spahr's *"World War II Radio Heroes – Letters of Compassion,"* the story of patriotic shortwave listeners during World War II, is available in paperback and for Kindle e-readers on Amazon.com <http://amzn.to/1dnbjuv>. *(Courtesy of KPC6PC)*

Patriots of the Shortwave

The Little-Known Story of World War II SWLs Who Did Their Duty on the Home Front

By Richard Fisher, KPC6PC

Night after night they tuned in German stations DXC and DXR on the 25-meter band; DXJ and DXM on 41 meters; and DJC, DXP, and DXX on 49 meters in hope of capturing the brief messages being regularly transmitted about American soldiers held prisoner of war.

Riding the rollercoaster of Radio Berlin's shortwave signals — booming one moment and fading into oblivion the next — hundreds of ordinary citizens across the United States leaned into their shortwave receivers to hear signals that carried the names, next-of-kin, and hometowns of "our boys."

"Hello, Mom," Mildred West jotted quickly, taking dictation from the radio. "Am now a prisoner of war. I was captured on the Tunisian front and flown to Italy. I am now in Germany, feeling fine, don't worry." The voice concluded: "I will write as soon as possible. You may contact me through the American Red Cross. Love," **Photo A**.

The static at her Tampa, Florida listening post was terrific and Mildred had missed the soldier's name. But she had copied that the message was directed to Mrs. Martha Spahr, RFD 2, Dover, Pennsylvania. Honor bound, as each of these World War

"Every day that passes means fewer of these shortwave listeners will be personally recognized. But I won't let that discourage me — it ignites me." – Lisa Spahr

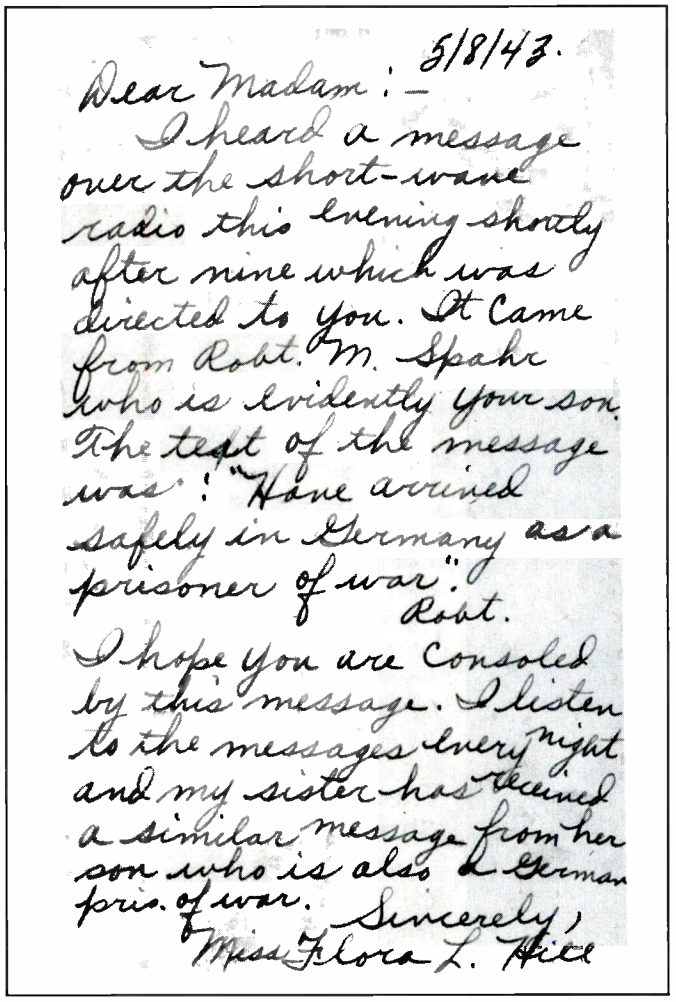
ll "message relays" would prove to be, Mildred detailed what she had copied down and mailed it to the Spahrs the next morning — May 9, 1943.

Many people heard the same broadcast and were compelled, like Mildred, to assure Martha Spahr that her son Robert was doing OK. In subsequent days and weeks letters and postcards arrived carrying a similar shortwave message — 83 in all, **Photos B** and **C**.

A Granddaughter's Discovery

Lisa Spahr was 11 years old when her grandfather — "Pappy," Robert Spahr — died. She knew he had served bravely in the Army during the war and returned home to a normal life, overcoming his experience as a POW, **Photos D** and **E**.

But it wasn't until she opened his "war trunk" in 2006 that Spahr, then in her 30s, would learn from a box of cards and letters of the heroic efforts made by U.S. shortwave listeners decades before on her family's behalf.



5/8/43.

Dear Madam: —

I heard a message over the short-wave radio this evening shortly after nine which was directed to you. It came from Robt. M. Spahr who is evidently your son. The text of the message was: "Have arrived safely in Germany as a prisoner of war". Robt.

I hope you are consoled by this message. I listen to the messages every night and my sister has received a similar message from her son who is also a German pris. of war.

Sincerely,
Miss Flora L. Hill

Photo B. In her own hand, shortwave listener Flora Hill, assured Martha Spahr that her son Robert "had arrived safely in Germany as a prisoner of war ... I hope you are consoled by this message," Miss Hill wrote. *(Courtesy of Lisa Spahr)*

So moved by their messages, Spahr began a nationwide search to learn about the 83 selfless strangers who stood behind her "Pappy" and the Spahrs during the war. She had a story to tell, and her discoveries would go on to become a book, **Photos F**, **G**, and **H**.

In the second edition of "*World War II Radio Heroes – Letters of Compassion,*" Spahr richly builds upon the research and documentation she first introduced in 2007. Released this year, the updated "Radio Heroes" is more than 200 pages containing:

- The story of Spahr's discovery of the "war trunk," and the wave of emotion the relayed messages brought her.
- Images of the actual cards and letters received by her great-grandmother, Martha Spahr — accompanied by typeset narratives, which translate their handwriting and faded scripts after so many years.
- The role of SWAM, the Short Wave Amateur Monitors club, in supporting the communication hobbyists' POW message relay efforts, **Photo I**.
- The story of "The Fighting Heers," a family which, through the kindness of shortwave monitors, received 18 cards and letters about Technical Sergeant Robert Heer, held captive by the Japanese for 39 months. The returning soldier's extensive post-war research about the people who wrote on his behalf is documented in "Radio Heroes'" second edition.
- Letters of thanks received by Lieutenant Colonel Morton Barfield for the many relayed messages he forwarded to POWs' loved ones.
- Details of Lisa Spahr's campaign to get Congressional recognition for the 284-*and-counting* shortwave message relays that have been so far identified.

'Radio Heroes' Second Edition

"People just keep coming out of the woodwork on this and sharing amazing collections with me," she said in an interview.

"The second edition, specifically Chapter 6 — '*Bob Heer and the Fighting Heers*' — is filled with one magnanimous example after another.

"Sanford Lowe, of New York, sent more than 10,000 message relays. The impact that that alone had on awaiting families is unimaginable to me," Spahr said.

"Earl Archibald Fitzgerald, of Washington, spent every night listening and capturing the 3-to-10 POW messages relayed. His town took a collection and helped him purchase a better receiving set — 15-tubes covering six bands. He sent more than 4,500 letters during the course of the war. Grateful POW families exchanged letters with him thereafter, drove thousands of miles to meet him and he was acknowledged by Presidents Roosevelt and Truman. That collective effort and prized dedication embodies what POW message relay was all about."

"Another was R.P. Read," she said, "who hadn't taken a night off for more than three months, listening to the messages and relaying the information. His letter to Mr. and Mrs. Heer asked them to tell him if they had received any other messages, and if they were clear. If so, he could take a night off and rest."

Telling an Untold Story

Spahr was first compelled to document her findings in a book "after talking to more intelligent people than myself, and dis-

63 Willow Avenue
Somerville, Mass.
May 10, 1943

Mrs. Martha Spahr
R. D. #2
Dover, Pa.

Dear Mrs. Spahr:

While listening to a short wave broadcast Saturday evening, a message came through from "a camp in Northern Germany" which is purported to be from your son. The message is as follows:

"Arrived safely in Germany as a prisoner."

Signed Robert

There may have been more to this message - I am not sure - for the static was bad, and the German accent isn't easy to understand. However, maybe you will receive a letter from someone else who heard it and you will have the whole story. At least, I hope the above is encouraging news.

Very truly yours,
Hazel P. Woodley

Photo C. Fighting through the radio static and a thick accent, Hazel Woodley wrote Martha Spahr that she had heard Robert was alive in "a camp in Northern Germany" and hoped that the message relay "is encouraging news." *(Courtesy of Lisa Spahr)*

Photo D. A tiny Lisa Spahr shares an apple-munching moment with her "Pappy" many years ago. *(Courtesy of Lisa Spahr)*

covering that these shortwave POW message relays were, in fact, an unknown piece of our history," she said. For people who looked back upon 1943 to 1945 as a time of an anxious and troubled United States, "the story brought optimism and hope to everyone who heard it. We are inundated with bad news, and here was a great story that had slipped through the cracks."

"I remember asking John Sommer, Jr., then Executive Director of The American Legion Washington office and an ardent student of WWII and military history: 'Should we write a book about this?'" Spahr said. "His response was: 'Yes,' and I've never looked back. I just needed validation that this was as worthy as I thought."

The Enemy's Mission Thwarted

As a bridge between the U.S. prisoner of war and an anxious American people, the Germans and Japanese had hoped the broadcast messages would demoralize listeners under a cloud of wartime gloom and doom. These were, after all, messages from U.S. fighting men who were now prisoners of the Third Reich and Japanese Empire.

In the course of her research, though, Spahr believes the broadcasts had the opposite effect. "You have to have a son in the war to understand how much this means to me," a mother wrote in thanks to one shortwave message relay. And for relaying those many thousands of broadcast messages, Earl Fitzgerald was called "The Man of Hope," Spahr said.

"Conversely, I did see many cautions about being careful about what you heard over the airwaves," as to the broadcasts' authenticity. One such caution was "specifically from *The American Legion Magazine,*" she said. "And, I've also heard that some unscrupulous people contacted families and requested money for such information."

The Goodness of American Shortwave Monitors

It is clear from her research, however, the overwhelming majority of message relays were kind, patriotic souls whose collective heart, shortwave radio, and writing implements were in the right place at the right time.

They listened from busy cities and rural towns across America — Norco, California to New York City; Lovel,

Photo E. Lisa Spahr's grandparents, Kathryn and Robert, are pictured upon "Pappy's" return from World War II. *(Courtesy of Lisa Spahr)*

Photo F. A picture of Lisa Spahr's presentation to the Sangamon Valley Radio Club, in Central Illinois, is posted on the *"World War II Heroes"* Facebook page: <http://on.fb.me/17jHIDh>. *(Internet screen grab)*

Maine to Dallas. Unknown to one another and unaware of the lasting importance of their mission, these individual shortwave monitors became a grassroots *movement of one* from 1943 to 1945.

While most of the listeners made no mention of a specific program during which the messages were broadcast, Morton Bardfield, who took part in the relays as a teenager, referred to a show called *Calling Back Home,* which "was on Radio Berlin nightly," Spahr said. "That was the only 'show' ever mentioned to me or in the correspondence. Other writers simply report nightly transmissions of POW names, next-of-kin addresses, and short messages home. Both Germany and Japan had nightly reporting on their airwaves."

An audio file on the Internet discovered by Spahr's husband, Rob, contains POW relay messages "featuring none other than 'Axis Sally,'" Spahr said, **Photo J**. *(**LISTEN:** To "Axis Sally" in a propaganda broadcast during the war years at <http://bit.ly/1dqQRtp>. – KPC6PC.)*

"The title of those related shows from Germany were *Home Sweet Home, Gerry's Front Calling,* and *Berlin Calling,"* Spahr said. "They were all propaganda-filled programs, interspersed with POW messages for relay."

Spahr said that "some writers noted the frequency information, but most did not. One message relay monitored Japan's JLGA on "9.505 megacycles and JLG1 15.105."

The Efforts of SWAM

Mrs. Ruby Yant, who had organized the Short Wave Amateur Monitors club from her listening post in Lima, Ohio, identified 27 German stations and their broadcast frequencies — each documented in "Radio Heroes."

And in a newsletter, she thought SWAM's 47 members "might be interested in the following transmissions I observed at various places. All Eastern War Time."

- **Radio Saigon** (French Indo China) in English, 10:40 to 11 a.m. on 11.77 megacycles.
- **Chungking** (XGOY) in English, news, 6 and 10 a.m., 11.88 mc.
- **All India Radio** (Delhi) in English, 3 a.m., 15.23, 11.80, 9.83 mc.
- **Radio Moscow** (in Russian), 1 a.m., 13.6 mc., and beginning in English, 9 to 10 p.m., 9.48 mc.
- **Budapest** (HAT4) in English at 9 p.m., 9.12 mc.
- **Radio Brazzaville** (FZI) for North America, 6 to 8 p.m., 11.79 mc.
- **Radio Algiers,** in English, 4 p.m., 6 mc.

But most likely for its members, there were no more important stations for SWAM to monitor than those of those from Berlin and Tokyo.

"I'm assuming most SWAM members were actively engaged in the relay given I have seen or learned of most actively sending postcards and letters," Spahr said. "Keep in mind, if you partner Ruby's list with the other data I've compiled, we now have 284 names thus far for the collective effort."

A Special Movement in a Special Time

The seeming singularity of the World War II POW message relays is not lost on Spahr.

"I think World War II was an anomaly in many respects," she said. "Radio propaganda certainly spiked during Korea and

Photo G. In a Veteran's Day interview on KDKA in Pittsburgh, Lisa Spahr tells the story behind "World War II Radio Heroes – Letters of Compassion." ***(WATCH and LISTEN:*** *At <http://bit.ly/16R1VtM>. – KPC6PC) (Internet screen grab)*

Lisa Spahr PghToday Live

Vietnam, with radio personalities like 'Seoul City Sue' and 'Hanoi Hannah.' But I am not aware of letters being sent to families from listeners who heard about POWs from those programs. Like this story, though, it may be an issue of not being documented, researched, and openly written about."

Spreading the World About 'Radio Heroes'

Since first releasing "Radio Heroes" in 2007, Spahr has traveled around the country speaking to groups and organizations about the shortwave monitors and their good works.

A sense of urgency drives her continuing outreach and research. Given the advanced age of the generation which fought in World War II, and of those shortwave listeners who supported the troops and their families, Spahr is eager to get Congressional recognition for the SWLs who made such a difference.

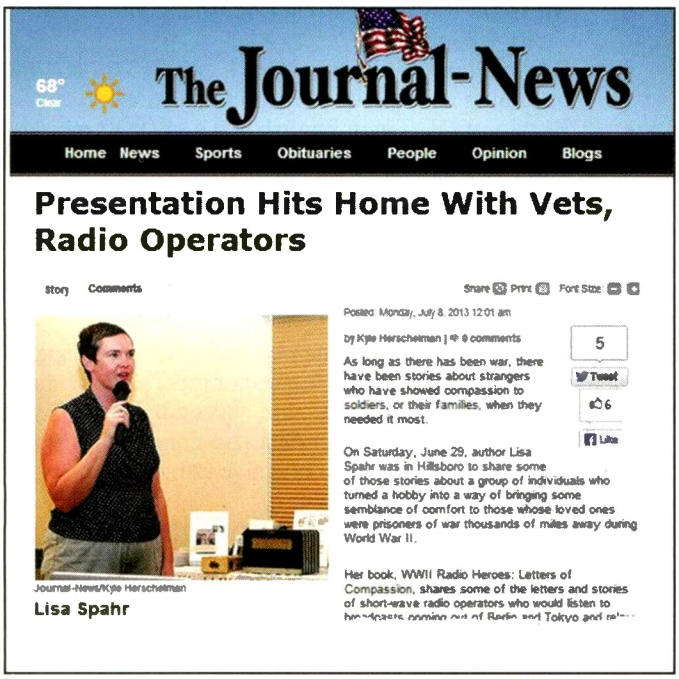
"That is a process in-and-of itself and thus far I have no strong lead in Washington, D.C. pushing it through," she said. "Every day that passes means fewer of (the SWLs) to be personally recognized. But I won't let that discourage me — *it ignites me.* These people deserve this. And, the American people deserve to recognize this wonderful part of our history that can offer hope and optimism for future endeavors."

Moving Forward

Will there be a third edition of "Radio Heroes?" "Not likely," Spahr said. "But then again, I said that about a second edition, too."

There is the possibility of a film documentary, and Spahr wants to use the Internet to make "our collection publicly accessible online."

"Beyond that, I want to write less and speak more," she said. "I think I'm better at the latter. I love telling this story to audiences across the United States. I had the opportunity to do that for the five years between the first and second editions being published. I'm ready to hit the road again."


The Journal-News

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Presentation Hits Home With Vets, Radio Operators

Story Comments

Posted: Monday, July 8, 2013 12:01 am

As long as there has been war, there have been stories about strangers who have showed compassion to soldiers, or their families, when they needed it most.

On Saturday, June 29, author Lisa Spahr was in Hillsboro to share some of those stories about a group of individuals who turned a hobby into a way of bringing some semblance of comfort to those whose loved ones were prisoners of war thousands of miles away during World War II.

Her book, WWII Radio Heroes: Letters of Compassion, shares some of the letters and stories of short-wave radio operators who would listen to

Journal-News/Kyle Herscheiman

Lisa Spahr

Photo H. The Hillsboro, Illinois *Journal-News* sent a reporter to cover Lisa Spahr's story of World War II "Radio Heroes" during a presentation to the Montgomery Amateur Radio Club in July. Read the full story at <http://bit.ly/14Dk0fm>. *(Internet screen grab)*

Photo I. A young Flavius Jankauskas, today K3JA, was a member of the Short Wave Amateur Monitors club who relayed POW broadcast messages to loved ones on the home front. *(Courtesy of Lisa Spahr)*

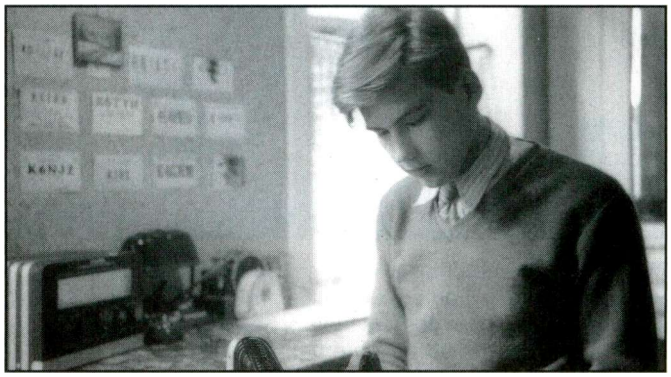


Photo J. Mildred Gillars, nicknamed "Axis Sally," along with Rita Zucca, worked for the Third Reich as a propaganda broadcaster during World War II. *(Courtesy of Wikimedia Commons)*

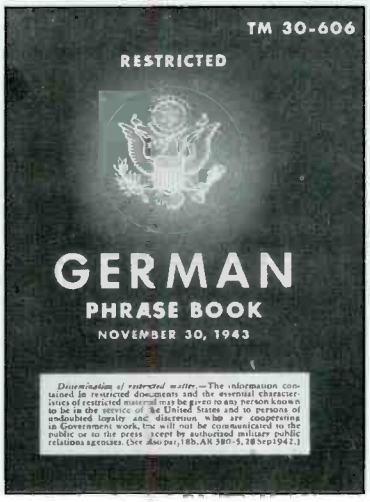


Photo K. A German phrase book was among the items found in Robert Spahr's "war trunk," along with a cigar box full of letters to his mother from shortwave listeners around the United States. *(Courtesy of Lisa Spahr)*

Photo L. Robert Spahr, with military ribbons pinned above his breast pocket, poses for a photograph with his sister Marty — a classic picture of the times. *(Courtesy of Lisa Spahr)*

Three sites on the Web are already undergirding Spahr's efforts:

- **"Radio Heroes"** homepage, including video and audio of TV and other interviews <http://www.powletters.com>.
- **POW Letters** blog, with updates on Spahr's ongoing research and upcoming speaking engagements <http://powletters.blogspot.com>.
- **"World War II Heroes" on Facebook:** <http://on.fb.me/17jHlDh>

She is not sure just how much web traffic her online sites receive, but every bit of exposure counts. "If I were better at this, I'd likely monitor and promote (the websites) much more," Spahr said. "I have a couple thousand hits a month to <http://www.powletters.com>.

"We have a small, but growing 120+ Facebook friends." In time, "I hope to do more in this area," she said.

Future work will include refining e-book versions of "Radio Heroes," as well.

A Writer's Gratitude

In her *"Second Edition Letter from the Author,"* Spahr thanks everyone for caring about this story of shortwave's power, and those "at least curious enough" to pick up her book. "I hope you love it and find it as touching as I did when opening that trunk for the first time, **Photos K** and **L** — and *even more so* now as the journey has taken on a life of its very own."

An aerial view of Puerto Lleras, Colombia. It may look small but it is home to two SWBC stations.

Shortwave DXing NSA: It's Not What You May Think!

By Gerry Dexter, WPC9GLD

NSA DX? How's *that* for an attention getter? Yup, there's a bit of tomfoolery afoot. "NSA" here has nothing to do with spies, cloak and daggers, intrigues, or people listening in on your plans for dinner at the club — the kind of stuff we've been hearing and reading so much about in relation to the National Security Agency.

Forgive me if we get into something a little more common and, well, comparatively *trite.*

NSA in this case, stands for "Northern South America" and what shortwave broadcast stations (SWBC) you can bag that are broadcasting from that area. Actually there aren't too many of them — there *used to be* a whole lot more of course. But there are still a few targets worthy of your attention and maybe it would be wise to get them while you still can. You never know what's coming 'round the corner or down the pike these days.

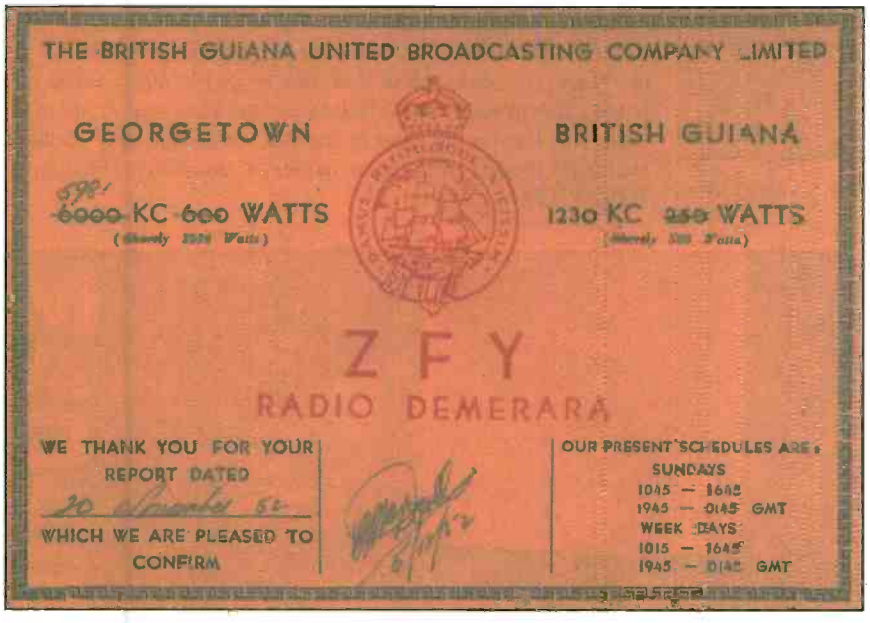
For our purposes, "northern" is interpreted to be whatever we can find in South America operating above the equator. *So let's take a look-see.*

Equador

Once home to many SWBC stations, the only one left that fills the bill in Equador is **Centro Radiofonico de Imbabura** in Ibarra, listed for one kilowatt on 3380. First rate DXer Ralph Perry, from Illinois, reported this one as active for a few days back in January 2013, but after that it has gone quiet again.

"Northern South America shortwave still has a few targets worthy of your attention. Maybe it would be wise to get them while you still can."

This twisted river lends its name to La Voz del Guavaire on 6035 kHz.



The Guyana Broadcasting Company used 3290 back when it was British Guiana. Now, later reborn as Guyana, it uses the same frequency.

The *World Radio TV Handbook* (WRTH) says it's irregular, so we can hope for an eventual return, if however briefly.

Colombia

Next door sits Colombia which holds three SWBC stations. Two of them are in the small town of Puerto Lleras, the main community in Meta Department. It's a bit of a puzzle as to why two such stations, both running 5 kilowatts, should have ended up in such a relatively obscure location and account for two-thirds of the SWBC activity in that nation.

There isn't much information available on Puerto Lleras, to say nothing of the stations involved. Both maintain offices in the capital, Bogota, and operate on a 24-hour-a-day schedule so that anytime the band is open you have a shot at hearing them.

Al Caravan Radio uses 5910 and **La Voz de tu Concencia** (Voice of Your Conscience) operates on 6010 where it sometimes suffers QRM (interference) from Brazil's Radio Inconfidencia. Both are relatively good in the verification department. Use Apt. Aero 67751, Bogota, DC for either station.

The third Colombian station is **La Voz del Guavaire**, located in San Jose del Guavaire. This is another 5 kilowatter, which uses 6035 and is occasionally heard when the band is open, operating from 1000 to 0300 UTC. Guavaire is a small community located along the river of that name and home to the Nukuk tribe — a community of about 500 hunter-gatherers. The station has responded to reports in the past. Try an email to <mercorio@col3tele.com.co>. Or, if you prefer to help out your friendly post office, write them at: Cra. 22, con Calle 9, San Jose del Guavaire, Colombia.

Venezuela

To the east, and next door, is Venezuela, which used to be thick with shortwave broadcasters. You could hardly tune 60 meters without tripping over one of them.

But over the years they've all vanished. However, we await the day when **Radio Nacional (Canal Internacional)** comes on the air. Still being constructed, there's been no news of any progress on the project since well before the passing of President Hugo Chavez.

It was advertised to be a high-power, multi-lingual "International Service" with 100-kilowatt transmitters in Calabozo, Guarica state. Those plans

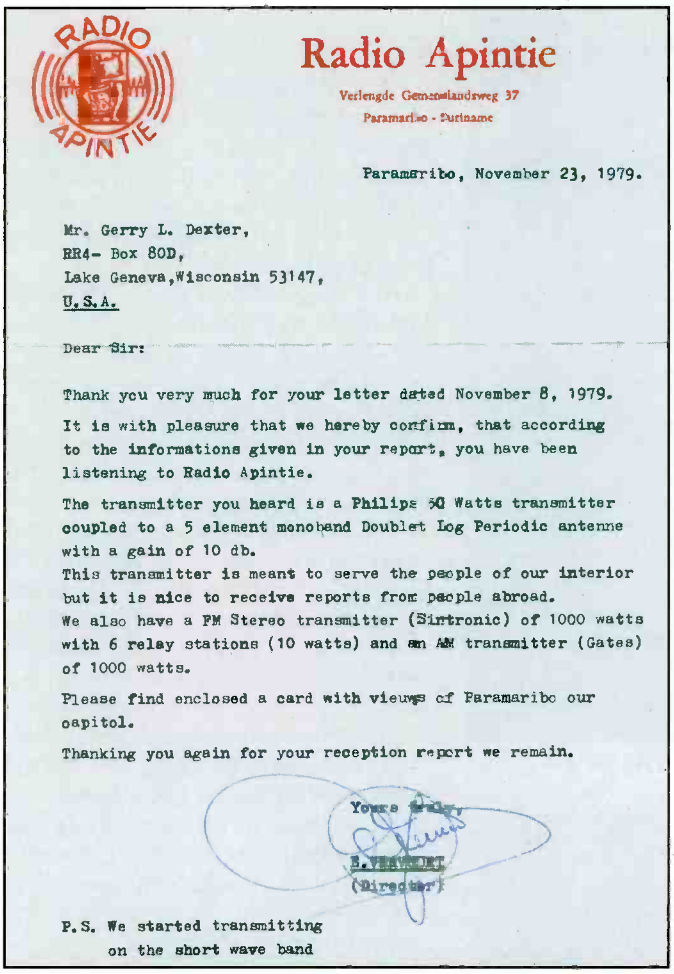
were highly touted back in September 2008 — a good five years ago. *We're still waiting.*

Meantime Venezuela's only remaining contribution to this NSA collection is **YVTO**, which — when the wind is right — can be heard under WWV on 5,000 kHz with SS time announcements. **Observatorio Naval Cagigal** normally QSLs reception reports to Apt. Postal 6745, Caracas. E-mailers might try <dhn@truevision.com>, which has also brought replies.

Guyana

Guyana's **Voice of Guiana** returned to the air a few years back after a very long multi-year absence. It's still active, although it hasn't been reported in several months.

It originally used the frequency of 3290 and has since added 5950 — each running 10 kilowatts and operating 24-hours per day. Emails can be sent to <feedback@ncnguyana.com> *(**NOTE:** Although the email address may not be valid –WPC2COD)*. Via the postal service, the address is P.O. Box 10760, Georgetown, Guyana.



Radio Apintie

Verlengde Gemenelandsweg 37
Paramaribo - Suriname

Paramaribo, November 23, 1979.

Mr. Gerry L. Dexter,
RR4- Box 80D,
Lake Geneva,Wisconsin 53147,
U.S.A.

Dear Sir:

Thank you very much for your letter dated November 8, 1979.

It is with pleasure that we hereby confirm, that according to the informations given in your report, you have been listening to Radio Apintie.

The transmitter you heard is a Philips 50 Watts transmitter coupled to a 5 element monoband Doublet Log Periodic antenne with a gain of 10 db.
This transmitter is meant to serve the people of our interior but it is nice to receive reports from people abroad.
We also have a FM Stereo transmitter (Sirtronic) of 1000 watts with 6 relay stations (10 watts) and an AM transmitter (Gates) of 1000 watts.

Please find enclosed a card with views of Paramaribo our capitol.

Thanking you again for your reception report we remain.

Yours truly,
[illegible]
(Director)

P.S. We started transmitting
on the short wave band

Suriname's Radio Apinte is a fairly reliable visitor on 4990 kHz.

Suriname

Next door — again — in Suriname is **Radio Apinte** in Paramaribo. The WRTH lists this one as irregular and I don't recall any loggings being reported over the past few months. Still, if you need this one, you should certainly place 4990 on your "watch" list. If you hear it, the address is Germenelandaweg 37, Paramaribo. On the Internet: <http://www.radiozon.com> or try an email to <admin@radiozon.com>.

French Guiana

A couple of years ago, French Guiana would have eaten up several paragraphs of this feature with its major international relay station at **Montsinery**, which seemed to relay nearly everyone — from Radio Japan, Radio Taiwan International, Radio France International, KBS World Radio from South Korea, the anti-Cuban Radio Republica, and probably a few others. Then the owner/operator, TDF, *in their wisdom*, tore it down.

Brazil

Last, we'll have to drop down a bit to Macapa, Brazil, located just a few miles north of the equator, to find **Radio Difusora Macapa**, which is one of the more easily heard Brazilians. It operates with a hefty 25 kilowatts on 4915 and seems to have a reasonably good reputation on the verification front.

Reports to: Rua Candido Mendes 525, Centro 68900-100, Macapa, Amapa State. Or you can send an email to: <rdm@rdm.ap.gov.br>.

Concluding Our Spin Around the NSA Dial

That completes this too-brief tour of Northern South America. If this visit was too tame for you and you'd like to venture farther south, know that you're in for many more challenges, lots of highs and a few more lows that you'd care to deal with. But they're all part of the DX challenge and adventure that still awaits you, even in these troubling DX times. – ***WPC9GLD***

Macapa, capital of Amapa state, is home to Radio Difusora de Macapa on 4915 kHz.

Wireless Trivia and Other Fascinating Pursuits

By R.B. Sturtevant,
KPC7RBS/AD7IL

Q: I understand that in India and parts of Africa, where the British ruled at the time, authorities found that the telegraph system was more expensive and difficult to maintain than wireless communications. Why was that?

A: I think the key words are *difficult to maintain*. Putting up telegraph lines was a pretty cheap consideration using local labor and such. The problems were maintaining the lines after elephants and rhinos had been rubbing or battering their heads on the poles.

It was also kind of hard to get linemen to go out to repair lines when the odd lion or tiger might happen by to sit at the bottom of the pole waiting for dinner. Monkeys used to play on the wires, as well.

In India, there is a story of the wires on a certain line going dead for several hours every day. After a while the lines would come back on. Local monkeys would slide down the sloping wires until they shorted the line on the ground. Over time, the metal wires stretched out so only a few slides would bring the line down to the grounding point. The British solution was to replace the wires and put up taller poles every time the disturbance occurred — or to switch to wireless.

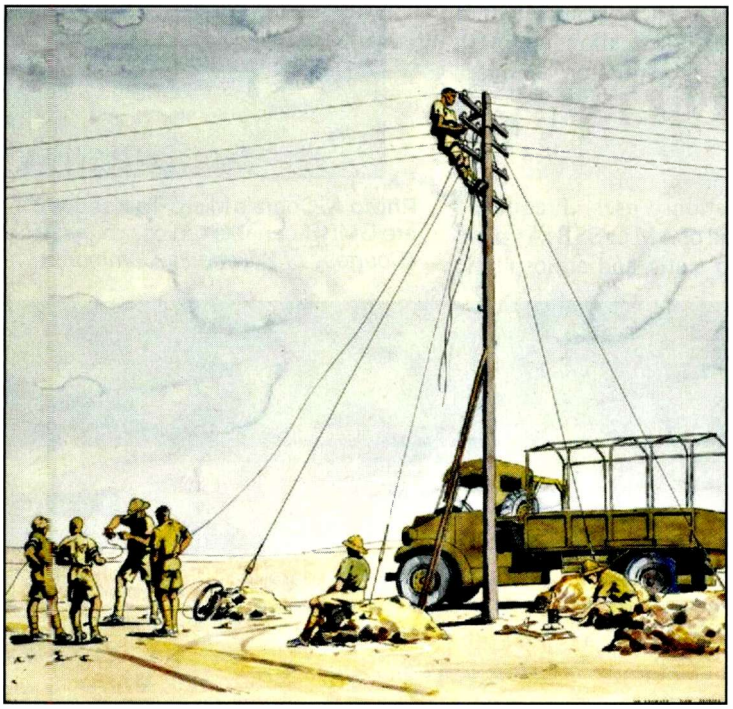


Photo A. This illustration, titled *Repairing Lines on 'dodd's Route' — Western Desert, 1941*, depicts a British soldier at the top of a telegraph pole in the desert. Other soldiers are gathered around the bottom of the pole next to an open truck. One of the soldiers on the ground is cutting a length of wire. *(Courtesy of Wikimedia Commons)*

Q: Why is it so hard to tune in foreign stations with a digitally tuned radio?

A: This is a case of when technology gets ahead of itself. Many digitally-tuned radios are designed to jump 10 kHz between stations. The channels all end in zero. In Europe and Asia, the frequency assignments are 9 kHz apart. The difference is not easy to tell, but your American radio is off frequency by 1 kHz. An analog tuning system will solve the problem.

Q: Was there a lot of Japanese spying on our west coast during World War II? Were secret radio transmitters discovered?

A: Only one case of radio transmissions to Japan was discovered on the United States west coast. Covertly, FBI agents paid an unsuspecting — *but willing* — operator at a commercial radio transmission facility to tune his transmitter to another frequency and transmit a coded message on behalf of an FBI informant. The radioman got $35, some jail time and lost his commercial and amateur radio licenses.

There was also a case — albeit difficult to confirm because of the secrecy at the time — of a Japanese agent posing as a commercial fisherman around the Panama Canal. As early as 1934, the Japanese were attempting to set up espionage operations around the Pacific side of the Canal Zone.

It is said that Yoshitaro Amano, a local entrepreneur, established Amano Fisheries Ltd. in 1937 and had a specially equipped fishing vessel built in Japan with high-powered diesel engines. It was the longest-range fishing vessel in the Panama area.

The fishing boat also had high-powered sending and receiving radio gear on board with a permanent operator on hand. Oh, and a top-secret Japanese device for locating sea mines, as well. More interested in photography than fishing, the millionaire Amano spent a lot of time taking pictures in and around the Canal Zone.

At the time, America let it be known that a new canal was being planned through Nicaragua. This was picked up by the espionage grapevine and Amano started visiting the "proposed site" and some peculiar fortifications near Managua on his photography expeditions.

On his first trip, October 7, 1937, he found himself in a Nicaraguan jail on espionage charges and for taking pictures in a prohibited area. The fishing boat had been registered under a Panamanian flag. Its activities in Panama had been noticed to the extent that the registry was cancelled. The fishing boat quickly took off for Costa Rica and was often seen there and in Panamanian waters — occasionally running out to sea and going on the air with coded traffic.

Digging Deeper Into the Fascinating World of GMRS

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

"GMRS is a step up from Class D operation. If you are looking for something a little 'calmer' than Citizens Band, it's a great way to go."

In several previous editions of *CB and More* we've touched on the General Mobile Radio Service (GMRS) and some of the advantages of life in the UHF spectrum. Now it's time to dig deeper and actually join in on the fun, **Photo A**, <http://bit.ly/13TkzDs>.

What and Where?

GMRS consists of eight channels that may be used as simplex (same frequency for transmit and receive) or paired with eight repeater input frequencies, **Figure 1**.

Repeaters are stations that are typically placed on hilltops, water towers, or other high supports. They receive on one frequency, while re-transmitting — in real time — your signal on another frequency. By doing this, it increases the range of your portable or mobile station and allows you to talk farther and to more people. It also falls under the same Part 95 rules as Class D CB.

There are seven other channels, as well, that are simplex only. Note that some borrow the term "talkaround" from the Land Mobile Radio (LMR) world, instead of simplex. These channels limit you to 5 watts, while the others allow up to 50. They are also known as interstitial or "splinter" channels.

How?

GMRS communications uses Frequency Modulation (FM) instead of AM or SSB. As such, it is less susceptible to static and atmospheric

Photo A. Cobra's Micro-Talk series of handhelds are GMRS-capable radios, <https://cobra.com>. *(Courtesy of Wikimedia Commons)*

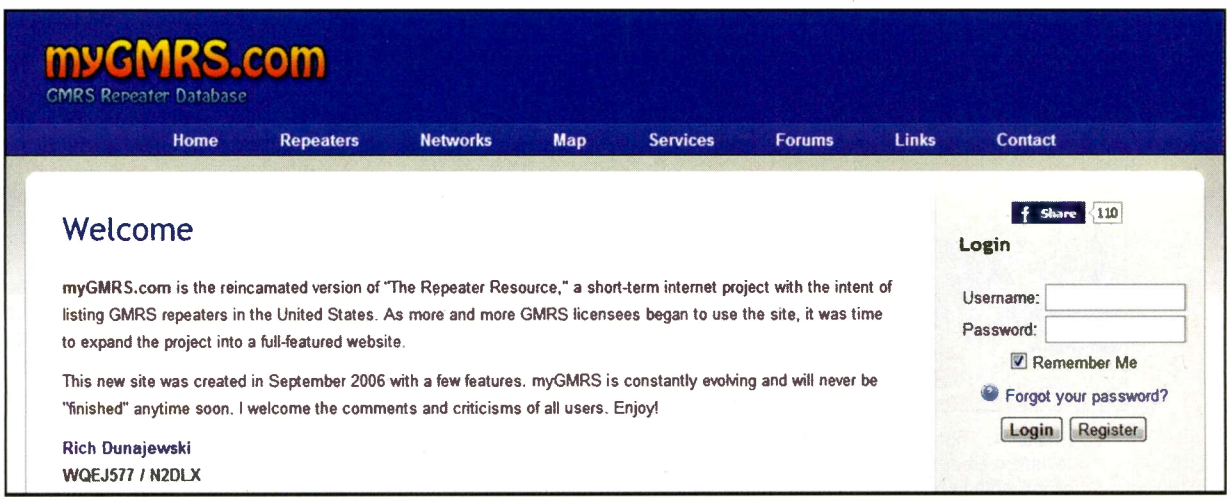


Photo B. Check for GMRS repeaters in your area at <http://www.myGMRS.com>, where you can learn more about terminology and some of the equipment that's available, as well. *(Internet screen grab)*

GMRS Frequencies

Here are GMRS frequencies for 50-watt operation.

- 462.5500 simplex or paired with 467.5500
- 462.5750 simplex or paired with 467.5750
- 462.6000 simplex or paired with 467.6000
- 462.6250 simplex or paired with 467.6250
- 462.6500 simplex or paired with 467.6500
- 462.6750 simplex or paired with 467.6750 (unofficial emergency/traveler assistance channel – 141.3 Hz CTCSS)
- 462.7000 simplex or paired with 467.7000
- 462.7250 simplex or paired with 467.7250

Here are GMRS frequencies for 5-watt operation.

- 462.5625 simplex only (unofficial calling channel – carrier squelch)
- 462.5875 simplex only
- 462.6125 simplex only
- 462.6375 simplex only
- 462.6625 simplex only
- 462.6875 simplex only
- 462.7125 simplex only

*(**NOTE:** There is also GMRS and FRS (Family Radio Service) in Canada. Although they use the same frequency allocations as in the U.S., it appears the maximum power allowed is 2 watts. While most portables sold in the United States can operate with reduced power — such as 1 watt — it would be a good idea to find out what other restrictions or licensing requirements there are before transmitting. More information is available via Industry Canada <http://bit.ly/15d1eaq>, **Photo G**. To my knowledge, there is no GMRS allocation in Mexico. There is, however, an FRS band — although the equipment you use must be "hecho en Mexico" (made in Mexico) — requiring some extra shopping once you get there. – **WPC2CS**)*

Figure 1.

noise. The sound quality is a marked improvement over what you will hear on the Class D CB channels.

Also, there's an absence of 10-codes, Q-signals, and other jargon, with everyone speaking in a natural voice. Identification is with callsigns or unit numbers assigned to those callsigns. I think the upgrade is worth the $85 fee for a five-year license, covering everyone in your family. You can even apply for the license online at <http://www.fcc.gov>.

While you can put together your own repeater system for less than $2,000, it's easier and less expensive to join a group that already has one. As some repeaters are set up by individuals for anyone to use, most are established and supported by organizations such as clubs. A good place to see if there are GMRS repeaters in your area is to take a look at <http://www.myGMRS.com>, **Photo B**. This site is also a helpful resource where you can learn more about terminology and some of the equipment that's available.

Gathering Information

Not every GMRS repeater out there is listed, however. So

another way to find out what repeaters and activity is available in your area would be to program the GMRS frequencies into your scanner or listen to an inexpensive FRS/GMRS radio that scans. Listen especially during "drive times" and in the evenings.

You can learn a lot about the repeater's coverage, how many users there are, who supports it, and so on. Maybe you'll even hear chatter about an upcoming club meeting you can visit.

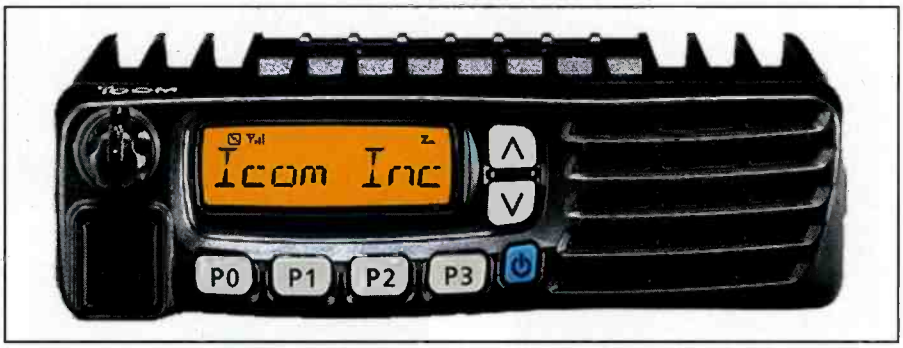
Choosing a Radio

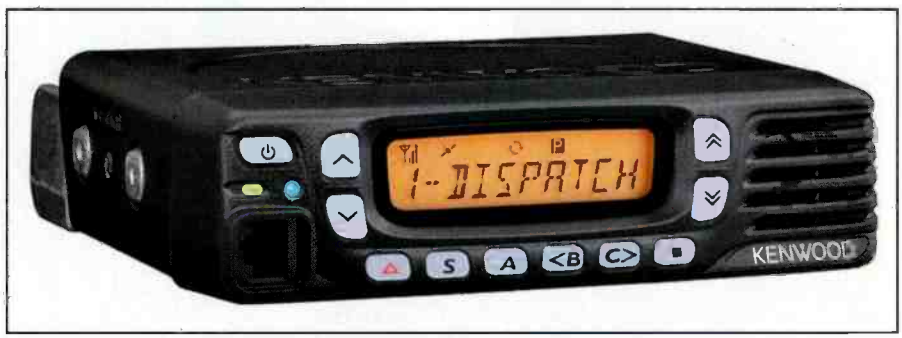
Once you've decided to join in on the activity and have received your license, you'll want a radio. The "bubble pack" FRS/GMRS radios are typically not what you want, as they don't have the ability to operate duplex — with split transmit and receive frequencies — through a repeater.

The antenna on anything that is FRS-compliant, as well, is "stuck on" — there's no realistic way to connect a better, external one. Rather, you want to get a radio specifically designed as GMRS-only.

As one of many examples, Power Werx <http://www.powerwerx.com> markets the GU-16 GMRS handheld. For just under $100, it comes preprogrammed and can produce up to 4-watts output. Accessories like a speaker-mike or headset are available, plus it has a *real* antenna connector, so you can increase your range while mobile. It is also a Part 95-certified device.

Most GMRS users seem to use Part 90 LMR radios. They are in fact, made to more exacting standards than Part 95 gear and I've never heard of this being a problem. Companies like ICOM, Kenwood, Motorola, and Vertex Standard, to name but a few, all produce some very nice portables and mobile UHF radios that produce 45 watts and work well for GMRS. Many are available through amateur radio or LMR dealers at reasonable prices.





Photos C and D. ICOM and Kenwood offer the GMRS radio enthusiast several options for both mobile and home-based operation. A couple of examples are the IC-F6021 and the Kenwood TK-8360HU. *(Internet screen grabs)*

A look at an ICOM IC- F221S, IC-F6021, **Photo C**; or Kenwood TK-8360HU, **Photo D**; will give you some idea of what's out there. Do some shopping around and you'll find some bargains.

Of course, there's always the used market. Just like hams, GMRS users will upgrade equipment from time to time and some bargains can be had.

Programming Options

Either way you go to buy a GMRS radio, you will want some way to program or have them programmed for your use.

While the channels are standard,

Photo E. GMRS organizations such as the Central Jersey Radio Group have a lot to offer new and seasoned operators. *(Internet screen grab <http://bit.ly/143pZqc>)*

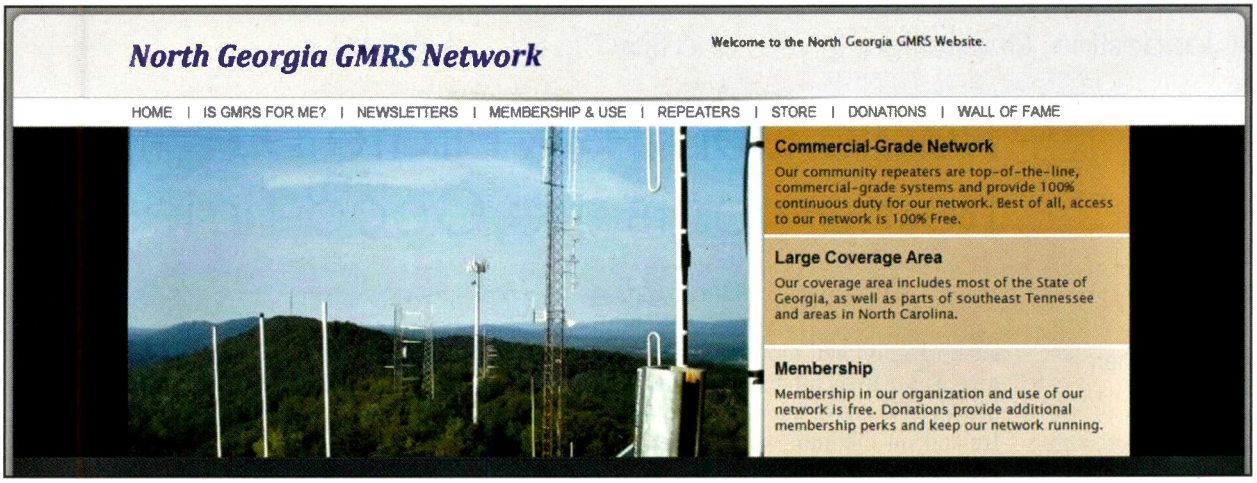


Photo F. The North Georgia GMRS Network supports SKYWARN, CERT, and other public service groups through GMRS. *(Internet screen grab <http://bit.ly/1fen3fg>.)*

GMRS repeaters typically make use of sub-audible tones to "key" the transmitter. Tone choices vary, but the GMRS community has standardized on 141.3 Hz as the "travel tone," for times when you are in a new area and looking to get on the air. As most mobiles have lots of memories, you could just keep a bank of channels with 141.3 Hz as the tone and use this if you're not familiar with the specifics of the repeaters in the area you find yourself.

Also, there are some organizations that have grouped repeaters together as a loose network, which allows you to cover an even wider range of territory, especially in heavily traveled corridors.

Advantages of GMRS Organizations

The Central Jersey Radio Group <http://bit.ly/143pZqc>, **Photo E**, is an example of an organization that offers *a lot* to GMRS operators. With multiple repeater coverage from Connecticut into Delaware, this is a group that has invested a serious amount of time, effort, and funding.

Another good reason to join a club and get to know other GMRS enthusiasts in your area is that more experienced folks can help guide you with what to purchase and the best ways to install mobiles or base stations. Yes, I'm a big believer in clubs. I also think you should participate and help build the community around you. Any help you can give will come back to you, many times over.

Appreciating Class D

GMRS is a step up from Class D operation. If you are looking for something a little "calmer" that allows you to make new friends and keep in touch with family, it's a great way to go.

If you travel a good deal, then stuffing a portable in your luggage can entertain you in a distant city and maybe get you some restaurant suggestions from some of the locals. Like the North Georgia GMRS Network <http://bit.ly/1fen3fg>, **Photo F**, your area may support SKYWARN, CERT, or other public service opportunities through GMRS. Take a listen and see if it sounds like something you'd enjoy. If so, then get involved in another rewarding aspect of two-way radio communications.

Photo G. Before operating GMRS or FRS in Canada, visit the country's website outlining rules governing such operation. *(Internet screen grab <http://bit.ly/15d1eaq>)*

Radio Dublin: A Pirate DJ Remembers the Good Times

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

"Radio Dublin operated openly in the hope that it would eventually receive a station license." – Freddie McGavin, a.k.a. "James Gavin," pirate broadcaster

Radio Dublin had more than a three-decade history as an Irish pirate radio station. Its popular broadcasts were heard inside and outside of Ireland on medium wave, FM, and shortwave. Freddie McGavin worked as a DJ at the station. This month he shares his recollections of life at a pirate station, **Photo A**, with *Pop'Comm* readers.

Interview With 'James Gavin'

[Handler] *I understand that Radio Dublin had more than a 30-year history as a pirate radio station, beginning operations sometime around 1966 and concluding in 2003. Is that correct?*

[McGavin] Yes. Radio Dublin would be considered one of the longest-running pirate radio stations in Ireland, if not the world.

[Handler] *How did you first hear about Radio Dublin?*

[McGavin] The station was in my locality. In fact, it was just a stone's throw from where I lived. I used to tune in as a child and in my teen years and often put radio requests in their letter box.

Photo A. Dublin, circled in RED, is on the east coast of Ireland, home of the radio pirate Radio Dublin. *(Courtesy of Tourism Ireland)*

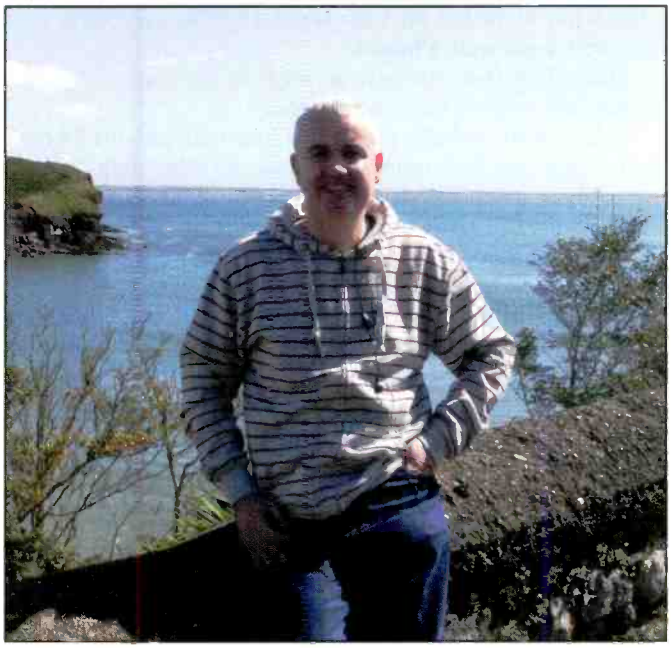


Photo B. With the sea as a backdrop, former Radio Dublin DJ Freddie McGavin — a.k.a. James Gavin — takes time out for a picture. *(Courtesy of Freddie McGavin)*

[Handler] *How did you acquire a job at the station?*

[McGavin] I worked for another community radio station at the time and heard Radio Dublin was looking for presenters. I felt Radio Dublin was a step up, **Photo B**.

[Handler] *I understand you were only 18 years old when you started at Radio Dublin. Did you have any previous broadcasting experience that qualified you as an "on the air" broadcasting personality?*

[McGavin] I was, in fact, 19 years old when I started at Radio Dublin. I had worked as a drive time disc jockey in a community radio station a year earlier and had clocked up a fair amount of "on air time." Before that I was a CBer, so you could say I was well used to being behind the microphone.

[Handler] *What interested you in working at Radio Dublin?*

[McGavin] Radio Dublin had a big reputation and there was the added benefit and buzz of broadcasting to a bigger audience with greater exposure.

[Handler] *How long did you work there?*

[McGavin] I worked there for three months from July to September 1988. I then took up a job as an animation camera operator with an Irish/American film company in Dublin.

[Handler] *You selected the "on-the-air name" of James Gavin. Why did you pick that name?*

[McGavin] It was common among DJs at pirate radio stations to use an alternative on-air name. This was as much for "coolness" and "street cred" as it was to avoid the authorities finding out who you really were. I also thought the name "James Gavin" was a good radio name and had a nice ring to it.

[Handler] *Would you please describe your normal broadcasting work day?*

[McGavin] I usually arrived at the station around 6.30 a.m. This gave me a chance to talk to the DJ on the graveyard shift and make sure everything was OK and we were still on the air. Sometimes there were raids by the authorities in an attempt to close us down. We were also being jammed by the state broadcaster at the time and our signal was being tampered with.

We had a reel to reel prerecorded show that could be put out should any of our presenters have to vacate the premises or simply failed to turn up.

My show started at 7 a.m. and I usually began the first hour with "low key" tracks and "small talk" to gradually "wake up" the listeners and get them in the mood for the new day. Station ads and IDs were to be played every 15 minutes. I also had to

Photo C. The Dublin, Ireland skyline strikes a majestic pose. *(Courtesy City of Dublin/Dublin City Council)*

Photo D. Freddie McGavin was 19 when he joined Radio Dublin. "I had worked as a drive time disc jockey in a community radio station a year earlier and had clocked up a fair amount of 'on-air time.'" *(Courtesy of Freddie McGavin)*

air a syndicated evangelical show, which would be delivered by courier in cassette form. I would have to sign for it at the door before playing it "on air" at around 10:45 a.m.

Sometimes listeners would phone in requesting certain artists to be played and I would usually have enough tracks with me to improvise. However, we never put listeners directly on the air. My show would finish after four hours of live broadcasting and I would go directly home. It took a few hours to wind down after a live show but the buzz was incredible especially when the show went well, **Photo C**.

[Handler] *Did you have to prepare for your daily radio broadcasts or were they spontaneous?*

[McGavin] I usually prepared a four-hour playlist 24 hours beforehand and had community news and other items of interest ready to go.

[Handler] *Working a daily on the air shift at any radio station takes a lot of effort. What about your work did you find enjoyable and what did you dislike?*

[McGavin] It did take a lot of work, but it was something I enjoyed doing. I also got a great buzz from the show, especially when I got positive feedback from family, friends, listeners, or the station manager. It was certainly a labor of love for me personally.

[Handler] *Did you have any single day at work that you would categorize as "your best day on the job?" If so, what happened?*

[McGavin] I had many shows and days that I considered my best. I tried to be consistent in everything I did and kept the energy levels going. When you got good feedback from listeners or the station authorities on a particular day that was always an added bonus.

[Handler] *Did you have any single day at work that you would call "your worst day on the job?" If so, what happened?*

[McGavin] This would happen when the show was not going out "on air" and the signal was being tampered with. There were also days when the state broadcaster jammed our signal. This could be annoying as one would just have to continue with the show on "dead air" until the station returned to air — sometimes mid-show; sometimes not at all.

We also used vinyl records at the time and a show could be ruined if you had a number of tracks that skipped. This was usually as a result of worn-out needles. The equipment was in constant use as we were a 24-hour music station at the time, **Photo D**.

Photo E. The Dublin Convention Center is the dominant feature in this shot of the city's skyline. *(Courtesy of Tourism Ireland)*

Photo F. *COPS* columnist Steve Handler, WPC9JXK, rates the Radio Dabanga's as "one of the better sign-on/sign-off jingles I have heard on shortwave." <http://bit.ly/14VqFmC>. *(Internet screen grab)*

[Handler] *Many pirate radio stations back in the 1960s, 1970s, and 1980s operated ship-based transmitters. Apparently Radio Dublin was always a land-based operation. Wasn't this more risky in terms of being shut down by the authorities? What steps were taken to limit the ability of the authorities to track and shut down your operation?*

[McGavin] No real steps were taken to prevent this. Radio Dublin operated openly in the hope that it would eventually receive a station license. Station members and listeners constantly campaigned for "legislation" as the law was wanting with regard to pirates — or more accurately, stations other than the state-run monopoly broadcaster RTÈ. So it was hoped that by operating openly this would curry favor with the authorities and get us a license. ***(IN DEPTH:*** *What is RTÈ? Visit <http://www.rte.ie>. – WPC9JXK)*

[Handler] *As a pirate radio station "on the air" personality, were you concerned about your safety or by the possibility of the authorities shutting down the station and prosecuting on-the-air broadcasters such as yourself?*

[McGavin] To be honest, I was having such a good time I never thought about my personal safety or possible prosecution. Many of us believed what we were doing was right and that the law needed to change to provide alternatives to state broadcaster RTÉ, <http://bit.ly/16KMJ1g>.

Eventually the law did change but only after the pirates had been put off the air and more regulated commercial stations came into being. Like other business ventures in Ireland at the time, Radio Dublin didn't have the financial backing to be a commercial success but that didn't stop the state broadcaster RTÉ from poaching many of our presenters. We like to take the credit for dragging RTÉ — particularly with regard to their youth programming — into the 20th Century! *LOL!*

[Handler] *I also understand that during Radio Dublin's broadcasting history, its broadcasts were heard on medium wave, FM, and shortwave, including 6317 and 6910 kHz. What frequencies or bands were in use while you were there?*

[McGavin] Radio Dublin broadcast on 1188 AM and 105 FM when I was there.

[Handler] *Did you receive much fan mail from listeners, and if so, were any of the letters memorable?*

[McGavin] I didn't receive much fan mail — not that I know of — in my short time at Radio Dublin, although I did receive encouragement and praise from listeners who would regularly ring in, **Photo E**.

[Handler] *Is there anything that I haven't covered which you think Popular Communications magazine readers would like to know about your time at Radio Dublin?*

[McGavin] No. I think we have covered pretty much everything. Thank you, Steve, for your interest in Radio Dublin. It brings back many memorable times I had there. It was a pleasure sharing my recollections of those years with your readers.

Using and Understanding SIO

In station loggings you will notice frequent references to SIO. This is a shortened version of SINFO (Signal Interference Noise Fading Overall quality). SIO deletes noise and fading factors. This code is used by some shortwave listeners to report reception quality and its numbers are based on a five-point scale with five being the best. So an SIO of 454 would be good signal strength, with no interference and an overall reception quality that is good.

North American Pirate Station Loggings

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

Captain Morgan on 6924 at 0250-0315+ Saturday. Blues music by Jimmy Morello, John Campbelljohn, Jools Holland. IDs and email address given. SIO: 343. (Lobdell-MA)

Cool AM Radio PRB Relays on 6925 AM at 1414 to 1503 sign off Saturday. Relay of this Dutch pirate with rock tunes, IDs, email address <coolamradio@hotmail.com>. SIO: 333. (Lobdell-MA)

Echo One PRB Relay on 6921 at 0104-0145 Saturday. Songs by Thurston Harris, Pink, Queen, IDs, talk by OM ... signal faded by sign off. SIO 343. (Lobdell-MA)

Mancave Radio on 6925 AM 0246 Sunday with heavy metal, story with jazz background, got ID from HF underground. Poor or below static. (Hassig-IL)

PPVR on 6925 USB, 0254-0258 Tuesday. Couple of IDs, instrumental music. SIO: 121. (Lobdell-MA)

Radio Free Whatever on 6925 AM 0000 Sunday with pop/rock, <dickweed-dj@gmail.com>. Poor/static, (Hassig-IL). Also heard 0042 until 0107 sign off Sunday noted with frequent IDs, rock music from DJ Dick Weed. Closed with long instrumental music selection. Fair to good. (D'Angelo-PA). Heard also from 0043 until 0245 sign off. Friday DJ Dick Weed holding forth here playing rock tunes, announcing song titles, etc. Tunes by Silversun Pickups, Pearl Jam, Smashing Pumpkins, etc. Off at 0245 with whispered ID. SIO: 444 (Lobdell-MA)

Radio Free Whatever on 6945 AM 0103 to 0225 sign off Wednesday. Songs by Stone Temple Pilots, Halestorm, 2 Door Cinema Club. DJ Dick Weed with

IDs, talking between songs. Mention of Ragnar's Pirates Week podcast. SIO: 222 (Lobdell-MA). Also heard 0340-0405+ Saturday. DJ. Dick Weed just above the noise floor playing "The High Road" by Broken Bells. At 0342. Signal would fade in and out. SIO: 121 (Lobdell-MA)

Radio Free Whatever on 6945 AM 0250 Saturday. Nice program of pop music, at 0304 song "Video Killed the Radio Star," <dickweeddj@gmail.com>. Poor signal with much static, (Hassig-IL)

Radio Ga Ga on 6925 USB 2358 to 0007 sign off, Thursday/Friday. Pop tunes, ID just prior to sign off. SIO: 232. (Lobdell-MA)

Red Mercury Labs on 6925 USB 0204-0221 Sunday sign on with heavy metal, soft rock tune, Johnny Cash "I Walk the Line," Willie Nelson "Highway Man," sign off at 0221 after ID and email address <redmercurylabs@yahoo.com>. Fair, some static. (Hassig-IL)

Radio Mushroom on 6930 at 0039 until 0052 sign off Saturday. Male announcer hosting program of familiar rock vocals (John Fogherty, Guess Who, etc.) with frequent IDs, email address <radiomushroom@gmail.com>, and close down. Fair signal, although noisy conditions. (D'Angelo-PA)

Radio True North on 6940 AM 0235 Sunday, very poor almost non-existent under static, heard bits of audio in AM mode, detect weak carrier in SSB mode. I emailed him at <radiotruenorth@gmail.com> and asked if it was him he said yes it was. Got ID from HF underground. (Hassig-IL)

TCS-The Crystal Ship on 6925 AM 0142-0213+ Friday. Tunes by April Wine, Jefferson Starship, Nirvana. Talk by Commander Bunny 0214. SIO: 343. (Lobdell-MA)

The Voice of The Robots on 6925 USB at 0056-0120+ Friday. IDs, "Attention, attention, we have returned;" "the revolution will begin." Email: <voiceoftherobots@gmail.com>. Theme music from "Lost In Space" TV show; song "Space Jam;" "Major Tom." Full data eQSL in three days. SIO: 343 (Lobdell-MA)

WPON-The Weapon on 6925 USB 2216-2237+ Saturday. Song "CIA Man" by The Fugs. Discussion of the CIA during Eisenhower administration. "Spies" by Coldplay. SIO: 333 (Lobdell-MA)

WPON-The Weapon on 6935 USB at 0016-0046+ Friday Song "Spies" by Coldplay; "Secret Agent Man" by Johnny Rivers. Possible interview with NSA leaker Snowden, sounded like Piers Morgan audio at 0047. SIO: 233 (Lobdell-MA)

UNID on 6924.7 AM 0154-0215 Thursday. Noted with rock vocals, Abbott and Costello classic baseball routine of "Who's on First?" at 0210. Partial ID caught saying "AM Radio" but fairly noisy at that point. Generally poor reception. (D'Angelo-PA)

Euro Pirate Station Loggings

Note that all days and times are in UTC (GMT) and all frequencies are in kHz

NMD-Holland on 6290 AM from 0019 to 0031 sign off, Sunday. Many IDs. Email <nmdradio@gmail.com>, harmonica mix just prior to close down. SIO: 333 (Lobdell-MA)

Radio Focus International–England 6285 AM 0113-0505+ Saturday. Nice signal from this U.K. station, playing tunes by the Beatles, Aerosmith, Kiss, Snow Patrol. Announcing a phone number as well as a Dutch mail drop. At 0446 it seemed to be running a special show on old U.K. pirate stations. Transmitter site unknown. SIO: 333/343/121. (Lobdell-MA)

Readymix Radio-Holland on 6450 AM from 2351 to 0010 sign off Saturday. Playing oldies by Fats Domino, The Champs, Trini Lopez, etc. Email: <readymix@hotmail.nl>. ID just prior to closedown SIO: 232. (Lobdell-MA)

Sunshine Radio on 7600 AM at 2312-2330+ Saturday. Pops including songs by Babybird, Roxy Music. No ID noted, but per Iann's chat, this was Sunshine Radio. SIO: 232. (Lobdell-MA)

Technical Man on 6210 AM from 2241 to 2333 sign off, Wednesday. Tunes played by REO Speedwagon, Joe Cocker, Cranberries, IDs by OM announcer in English and Dutch. SIO: 333 (Lobdell-MA)

TRX-Holland on 6300 at 2325-2355+ Saturday. Oldies by Big Bopper, Richie Valens, ID by OM repeating "TRX" several times. SIO: 333 (Lobdell-MA)

Oceania Pirate Station Loggings

Note that all days and times are in UTC (GMT) and all frequencies are in kHz

Radio Totse on 6925 USB, 0942-1100 Sunday. Rock music, frequent IDs, a couple of SSTV images, ID'd one song "The Joker and The Thief" by Wolfmother at 1024 UTC. Email is <radiototse@gmail.com>. Log on the HFUnderground brought full data eQSL in 16 hours from operator Dak, who says he is located in the central part of the North Island in New Zealand. Power 100 watts. (Lobdell-MA)

Clandestine and Opposition Station Loggings

Note that all days and times are in UTC (GMT) and all frequencies are in kHz

Firedrake Chinese musical jammer 9745 at 1705 on Monday (Barton-AZ). *(**NOTE:** Probable target is Radio Free Asia's Mandarin language broadcast via Saipan, Northern Mariana Islands. – WPC9JXK.)*

Radio Dabanga via Vatican on 15275 kHz 1610 Arabic or Sudanese, 1611 Radio Dabanga slogan by man and ID by woman, followed by an interview. Saturday. Fair. (Sellers-BC) *(**NOTE:** This is targeting the Sudan Region. If you want to hear the Radio Dabanga sign-on jingle, which I rate as one of the better sign on/sign off jingles I have heard on shortwave, visit <http://bit.ly/14VqFmC>, **Photo F.** – WPC9JXK.)*

Radio Miraya via Bulgaria 11560 kHz at 0300 sign on until 0328 Saturday, opening with English ID and announcements by a male announcer followed by various selections of local vocals. Fair to good. (D'Angelo-PA) *(**NOTE:** This is targeting the Sudan Region. – WPC9JXK.)*

Radio Miraya via Bulgaria 11560 kHz at 0409 Monday. English, Sudanese song, greetings, talk about programs. Dual path echo made comprehension difficult. (Sellers-BC) *(**NOTE:** This is targeting the Sudan Region. – WPC9JXK.)*

Salam Watandar on 11545 0344 until 0359 sign off Wednesday. Talks by a man and woman announcers followed by IRRS ID inviting reception reports at 0359 before carrier was terminated. Fair to good. (D'Angelo-PA) *(**NOTE:** Apparently targeting Afghanistan from transmitters in Bulgaria. – WPC9JXK.)*

Spy and Numbers Station Loggings

Note that all days and times are in UTC (GMT) and all frequencies are in kHz. Unless otherwise noted the station name

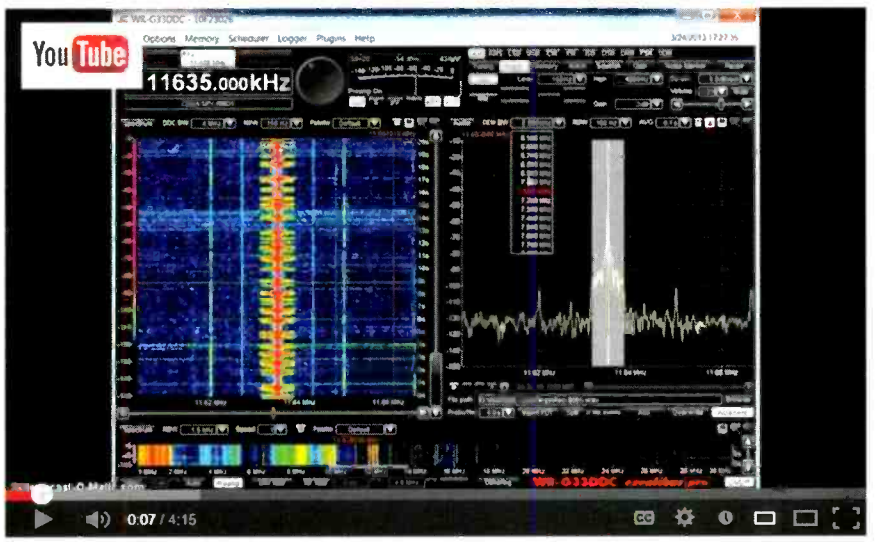


Photo G. To listen to a good-quality a broadcast from the Cuban station HM-01, visit <http://bit.ly/13SGjPH>. *(Internet screen grab)*

Photo H. Undercover Radio's 2012 New Year's Eve program included a retrospective by the mysterious Dr. Benway on 20 years of pirate broadcasting. Watch and listen at <http://bit.ly/1c9a9j7>. *(Internet screen grab)*

uses the Enigma 2000 designator set forth in their control list.

HM-01 on 9065 AM 0809-0810 on Sunday with a good signal and slightly distorted modulation. Spanish language mechanical synthesized voice with five-digit number alternating with Recumbent Digital File Transfer (RDFT) data transmissions. (From an Anonymous Contributor-USA) ***(NOTE:*** *Probable originator of this broadcast is the Cuban Direccion de Inteligencia (DI) – WPC9JXK.)*

HM-01 on 9240 AM 0935-0937 on Wednesday with Spanish language mechanical synthesized voice with five-digit number alternating with Recumbent Digital File Transfer (RDFT) data transmissions. Good-excellent signal. (From an Anonymous Contributor-USA)

*(**NOTE:** Probable originator of this broadcast is the Cuban Direccion de Inteligencia (DI) – WPC9JXK.)*

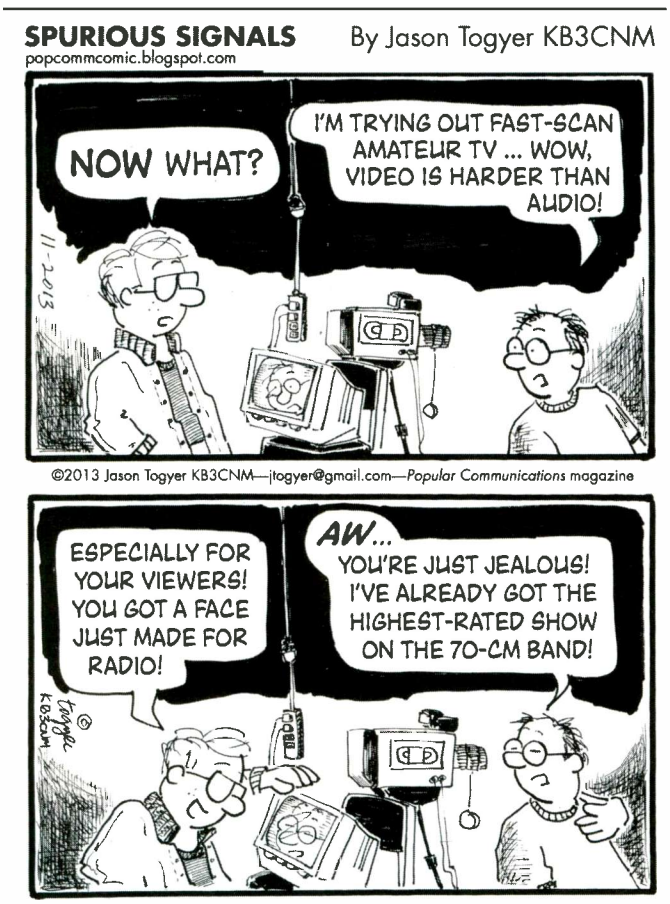
HM-01 on 14375 AM 0504-0506 on Saturday with an Excellent signal. Spanish language mechanical synthesized voice with five-digit number alternating with Recumbent Digital File Transfer (RDFT) data transmissions. (From an Anonymous Contributor-USA) *(**NOTE:** Probable originator of this broadcast is the Cuban Direccion de Inteligencia (DI) – WPC9JXK.)*

S06s broadcast at 1200:00-1205:34.5 lasting 5 minutes 34.5 seconds on 10230 kHz USB. Female Russian speaking synthesized mechanical voice. Began with ID number repeated over and over for four minutes followed at 1204:01.5 GMT with a three- and then a single-digit control number each one given twice. At 1205:13 she began reading five-digit number groups, each one given twice in a row. This continued until 1205:15 at which time she again read a three- and then a single-digit control number each one given twice. At 1205:34.5 the broadcast ended. Monday via web SDR Netherlands. (From an Anonymous Contributor-USA).

*(**NOTE:** The source of S06s broadcasts were long believed to be the Russian government. However, in 2013 a theory was put forth, by perhaps the most knowledgeable amateur group of number station observers, that S06s may possibly originate from a former Soviet SSR state not politically aligned with Russia. That group is still reviewing the evidence. – WPC9JXK.)*

More About HM-01

For those have not heard a broadcast from the Cuban station HM-01, YouTube has a good quality recording of HM-01's opening voice preamble followed by a change over to the Recumbent Digital File Transfer data transmission at about three-minutes, nine-seconds. Visit: <http://bit.ly/13SGjPH> **Photo G**.



Good to Hear From You

Here's a quick note that I received an email from Ed Holz, WPC1KEX, of Temple, New Hampshire, who heard BoomBox Radio on 6920 playing techno music. Ed said the DJ was very friendly. He sent a CD of his programs and a real nice letter. *Thanks!*

November's COPS Contributors

I wish to thank this month's loggings and QSL report contributors, Rick Barton-Arizona, Richard D'Angelo-Pennsylvania, William Hassig-Illinois, Ed Holz, WPC1KEX-New Hampshire, Chris Lobdell-Massachusetts, Harold Sellers-British Columbia, and Anonymous Contributor(s)-parts unknown.

Four North American Pirates That QSL!

Much to the delight of those buccaneers who want to memorialize their reception of pirate broadcasters, many pirate stations will QSL. Here are four North American pirate stations with a history of responding to correct reception reports with either a paper or electronic QSL cards.

- *Rave On Radio* has sent an e-QSL for reports to <raveonradio@gmail.com>
- *Renegade Radio* has sent an e-QSL for reports to <renegadeshortwave@gmail.com>
- *SDF-1 Radio* has responded with an e-QSL for a report sent to <SDF1radio@gmail.com>
- *Underground Radio's* mysterious Dr. Benway has responded with a paper QSL via post for reports to <undercoverradio@gmail.com>.

A Pirate Celebration

Undercover Radio's 2012 New Year's Eve program included Dr. Benway's retrospective of 20 years of his broadcasts. Watch and listen on YouTube at <http://bit.ly/1c9a9j7>, **Photo H**.

Sneak Preview

In upcoming issues, the COPS column will focus on some of Russia's secret shortwave stations, including information on how they communicate with spies outside of Russia. We will be reviewing the operation of several clandestine and opposition shortwave broadcasting stations.

We will continue with interviews of current and former pirate radio station operators. And, of course, we will continue to bring you Clandestine, Opposition, Pirate and Spy and Numbers stations loggings contributed by our readers. *Stand by for action!*

It's a Wrap

Thank you for reading this month's COPS column. If you would like to contribute Clandestine, Opposition, Pirate and 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***

AM BCB DXpeditions! There's Excitement in the Air

By Bruce A. Conti, WPC1CAT

November is DXpedition month! The best long distance (DX) reception of the year on the AM broadcast band typically occurs now. With ever increasing interference across the band from utility lines, computers, bug zappers, and *who knows what,* sometimes it's best just to get away from it all, rather than miss out on the fun — thus the increasing popularity of DXpeditioning where radio listening is done from an electrically-quiet remote site.

"For inspiration, here are some highlights and selected logs from DXpeditions that have taken place over the past few months across North America."

For inspiration, here are some highlights and selected logs from DXpeditions that have taken place over the past few months across North America as DXers targeted reception of signals emanating from southern latitudes during the current peak of solar activity.

All times are UTC unless otherwise noted.

Rockwork, Oregon

We begin our itinerary with ferrite sleeve loop (FSL) antenna designer and ultralight DXer Gary DeBock on his annual visit to the Oregon cliffs during a period of intense DXpedition activity in the Pacific Northwest.

"Concurrent with a separate DXpedition in Yachats, Oregon, another wild ocean cliff DXpedition was conducted from a 400-foot high sheer cliff located on Highway 101 in Tillamook County, Oregon, now known as the Rockwork site," DeBock said.

"As in previous trips, there was no AC power, running water, street lights or weather protection at the site, but there was plenty of traffic noise, soggy weather, and Murphy's Law.

"Despite the challenges, vibrant South Pacific DX was received on seven out of seven days, providing conclusive evidence once again that this sheer cliff creates its own enhanced Down Under propagation.

"Most astonishing was the strength and regularity of the New Zealand AM stations, six of which owned their frequencies with strong signals every day. These Kiwi 'big guns' ranged from the 2.5-kilowatt Maori overachiever Kahungunu on 765 kHz to the flagship RNZ National station on 567 kHz. New Zealand seemed to have a pipeline to the cliff, even during the days when Australia boomed in as well.

"Although the DXing conditions at the Rockwork site are pretty rough, hearing such powerful South Pacific signals in the middle of such awesome scenery is enough to permanently cure any hobby boredom. Below are the strongest 10 (plus one) Down Under signals heard during the week. All signals were received on a Tecsun PL-380 ultralight radio hot-rodded with a 7.5-inch external loopstick antenna inductively coupled to a newly designed 12-inch FSL antenna.

"Most signals pegged the Tecsun PL-380 S/N display. For those interested, a DXpedition video showing the scenery, equipment, and sleep-deprived DXer is posted at <http://bit.ly/14xGtuj>, **Photo A**.

Photo A. Gary DeBock sets up his latest creation — a 22-pound, 12-inch diameter FSL antenna — at the Oregon cliff DXpedition site in this YouTube video. Watch and listen at <http://bit.ly/14xGtuj>. *(Internet screen grab)*

Rockwork 4 Loggings

531 **PI Auckland, New Zealand**, at 1231, this 5-kilowatt Samoan-language station had a hammerlock on the frequency most of the time, rarely allowing a co-channel Aussie talk station to squeak through.

567 **RNZ National, Wellington, New Zealand**, its 50-kilowatt trransmitter always managed a huge signal by around 1230 UTC, this music and interview station was by far the strongest of the RNZ network. Usually the first Kiwi station to fade in each morning.

Photo B. With a longwire antenna deployed from their tent, Rick Barton, KPC7RAT, says he appreciates his AM BCB DX-tolerant wife who in this picture is still smiling. *(Courtesy of KPC7RAT)*

This Month in Broadcast History

75 Years Ago (1938): Irving Berlin's "God Bless America" was broadcast for the first time, performed by Kate Smith over the radio waves on Armistice Day. ***(WATCH and LISTEN:** Kate Smith's rendition at <http://bit.ly/15pUzOf>. – WPC1CAT)*

50 Years Ago (1963): "Deep Purple," by Nino Tempo and April Stevens, **Photo A**, topped the Countdown music survey on Radio Active 1410 KWBB Wichita, Kansas. ***(WATCH and LISTEN:** To the duo's Grammy-winning 1963 hit performed live at <http://bit.ly/18VKRTJ>. – WPC1CAT)*

25 Years Ago (1988): The Satellite Home Viewer Act of 1988 was enacted as an amendment to copyright laws. The Act gave satellite carriers a statutory copyright license to offer distant broadcast television signals to "unserved" households. The 34th and 35th AM broadcast DXpeditions to Lemmenjoki, Finland, were completed as part of an ongoing series held September through January annually since 1981. Well over 300 DXpeditions have now taken place at this remote Arctic site. – ***WPC1CAT***

Photo A. Nino Tempo and April Stevens won a Grammy Award for their 1963 monster hit "Deep Purple." *(Internet screen grab <http://www.ninoandapril.com>)*

594 **3WV Horsham, Australia**, at 1244, a 50-kilowatt underachiever during previous ocean cliff trips, this Aussie LR network big gun finally dominated the frequency over the low-powered co-channel Kiwi NZ Rhema network, and did it all week long.

603 **Radio Waatea, Auckland, New Zealand**, at 1253, the 5-kilowatt Maori-language music and interviews were vibrant as usual throughout the week, and surprisingly stable. No Aussie competition on the frequency, as was sometimes heard in previous trips.

657 **Southern Star, Wellington, New Zealand**, at 1242, this 50-kilowatt Christian music station was one of the six Kiwi 'big guns' during the week, although it occasionally had some domestic splatter issues. Always a vibrant and stable signal every morning.

675 **RNZ National, Christchurch, New Zealand**, at 1228, with 10 kilowatts the second of the RNZ network to make this "Top Ten" list, it typically came in slightly weaker than its 567 parallel with music, interviews, and national news.

738 **Radio Polynesie, Mahina, Tahiti**, 20 kilowatts once again, a French language blowtorch all week, and typically the first Down Under signal to reach vibrant audio usually around 1200 UTC. Plays French and English pop music, with occasional French interviews.

765 **Radio Kahungunu, Napier-Hastings, New Zealand**, at 1226, with 2.5 kilowatts the lowest powered of the "Top Ten" Down Under stations, this Maori-language overachiever still packed a strong punch every day. Typically has Maori language music and speech, but occasionally plays old Motown favorites. Parallel 603 kHz at times.

774 **3LO Melbourne, Australia**, at 1227, this 50-kilowatt LR network big gun could send a blistering signal into the cliff when Aussie signals rose up. Parallel 828, 891, and other LR network stations, it has variety programming with news, music and interviews.

783 **Access Radio, Wellington, New Zealand**, at 1248, with 10 kilowatts was one of the big surprises of the week, this ethnic programming Kiwi station somehow transformed itself from a weak underachiever into a vibrant big gun, heard with South Asian music.

792 **4RN Brisbane, Australia**, at 1254, not a "Top Ten" pick, this 25-kilowatt Aussie RN network station gets an honorable mention for a signal that was very potent when favorable propagation kicked in, but was missing in action oth-

erwise. Plays a variety of diverse music from around the world, parallel 576 kHz.

Saving the Best for Last

"The last day at the Rockwork 4 cliff turned out to be the best Down Under DXing of all, with both Australian and New Zealand stations pegging the PL-380 meter on certain frequencies," wrapped up DeBock. "Several Aussies which had been weak or missing in action all week suddenly became vibrant, and three of them (702, 729, and 747) were able to break through serious domestic splatter for the first time at Rockwork. Although the cliff definitely favors New Zealand signals (with 531, 567, 603, 657, 675, and 765 very strong on 7 out of 7 days), it will greatly enhance Aussie signals as well on certain days. Discovery and confirmation of freakish cliff-side Down Under propagation has made this DXpedition very exciting, and the compact FSL antenna has proven to be the perfect tool for taking advantage of these concentrated South Pacific signal boosts."

Also Tuning the AM BCB ...

"Another group of DXpeditioners, including Mauno Ritola, Victor Goonetilleke, Vlad Titarev, Neil Kazaross, Guy Atkins, Chuck Hutton, and Bruce Portzer, worked in parallel with Gary DeBock's annual visit to the cliffs of Oregon," added DXer Bill Whitacre. "We gathered near Yachats, Oregon to use more traditional 'wire' antennas — mostly a 140-foot Double Delta with its main lobe at approximately 255 degrees. Similar setups were also running at the famous Grayland, Washington, site and a location 15 miles south of Yachats called Sans Souci at 800 feet above and about a half mile back from the Pacific Ocean."

Granite Mountain, Arizona

While the Pacific coast DX party was underway, Rick Barton, KPC7RAT, braved a camping DXpedition in the mountains of Prescott National Forest despite a tricky weather forecast. "The rain's not a biggie, but lightning makes me a little nervous, and the crackles make for a tougher ID," said Barton of the experience, **Photo B**. "Blessings to the tolerant wife who shrugs and says, 'I married a radio guy.'"

"Big thunderstorms (were around) almost the whole time. Rolled out a quick up and down longwire between storms, a southwest 'Tomato Stake' antenna, but only used it for the last couple of hours before we broke camp. It's very hot here in the desert southwest this time of year, but, unlike Florida, we can drive 90 miles north up into the mountains at higher elevation to cool off. It was the middle of the 'monsoon cycle' too, so we got a lot of T-storms. The lightning was intense.

"Signals were received with the Grundig Satellit 750, **Photo C**, connected to the longwire antenna, and the ultralight Grundig G8 Traveler, beginning with these stations logged in the afternoon between lightning storms."

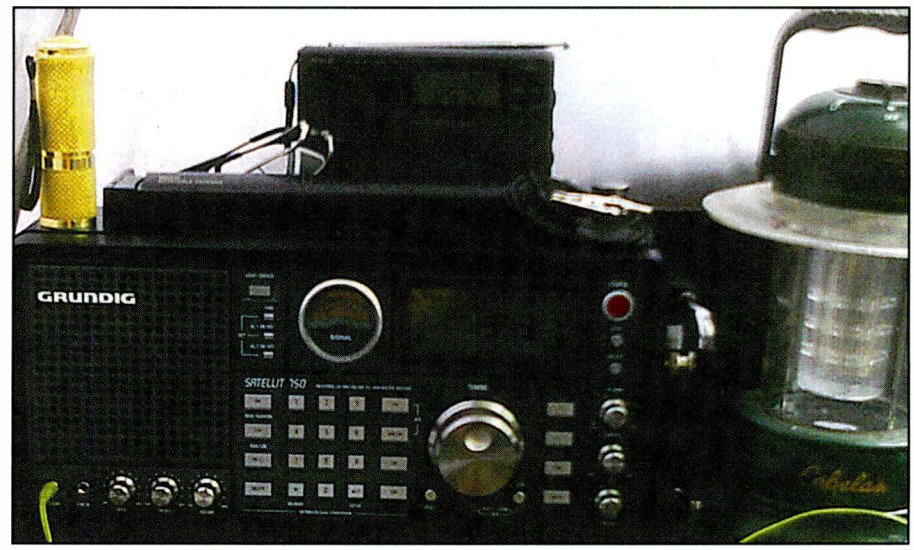


Photo C. The Grundig Satellit 750 was the primary receiver during the KPC7RAT camping DXpedition in the Arizona mountains. *(Courtesy of KPC7RAT)*

Granite Mountain Loggings

560 **KBLU Yuma, Arizona**, "News/Talk 560" and Glenn Beck. Still daylight at 5:30 p.m. local time. 1 kilowatt, 280 miles.

590 **KSUB Cedar City, Utah**, "Money Talk" to local spots and weather, "High today in Cedar City." Daylight log at 1:20 p.m. local time.

640 **KFI Los Angeles, California**, local traffic and weather, a very steady fair to good signal, 2 p.m. local time.

720 **KDWN Las Vegas, Nevada**, financial talk show, to break, "You're listening to News/Talk 720 KDWN."

820 **WBAP Ft. Worth, Texas**, a nice pre-sunset log, with good legal ID at the hour, "on 820 WBAP Fort Worth-Dallas."

970 **KVWM Show Low, Arizona**, talk show about local "monsoon season," a very good signal.

" ... and these DX signals were logged from daybreak to a couple hours after."

610 **KNML Albuquerque, New Mexico**, "Tom Tebow" sports talk with a very good signal. This station not received at home due to local 620 KTAR splash.

700 **KALL Salt Lake City, Utah**, "Where the Utes play, KALL ESPN 700."

740 **KCBS San Francisco, California**, "All news 740, KCBS," into CBS news on the hour.

1000 **KKIM Albuquerque, New Mexico**, a good signal with a Christian talk show and New Mexico weather forecasts, "New Mexico's Christian Heritage Radio Station, KKIM."

1080 **KRLD Dallas, Texas**, heard "KRLD news time, 6:14."

1160 **XEQIN San Quentin, Baja California Norte, México**, very good with news items, over co-channel KSL Salt Lake City.

1170 **KCBQ San Diego, California**, with current events, mixing with presumed co-channel station KYET.

1210 **KEVT Sahaurita, Arizona**, Spanish gospel-like music to announcements in Spanish after the hour. Good daylight signal, with 10 kilowatts at 240 miles.

1330 **KGAK Gallup, New Mexico**, good signal in Navajo with "KGAK" clearly heard into list of names of local people.

1700 **XEPE Rosarito, Baja California Norte, México**, ESPN Radio sports talk; tremendous reception.

Outer Banks, North Carolina

While DXpeditioners on the Pacific coast were concentrating their efforts toward the land Down Under, their counterparts on the Atlantic coast were aiming for tropical signals from the Caribbean and Latin America.

Photo D. Niel Wolfish takes a moment for a photo op with a make-shift Wellbrook Loop after a morning of DXing from the foggy coast of Nova Scotia. *(Courtesy of Ken Alexander)*

"Here are a few logs from a recent mini-DXpedition in Duck, North Carolina, during a family vacation," said DXer Brett Saylor. "Receiver was a Perseus software-defined radio (SDR) and the antenna was a corner-fed, 16- by 36-foot terminated SuperLoop with a Wellbrook FLG-100 amp."

Duck Loggings

740 **XECAQ Cancun, México**, at 0300 Radio Fórmula ID's, local ads, under domestic WSBR Florida and another Latin American station.

760 **HJAJ Barranquilla, Colombia**, at 0300 "RCN, la Radio" network ID, ad for Topi cola, 4 beeps on the hour over a music bed, received over co-channel Radio Progreso Cuba.

810 **ZNS3 Freeport, Bahamas**, at 0356 orchestral Bahamian national anthem, into lively reggae singing ID, "Yeah! ... ah ZNS-1, ah ZNS-1, ah ZNS-1 that's all I ever want, ah ZNS-1, ah ZNS-1, ah ZNS-1 and that's what I want to be ... ah ZNS-1, ah ZNS-1, ah ZNS-1 and I am proud that I am, ah ZNS-1, ah ZNS-1, ah ZNS-1," then talk about a movie episode being shot in Nassau. Good on top of Spanish jumble.

840 **Radio Revolución, Palma Soriano, Cuba**, at 0400 Cuban anthem, ID as "CMKC, Radio Revolución" over trumpet tune; another co-channel Cuban station national anthem at 0401. Signal at even levels with co-channel WHAS Kentucky.

940 **WIPR San Juan, Puerto Rico**, at 0400 pop Spanish music, ID, "Máxima nueve cuarenta" and "gracias ... muchachos," over offset carrier from likely XEQ on 939.88 kHz.

980 **Radio COCO La Cruz, Cuba**, at 0300,"Esta es la C-O-C-O, CMCK," and light Latin American music.

1000 **Radio Granma, Media Luna, Cuba**, at 0300 Granma signature tune, "Transmite, Radio Granma," 9 notes on chimes, and talk in Spanish.

1020 **CMKS Radio Trinchera AntiImperialista, Guantánamo, Cuba**, at 0400, mixing with but well over co-channel Radio Guama and Radio Reloj. National anthem then "Esta Guantánamo, provincia más ... Cuba" and "CMKS, Radio Trinchera AntiImperialista" over song "Guantanamera," followed by the first five notes of "Guantanamera" on chimes.

1080 **Radio Cadena Habana, Villa María, Cuba**, at 0358 ID, "Esta la capital, transmite Radio Cadena Habana, la emisora de la música Cubana" over jazzy music then what sounded like a sign-off announcement including FM frequency, into Cuban anthem. Following this was some type of announcement in Spanish with the sound of pouring liquid, clinking glasses, and "salute" into a romantic Cuban vocal song. Following the song was a Radio Ciudad de Habana ID. The audio on Ciudad had a noticeable hum not present on previous Cadena program. I think this confirms suspicions that Cadena is carrying Ciudad programming.

1220 **ZYJ458 Radio Globo, Rio de Janeiro, Brazil**, at 0300 Portuguese talk with sliding sound effect, ID's and Globo signature tune, parallel a weaker 1100-kHz signal. Heard throughout the week with very good signals during most evenings, as early as 0100 UTC.

Louisbourg, Nova Scotia

DXers Niel Wolfish, **Photo D**, and Ken Alexander also took advantage of the modern convenience of SDR RF spectrum recordings to capture signals at a remote Canadian Maritimes site for later "almost live" DXing from home.

"All logs were made from the car using the WiNRADiO Excalibur SDR and the Wellbrook Loop," said Wolfish in his account. "Essentially we went out to a parking area near the Fortress of Louisbourg, ran a coax cable out to a post and strung up a simple wire loop.

"This was a joint effort; Ken's wire, my Wellbrook, Ken's Excalibur, Ken's laptop computer, I drove the rental car and Ken woke me up for the sunrise sessions.

"We'd hop in the car from our vacation rental cottage, drive four minutes and then set up, which took another couple of minutes. Then sit patiently at hour-top or hour-bottom while the Excalibur SDR did its scheduled spectrum captures. Then it was back to the cottage where Ken would transfer the DDC files to a thumb drive and I'd put them on my computer.

"It would have been nice to listen from the cottage, but the noise level there was bad. The other downside was on Saturday morning when we were done with our DXing, Ken wanted to go to Tim Horton's for 'breakfast' 30 minutes away in Sydney. So we went."

Canada Loggings

560 **Voice of Guyana, Georgetown, Guyana**, at 2356 some kind of music countdown program. Commercial for Republic Bank and ID as Voice of Guyana with announcer giving time as "20 hours 1." Then lotto results by a woman where she read the numbers live for the "Draw de Line" and then she did the "Lucky 3" draw. Fair and alone on the frequency.

630 **LS5 Radio Rivadavia, Buenos Aires, Argentina**, at 2357 Spanish vocal, talk over 6 pips on hour, seemed to be an ID and into news. Various mentions of websites with "punto.com.ar" and Argentina at 0003. All alone on frequency.

630 **YVKA Radio Nacional Venezuela**, Caracas, at 0803 strong with many mentions of "El Chavismo" interspersed with bits of singing and talk about Venezuela and revolución. A second Latin American station audible underneath.

670 **Radio Rebelde, Cuba**, at 0202 baseball coverage, ID, "Radio Rebelde con CMHW." Parallel to 1180, etc. Sounds like

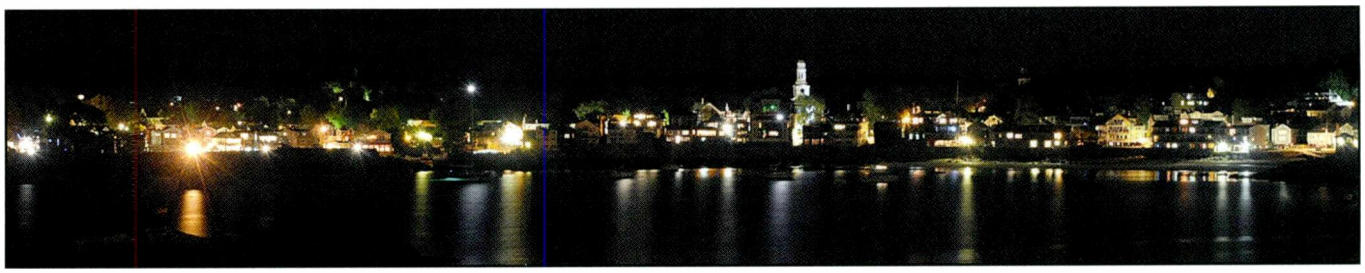


Photo E. This serene view of Rockport, Massachusetts, across the bay from the Granite Pier DXpedition site, was eventually disrupted by the arrival of nighttime revelers which gained the attention of local police and brought an end to DXing, one of the risks involved with using a public location. *(Courtesy of WPC1CAT)*

there's an unlisted co-channel Radio Reloj here, too, in the background.

680 **WAPA San Juan, Puerto Rico**, at 0201, "Esta es la poderosa, WAPA seis ochenta AM, San Juan-Arecibo ... la señal más ponderosa con la máximo en la noticias," and "WAPA Radio" jingle. Then chime and "diez y dos" time check.

680 **YVQR Radio Continente, Cumaná, Venezuela**, at 0800 mentions of Puerto La Cruz and Caracas, ID mentioning frequency at 0801 followed by male vocal when lost to co-channel WRKO Boston.

700 **LV3 Radio Córdoba Cadena 3, Córdoba, Argentina**, at 0758 romantic music, ID after hourtop with mentions of Argentina and "Cadena 3." I think there is another Latin here too. Signal trashed by HD digital from 710 WOR New York.

920 **Radio Nacional, Asunción, Paraguay**, at 2340 folk music, several ID's heard. Later at 0200 possibly a soccer match. Excited announcer says something about "republica Paraguay" and "Viva Paraguay."

1030 **LS10 Radio del Plata, Buenos Aires, Argentina**, at 2358 ID as "Radio Noticias del Plata." Gave time check as "la hora nueve" into some kind of political speech. Co-channel WBZ Boston heard way under.

1110 **YVQT Radio Carúpano, Carúpano, Venezuela**, at 2358 Latin American music, ID's, station promo, "Radio Carúpano, más música." There's a co-channel Brazilian with soccer in here, as well.

1130 **ZYJ460 Radio Nacional, Rio de Janiero, Brazil**, at 2357 talk about Campeonato Paulista, a lengthy bit about soccer with music playing in the background. Co-channel WBBR New York began to upfade at top of hour.

1150 **LT9 Radio Brigadier López, Santa Fé, Argentina**, at 0800 James Brown "I Feel Good" into legal ID, "LT9 Radio Brigadier López, Santa Fé," which also mentions 92.5 FM frequency.

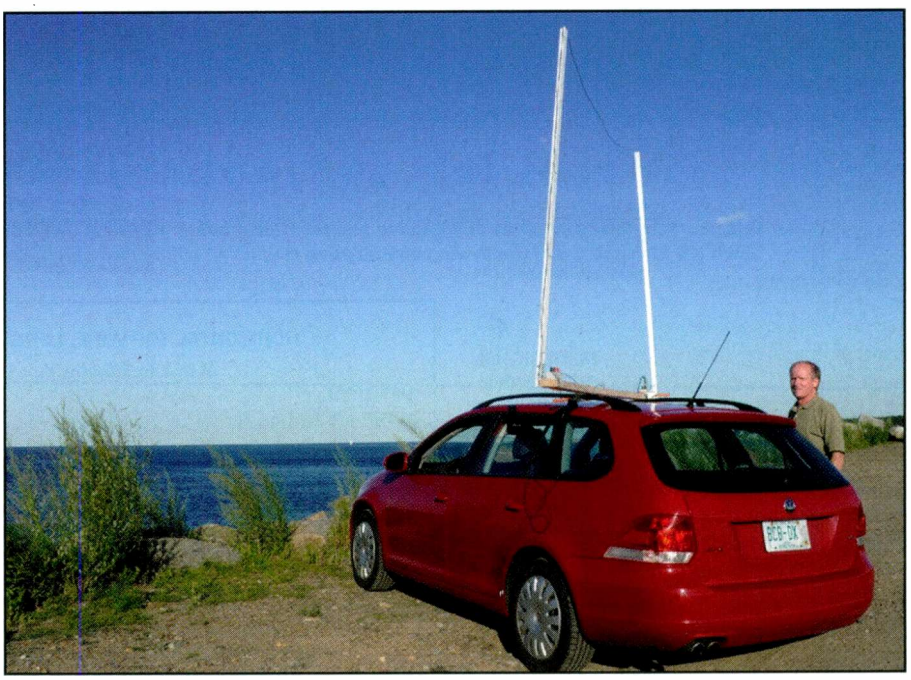


Photo F. Bruce Conti, WPC1CAT, with car rooftop SuperLoop antenna aimed across the Atlantic from Granite Pier, awaits sunset for the DX to begin in earnest. *(Courtesy of WPC1CAT)*

Almost didn't stop for ID as I had figured this would be co-channel CKOC Ontario with their oldies format.

1280 **VSB2 Hamilton, Bermuda**, at 0004 with BBN broadcast of Unshackled, which fits BBN schedule, under WCMN Puerto Rico.

1280 **ZYJ455 Super Radio Tupi, Rio de Janeiro, Brazil**, at 2355 another Brazilian soccer broadcast with mentions of São Paulo and Paulista. Sounded like a very quick ID just before the Brazilian anthem cranked up at 2359. Religion underneath, which I assume was VSB2 Bermuda.

1280 **WCMN Arecibo, Puerto Rico**, at 0001 upfaded over co-channel Brazil, with a man ranting about the banco central, then NotiUno network ID.

1450 **VSB1 Hamilton, Bermuda**, at 0000 Jackson Five "I'll Be There" with ID as "AM 1450 Gold, your station for the hits of the '40s, '50s and '60s" into another oldie, under co-channel CFAB Nova Scotia.

1660 **WGIT Canóvanas, Puerto Rico**, at 0001 a heated discussion with somebody on the phone, then a bit of music at 0003 followed by station promo and a spot for a barbecue place.

1670 **Radio Rubi, Buenos Aires, Argentina**, at 0200 under co-channel CJEU Montreal with a couple of IDs and what sounded like program announcement with a bit of a reverb effect. ID sounds just like what I found on somebody's YouTube recording of the station.

Rockport, Massachusetts

I also tried some DXing on the road in Rockport, Massachusetts, **Photo E**, using

A Tropical Island Radiophone

From 1922: Radio Adventures Among the Bahama Islands

By Charles T. Whitefield
From "Radio Broadcast" magazine, May 1922

"Newark, Washington, Pittsburgh, which had seemed so far away, Dan Smith said would 'come roaring in' if we gave him a chance, and he would do all the work."

Like most "fans," we hated to abandon our radio receiving telephone (radiophone) when we left home for some mild adventures among the Bahamas. So we packed it up with the idea that we could install it on the good ship *The Sea Scamp,* a schooner of 70 feet which we had sent on to Nassau, New Providence, from Miami, **Photo A**, where she had spent a comfortable summer getting a new coat of paint and all the troublesome expensive things that yachts require.

On Our Way

On the good ship *Munargo* coming south we had snatches of WJZ, Newark, but the air was jammed with local messages in shortwaves, and especially troublesome was the radio hog who amused himself by printing his alphabet, calling aloud to heaven to hear his efforts, and completely blinding much better material.

When one leaves cold weather and New York, one's head is stuffed with plans of things to do among the Isles of June. But warm weather is very quieting to the ambitions of even the most energetic, and it seemed a big job to rig up the wires on the schooner. So we postponed this task until later.

Now along came Dan Smith, a full-fledged radio bug. Radio was the very breath of his nostrils, and his conversation was so full of strange technical words that one felt instantly that here, *indeed,* was a man who could reach out into the ether and take from it what he willed. Newark, Washington, Pittsburgh, which had seemed to us so far away, he said would "come roaring in" if we gave them a chance, and, besides, he would do all the work.

Establishing a Bahamian Listening Post

Nassau, the metropolis of the Bahama Islands, is crowned by a hill, and on the top of it lives a very kind friend to whom we had talked much of radio, somewhat to his incredulity.

Here was the ideal place to string the wires to heaven, and the regulation that any one operating radio in these Islands must pay a fee of 5 shillings a year did not seem an insurmountable objection.

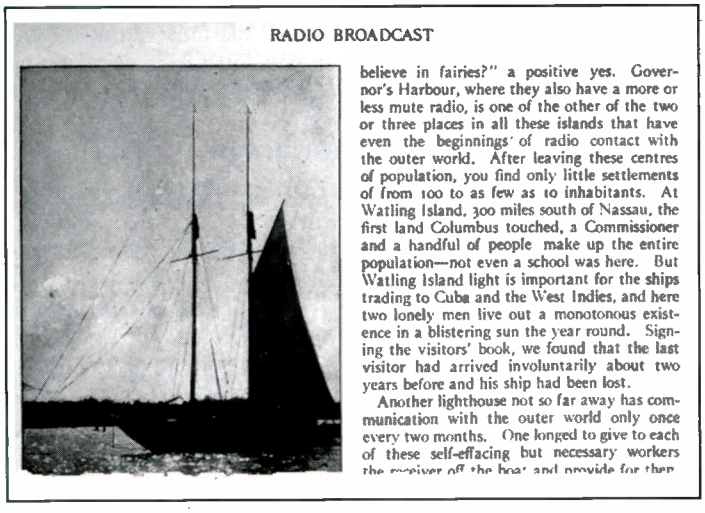
The idea that one could listen in Nassau to a concert being performed in Newark, New Jersey, and East Pittsburgh, Pennsylvania seemed to our friends what they called *a quaint piece of imagination.* However, they put the island carpenters at work, and in a few hours the enterprising Dan Smith had the wires stretching over the roof of Government House.

In the daytime in Nassau one can do little with radio — the static is so bad — but the work was finished by evening and our friends sat about curious to see if this box of magic would do anything wonderful. The final wires were connected. The anxious moment had arrived ... and produced not a sound. *A heart-breaking pause.*

Perhaps the wires were on the wrong poles of the battery. They were. A violent hum developed, and in a minute a clear voice was heard talking at Miami, and then Newark and Pittsburgh.

Hearing is Believing

Our Nassau friends were now convinced that we were not liars, and so began our experiments


RADIO BROADCAST

believe in fairies?" a positive yes. Governor's Harbour, where they also have a more or less mute radio, is one of the other of the two or three places in all these islands that have even the beginnings of radio contact with the outer world. After leaving these centres of population, you find only little settlements of from 100 to as few as 10 inhabitants. At Watling Island, 300 miles south of Nassau, the first land Columbus touched, a Commissioner and a handful of people make up the entire population—not even a school was here. But Watling Island light is important for the ships trading to Cuba and the West Indies, and here two lonely men live out a monotonous existence in a blistering sun the year round. Signing the visitors' book, we found that the last visitor had arrived involuntarily about two years before and his ship had been lost.

Another lighthouse not so far away has communication with the outer world only once every two months. One longed to give to each of these self-effacing but necessary workers the receiver off the boat and provide for them

Photo A. "The Sea Scamp, which carried 'the idea of listening' to the Bahamas," is how the caption writer described this picture in the May 1922 edition of *"Radio Broadcast."*
(Courtesy of Radio Broadcast magazine)

RADIO BROADCAST

Bimini is now the famous "Booze Port." I well remember landing in the primitive days of 1917. Few yachts stopped at the Biminis, and it was a great day when a stranger came. The whole village (about twenty people) squatted under the "Welcome Tree" and the news of the world outside was revealed to the natives. Where this kindly "Welcome Tree" was, now is a huge club-house dedicated to rum in its various forms.

No more delightful experience could be found than introducing the radio telephone to these simple people. One evening we had a crowd listening to W J Z, the aerial being run from a flagstaff put up at almost a minute's notice. When we told them that W J Z meant Newark, N. J., they accepted it with entire trustfulness. If we had said that the people they heard talking and singing were in the moon, I have no doubt that that, too, would have been accepted.

One thinks of the tropical islands of the world as delightful places where the weather is always fine, food easy to come by, as it grows without attention, and occupied by a people of contented minds enjoying an easy life.

The real thing is quite different. These islands of the Atlantic, as well as the Pacific, are often stormbound for weeks and travelling in small boats, the only means available, is uncomfortable and dangerous. The number

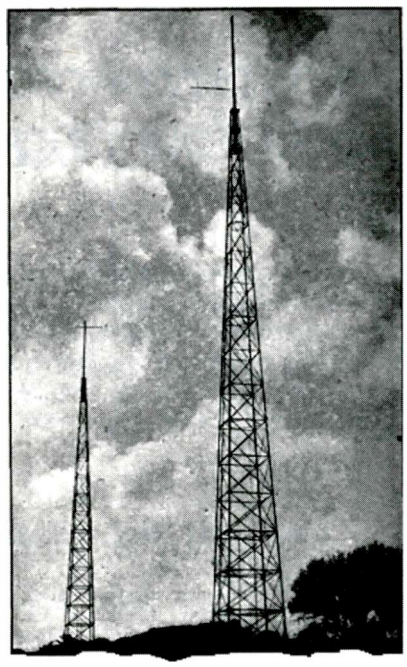


Photo B. The caption under this picture in *"Radio Broadcast"* magazine, reads: "The Radio Station At Nassau — Not equipped for radio telephone broadcasting, which is practically unknown in the Bahamas." *(Courtesy of Radio Broadcast magazine)*

in the Bahama Islands. The people here are soft-spoken, well ordered with ambition and real charm. One quality which very much amused us in the Out Island was their implicit faith in everything you could tell 'em. We thought they might shy at a tale of what radiotelephony could do, but all our stories were accepted at par.

If this stranger from the great world says he can pick out from the sky music, words, and the sound of the fiddle or the banjo, we know he can do it, and we ask him to put up the strings which connect with the sky and we will all keep quite still and listen.

All that was said came true, as they knew it would. Of all our friends at Dunmore Town (on Harbour Island), none knew of the radio telephone. The mysterious machine, which made dots and dashes, that but one man in the place understood, had no appliance for hearing the news and music in the ether by wireless telephone.

The promise of bringing to Earth opera singers from New York and Pittsburgh was much appreciated, as a child shows its pleasure for what it does not understand, but accepts as from the fairies. I am sure that all the inhabitants would answer to Barrie's *"Do you believe in fairies?"* a positive yes.

Receiving 'the Outer World'

Governor's Harbour, where they also have a more or less mute radio, is one of the other of the two or three places in all these islands that have even the beginnings of radio contact with the outer world, **Photo B**.

After leaving these centers of population, you find only little settlements of from 100 to as few as 10 inhabitants. At Watling Island, 300 miles south of Nassau, the first land Columbus touched, a Commissioner and a handful of people make up the entire population. Not even a school was here.

But Watling Island light is important for the ships trading to Cuba and the West Indies, and here two lonely men live out a monotonous existence in a blistering sun the year round. Signing the visitors' book, we found that the last visitor had arrived involuntarily about two years before and his ship had been lost.

Another lighthouse not so far away has communication with the outer world only once every two months. One longed to give to each of these self-effacing but necessary workers the receiver off the boat and provide for them a touch with all mankind during their lonely vigils, four hours off, four hours on, never a full night's sleep. At Bimini, the radio will soon take the place of the old Bahama "Welcome Tree."

Bimini is now the famous "booze port." I well remember landing in the primitive days of 1917. Few yachts stopped at the Biminis, and it was a great day when a stranger came. The whole village (about 20 people) squatted under the "Welcome Tree" and the news of the world outside was revealed to the natives.

The Magic of Radio

Where this kindly "Welcome Tree" was, now is a huge club-house dedicated to rum in its various forms. No more delightful experience could be found than introducing the radio telephone to these simple people. One evening we had a crowd listening to WJZ, the aerial being run from a flagstaff put up at almost a minute's notice. When we told them that WJZ meant Newark, New Jersey, they accepted it with entire trustfulness. If we had said that the people they heard talking and singing were on the Moon, I have no doubt that that, too, would have been accepted.

'Radio Will Be Literally a Godsend'

One thinks of the tropical islands of the world as delightful places where the weather is always fine, food easy to come by, as it grows without attention, and occupied by a people of contented minds enjoying an easy life. The real thing is quite different.

These islands of the Atlantic, as well as the Pacific, are often stormbound for weeks and travelling in small boats, the only means available, is uncomfortable and dangerous. The number of lives lost among these island people is by no means small. Money, clothes, and food are for the most part scarce. And, almost worse than all, the pleasures of life, the occupations after the day's work is finished, are few and far between. To such people a simple and cheap radio telephone will revolutionize their life.

From Nassau, where they have a good radio plant, they could broadcast to a thousand islands, giving not only amusement, but information of the utmost value, including, most important of all, storm signals which might easily save hundreds of lives.

To such a region as this lonely, starved for a touch of the pulsing life of the great world, radio will come as more than a convenience or another form of pleasure. To the people here it will be literally a godsend.

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	6155	All India Radio	Urdu
0000	4925	La Voz de Selva, Peru	SS
0000	9925	The Mighty KBC, via Nauen	
0000	5980	Radio Chaski, Peru	SS
0000	4915	Radio Daqui, Brazil	PP
0000	15160	Radio Exterior Espana, Spain	SS
0000	6155	Radio Fides, Bolivia	SS
0000	6000	Radio Guiaba, Brazil	PP
0000	17705	Radio Havana Cuba	SS
0000	5970	Radio Itatiaia, Brazil	PP
0000	5952	Radio Pio Doce, Bolivia	SS
0000	5025	Radio Quillabamba, Peru	SS
0000	9490	Radio Republica, via France	SS-Cuba
0000	4451	Radio Santa Ana, Bolivia	SS
0000	9760	Radio Sultanate of Oman	AA
0000	4965	Radio Verdes Florestas, Brazil	PP
0000	11665	Sarawak FM, Malaysia	Malay
0000	8989u	El Pescador Preacher, Nicaragua	SS
0100	12759	Armed Forces Net., Diego Garcia	
0100	11620	All India Radio	Urdu
0100	9730	IRIB, Iran	Turkish
0100	7280	Radio Farda, via Germany to Iran	Farsi
0100	11590	Radio Japan, via France	Hindi
0100	6135	Radio Santa Cruz, Bolivia	SS
0100	9640	Voice of Vietnam, via England	
0100	7506	WRNO, Louisiana	
0100	5050	WWRB, Tennessee	
0200	13695	All India Radio	Kannada
0200	9500	BBC	Farsi
0200	6160	CKZN, Canada	
0200	7555	KJES, New Mexico	
0200	6010	La Voz Concencia, Colombia	SS
0200	13600	Radio Sultanaate of Oman	AA
0200	7450	Radio Makedonias, Greece	Greek
0200	11710	RAE, Argentina	
0200	7335	Vatican Radio	AA
0200	12035	VOA/Deewa Radio, Kuwait Relay	Pashto
0200	9665	Voice of Russia, via Moldova	
0200	5110	WBCQ, Maine	
0300	11610	Adventist World Radio, via Nauen	
0300	5910	Al Caravan Radio, Columbia	SS
0300	5980	Channel Africa, South Africa	
0300	9690	China Radio International	
0300	11545	R. Salam Watandar, to Afghanistan	Pashto
0300	9820	Radio 9 de Julho, Brazil	PP
0300	5015	Radio Madagasikara, Madagascar	Malagasy
0300	7350	Radio Romania International	
0300	4790	Radio Vision, Peru	SS
0300	4796	UBC Radio, Uganda	
0300	7100	Voice of Broad Masses, Eritrea	AA, others
0300	9515	Voice of Turkey	
0300	9665	Voz Misionaria, Brazil	PP
0300	9955	WRMI, Florida	
0300	4055	Radio Verdad, Guatemala	SS/EE
0400	957-	Deutsche Welle, Rwanda Relay	
0400	15470	Islamic Rep. of Iran Broadcasting	
0400	6090	Radio Amhara, Ethiopia	Oromo
0400	4950	Radio Nacional, Angola	PP
0400	7330	Radio New Zealand Internatonal	
0400	7390	Radio Tirana, Albania	
0400	9585	Super Radio Deus e Amor, Brazil	PP
0400	15110	Tartarzan Wave, Russia	Russian +
0400	9435	Voice of Russia, via Armenia	
0400	9505	Voice of Sudan	AA
0400	3220	Radio Sonder Grense, South Africa	Afrikaans
0400	4840	WWCR, Tennssee	
0500	15170	BSKSA, Saudi Arabia	AA
0500	15150	Islamic Rep. of Iran Broadcasting	AA
0500	15400	Radio Dabanga, via Madagascar	AA
0500	9535	Radio France International	FF
0500	11970	Radio Japan, via France	JJ
0500	3215	WWCR, Tennessee	

UTC	Freq.	Station/Country	Notes
0600	4885	Radio Clube do Para, Brazil	PP
0600	5025	Radio Rebelde, Cuba	SS
0700	9580	Radio Medi Un, Morocco	FF/AA
0800	4990	Radio Apinte, Suriname	DD
0900	9700	Radio New Zealand International	
0900	9680	Radio Republik Indonesia	II
1000	9820	Beibu Bay Radio, China	Mandarin
1000	6003	Echo of Hope, S Korea to North	KK
1000	4755	Radio Imaculada, Brazil	PP
1000	4795	Radio Llpez, Bolivia	SS
1000	4810	Radio Logos, Peru	SS
1000	6025	Radio Patria Nueva, Bolivia	
1000	4755	The Cross, Micronesia	
1000	5040	Radi Libertad, Peru	SS
1100	15490	HCJB Global, Australia	
1100	2850	KCBS, North Korea	KK
1100	2245	Radio Northern, Papua New Guines	Tok Pisin
1100	4781	Radio Oriental, Ecuador	SS
1100	6173	Radio Tawantinsuyo, Peru	SS
1100	4020	Solomon Is. Broadcasting Corp.	
1200	12105	Adventist World Radio, Guam	Mandarin
1200	7410	Far East Broadcastng, Philippines	Khmer
1200	9960	Khmer Post Radio, via Palau	Khmer
1200	3260	NBC, PNG	Tok Pisin
1200	9580	Radio Australia	
1200	11605	Radio Free Asia, Tinian Relay	Tibetan
1200	11740	Radio Japan, via Singapore	JJ
1200	3325	Radio Republik Indonesia	II
1200	4750	Radio Republik Indonesia	II
1200	9525	Voice of Indonesia	various
1200	9677	Voice of Tajikistan	Tajik
1200	12000	Voice of Vietnam	Russian
1200	11665	Wai FM, Malaysia	Malay
1300	15310	BBC, Thailand Relay	
1300	15575	KBS World Radio, South Korea	
1300	9335	Radio Free Asia, via N. Marianas	Burmese
1300	9795	Radio Thailand	TT
1300	11850	Radio Veritas Asia, Philippines	VV
1300	15115	VOA, Thailand Relay	Mandarin
1300	11530	Voice of Russia, via Tajikistan	Hindi
1300	9930	World Harvest Radio, Palau	
1300	6130	Radio Nacional, Laos	Lao
1400	17630	China Radio International	
1400	15410	China Radio International	Mandarin
1400	17630	China Radio International	
1400	7200	Myanmar Radio	Burmese
1400	15505	Radio Bangladesh Betar	Urdu
1400	6165	Thazin Radio, Myanmar	Burmese
1400	9690	Voice of Nigeria	
1400	11990	Voice of Russia	Mandarin
1400	15825	WWCR, Tennessee	
1400	17775	KVOH, California (tests)	
1500	11880	FEBC, Philippines, via Armenia	Dari
1500	11835	Radio Australia	
1500	15490	VOA, Thailand Relay	
1600	17649	BBC, Ascension Is. Relay	
1600	15320	Bible Voice, via France	Farsi
1600	15205	BSKSA, Saudi Arabia	AA
1600	11600	Radio Libya	AA
1600	15370	Vatican Radio	Armenian
1700	11525	Bible Voice Broad., via Bulgaria	Farsi
1700	17775	KVOH, California	tests
1700	13650	Radio Kuwait	AA
1700	9370	Radio Pakistan	Farsi (irr)
1700	15570	Vatican Radio	
1700	9420	Voice of Greece	Greek
1900	11610	Adventist World Radio via Germany	AA
1900	12095	BBC, Seychelles Relay	
1900	11875	IBRA Radio, via Germany	Bambara
1900	11975	Radio Romania International	Romanian
1900	15630	Voice of Greece	Greek
2000	11830	Adventist World Radio, via France	
2000	11800	Deutsche Welle, Rwanda Relay	
2000	11775	Overcomer Ministry, via Nauen	
2000	15540	Radio Kuwait	
2000	15580	VOA, Botswana Relay	
2000	11785	Radio France International	FF
2000	11625	Vatican Rado	
2100	11740	All India Rado, via Goa	
2100	17505	Radio Exterior Espana, Spain	PP
2100	15300	Radio Romania International	SS
2100	15140	Radio Sultanate of Oman	AA
2100	11775	University Network, Anguilla	
2200	9445	All India Radio	
2200	11985	FEBA Radio, via Ascension	Hasinya
2200	11895	Radio Cairo, Eypt	
2200	7255	Voice of Nigeria	
2200	9565	Voice of Russia, via Albania	
2300	9500	Islamic Rep. of Iran Broadccastng	AA
2300	4955	Radio Cultural, Peru	SS
2300	4885	Radio Difusora Acreana, Brazil	PP
2300	6055	Radio Exterior Espana, Spain	SS
2300	4895	Radio Novo Tempo, Brazil	PP
2300	9665	Radio PMR, Moldovia	unid
2300	9740	Radio Romania International	SS
2330	6070	CFRX, Canada	

WPC3BOA, Pittsburgh, Pennsylvania

Hooked Again, Having a Ball Listening to Shortwave Broadcast Stations

When he was 12 or 13 years old, Lou Sander developed an interest in shortwave radio. It led him to become an avid SWL, a radio amateur for a while, and to pursue a degree in electrical engineering. It is a passion that has extended from the early 1950s to today. He is registered in the Pop'Comm Monitoring Station program as WPC3BOA and has been "hooked again" from his listening post in Pittsburgh.

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 Lou Sander, WPC3BOA

"As a youngster, I won every possible Boys' Life SWL award, including those for confirmed reception of stations in all 48 states."

I first listened to shortwave on my family's Philco 610 radio. In pre-television days, this had been the family's entertainment center. Somewhere in the early 1950s, it moved up into my bedroom and became my personal radio. The Philco covered several shortwave bands, and if you connected it to a wire antenna, you could hear a surprising number of shortwave stations. *(**WATCH and LISTEN:** to a vintage Philco 610, similar to the one Sander used as a kid, at <http://bit.ly/19KbY59>, **Photo A.** – KPC6PC)*

I was fascinated by the shortwave broadcast stations I could hear, and by the ham radio operators — at the time using AM, and therefore intelligible on a simple receiver — who were able to converse with each other across hundreds or thousands of miles. This was in the days when making a long distance telephone call was a major undertaking, involving lots of money and one or more long distance operators.

Listening to the Philco led me to build my first receiver, which was better than the Philco on the ham bands, but didn't cover any shortwave broadcast bands.

1936 Philco 610 tombstone tube radio

Photo A. As you will see in this YouTube video, the Philco 610 earned its place in the receiver genre known as the "tombstone radio" for good reason. As a kid, Lou Sander, WPC3BOA, cut his teeth on the shortwave bands with one of these classic tube radios. Watch and listen at <http://bit.ly/19KbY59>. *(Internet screen grab)*

Hallicrafters SX-28 Shortwave Receiver

Photo B. "When I was in junior high or high school," WPC3BOA writes, "I bought a Hallicrafters SX-28A, which had been one of the premiere receivers in the immediate postwar period." See a YouTube video of the receiver at work at <http://bit.ly/15evwjL>. *(Internet screen grab)*

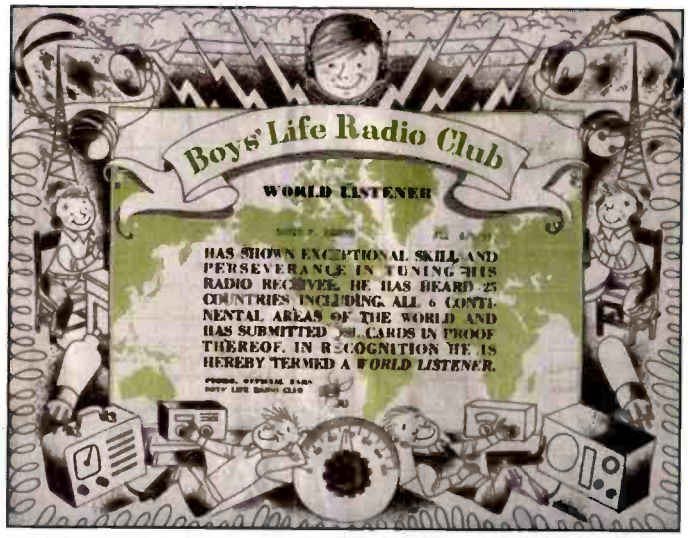


Photo C. The Boy's Life's *"World Listener"* was among the top awards the magazine issued to qualifying shortwave monitors. A young Lou Sander received the honor as an avid SWL. The certificate is dated June 9, 1955. *(Courtesy of WPC3BOA)*

When I was in junior high or high school, I bought a Hallicrafters SX-28A, which had been one of the premiere receivers in the immediate postwar period. It wasn't a modern radio at the time, but it was a pretty good second choice. ***(WATCH and LISTEN:** To a Hallicrafters SX-28 receiver at <http://bit.ly/15evwjL>, **Photo B**. – KPC6PC)*

While learning Morse code and studying for my ham license, I pursued shortwave listening on the SX-28A. *Boys' Life*, the official magazine of the Boy Scouts of America, had a shortwave column in those days, and offered awards for logging stations in various geographical areas, as well as awards for listening confirmed by QSL cards for the stations involved.

I won every possible *Boys' Life* award, including those for confirmed reception of stations in all 48 states — Alaska and Hawaii had not yet been admitted to the union.

Probably his highest award was the *World Listener* certificate, **Photo C**, for confirmed reception from 25 different countries on all six continents.

In March 1955, at age 15, I earned my FCC license as an amateur radio operator, with callsign WN3BOA. Less than a year after being licensed a Novice, I

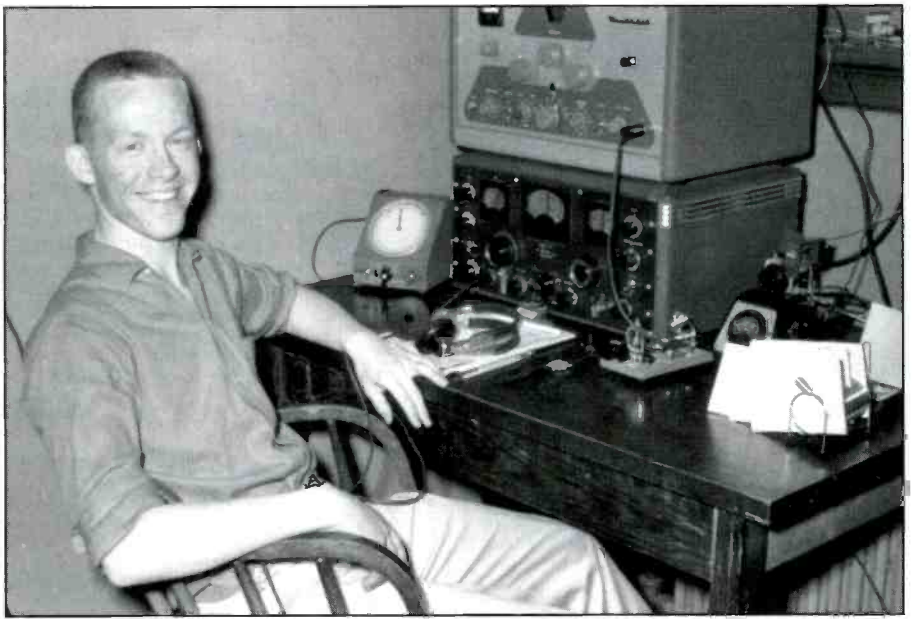


Photo D. This photograph was taken after Lou Sander — now WPC3BOA — had completed the 1957 ARRL November Sweepstakes contest. His Heathkit DX-100 sits on top of the classic Hallicrafters SX-28A Super Skyrider receiver. *(Courtesy of WPC3BOA)*

passed the test for a higher class of FCC license, and became W3BOA. By mowing lawns in the summer, I earned the money — $169.95, as I recall — to buy a Heathkit DX-100 transmitter kit, **Photo D**. Becoming a radio amateur marked the end of my shortwave listening, and the beginning of a 10-year period of ham operation.

Years later, I had an encounter with shortwave listening when I bought a Radio Shack DX-399. It was September 2002. A few nights with the radio and *Passport to World Band Radio,* the SWL equivalent to TV Guide, **Photo E**, and I was hooked again, having a ball listening to shortwave broadcast stations, and even to a few ham operators. I bought a second, more upscale, radio, a Radio Shack DX-398, which is a rebranded Sangean ATS-909, *(**WATCH and LISTEN:** To the RadioShack® DX-398 in action on shortwave at <http://bit.ly/14Zkl8H>, **Photo F**. – KPC6PC.)* The DX-399 is a rebranded Sangean ATS-606.

Some of the same stations are still on the air as in the 1950s, though some of their names and even their countries have changed. The BBC is still around, as are Radio Moscow (now called Voice of Russia) Radio Ankara Turkey (now Voice of Turkey), and HCJB, the Voice of the Andes.

New entities, here because of progress and the change in the global political scene, include Deutsche Welle, Radio Taipei International, China Radio International, and many stations from the Arab world.

Broadcasts in English and Spanish are as common as they were in the 1950s, and we now have many in Arabic, Chinese, German, and Japanese, as well. These latter were rare or totally absent back in my *old days*. WWV, WWVH, and CHU are still ticking out their super-accurate time signals. Since I first heard it, WWV has sent out more than 1.5 billion ticks — *every one of them flawlessly accurate!*

The new radios are truly amazing. The entire DX-399 is smaller than the power transformer on the old Philco or SX-28A, and is more sensitive and selective than either of them. Electronics has *really* advanced in 50 or 60 years.

*(**IN DEPTH:** For more on the radio experiences of Lou Sander, visit his website at <http://bit.ly/1cdmaUA>. – KPC6PC)*

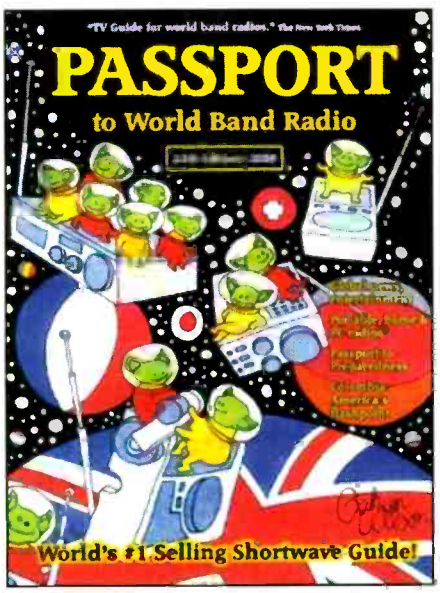


Photo E. WPC3BOA describes the popular *"Passport to World Band Radio"* as "the SWL equivalent to TV Guide." *(Internet screen grab)*

Photo F. The RadioShack® DX-398 is a shortwave radio that got Lou Sander hooked on SWLing — *all over again.* Watch and listen to the DX-398 on the shortwaves at <http://bit.ly/14Zkl8H>. *(Internet screen grab)*

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

As always, we'll pick a respondent at random for a year's free subscription or an extension of an existing subscription as thanks for your participation — so **don't forget to fill in your name, mailing address, and other contact information.**

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

Last, but not least: You can take this survey online. Link to <http://svy.mk/15pQPZN>.

As we head into the holiday season, do you expect to be buying communications gear for your listening post or for that of someone else? (Choose one)

Yes 1
No 2
Not sure 3

When was the last time you purchased new (or used) gear or accessories for your SWL or scanning shack? (Choose one)

Within the last year 4
In the last two years 5
Within the last five years 6
Within the last decade 7
Can't remember 8
Never 9

If you had $1,000 to put toward your communications hobby, on what would you spend it? (Choose all that apply)

New conventional receiver 10
New software-defined receiver 11
Used vintage receiving gear 12
Computer for dedicated on-line broadcast streaming 13
Antenna and/or tuning accessories 14

If the previous question did not touch on gear for your specific interests, what gear would that be? (Please use the comment line)

How much of a role does the U.S. economy play in your communications gear buying decisions? (Choose one)

A major role 15
Somewhat of a role 16
A small role 17
No role whatsoever 18

Take This Reader Survey Online

You can now participate in this reader survey via the Internet by linking to the *Pop'Comm November 2013 Reader Survey at <http://svy.mk/15pQPZN>*. It's quick and easy.

For November, the Envelope, Please!

For participating in the *Pop'Comm Reader Survey*, the winner of a free subscription or extension is **Robert J. Rex, WPC9REX, of Griffith, Indiana** who writes he started shortwave listening in December 1949 when he got a Zenith Transoceanic receiver for Christmas. *Congratulations, Robert. Continued success on your 60+ years of monitoring! – **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
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

Comments:

_____
_____
_____

Name _____ **Call Sign** _____

Address _____

City _____ **State** _____ **Zip** _____

E-mail _____

Cold War Tumult Brings Forth a World-Class Airport

By Bill Hoefer, KPC4KGC

"Today, Orlando International Airport (MCO) is the 33rd busiest international airport in the world. Only 12 U.S. airports are busier."

Reflecting just days after the 52nd anniversary of the beginning of the Berlin Wall, I'm reminded that *The Wall* was *The Symbol* of *The Cold War.* This month marks the 24th anniversary of the Wall's completion.

The late 1950s through 1960s were troubling times for the U.S. The Korean War was ending, Francis Gary Powers was shot down over the Soviet Union in his U2 *Dragon Lady* spy plane, **Photo A**; the war in Vietnam was beginning — then, this Berlin Wall is built. After both Powers, **Photo B**, and the Wall came a short piece of history known as the Cuban Missile Crisis.

In October 1962, just over a year after the Wall was built, the Soviet Union sent missiles to Cuba, less than 100 miles from our soil. President Kennedy was treading on thin ice — trying to keep us safe and avoid an all-out nuclear war, at the same time without blinking to Soviet Union Secretary Nikita Khrushchev, **Photo C**.

It worked. However, most military bases in Florida, and yes, around the country, went on high alert. I wasn't quite 10, living in Orlando, when this happened. But I can still remember vividly the B-52 bombers, KB-50 and KC-135 tankers, F-100 and 105 fighters flying into McCoy Air Force Base on the south side of the city.

As a nine-year-old, I didn't know what was happening, but I could see concern in my family's eyes. Had anyone had modern scanners back then it would have been a field day listening to the non-scrambled transmissions.

Changes, a Decade+ Later

Move ahead 13 years and the keys to McCoy AFB were handed over to the city of Orlando and would subsequently become Orlando International Airport, **Photos D** and **E**. While the city was already operating Herndon Field just east of downtown Orlando, that airport could not handle the day-to-day operations of commercial jets.

From the mid-1960s until final handover of

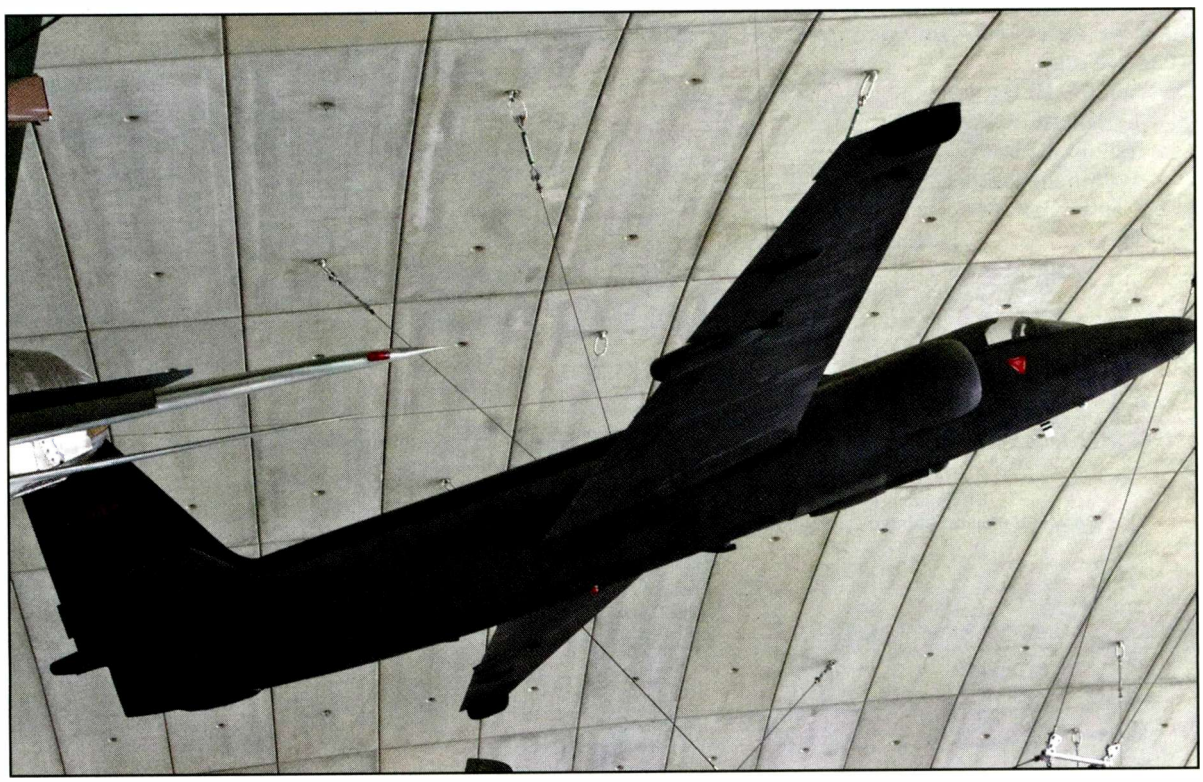


Photo A. This U2 spy plane is on display at the Imperial War Museum, Duxford, England. *(Courtesy of Oxyman via Wikimedia Commons)*

Photo B. U2 designer Kelly Johnson, left, appears in the picture with *Dragon Lady* pilot Frances Gary Powers. *(Courtesy of Wikimedia Commons)*

the base, civilian commercial aircraft utilized Herndon, as only this airport could handle the new Boeing 707, Douglas DC-8, and Convair 800 passenger jets. Ultimately, all commercial operations were transferred to McCoy and Herndon became primarily a non-commercial airport.

Bigger Has to Be Better

As the years progressed, Orlando International had to expand. With the opening of Walt Disney World, Universal Studios, SeaWorld, Baseball World, and Circus World — *yes, the last two are gone* — passenger *de-planements* exploded. The two runways couldn't handle the traffic. These runways were also too close to allow simultaneous landings during inclement weather, as greater separation had to be employed.

Also, aircraft landing to the south had to wait until they passed the Orlando VORTAC at Herndon just six miles north. Then they had to do a slam-dunk to land, dropping 2,500 feet in that short distance. *(**REFERENCE:** For a glossary of aviation terms, link to <http://bit.ly/18dcS6U>. – KPC4KGC.)*

Over the years, two additional parallel runways have been added on the east side of the airport. Runway 17R/35L is 10,000 feet by 150 feet and 17L/35R is 9,000 feet by 150 feet. The original runways 18L/36R and 18R/36L, both still in use, are more than 12,000 feet in length by 200 feet, so few aircraft can use this airport. *(**NOTE:** In the 1980s two supersonic Concorde jets landed simultaneously on runways 18L and 18R. One was operated by British Airways and the second by Air France. A photograph of the event was carried in the Orlando Sentinel newspaper. To my knowledge it is the only time that such a dual landing ever occurred — anywhere. – KPC4KGC.)*

The Situation Today

In spite of the size and complexity of Orlando International, very few aircraft are based there. The most recent count reveals only 23 aircraft reside there permanently: 11 single- and multi-engine prop planes, 11 jets and one helicopter.

Today, Orlando International Airport (MCO) is the 33rd busiest international airport in the world. Only 12 U.S. airports are busier. Atlanta Hartsfield (ATL) is the busiest.

What Can You Hear?

Grab the scanner and tune in these frequencies:

Orlando tower: 118.45, 124.3, 253.5 MHz

Orlando ground:

- 121.8 West
- 126.4 East
- 275.8 East-West

Orlando approach:

- 119.4 (061-180 4,500 and Below)
- 119.4 (181-310 5,500 and Below)
- 120.15 (181-359 Above 5,500)
- 121.1 (311-060 5,500 and Below)
- 123.85, 124.8 (000-180 Above 5,000)
- 125.55, 134.05, 284.7 (181-359 Above 5,500)
- 307.0 (000-180 Above 5,000)
- 339.8, 351.9 (311-060 5,500 and Below)

Orlando departure:

- 119.4 (061-180 4,500 and Below)
- 119.4 (181-310 5,500 and Below)
- 120.15 (181-359 Above 5,500)
- 121.1 (311-060 5,500 and Below)
- 124.8 (000-180 Above 5,000)
- 284.7 (181-359 Above 5,500)
- 307.0 (000-180 Above 5,000)
- 351.9 (311-060 5,500 and Below)

Clearance Delivery: 134.7, 341.7
AR Ops: 148.8, 41.5
D-ATIS ARR: 121.25

Photo C. President Kennedy meets in the Oval Office with General Curtis LeMay and reconnaissance pilots who flew the Cuban missions. Third from the left is Major Richard Heyser, who took the photographs on which the Cuban missiles were first identified. *(Courtesy of the CIA)*

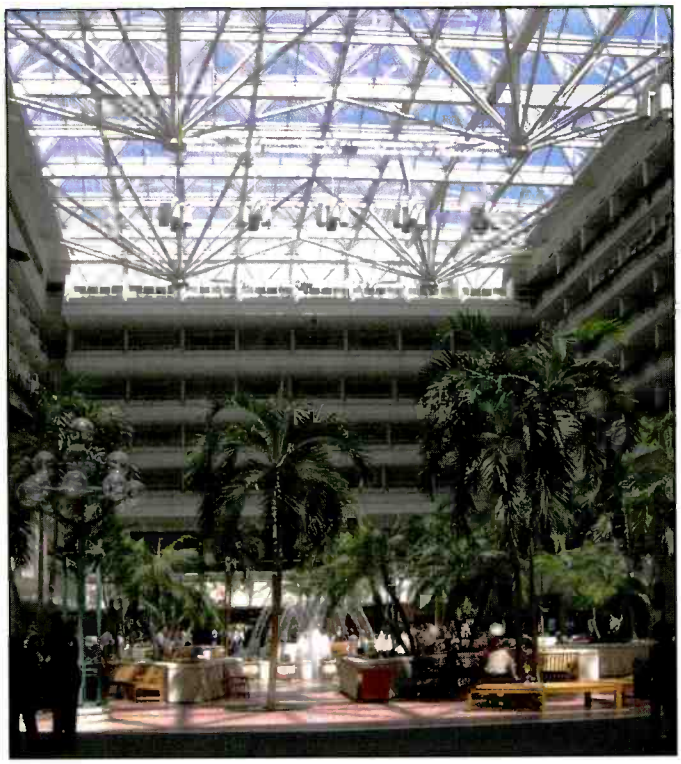


Photo D. The modern Orlando International Airport — located at 28.431° -81.308° — features a large atrium.
(Courtesy of Larry D. Moore, via Wikimedia Commons)

Class B:
- 119.4 (061-180 4,500 and Below)
- 119.4 (181-310 5,500 and Below)
- 120.15 (181-359 Above 5,500)
- 121.1 (311-060 5,500 and Below)
- 284.7 (181-359 Above 5,500)
- 351.9 (311-060 5,500 and Below)
- (RYS 18L/36R and 18R/36L): 124.3

IC Class B:
- 124.8 (000-180 Above 5,000)
- 307.0 (000-180 Above 5,000)
- (RYS 17L/35R and 17R/35L): 118.45

UNICOM: 122.950
Navigation aids nearby are:
- ORL – Orlando, 112.20 MHz, 168° 6.9
- ORL – Herny (LOM), 221 MHz, 311° 8.1

Listen to ORL Air Traffic Live Online

*Check out this link to listen to air traffic at Orlando International Airport via Live ATC: <http://bit.ly/14SemT8>, **Photo F**.*

Who's Onboard

Current airlines operating there include:

Aer Lingus, Aeromexico, Air Canada, Air Transat, AirTran, Alaska Airlines, American Airlines, Avianca, Avianca El Salvador, Bahamasair, British Airways, Can Jet, Caribbean Airlines, Copa Airlines, Delta Air Lines, Delta Connection (Compass Airlines, Endeavor Airlines, Express Jet, GoJet Airlines, and Shuttle Airlines), Dutch Antilles Express, Frontier Airlines, Gol Airlines, JetBlue Airways, LAN Airlines, Lufthansa, MetJet, Republic Airlines, Silver Airways, Sky West Airlines, Southwest Airlines, Spirit Airlines, Sun Country Airlines, Sunwing Airlines, TAM Airlines, United Airlines, U.S. Airways, Virgin America, Virgin Atlantic Airways, Volaris, WestJet, and Whitejets.

Photo E. Looking from above, here's a USGS digital picture of Orlando International Airport, Orange County, Florida.
(Courtesy of USGS)

You would think that the proximity of Florida to the Bahamas and Mexico, these facilities would be the top international destinations, however they rank 8th and 9th. The top five international connections are London (Gatwick), U.K.; Toronto, (Pearson) Canada; Manchester, U.K.; Panama City, Panama; and Frankfurt, Germany.

All of this in the last 41 years.

Scanning @ KPC4KGC

I live in the hills of Virginia in Front Royal (FRR), some 57 nautical miles west of Washington Dulles (IAD). That's the closest commercial airport, so you'd think that my aviation scanning would be scant at best, but you'd be wrong.

Just playing around, I've heard activity on 33 VHF frequencies, not including emergency — 121.5. Granted, most are

at altitude talking to both Washington (ZDC) and Indianapolis (ZIN) centers. But here's the strange part: I'm using only the whip antenna supplied with the unit.

I'm planning on installing a band-specific external antenna next spring. In fact, I'll be putting up three of them — one for the scanner, one for my 2-meter amateur radio gear, and a third for HD FM.

Let's Scare a Retiring Controller

As you might imagine, over my years in ATC I've seen numerous aircraft. The first time I saw an AV8B Harrier was at Patrick AFB, Florida (COF) in 1973. I'd only been at my first assignment just a few months and I'd gotten used to the telltale sounds of various aircraft, and could even identify them. I knew when the EC-135s were starting, the UH-1s, the last remaining C-118 (Douglas DC-7) in the USAF inventory, and the NASA BE-18.

I was next to my dorm washing my Karmann Ghia and kept hearing some jets that not only I didn't recognize by their whine, but the sound was coming not from the flight line, but toward the beach to the east.

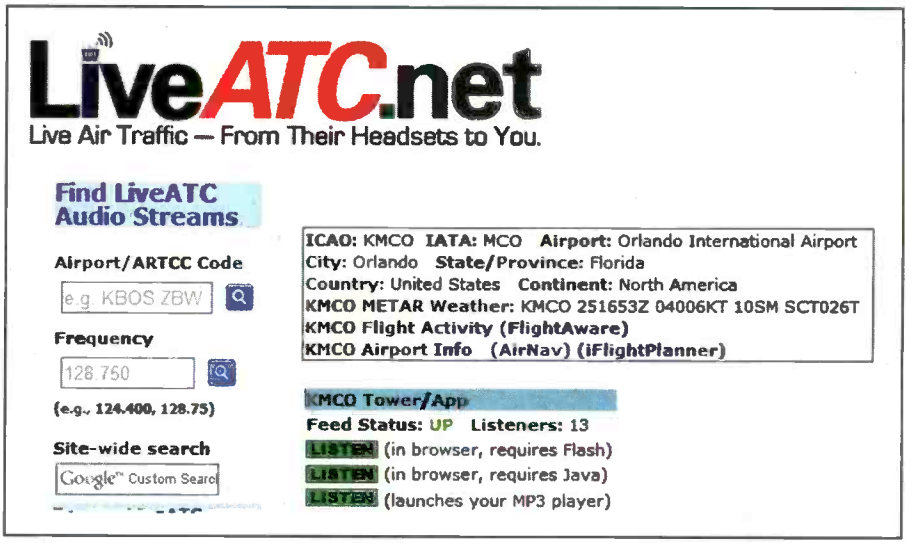


Photo F. Listen to live air traffic transmissions at Orlando International Airport via *LiveATC.net* at <http://bit.ly/14SemT8>. *(Internet screen grab)*

I kept walking to the end of the dorm and after two or three trips I saw six Harriers, **Photo G**, on short final to runway 20, doing about 15 knots. *That floored me.*

Move ahead about a year and a flight of two came in. After doing a few turns in the pattern, the lead pilot requested to separate into single ship flying. The controller in the tower approved it, inventing some phraseology not found in our handbook — *FAAO 7110.8.*

A few more turns in the pattern and the lead aircraft requested to hover midfield. Again approved — and with more phraseology invention — and the wingman was told to make a restricted low approach. Wing said he could maintain

Photo G. A BAE McDonnell-Douglas AV8B Harrier jet hovers at the world-renowned Oshkosh AirVenture air show in 2003. *(Courtesy of Paul Maritz via Wikimedia Commons)*

separation and requested to hover. Again approved and with more invention.

These two are hovering, in flight formation, when the lead aircraft rotated and went nose to nose with his wingman. They now do an aerial "ballet," basically playing tag with each other.

While this was going on, the chief of the approach, who was preparing for retirement, was inside the RAPCON cleaning nuts and bolts of a Corvair engine he was overhauling in the facility parking lot.

He backed through the door heading to the dismantled car, looked up to see two jets in flight and nose-to-nose over the runway. Nuts and bolts go everywhere. It took us a while to calm him down. I think he found all of the hardware.

*(**NOTE:** Reminds me of a time I thought an airplane was going to crash at Orlando Executive just two years earlier. But that's a story for another month. – KPC4KGC.)*

Wheels Down

That's it for this month. Until next time, keep your feet on the ground, your antennas pointing up, and let me know what you hear. ***– KPC4KGC.***

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

Here are some basic frequencies in MHz to keep handy:

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

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

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

Photo H. Whitejets is one of many commercial airlines flying in and out of Orlando International Airport on a daily basis. See the accompanying *Plane Sense* for a full rundown of carriers. *(Courtesy of Wikimedia Commons)*

The 'Original Digital' is Still Going Strong

By Kirk A. Kleinschmidt, KPCØZZZ/NTØZ

"Even in the 21st Century, the advantages of Morse are still going strong and the bands are filled with CW activity from every state and every corner of the globe."

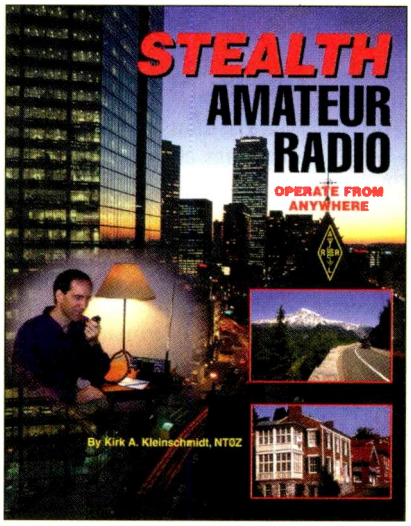
If you haven't been licensed very long, take my word that HF DX has been pretty minimal the past few years. And as bad as it's been, it may get even worse going forward, perhaps for a very long time. Some solar scientists are suggesting that the 2013-2014 winter season, as dismal as it is, may produce the best HF DX propagation we'll see over the next 50 years. Because of those ominous warnings — and because HF DX propagation may soon fall off a cliff and stay there — I have been doing more DX contesting than usual to boost my band totals or (please!) snag the last two zones I need for WAZ.

In a recent contest — CW one weekend, SSB the other — stations from every continent except Antarctica were logged, including two "all time new" DXCC entities. Highlights included Senegal on three bands, Siberia via fluttery transpolar propagation (haven't heard that in many moons), ZL, KH6, and KL7 on 40 meters, almost every Caribbean entity except Guantanamo Bay, and no fewer than six stations in the Canary Islands, including one on 80 meters. It seems EA8 always has propagation.

These are solid results for several hours' of QRP contesting, especially with indoor antennas. But if you think the results were evenly split between the two weekends, you'd be wrong. More than 125 QSOs took place on CW, while only four were made on SSB. Even in today's "no-code" era, Morse code gets through with much less power.

Because the brain applies its own "internal DSP" when receiving CW, and because CW signals occupy a tenth of the bandwidth of SSB signals (250 Hz vs. 2.5 kHz), Morse code has a 12 dB signal-to-noise ratio (SNR) advantage over SSB. That means that a 100-watt CW signal has the "talk power" of a 1,500-watt SSB signal. And there are other advantages, too, such as easy-to-build equipment, reduced spectrum congestion, access to exclusive band segments for U.S. hams (those CW-only, 25-kHz subbands are golden DX nuggets), and so on.

Surprisingly, even though the code is no longer required for licensure, Morse activity on the bands hasn't diminished one bit, and CW contest activity is at historic levels. If you'd like to participate, maintaining your own historic link to radio's most basic technology, here are some inside tips and expert resources.



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>.

Dit-Slingin' Hardware

With the exception of keyboards and computers, the devices we use to send code are pretty much unchanged since Marconi's era. *A key is a key.*

What matters is how you use it. That said, paddles and electronic keyers are used by the vast majority of proficient CW users for good reason: they tend to work best. Straight keys are slow and fatiguing to use. Bugs, unless used by experts, tend to produce sloppy, hard-to-understand code — as evidenced by a lot of horrible on-air Morse-mangling.

PCs are great for code practice chores, but unless you have special needs, save them for contesting (macro exchanges) and ultra-high-speed code after you've mastered the art. And code readers? Just forget about them. They can't help you learn the code, which is primarily an ear-brain process and not an eye-brain process — excepting hearing-challenged ops whom learn the code visually or by touch.

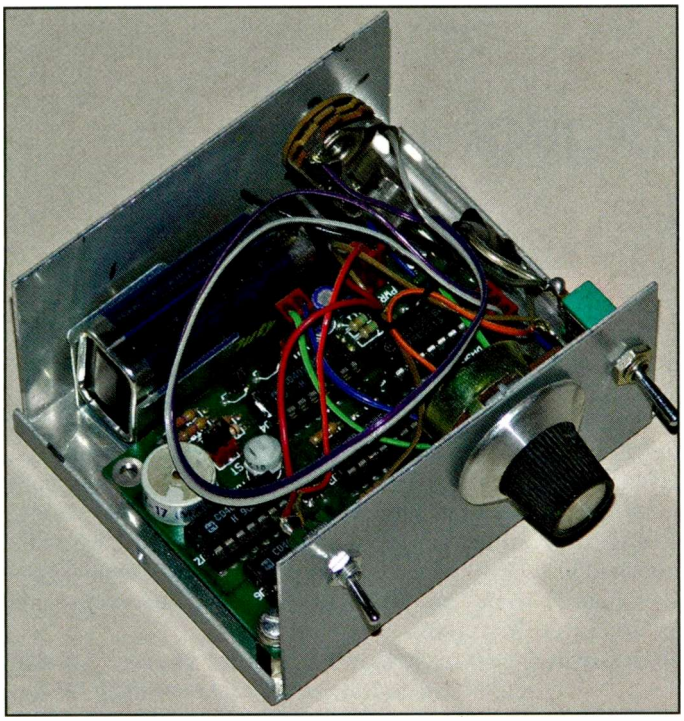


Photo A. The keyer at NTØZ is far from glamorous, but it sends great Morse, has only three controls (power, speed, and tune), was a gift from a mentor, and it's required only a handful of 9-V batteries in the past 20+ years. The printed circuit board, a kit from A&A Engineering, was a gift from former *QST* Technical Editor Paul Pagel, N1FB. Although most modern radios have built-in keyers, external units such as this one have certain benefits — built-in sidetone oscillators, for one — that make them true Swiss army knives. *(Courtesy of KPCØZZZ/NTØZ)*

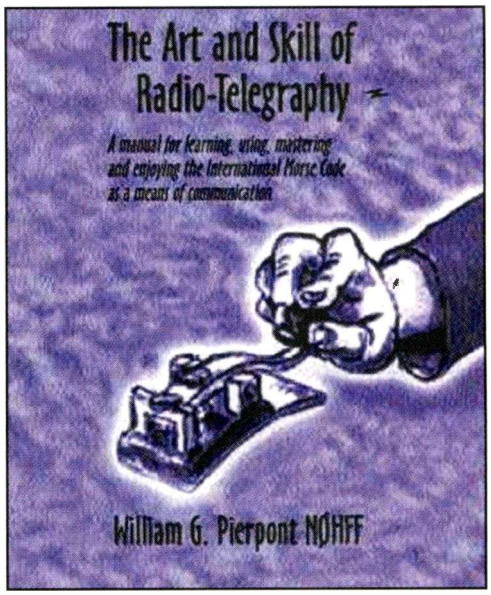


Photo B. *The Art and Skill of Radio Telegraphy,* by William G. Pierpont, NØHFF (SK) is a 241-page homage to learning, using, and celebrating Morse code. A free download in PDF format, NØHFF's book is a must-read for anyone interested in CW. Get a copy at <http://www.tasrt.ca> or <http://bit.ly/18Wc0G3>. Hard copies are available for purchase, as well. *(Courtesy of KPCØZZZ/NTØZ)*

Most hams use single- or dual-lever paddles with an electronic keyer, either external or built into their rigs. Push the paddles or levers one way for *dahs,* the other for *dits*. It's the user's choice. The electronic keyer, **Photo A**, handles speed, weighting (the exact timing relationship of dits and dahs), and mode, which, in this context is the exact nature of how inputs from various paddle types are processed.

In all cases the paddles *talk* to the keyer, the keyer *talks* to your transmitter, and Morse comes out.

As you learn about paddles and keyers you'll see references to Mode A, Mode B, iambic, squeeze keying, and so on. These refer to specific keyer modes, and there are several main variations in how specific keyers process inputs from single- and dual-lever paddles.

Discussing these nuanced differences at length isn't really useful, as these "feel-based" keyer characteristics are best experienced by each individual.

Most keyers can handle most, or all paddle modes, so you'll want to explore them with an experienced CW helper, or after you have a keyer and a set of paddles. Most ops develop a strong preference early in the learning process. You probably will, too.

If you ask six CW ops about their favorite keyers, paddles, and settings, you'll get seven different answers. Keys and paddles range from crude to elegant, large to tiny, and fixed to portable. They can cost anywhere from $20 to $2,000. Many paddles are factory-made, while some are hand-crafted. Interestingly, some mass-produced paddles are fantastic, and some hand-made, kilobuck keys aren't.

The best paddle for you depends on your experience, the way you learned the code, and on what hardware, the anatomy of your hand and arm, the environment in which the key will be used, and so on. It's highly personal, and there's no one "best paddle." Thankfully, good code can be sent with most available models, so you'll at least have a "daily driver" to use while you look for the "perfect sports car."

The Right Kind of Education

Most hams, me included, learned Morse code the wrong way, and it has cost us dearly. So, if you haven't begun your learning process you can do yourself a huge favor by not learning the code by training yourself to remember code elements as a series of patterns — the way you'd learn it from a book or from the Boy Scouts.

Morse code is an auditory language. It's an ear-brain process consisting of musical sounds and phrases. If you learn it as a collection of dot and dash patterns memorized from a chart or database, you'll add an extra, unwanted, step to your neurological Morse code process that will greatly hamper your speed and fluency.

Most people who learn Morse this way have difficulty moving beyond seven to 10 words per minute, which was sufficient to pass the 5-wpm Novice class Morse proficiency test back in the day, but far short of true on-air fluency.

Even after 35 years, my speed bump, because of my "extra translation step," is about 22 wpm for conversations and about 35 wpm for short contest exchanges. So, if you come across a table of Morse code dot-and-dash patterns in a book — look away. *Seriously!* You want to speak Morse effortlessly, and not as a second language that has to be meticulously translated letter by letter, word by word.

Learning Morse the right way comes down to choosing between two big names: Farnsworth or Koch. Each developed

THE AMERICAN RADIO RELAY LEAGUE, INC.

Headquarters, Newington, Connecticut, U. S. A.

Certificate of Code Proficiency

By this certificate and any appended endorsements to show additional qualifications, the Communications Department of the American Radio Relay League expresses its recognition of merit and progress in code proficiency on the part of

KIRK KLEINSCHMIDT, WDØBDA

who has this date demonstrated skill in the basic art of the true amateur, reception by ear of the International Morse or Continental Code. Our examination of copy submitted as his work in copying by ear indicates absolute accuracy in his performance at a speed of 10 words per minute for a period of at least one minute of plain-language automatic tape-sent text averaging five characters to the word, which we hereby certify. Date of the A. R. R. L. transmission from W1AW, November 17, 1977.

Endorsement Here

Communications Manager, A.R.R.L.

Photo C. This ARRL Certificate of Code Proficiency was my first piece of "shack wallpaper" other than a growing collection of QSL cards. I still remember how excited I was when, on a cold and snowy November day in 1977, I managed to squelch my nervousness enough to qualify for this 10-wpm certificate — now adorned with water spots of indeterminate origin. These "Qualifying Runs" (on-air Morse code tests) are still transmitted monthly by ARRL Headquarters station W1AW and a companion West Coast station, and you can still get a proficiency certificate of your own. See "Resources for the Aspiring and Rusty CW Operator" to find a link to the Qualifying Run schedule. *(Courtesy of KPCØZZZ/NTØZ)*

an excellent system for effectively learning Morse code and using it fluently after mastering the basics, **Photo B**.

The systems are similar, so you can choose one or both — just don't use the "Boy Scout method" or you'll pay the price down the road.

Farnsworth and Koch teach the code at full speed. Sounds only. Only the spacing is adjusted between full-speed letters and words, or limiting the number of characters learned at full speed before adding another. Each system is way better than learning the code visually or at slow speeds.

Right from the start, the Farnsworth and Koch methods help you understand "*didahdit*" instead of "dot dash dot." You internalize the character as a complete sound, not a series of disconnected elements that have to be painstakingly translated. By learning the code the right way, higher speeds and greater fluency are assured.

There are many Farnsworth and Koch learning resources — tapes, CDs, online, and on-the-air — both free and paid, **Table 1**.

One way to gauge or improve your code proficiency is with on-air practice bulletins, which add completely new material to your pre-recorded training. The ARRL's bulletin station, W1AW, transmits code practice bulletins on multiple frequencies every day, so it's easy to find fresh practice material.

You'll have to have access to *QST* to confirm what you've just heard as the practice text is taken from a recent issue. But you can receive Morse code proficiency certificates to chart your milestones, **Photo C**.

Some local clubs transmit Morse practice materials on VHF or UHF repeaters, so check with your nearby amateur radio clubs to see what's available. Some clubs also have code classes for both the beginner and for "speed improvement." They also may have "code helpers" — *Elmers* — or some means to pair you with others who are learning the code.

With all of this talk about properly receiving Morse code, make sure you put enough time and resources into properly sending the code, too. If you don't have access to in-person coaches who can be invaluable in this part of the process, make sure you record your own sending or QSOs to hear what you're actually sending, as opposed to what you think you're sending.

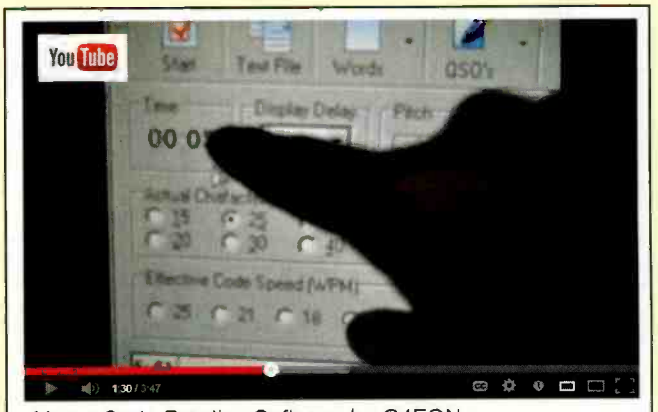
Even experienced CW ops are some-

Resources for Aspiring and Rusty CW Operators

Here are some sources for getting help in learning or polishing your Morse code skills.

Learning the Code:

- AC6V's exhaustive list of Morse-related stuff. It's a bit wooly, but it's *gigantic* <http://bit.ly/15di88D>.
- The ARRL's "Learn Morse Code" site has links to articles, courses, trainers, books, and tools all aimed at helping you learn Morse <http://bit.ly/13TGTN3>.
- The NW7US International Morse Code Resource Center. Propagation guru Tomas Hood, NW7US, is also a Morse aficionado, and his site is filled with highly curated information and links about learning and using the code <http://bit.ly/18g20oF>.
- Ray Goff, G4FON's, free *Koch Method CW Trainer* software, is now in version 9. Koch-style trainer with optional QSB, QRN, chirp, and drift. Very nice, and the price is right. Works in most versions of Windows (author tested in XP) and reportedly in Linux via Wine <http://bit.ly/12ESaOt>. *(**WATCH and LISTEN:** To the G4FON Koch Method CW Trainer at <http://bit.ly/1dJdQh2>, **Photo D**. – KPCØZZZ/NTØZ)*
- The *Learn CW Online* site by Fabian Kurz, DJ1YFK, hosts a comprehensive Koch-style trainer with speed-building and QSO simulation features. Free with simple registration. <http://bit.ly/13THyOE>.



Morse Code Practice Software by G4FON

Photo D. This YouTube video <http://bit.ly/1dJdQh2> gives the viewer a pretty good overview of the G4FON *Koch Method CW Trainer* <http://bit.ly/12ESaOt>. It's very helpful in explaining the program's capabilities, and the best part is *the downloadable program is free.* For the video, thank David McCoy, KF6UME, of San Clemente, California. *(Internet screen grab)*

Organizations:

The North American QRP CW Club is dedicated to low-power hamming and helping its members learn and become proficient in Morse operation. Membership is free for hams and SWLs. The club boasts 6,500 members in all states and 90 countries. Features include awards, contests, challenges, nets, and more <http://bit.ly/17hpP0r>.

The International Morse Preservation Society (FISTS), founded in the U.K., recently celebrated its 25th anniversary. The Society, with a global membership in the thousands, encourages CW operation by established and beginning ops. Its sole membership requirement? "A love of Morse code and a concern for its perpetuation," <http://bit.ly/18g2pHI>.

On-Air Code Practice:

ARRL Headquarters station W1AW transmits daily (Monday-Friday) code-practice sessions on 1.8025, 3.5815, 7.0475, 14.0475, 18.0975, 21.0675, 28.0675, and 147.555 MHz. Slow code session speeds are 5, 7-1/2, 10, 13, and 15 words per minute, while fast code session speeds are 10, 13, 15, 20, 25, 30, and 35 words per minute. Achievement certificates are available <http://bit.ly/HMAHFj>.

Table 1.

times surprised to hear their own code if they're not used to it. Strive for perfect code and let your sparkling and unique personality shine through in what you say, not how you say it.

Using Morse on the Air

Once you've "learned the code," you still need to learn how to use it on the air to make QSOs, answer and call CQ, tune your radio to the right frequency, master Q signals and Morse code abbreviations, handle interference and so on. Learning and practicing the basics will get you started, while mastering the nuances will take time.

To tackle this broad subject, start with *Ham Radio for Dummies*, a Wiley and Sons book written by Ward Silver, NØAX. The revised edition just hit the shelves. Also, check out *The ARRL Operating Manual*, the perennial benchmark for on-air operating practices. Both are available from your local library or amateur radio booksellers.

Becoming a street-smart Morse op won't happen overnight, and it won't happen without actually using the code on the air, *sweaty palms and all* — listening to the mechanics of on-air QSOs first, then by transmitting. Thankfully, there are organizations and on-air nets devoted to helping you learn the ins and outs of becoming a proficient CW operator.

These include the North American QRP CW Club (NAQCC), the Straight Key Century Club (SKCC), and the International Morse Preservation Society (FISTS).

Several traffic-oriented slow-speed CW nets, such as the Maryland Slow Net, the Georgia CW Training Net, and the Hit and Bounce Slow Net, are on hand to help you learn proper CW procedures for net operations and traffic-handling. These are friendly, helpful folks, so don't be shy about asking for help.

Morse Forever

Even in the 21st century, the advantages of Morse are still going strong and the bands are filled with CW activity from every state and every corner of the globe — and likely will be for years to come. So, choose Mr. Farnsworth or Mr. Koch, or both, and follow up with the goodies in **Table 1** and *just get started.*

When it comes to learning and using "the original digital mode," there's no time like the present! – ***KPCØZZZ.***

Researching Propagation Using JT65A, Part I

By Tomas Hood,
WPC7USA/NW7US

"This month, we'll look at yet another mode that has become very active across most of the amateur radio HF spectrum: JT65A."

Last month, a challenge was made: become an amateur research scientist involved in radio propagation — *become a radio pioneer.* One tool by which you could begin a study of radio propagation, especially on higher shortwave frequencies, is the PropNET project, which is active at least on 10 meters in the amateur radio service.

It is true: you are needed in the world of radio propagation research, *today.* And you do not have to be a rocket scientist to be this kind of explorer and pioneer. When you are not using your favorite receiver, and if you have a recently built computer, say, within the last five years, you could dedicate that equipment to the task of monitoring for radio signals from a network of participating stations for the purpose of radio signal propagation discovery. This month, we'll look at yet another mode provided through various software programs that has become very active across most of the amateur radio HF spectrum: JT65A.

A Mode Originally Meant for Earth-Moon-Earth Communication

The JT65A communications protocol was conceived and first implemented by Joseph H. Taylor, Jr., K1JT, who has a B.A. in physics (Haverford College, 1963) and a Ph.D. in astronomy (Harvard University, 1968), participated in the discovery of the first pulsar in a binary system as well as the first confirmation of the existence of gravitational radiation in the amount and with the properties first predicted by Albert Einstein.

Joe shares a Nobel Prize with Russell Alan Hulse for the discovery of this binary pulsar. He has many more honors and awards recognizing his achievements. Joe has contributed to the amateur radio community in much the same way, changing the playing field for weak-signal operation.

In 2001, Joe wrote the WSJT (for "Weak Signal/Joe Taylor") software that implemented weak-signal communications protocols that he created to fill a need in various VHF weak-signal applications, such as the Earth-Moon-Earth activity where VHFers use high-powered CW or SSB, with high-gain radio antenna arrays, to bounce their signal off of the moon back to a far-distant terrestrial station.

It is hard work, and Joe wanted to improve the odds of success. He created a whole collection of new "modes" using advanced mathematical algorithms to implement new protocols for meteor-scatter, Troposcatter, and EME DX-ing; these include FSK411, the JT65 family, and JT6M. *(**IN DEPTH:** See <http://g.nw7us.us/15pOl0T> for more information on his software implementations. – WPC7USA)*

JT65A is actually the "child" of Joe's original JT65 protocol, the digital protocol he designed to optimize EME contacts on the VHF bands. JT65 includes error-correcting features that make it very robust, even with signals much too weak to be heard. He later realized that this protocol, with some adaptation, would be very usable on HF digital communications.

Before we can talk about the benefits of a mode like JT65A we need to delve into a bit of background on communications and information theory. In the earliest days of wireless the conversion mechanism between received signals and language was via the human ear, the difference between background static and the static of a spark-gap transmitter interpreted as Morse code and written down by an operator at the receiving end.

Technological advancements would later give rise to continuous wave (CW) and voice (phone) transmitters; the difference between the two being a tradeoff between better detection of weak signals for CW and faster throughput for phone. **Figures 1** and **2** illustrate this concept by revealing the "footprint" of a "usable" CW and voice (using a single sideband), respectively. These figures reveal that, using the same antenna and power level, the useful range of the CW signal is much greater than that of a SSB signal. This is why CW has been noted as a great mode for weaker-signal operation, and why low-power (QRP) operation is typically a CW-mode endeavor.

Speaking strictly in terms of detectable signal-to-noise ratios (SNR), a CW signal that is "encoded" at 12 words per minute (wpm) is generally held to be copyable at an SNR of -15 dB whereas a phone transmission that sends information at 250 wpm requires an SNR of +6 dB. *(**NOTE:** These ratios are typically calculated based on a 2.5-kHz channel bandwidth. – WPC7USA.)*

If we normalize these to a 1 character-per-sec-

ond (cps) rate — for example, 12 wpm CW versus speaking one letter per second phonetically on phone — the detectable SNR for phone becomes -8 dB. So on a truly level playing field, CW yields an improvement of 7 dB over phone.

The adoption of machine-to-machine communication (for instance, RTTY, Hellschreiber, and so on) in the early 20th Century provided faster throughput and a marginal increase in SNR performance, but at the expense of channel bandwidth. The normalized SNR of these early machine-to-machine modes works out to be only about 2 dB; hardly an improvement worth getting excited over.

To be fair, though, the value of RTTY was not so much from SNR improvements but rather that it printed directly to paper, freeing the radio operator to do other tasks. Even the development of PSK31 — as used in the PropNET project — in the late 1990s by Peter Martinez, G3PLX, did not yield an improvement in normalized SNR, although it did reduce the bandwidth requirements through the use of Varicode, a form of data compression.

If the application of data compression can reduce bandwidth requirements, are there other techniques that can be applied to improving SNR performance? And how much room for additional improvement might there be?

In the 1940s, Claude Shannon and Ralph Hartley, both of whom were researchers at Bell Labs, developed the Shannon-Hartley Theorem. This theorem provides an equation (proved by Shannon in 1948) for calculating the maximum amount of digital information that can be reliably decoded over a communications channel with a specified bandwidth in the presence of noise, **Equation 1**. Shannon-Hartley doesn't tell us how to reach the theoretical limit, it just tells us what that limit is.

As it turns out, for real-time data streams we can't get to the theoretical limit. Each modulation technique (for example, RTTY uses "frequency-shift keying," CW and Hellschreiber use "on-off keying," PSK31 uses "phase-shift keying") has an inherent limitation in the ability of the receiver system, whether machine-human or pure machine, to discriminate between states. Improving SNR beyond a certain point becomes impossible.

However, all is not lost. An alternate technique for improving SNR is to implement redundancy in the data. We use redundancy all the time in amateur radio — repeating callsigns, signal reports, locator grids, and so on. Of course this effectively reduces the channel capacity (the "throughput"), which appears in Shannon-Hartley as bits/second — *a function of time.*

If PSK31 has a throughput of 30 wpm, and we repeat our callsign six times to overcome a weak path, then clearly our throughput is less than 30 wpm. What we've effectively done by using redundancy is we've reduced the SNR required

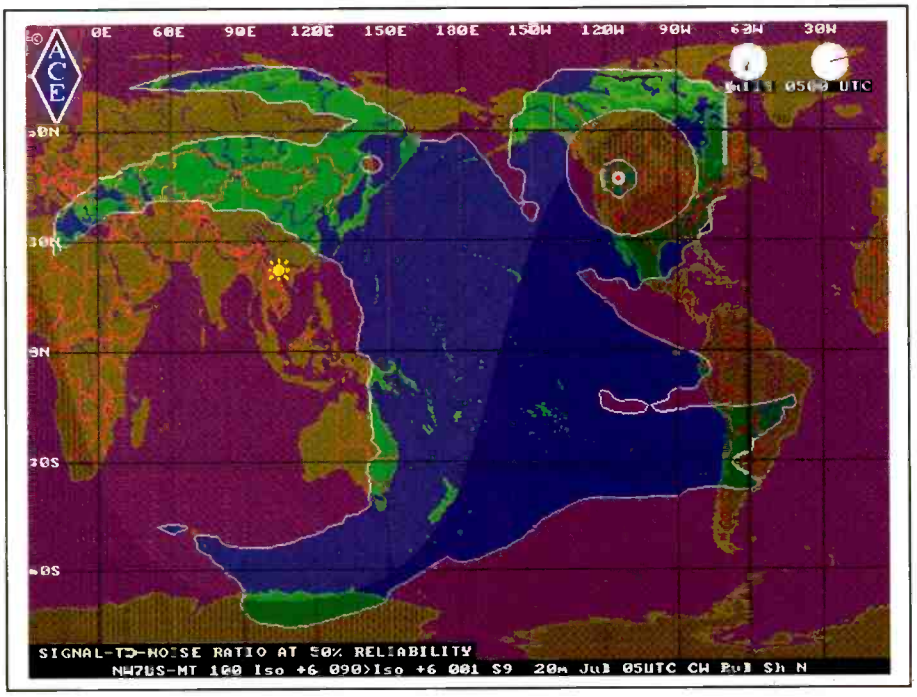


Figure 1. Here is the "footprint" of a 100-watt CW signal at 0500 on the 20-meter HF band. Compare this with the footprint of a 100-watt SSB signal at the same time, as seen in **Figure 2**.
(Via ACE-HF Pro <http://hfradio.org/ace-hf>, courtesy of NW7US)

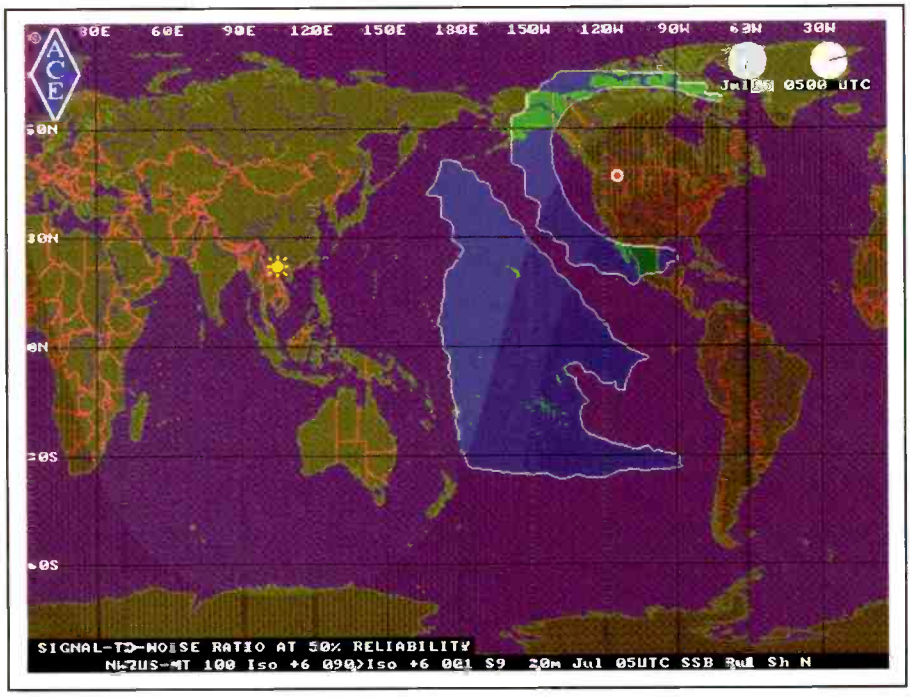


Figure 2. This is the "footprint" of a 100-watt SSB signal at 0500 on the 20-meter HF band. As can be seen, using the same power level and antenna, the footprint of a "usable" CW signal is greater than that of a SSB signal.
(Via ACE-HF Pro <http://hfradio.org/ace-hf>, courtesy of NW7US)

Optimum Working Frequencies (MHz) - For November 2013 - Flux = 134, Created by NW7US

UTC TO/FROM US WEST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	22	17	14	13	13	12	12	11	11	11	11	11	11	10	19	22	24	25	26	26	26	26	25	24
NORTHERN SOUTH AMERICA	31	28	22	18	17	16	16	15	15	15	14	14	14	14	23	29	31	33	34	35	35	35	34	33
CENTRAL SOUTH AMERICA	31	27	19	18	17	16	16	15	15	15	15	14	14	14	25	29	32	34	34	35	35	35	34	33
SOUTHERN SOUTH AMERICA	33	30	26	19	18	17	17	16	16	15	15	15	14	14	20	28	30	32	33	34	35	35	36	35
WESTERN EUROPE	10	10	10	10	10	10	10	10	10	10	10	10	10	10	11	15	17	17	16	14	11	11	11	10
EASTERN EUROPE	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	12	15	14	11	11	11	10	10	10
EASTERN NORTH AMERICA	24	20	15	15	14	14	13	13	13	12	12	12	12	12	21	24	26	27	28	28	28	28	27	26
CENTRAL NORTH AMERICA	14	13	11	8	8	8	7	7	7	7	7	7	7	7	7	12	13	14	15	15	16	16	15	15
WESTERN NORTH AMERICA	8	7	7	5	4	4	4	4	4	3	3	3	3	3	3	5	6	7	8	8	8	8	8	8
SOUTHERN NORTH AMERICA	24	22	18	14	13	13	12	12	12	11	11	11	11	11	15	21	23	25	26	26	27	27	26	25
HAWAII	23	22	21	19	17	12	12	11	11	10	10	10	10	10	9	9	9	17	20	21	22	23	23	23
NORTHERN AFRICA	11	10	10	10	10	10	10	10	10	10	10	10	10	10	14	17	18	19	19	15	12	12	11	11
CENTRAL AFRICA	13	13	12	11	11	11	10	10	10	10	10	10	10	10	12	16	18	19	19	16	15	14	14	13
SOUTH AFRICA	22	17	14	14	13	13	13	12	12	12	12	12	12	11	20	23	24	25	26	26	26	26	25	24
MIDDLE EAST	10	10	10	10	10	11	10	10	10	10	10	10	10	10	10	14	16	13	12	12	11	11	11	10
JAPAN	21	21	20	19	16	12	12	11	11	11	10	10	10	10	10	10	10	10	10	10	10	17	19	21
CENTRAL ASIA	21	21	20	18	16	12	12	11	11	11	10	10	10	10	10	10	10	13	12	12	12	12	19	21
INDIA	9	16	14	11	11	10	10	10	10	10	10	10	9	9	9	9	10	10	10	9	9	9	9	9
THAILAND	20	20	19	18	15	12	11	11	11	10	10	10	10	10	10	10	10	13	13	13	13	12	12	17
AUSTRALIA	30	31	32	30	26	19	18	17	16	16	15	15	15	14	14	14	14	19	18	17	20	24	26	28
CHINA	19	19	18	17	14	12	11	11	11	10	10	10	10	10	10	10	10	10	10	10	10	10	10	16
SOUTH PACIFIC	33	34	32	29	24	19	18	17	16	16	15	15	15	14	14	14	19	18	21	24	27	29	30	32

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

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	14	13	13	12	12	11	11	10	10	10	10	16	20	22	23	24	25	25	25	24	24	23	21
NORTHERN SOUTH AMERICA	24	21	19	18	17	15	15	14	13	13	12	12	17	22	25	27	28	29	30	30	30	29	28	26
CENTRAL SOUTH AMERICA	25	23	22	20	19	18	17	16	16	15	15	19	25	27	30	31	33	34	35	35	36	35	33	30
SOUTHERN SOUTH AMERICA	29	26	24	22	20	19	18	17	17	16	15	15	23	25	28	30	31	32	34	34	35	35	35	33
WESTERN EUROPE	10	10	10	10	9	9	9	9	9	9	9	14	17	19	20	20	20	19	18	17	14	11	11	10
EASTERN EUROPE	10	10	10	10	10	10	10	9	10	10	10	12	17	17	17	17	16	15	14	11	11	10	10	10
EASTERN NORTH AMERICA	7	5	5	5	5	4	4	4	4	4	4	4	6	8	9	10	10	10	10	10	10	10	9	8
CENTRAL NORTH AMERICA	17	12	11	11	11	10	10	10	9	9	9	9	9	15	18	20	21	22	22	22	22	21	20	19
WESTERN NORTH AMERICA	24	21	16	15	14	14	13	13	13	12	12	12	12	12	21	24	26	27	28	29	29	28	27	26
SOUTHERN NORTH AMERICA	19	14	12	12	11	11	11	10	10	10	10	10	10	17	20	22	23	24	24	24	24	23	22	21
HAWAII	25	22	16	15	14	14	13	13	13	12	12	12	12	12	12	12	18	24	27	29	29	29	28	27
NORTHERN AFRICA	13	13	13	12	12	12	12	12	12	12	12	21	25	26	28	28	28	27	25	22	16	15	14	14
CENTRAL AFRICA	14	13	13	13	12	12	12	12	12	12	12	21	25	27	28	29	28	27	23	18	17	16	15	14
SOUTH AFRICA	19	18	17	17	16	16	15	15	15	14	14	26	31	33	34	35	35	35	35	35	34	31	28	21
MIDDLE EAST	12	11	11	11	11	10	10	10	10	10	10	16	19	21	22	22	23	22	16	15	14	14	13	13
JAPAN	17	12	12	11	11	11	10	10	10	10	10	10	10	11	10	10	10	10	10	10	10	14	18	19
CENTRAL ASIA	15	12	12	11	11	11	10	10	10	10	10	10	10	14	14	13	13	13	12	12	12	12	12	18
INDIA	10	10	10	10	10	10	10	10	10	10	10	10	14	17	19	16	12	12	11	11	11	10	10	10
THAILAND	12	12	11	11	11	10	10	10	10	10	10	10	11	16	15	14	14	13	13	13	12	12	12	12
AUSTRALIA	30	26	19	18	17	16	16	15	15	15	15	14	14	14	23	21	20	19	18	18	22	25	27	29
CHINA	13	12	11	11	11	10	10	10	10	10	10	10	10	11	11	11	10	10	10	10	10	10	10	10
SOUTH PACIFIC	31	27	21	20	19	18	17	16	16	15	15	15	14	22	21	20	19	21	24	27	29	31	33	33

for detection of our callsign. Of course in this example we still rely on the operator to look at the decoded text and, using the human mind's awesome ability to do pattern recognition, extract the callsign from the garbled text.

Thus if we're willing to accept lower throughput and use redundancy we can improve SNR for a given modulation method. Further improvement can be achieved by using an error-correcting code, leveraging the power of a computer to encode the data in a process known as Forward Error Correction (FEC).

We can then use a computer on the receiver to invert the FEC encoding and correlate the redundant data blocks into a single error-free block of data. Combining redundant sending and error-correcting codes allows us to reach a throughput close to the limit predicted by Shannon-Hartley.

JT65A's performance tracks well with theory and has been shown to yield an additional 7 dB of detectable SNR (nearly approaching the theoretical limit) which equates to a 5x improvement in system performance. This means that reliable decoding of a signal at -24 dB SNR is now possible, and effectively turns your 20-watt portable station into a 100-watt boomer.

$$C = B \log_2 (1 + S/N)$$

Equation 1. This is the Shannon-Hartley theorem <http://g.nw7us.us/15pQkIR>. In information theory, the Shannon–Hartley theorem tells the maximum rate at which information can be transmitted over a communications channel of a specified bandwidth in the presence of noise. It is an application of the noisy channel coding theorem to the archetypal case of a continuous-time analog communications channel subject to Gaussian noise. The theorem establishes Shannon's channel capacity for such a communication link, a bound on the maximum amount of error-free digital data (that is, information) that can be transmitted with a specified bandwidth in the presence of the noise interference, assuming that the signal power is bounded, and that the Gaussian noise process is characterized by a known power or power spectral density. The law is named after Claude Shannon and Ralph Hartley. *(**NOTE:** In this equation, C is the channel capacity in bits per second; B is the bandwidth of the channel in Hertz (passband bandwidth in case of a modulated signal); S is the total received signal power over the bandwidth (in case of a modulated signal, often denoted C — for example, modulated carrier — measured in watts or volts^2; N is the total noise or interference power over the bandwidth, measured in watts or volts^2; and S/N is the signal-to-noise ratio (SNR) or the carrier-to-noise ratio (CNR) of the communication signal to the Gaussian noise interference, expressed as a linear power ratio — not as logarithmic decibels.)* For an explanation of this terminology, visit <http://g.nw7us.us/15pSuSl>.

JT65A's Benefits

JT65A on shortwave (HF) offers several benefits. It requires minimal transmit power making it suitable for highly portable stations, DXpeditions, and situations where running QRO (high power) might create interference and draw the unwanted attention and ire of neighbors or — worse yet — *spouses.*

The vast majority of JT65A QSOs on HF are completed using less than 50 watts ERP. Do note, however, that JT65A is a "weak-signal" mode, not necessarily a "weak-power" mode — known as QRP operation.

When talking about Earth-Moon-Earth communications, full-legal power is used with high-gain antennas. That's not QRP. It might take 100 watts to complete a JT65A QSO between North Dakota and South Africa, on 40 meters.

JT65A also allows operation in high noise environments, and on an amateur HF band that is experiencing a lot of fading, because the redundancy provided by the forward-error correction allows a loss of nearly 80 percent of the transmission before there's a loss in decoding.

That also means that this mode is very usable for the study of radio propagation conditions from day to day, hour by hour, each and every day, on a given band. The mode has become highly popular, so there's always stations scattered around the world on the most popular amateur bands such as 20 or 15 meters. *We'll talk more about that a bit later.*

Hardware Requirements

Hardware requirements for JT65A are straightforward and no different from most other digimodes. It uses an AFSK interface between your PC and rig. If you're already set up to run PSK31 via Ham Radio Deluxe's DM780 package, MixW, MultiPSK, and so on, then you're good to go with one exception: you'll need a method for accurately syncing your PC's clock.

PTT can be accomplished through either serial port triggering or VOX. The only twist is that the accuracy of your PC clock will have a direct effect on your ability to decode and be decoded, and if you're more than a second or so off-sync nobody will decode you and you won't decode anyone else. *More about this in Part II, next month.*

What About Software?

Operators wishing to try out the JT65A mode have a choice of software packages to choose from. Next month, we'll look at several choices: WSJT-X and one of the several JT65-A branches. In the meantime, you may check out the links for these packages, at this columnist's JT65A information page at <http://nw7us.us/jt65a.html>.

Keeping Time

Regarding the requirement to keep your PC clock synchronized: if your station is at home, and you have Internet access, then you should use a time sync client such as Dimension4 or Symmtime.

Each is free and readily available online. You really need this: the built-in time sync feature in Windows XP/Vista/7/8 is *not* accurate enough to allow proper JT65A operation. You should disable it and use a dedicated sync client.

If you don't have Internet access at home, or are working rover/portable, then you might consider using a GPS dongle together with a software package that locks the PC's clock with the time signals received via GPS.

*(**NOTE:** Many GPS vendors provide a small software utility with the GPS which will do just that, but I've also used the UI-View32 APRS software package which can link up with many GPS dongles and adjust your PC's clock. – WPC7USA.)*

If you're in a pinch, on a tight budget, and still want to work JT65A, you can try syncing to the WWV tones from NIST in Boulder, CO or other shortwave sources. F6CTE's MultiPSK package comes with a WWV clock receiver application (clock.exe) but bear in mind that PC clocks tend to drift a lot even during a short period of time, so you'll have to tune back to WWV and re-adjust your clock about every 30 minutes.

For best performance you'll want a GPS dongle. These can be purchased online for about $30.

Researching Propagation

One of the enhancements offered by JT65-HF is the reporting in real-time of decoded messages to both a DX cluster and a reception reporting system, often referred to in the JT65 community as a "reverse beacon." Those familiar with the automated DX cluster reporting in Alex VE3NEA's CW Skimmer, or the ability for DM780 (part of Ham Radio Deluxe) to upload PSK31 decodes to Phil Gladstone, N1DQ's, excellent PSKReporter will quickly grasp the value of this feature. Every person running JT65-HF can effortlessly become part of a world-wide network of monitoring stations which report their decoded messages to a web-based server for use by the amateur community, **Figure 3**. The PSKReporter website is at <http://pskreporter.info>.

The data provided by automatic collection/aggregation of reverse beacons from JT65A users around the world, combined with the ability of JT65A to decode signals approaching the Shannon-Hartley limit, has been very valuable in showing that propagation often exists where common sense says it shouldn't — such as 40- and even 80-meter openings, which occurred nightly for almost a week last winter around 0700Z between South Africa and the western United States.

It also provides a method for visualizing worldwide propagation of JT65A messages via maps such as those provided by PSKReporter. Call CQ and within a minute or two you can check the map to see just how far away you were heard. In addition to monitoring propagation, it is also used to do things such as compare the relative performance of antennas.

If you're looking for less visual and more detailed propagation data in a DX cluster style interface, then JT65A reception reports are also available via Laurie Cowcher, VK3AMA's, HamSpots system, and via W4CQZ's website.

The W4CQZ website also hosts a JT65A "chatroom" which features a live-updating list of reception reports displayed right on the page.

Using JT65A is not only interesting from the perspective of studying propagation on HF, but is useful for communication with DX stations around the globe that might not be possible using other pro-

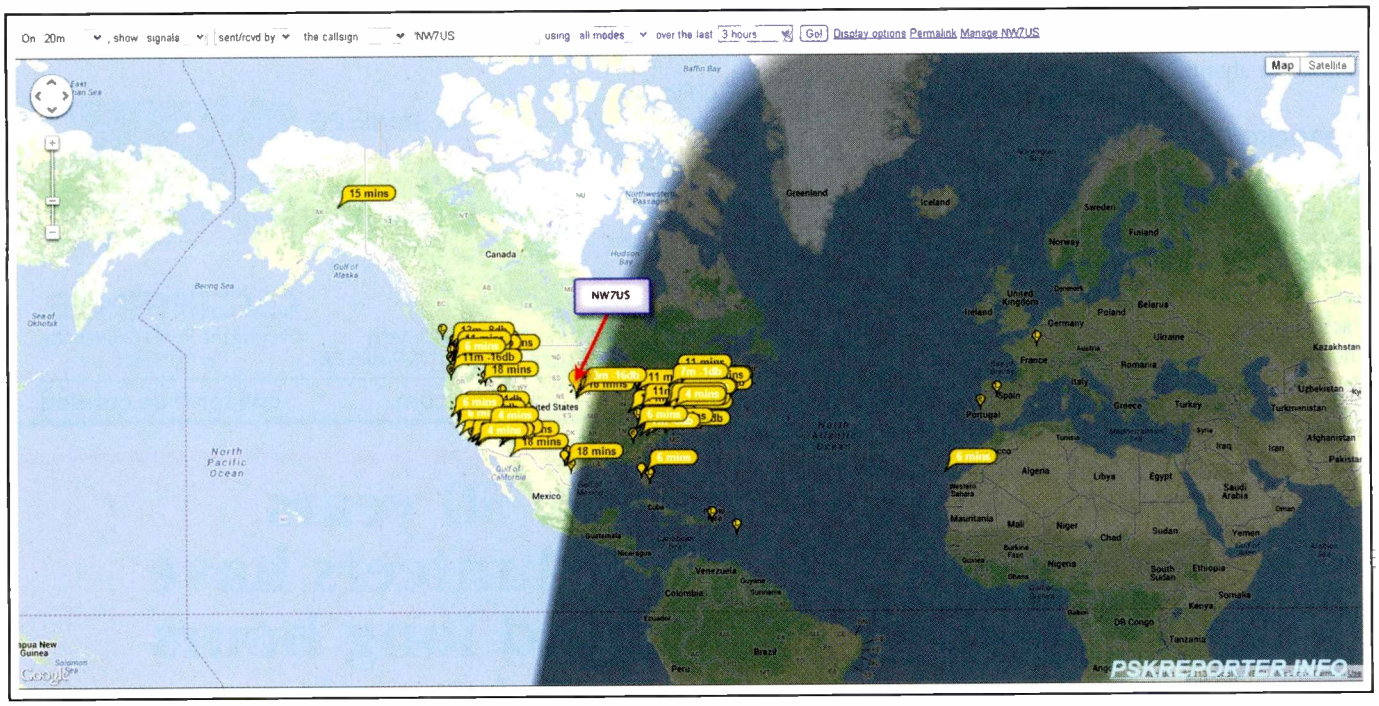


Figure 3. The PSKReporter map shows the reception of the JT65A signal as sent by NW7US. The stations "hearing" NW7US — as a "capture" by the remote JT65A software — are shown with the time since NW7US was last heard. The map also displays stations which the software "heard" at the NW7US station. *(Via PSKReporter at <http://pskreporter.info>)*

tocols and modes. Often, JT65A users can work DX on bands where no other mode, including CW, is working at that time.

Coming in Part II

Next month we'll dive into how to use JT65A in real-world communications. Until then, if you are adventurous and want to jump into this exciting area of weak-signal DXing to enjoy all that JT65A offers, visit <http://nw7us.us/jt65a.html>. – ***WPC7USA***

HF Propagation for November

With the peak of the current sunspot cycle likely landing during 2013's autumn, expect moderate conditions in November, somewhat the same as conditions from last year at this time. If you remember last year's season, more of the weaker DX on many shortwave bands were available, because there was enough solar energy to provide propagation on higher frequencies over many DX paths. While the geomagnetic conditions may be more active this year (typically, during the peak and during the first year or so of a decline phase, there are more geomagnetic disturbances created by the more-frequent coronal mass ejections and coronal holes), causing periods when the ionosphere will become weaker than normal, there will be windows of opportunity when the ionosphere will be increasingly more energized than a year ago, so much so that weak DX signals will become more reliable and higher frequencies will be more easily propagated over many paths. This is prime DX hunting season.

Expect a high-level of crowding on our all-season players, 31 and 25 meters. Signals on these bands are typically strong and stable. For medium distance DX (500 to 1,500 miles) during daylight hours, try 25 meters. By late afternoon and through early evening, reception will "stretch out" in the range of 2,000 to 3,000 miles for domestics, and twice that for international broadcasters, continuing until an hour or two after local sunrise.

There's heavy use on this band since many domestic and a good number of international broadcasters make use of the 25-meter band.

Thirty-one meters, the backbone of worldwide shortwave broadcasting, will provide medium-distance daytime reception ranging between 400 and 1,200 miles. During November, reception up to 2,500 miles is possible during the hours of darkness for domestic broadcasters, (easily double to triple that distance for international broadcasters), and until two to three hours after local sunrise.

Thirty-one meters, too, is highly congested, making reception of weak exotic signals a bit more of a challenge.

Seventy-five through 120 meters are coming alive, as well. Signals below 120 meters are improving, too. Throughout November, expect an improvement in nighttime DX conditions on these bands.

Since the night is longer, and there is the seasonal decrease in static noise levels, expect good long-range DX on the low bands, starting with signals from closer locations right after sunset, and then extending to areas farther away as the night develops.

Europe should be possible in the late evening. DX paths will move farther west through the night. By morning openings from Asia should be common.

VHF Conditions — Meteor Showers

One of the largest yearly meteor showers occurs during November. Appearing to radiate out of the constellation of Leo, this shower is known to create intense meteor bursts. The shower starts on about November 6 and lasts until about November 30. Of course, the shower is not going to produce significant hourly

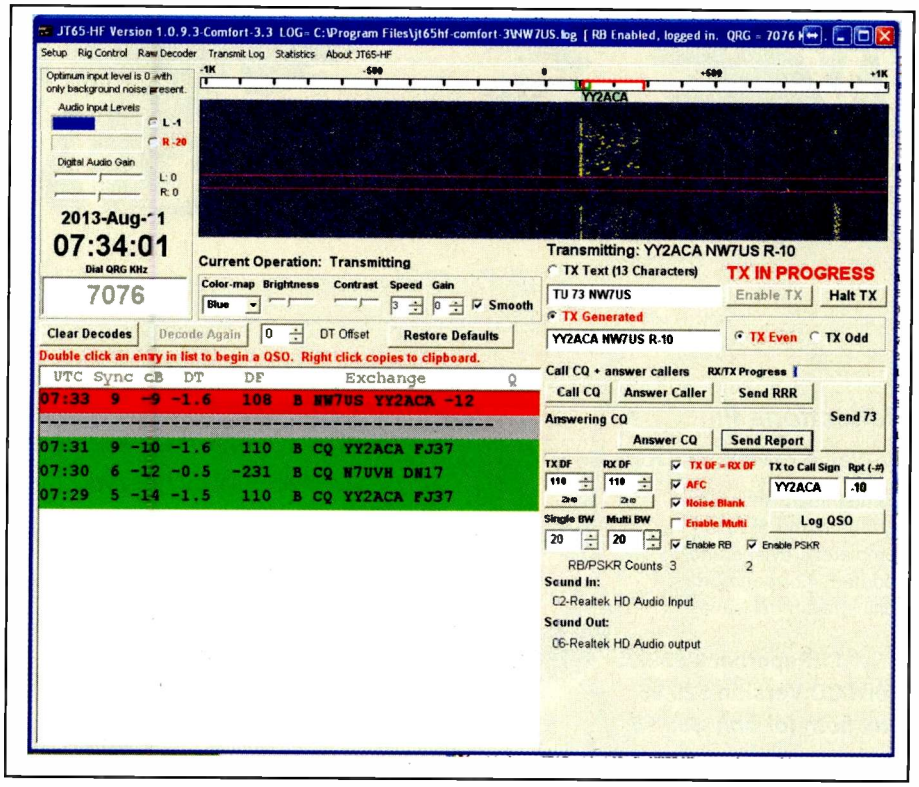


Figure 4. A screen capture shows the JT65-HF software using the JT65A digital communications protocol mode on the 20-meter JT65A frequency, 14.076 USB. *(Courtesy of NW7US using JT65-HF)*

rates until the days closest to the shower peaks (two are suggested, this year), which should be November 17, first at about 1000 UTC, and second at about 1600 UTC.

We are not expecting a heavy stream of hourly meteors, this year. At best, large, spectacular visuals might occur 10 to 20 times per hour during the two peaks on November 17. Visit <http://www.imo.net/calendar/2013> for a complete calendar of meteor showers in 2013.

From a radio perspective, when we are talking about meteor scatter radio propagation, we count any meteor-formed plasma clouds that will support VHF radio signals. With modern digital modes that enable very weak-signal detection (such as JT2 and JT4 <http://physics.princeton.edu/pulsar/K1JT/>), even small meteors that are not visually significant play a role for catching distant VHF signals.

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 me on Twitter: <@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 57.0 for July 2013, up a slight bit from June's 52.5, yet weaker than 78.7 for May. The low for the month was 24 on July 13. The high of 93 occurred on July 7.

The mean value for July results in a 12-month running smoothed sunspot number of 58.7 centered on January 2013. Following the curve of the 13-month running smoothed values, a smoothed sunspot level of 82 is expected for November 2013, plus or minus 14 points.

Canada's Dominion Radio Astrophysical Observatory at Penticton, British Columbia reports a 10.7-cm observed monthly mean solar flux of 115.6 for July 2013, up from June's 110.2, yet still lower than 131.3 for May. The 12-month smoothed 10.7-cm flux centered on January 2013 is 118.9. A smoothed 10.7-cm solar flux of about 134 is predicted for November 2013.

The geomagnetic activity as measured by the planetary-A index (A_p) for July is 9, down from 13 for June. The 12-month smoothed A_p index centered on January 2013 is a steady 7.5. Geomagnetic activity should be much the same as we have had during October. Refer to the Last Minute Forecast at <http://sunspotwatch.com> on the main page for the outlook on what days that this might occur.

I'd Like to Hear From You

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

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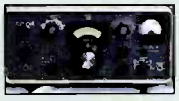

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After the BBC's Cutbacks, Oh, How the Dominoes Fall

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

"The demise of BBC World Service to North America has resulted in a mini-tsunami which 'brought down' international broadcasters left and right."

Off the top of my head, I do not recall when the BBC made its awful decision to drop shortwave service to North America, but the move brought with it a considerable — and continuing — downsizing of the **BBC World Service**.

The overflow also resulted in a mini-tsunami which "brought down" international broadcasters left and right. Those effects have now reached Israel.

Kol Israel, once a major international voice, lately has become a single-voiced, 98-pound weakling that has at last succumbed completely. Tel Aviv's minimal Farsi (Persian) language broadcasts to Iran are now a thing of the past. Considering that country's geo-political situation, one would think the *powers that be* in Israel would make certain that Kol Israel would be the equal of China Radio International in size and strength.

Actually, Kol Israel had become more of a DX item than anything. One had to tune to a specific frequency at a particular time — sprinkled with several gains of hope — in order to hear the station. Doing so today will get you *zilch*, nothing but the sad, irritating *"sssssshhhh"* of an empty radio band.

Shortwave-lettes for This Month

Radio Nacional San Gabriel, from Base Esperanza in Argentine Antarctica broadcasting on 15476, now says its listed 10 kilowatts has been reduced to a power level of between 1.2 and 1.5 kilowatts. That power loss is blamed on an anemic generator. That'll make hearing it an even rarer event during its Monday to Friday schedule from 1800 to 2100. If you manage to log it, let me know.

Once a semi-major SW broadcaster, Kol Israel has joined so many others in bowing out.

Radio Nacional Malagasy, which has been silent for the first half of this year, has now renewed its service on 5015. We in North America sometimes catch it at its 0300 sign on.

Australia's **Radio Symban**, 2368.5, now offers QSLs by email only. They are available only from John Wright at <dxer1234@gmail.com>. You must include the date and time along with the standard reporting details *and* an MP3 recording. The content details of the recording should also be written out. Mr. Wright is a member of the Australian Radio DX Club (ARDXC). Sounds like a lot of work involved. I'd have already been exhausted, having gotten up to hear the station in the wee morning hours.

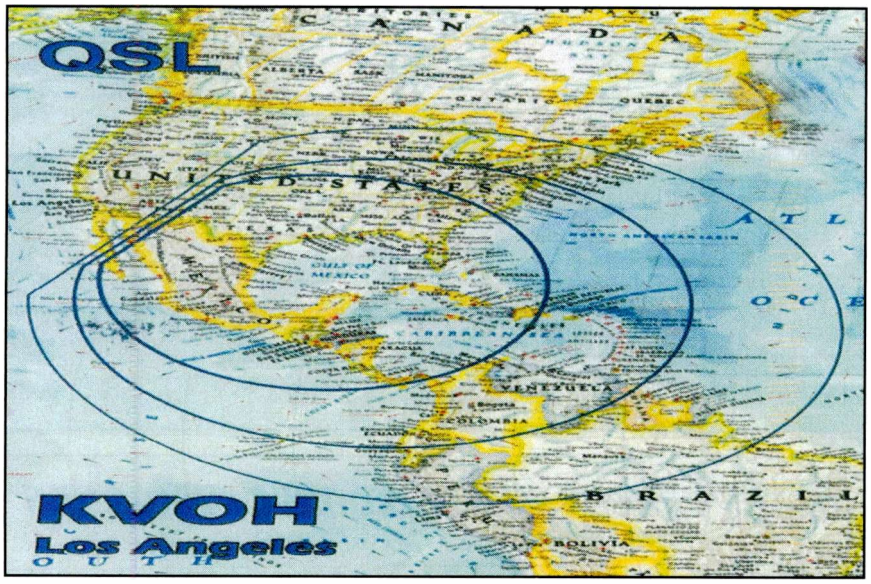
A new Afghanistan opposition broadcaster is **Salam Watandar**, utilizing the Kostinbrod (Bulgaria) site on 11545 at 0230-0400 and on 15615 from 1330-1500 in Pashto/Dari.

The Greek government broadcaster continues to have its problems, ranging from court cases to employee dissatisfactions (read that *"strikes"*) to occasional technical problems to eyeshade-topped munchkins fiddling around with laws, proposals, restrictions, and hoped-for cutbacks. Despite dealing with this pack of problems, the **Voice of Greece** survives and still puts out a commendable signal on 7475 from 2300, 9420 from 1300, 11645 from 0300, 15630 from 1300, and 15650 from 1900, each running for a few hours and all in Greek. Give 'em a try. There are actually unconfirmed reports that 15630, at least, may be operated by outers dissatisfied with ERT's management.

World Christian Broadcasting (KNLS) still plans to put its **Madagascar World Voice** on the air, but first must await a government go-ahead. Everything else is ready, except for one small detail: transmitters and approval.

And What About You?

Remember, your shortwave broadcast station logs are always welcome. But please be sure to double or triple space between the items, list each logging according to its home country and include your last name and state abbreviation after each. Also needed are spare QSLs or good copies you don't need returned, station schedules, brochures,



California's KVOH has been recently reactivated and sent Rich D'Angelo this attractive QSL.

pennants, station photos, and anything else you think would be of interest. And how about sending a photo of you at your listening post? It's your turn to grace these pages!

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

ALASKA—KNLS, 7355 at 1200 with feature on paradoxes in the Bible, f/by an offer of a free Bible, 9920 at 1543 interviewing a book author and *Profiles in Christian Music* pgm at 1547. (Sellers, BC)

ALBANIA—Radio Tirana, 9850 on additional airline traffic at Tirana's airport. (Maxant, WV)

ALGERIA—Radio Algerienne, 7295 via France at 0434 with M and news in AA, ID at 0440 and into Qu'ran recitations. (D'Angelo, PA) In AA at 0402 with a rousing vocal anthem, brief M vocals and talk to 0407 when went into Qu'ran. (Coady, ON) 11765 at 2040 with Qu'ran. (Brossell, WI) 11985 via Issoudun a 0607-0657* with Qu'ran recitations and AA talk. (D'Angelo, PA)

ANGUILLA—University Network, 6090 at 0110 with Pastor Scott and 11775 with Melissa Scott at 1315. (Maxant, WV)

ARGENTINA—Radio Argentina al Exterior, 11710 at 0332 with M ancr over slow piano. (Parker, PA) 15345 at 2321 with talks in SS. (Brossell, WI)

ASCENSION ISLAND—BBC-South Atlantic Relay, 11660 in (l) Hausa to close at 2030 and 17885 in Hausa at 1843. (Brossell, WI)

AUSTRALIA—Radio Australia, 5995 with soccer at 1150. (Brossell, WI) 12065 with world news at 1300, 1900 with soccer commentary at 2318, and 15160 with news at 0400. (Maxant, WV) 11945-Shepparton at 0700 with Australian network news, (D'Angelo, PA)

BANGLADESH—Bangladesh Betar, 15105 at 1345 with M vocal in Bengali. (Fraser, ME)

BOTSWANA—VOA Relay, 15580 at 1931 on teen pregnancies in the U.S. (Brossell, WI)

BRAZIL—*(NOTE: All in PP – GLD)*

Super Radio Deus e Amor, Sao Paulo, 9585.5 at 0432 with W host and M guest on telephone, 11765 at 0341 with impassioned preacher f/by inspirational music. (Parker, PA)

Radio Voz Missionaria, Camboriu, 9665 at 0452 with M ancr and phone callers. (Parker, PA)

Radio Bandeirantes, Sao Paulo, 9645 at 0437 with M joking with callers. (Parker, PA)

Radio Nacional Amazonia, Brasilia, 11780 at 0345 with talks. Awesome level and Hi-Fi audio. (Parker, PA)

Radio Gaucha, Puerto Alegre, 11915 at 0230-0303* with talks and easy instls. ID, and closedown at 0259 when they went off w/out an anthem. (D'Angelo, PA)

Radio Brazil Central, Goiania, 11815 at 0014 with M ancrs covering a soccer match with IDs, jingles, and halftime coverage starting at 0150. No sign of 4895. (D'Angelo, PA) 0348 with a choir. (Parker, PA)

CANADA—CFRX, Toronto, 0101 back on the air with a traffic report, ads, talk about Mayor Ron Ford and "News Talk 1010" IDs. (D'Angelo, PA) 1130 with news and weather. (Sellers, BC) 2215 with weather report and traffic conditions on the 409. (Maxant, WV)

CKZN, St. John's (Newfoundland), 6160 at 2325 with U.S. pop and weather in the Atlantic region. (Maxant, WV)

CFVP, Calgary, 6030 at 1618 with a long ad string and "Classic Country 10-60" ID. (Sellers, BC)

IBRA Radio, 11875 via Wertachtal at 1908 in listed Fulani. (Brossell, WI)

CHU, Ottawa, 7850 at 0230 with FF and EE time anmts, also 14670 at 2220. (Maxant, WV)

CHINA—China Radio International, 9570 via Cuba at 0100 with news of riots in Turkey and Iranian voting. (Maxant, WV) 11660-Kashi at 2114 with W ancr hosting pops pgm in FF, ID at 2130 f/by news. (D'Angelo, PA) 13680-Kashi in (l) Mandarin at 1550, 13860-Shijiazhuang in RR at 1605, 17630 with news in EE at 1330. (Brossell, WI)

CUBA—Radio Havana Cuba, 5040 at 0105 in SS with Cuban music, 6165 at 0410 on events in Moscow. (Maxant, WV)

EGYPT—Radio Cairo, 9865 in EE with vocals at 2353. (Fraser, ME) 9720 at 0210 with good carrier strength, but poor audio with Egyptian music and "This is Cairo" ID, 9965 at 2330 likewise. (Maxant, WV) 11895 at 2229-2245* with the EE service but the talk was so muddled it was nearly impossible to make out, although the music came through OK. (D'Angelo, PA) 15480 in PP at 2315. (Brossell, WI)

ENGLAND—BBC, 11855 via Moldova at 0317-0330 with talks in Farsi. ID at 0329, time pips at 0330 and ended. (D'Angelo, PA) 11855 via UAE in Farsi at 0354. (Parker, PA) 15330-Oman Relay at 1318 with talks in (l) Uzbek. (Brossell, WI)

ERITREA—Voice of the Broad Masses, Asmara, 9715 at 0437 in vernacular with a M vocal, but was very weak. (Parker, PA)

FRANCE—Radio France International, 11700-Issoudun for Africa with M in FF, some instl music, f/by W with ID and news head-

Help Wanted

We believe the Global Information Guide — month after month — offers more logs than any other monthly SW publication, (Some 200 shortwave broadcast station logs were processed this month) Why not join the fun and add your name to the list of GIG reporters? Send your logs to Gerry Dexter, Global Information Guide, 213 Forest St., Lake Geneva, WI 53147 or email them to <gdex@wi.rr.com>. See the column text for formatting suggestions. And please remember to cite the site.

**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*

lines. (D'Angelo, PA) 11995 at 2058 with ID, hi-life music, and shut down at 2100. (Brossell, WI)

GERMANY—Deutsche Welle, 9470-Rwanda Relay at 0425 on a race car accident. (Maxant WV) 0430 with *Pulse* pgm in Latvian on a W who cheers up hospital patients by singing silly songs, and 9800-Rwanda Relay at 0513 with EE news and thick-accented ancrs. (Parker, PA) 9810-Kigali Relay at 0402 with M/W and news in EE, f/by pgm previews. (D'Angelo, PA)

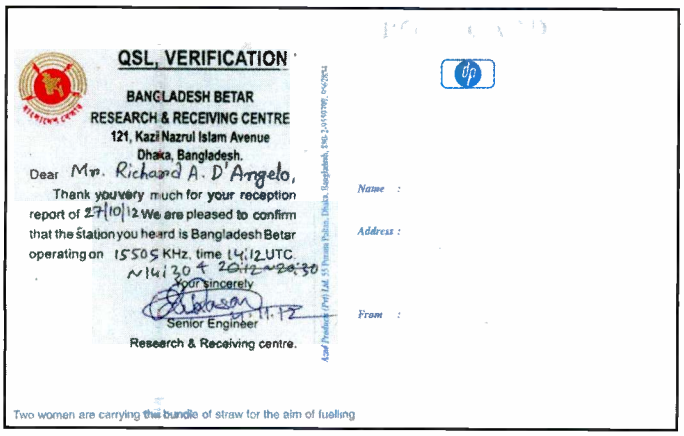
GREECE—Voice of Greece, 9420 at 0350 first check after they terminated and then restored broadcast service. Had M in Greek hosting a pgm of Greek music. Time pips at 0400 and interviews in Greek. (D'Angelo, PA)

Free Hellenic Radio (t), 15630 at 1330, 13353 in Greek with fair signal, though the modulation seemed to be a little "off." (D'Angelo, PA)

GUATEMALA—Radio Verdad, Chiquimula, 4055 at 0540 with SS talks by M/ with occasional light music. Canned ID and anmts at 0508 when a long anthem-like song began around 0602. (D'Angelo, PA)

INDIA—All India Radio, 11670-Bangaluru, 2152 with M/W singing a Hindi duet, ID at 2150 with W and EE news at 2200, M reading economic news at 2215, and close-down at 2229. (D'Angelo, PA) 2205 with news in the general overseas service. (Maxant, WV) 11895-Bangaluru at 1055 with news summary. (Brossell, WI)

Rich D'Angelo also got this nice QSL card and sticker from Radio Oriental, 4780 in Ecuador.


QSL, VERIFICATION

BANGLADESH BETAR
RESEARCH & RECEIVING CENTRE
121, Kazi Nazrul Islam Avenue
Dhaka, Bangladesh.

Dear Mr. Richard A. D'Angelo,

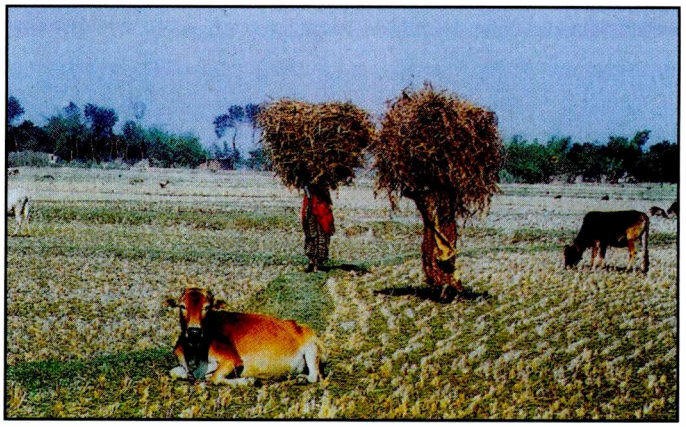
Thank you very much for your reception report of 27/10/12. We are pleased to confirm that the station you heard is Bangladesh Betar operating on 15505 KHz. time 14.12 UTC.

Your sincerely

Senior Engineer
Research & Receiving centre.

Name :
Address :
From :

Two women are carrying this bundle of straw for the aim of fuelling



Bangladesh Betar QSL'd D'Angelo with this QSL featuring women with bundles of straw being brought home for fuel.

IRAN—Islamic Republic of Iran Broadcasting, 11660-Zahedan, in AA at 0329 with rhythmic music. (Parker, PA) 12025-(Kalamabad – gld) in FF at 1925. (Brossell, WI)

JAPAN—Radio Japan, 11680 via Nauen at 0258 with W and JJ talk, but buried under RHC in SS. NHK improved with news at 0300 after Havana faded a little, 11850 via Madagascar in FF at 2050, and 15130 via France at 1919 in JJ. (Brossell, WI) & (D'Angelo, PA)

KUWAIT—Radio Kuwait, 15540 at 1820 with a profile with a woman head of a university. (Fraser, ME) 1930 with a pgm on "events that swayed the course of events that changed history." (Brossell, WI)

Remember Radio Mexico? They used high power transmitters in the major SW international bands, but they've been gone for several years.

LIBYA—Radio Libya, 11600 in AA at 1933 with an interview in AA. Fair, but with noise. (Coady, ON)

MOROCCO—Radio Medi Un, 9579 at 0413 in AA with EE pops, W with ID at 0415, news headlines and local pops. (Coady, ON) 2337 with Middle Eastern vocals and AA news, (D'Angelo, PA)

NEW ZEALAND—Radio New Zealand International, 15720 at 0345 talking about earthquakes there. (Maxant, WV)

NICARAGUA—El Pescador Preacher, 8989u at 0006 finally heard with SS talk until transmission ended at 0012. (D'Angelo, PA)

NORTH KOREA—Voice of Korea, 11710 on their finances at 0415. (Maxant, WV) 1604 in FF with patriotic choruses and W with talk, M with "Voix du Korea" ID. (Coady, ON)

OMAN—Radio Sultanate of Oman, 9760 at 0138-0156* with W ancr and AA talk/music, later M/W talk and brief segment of instl before close. Also 15140 at 2043-2200* with M in AA hosting AA vocals. (D'Angelo, PA)

OPPOSITION—Voice of Tibet, 15560 via Tajikistan with talks in (l) Tibetan. (Brossell, WI)

Sound of Hope (Taiwan to China), 11765 in (l) Mandarin at 1625. (Brossell, WI)

Radio Miraya, (Bulgaria to Sudan), 11560 at *0300-0328 with EE ID at opening, then a M f/by various local vocals. (D'Angelo, PA)

Radio Dabanga (Vatican to Sudan), 15725 in AA at 1611 with Radio Dabanga slogan, f/by an interview. (Sellers, BC)

Salam Wantander (via Sofia to Afghanistan), 11545 at 0344-0359* with M/W talks, f/by IRRS ID inviting reports. (D'Angelo, PA)

Radio Watandara, (Romania to Afghanistan) 11545 at 0351-0400* with M in Pashto talk and W with apparent Radio Salaam ID and closedown anmts. (D'Angelo, PA)

PHILIPPINES—Radio Veritas Asia, 15320 via Vatican in (l) Tagalog at 1514. (Brossell, WI)

PIRATES—Radio Free Whatever, 6925 at 0000 but poor with pop/rock. <dickweed-dj@gmail.com>. Also 6945 at 0250 with a nice pgm PIRATES of pops. (Hassig, IL)

Red Mercury Labs, 6925u at 0204 with sign on, heavy metal and soft rock, some Johnny Cash and Willie Nelson, sign off at 0221 after ID and email as <redmercury-labs@yahoo.com>. (Hassig, IL)

Radio True North, 6940 at 0235 very poor under static and just bits of audio. He said it was him after I emailed <radiotruenorth@gmail.com>. ID was obtained from HF Underground. (Hassig, IL)

Mancave Radio, 6925 at 0246. Poor or below static with heavy metal, story with a jazz background, (Hassig, IL)

Radio Mushroom, 6930 at 0039-0052* with M hosting a familiar pgm of rock vocals, frequent IDs, email as <radiomushroom@gmail.com> and closedown. (D'Angelo, PA)

ROMANIA—Radio Romania International, 9770-Galbeni, 9453-0457 with pops pgm and abrupt s/off. (Parker, PA) 11810 at 1930 in SS with ID, sked, and into news. (Fraser, ME)

RUSSIA—Voice of Russia, 9435 via Armenia in SS at 0428. (Parker, PA) 9465 in EE at 2205 with *Turning Point* pgm. (Fraser, ME)

Radio Kyzyl, 6100 with clear RR ID at 1200 f/by (p) news in RR. (Brossell, WI)

SAO TOME—VOA Relay, 7325-Pinheira, 0405 in Kinyarwanda with children doing lively songs, //7340. (Parker, PA) 11885 in (l) Hausa at 2053. (Brossell, WI) 11905 at 0355 in Kinyarwanda with W talks. EE ID at close of pgm and other anmts in EE. (Parker, PA)

SAUDI ARABIA—BSKSA/Radio Riyadh, 9580-Jeddah, at 0425 with traditional music. (Parker, PA)

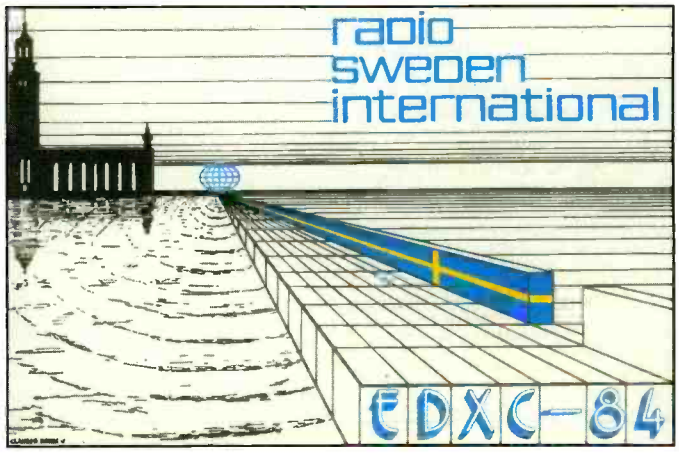
SEYCHELLES—BBC-Indian Ocean Relay, 11945 at 0407 with talks. Strong car-

In Times Past

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

Radio Sonora, TGTA, 6000 in Guatemala City at 0315 on June 15, 1955 using one kilowatt in its Spanish domestic service.

This Voice of Indonesia sticker relegates their Radio Republic Indonesia domestic service to second class status.



John Miller sends along this Radio Sweden QSL that celebrated the European DX Council's (EDXC) convention in 1984.

rier, but audio was sucked down by bad atmospherics. (Parker, PA)

SOUTH KOREA—KBS World Radio, 9640 at 1602 marking an anniversary in Seoul and other news items. (Sellers, BC)

SPAIN—Radio Exterior de Espana, 15160 at 2306 with talks in SS. (Brossell, WI)

SUDAN—Radio Miraya FM, 11560 via Sofia at 0325 with Arab pops. (Parker, PA)

TAIWAN—Radio Taiwan International, 15435 with carrier on at 1559, 1600 with IS, f/by s/on in EE, ID and sked. Checked back at 1614 and fair with interviews. (Sellers, BC) 15690 via France at 1937 with talks in FF. (Brossell, WI)

TUNISIA—Radio Tunisienne, 17735 at 1940 with talks in AA. (Brossell, WI)

TURKEY—Voice of Turkey, 9830 at 2220 with *The World is Ours* pgm. (Fraser, ME) Ermiler at 0409 with W vocal. Super signal but the bass was high. (Parker, PA) 15450 at 1350 on the world population, (Fraser, ME)

UNITED STATES—Voice of America, 11570 via Vatican in Somali at 0336 with many mentions of Somalia and Somaliland. (Parker, PA) 11825-Philippine Relay in Mandarin at 1248. (Brossell, WI)

Radio Free Europe/Radio Liberty, 7435 via Lampertheim in RR at 0416. (Parker, PA)

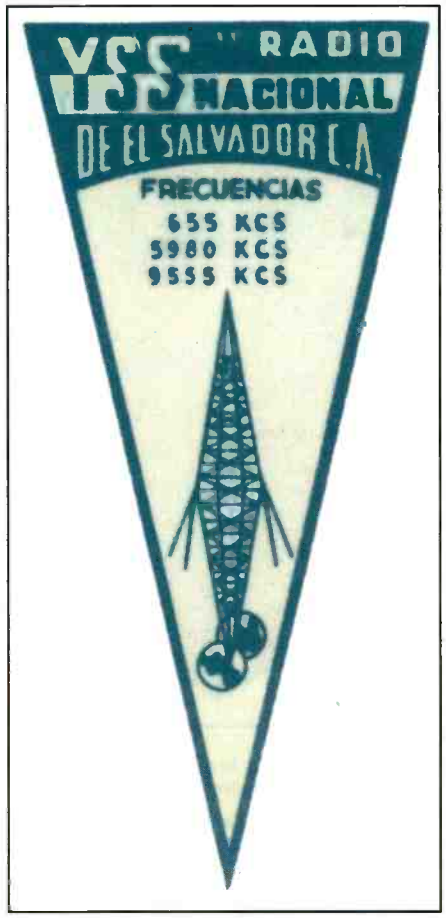
WHRI, Indiana, 21630-Cypress Creek with an EE fund raiser at 1919. (Parker, PA)

Adventist World Radio, 11955 via Austria at 1913 in (l) Hausa, 15260 via Nauen in AA at 1822, 17575 via Wertachtal in (l) Somali at 1639. (Brossell, WI)

VATICAN—Vatican Radio, 11890 via Philippines at 1250 in Mandarin. (Brossell, WI) 15570 in (l) Swahili at 1611. (Brossell, WI)

VIETNAM—Voice of Vietnam, 11840 via Wertachtal in VV at 2045. (Brossell, WI)

And that closes things out for this time. My thanks, bows, and salutes go to the following good folks who got the job done this month: Rich D'Angelo, Wyomissing, PA; Mark Coady, Peterborough, ON; Charles Maxant, Hinton, WV; Harold Sellers, Vernon, BC; Richard Parker, Pennsburg, PA; William Hassig, Mt. Pleasant, IL; Robert Brossell, Pewaukee, WI; Robert Fraser; Belfast, ME; and, — what was your name again? I did not find it on my contributors list!?



This tiny pennant from El Salvador's Radio Nacional must date back to the 1950s.

By Jason Feldman, WPC2COD

LDG Releases a Pair of Tuners

LDG Electronics recently released a pair of antenna tuners: The RT-100 and the AL-100, which is designed specifically to work with Alinco-brand radios.

Photo A. LDG Electronics' new RT-100 is designed to impede RF power loss. *(Courtesy of LDG Electronics)*

The RT-100

If you are worried about power loss due to SWR in your feedline, the RT-100 is a 100-watt, coax-in/coax-out remote tuner designed to be placed near the feedpoint of the antenna, **Photo A**.

For dipoles, verticals, 'V's, beams or any coax-fed antenna, the RT-100 covers 1.8 to 54.0 MHz and includes a built-in frequency sensor. Tuning into the proper frequency will take 0.1 to 6 seconds and 0.1 seconds if it is tuning from the 2,000 available slots in memory.

Maximum capacities of the RT-100 is 0.1- to 125-watt power range, 30 watts digital; tunes 4- to 800-ohm loads (16 to 150 on 6 meters), 16 to 3,200 ohms with the optional 4:1 balun that allows tuning of random length, long wire, or ladder-line fed antennas.

The RT-100 is DC-powered over the coax, so you can add your own DC injection circuit (bias-T) or use the LDG RC-100 to power and control the tuner from you shack. The RC-100 will provide DC power over the coax as well as control for auto/semi mode, lock, and force a manual tune.

Keeping the elements at bay is a 6.5-inch-long by 6.0-inch-wide by 2.5-inch-high, weather-resistant ABS enclosure with gaskets. If you would like to mount the RT-100 on a pipe, it comes with a U-bolt.

The RT-100 has an MSRP of $199.99 and the optional RC-100 has an MSRP of $49.99.

The AL-100

Fans of the Alinco-brand radios in search of an antenna tuner are in luck with LDG Electronics' new AL-100, **Photo B**. Featuring 2,000 memory channels, the high-efficiency switched "L" tuning network can tune in a frequency in 0.5 to 6 seconds with a 3.0-second average.

With a power range of 1 to 100 watts, the AL-100 can cover 1.8 to 54 MHz all while requiring 300 mA current and 11 to 18 volts that it can draw from the Alinco radio. When the tuner is not in use, it will draw almost zero current.

All coax-fed antenna types will work with the AL-100 and it can tune loads from 6 to 800 ohms. An optional external balun allows tuning of random length, long-wire, or ladder-line fed antennas.

If you are out in the field, the AL-100 has latching relays that LDG Electronics claims can hold the frequency indefinitely. Also helping out trail-friendly operation, the unit itself is 1.5 inches high by 5.25 inches wide by 6.5 inches deep and weighs in at 15 ounces.

Photo B. LDG Electronics' new AL-100 is designed specifically for Alinco's line of radios. *(Courtesy of LDG Electronics)*

The AL-100 has an MSRP of 149.99. For more information on the AL-100 or the RT-100, contact: LDG Electronics, 1445 Parran Road, St. Leonard, MD 20685. Phone: (410) 586-2177. Website: <http://www.ldgelectronics.com>.

SOTAbeams High Hopper III Aims at QRP Operation

For hams who operate using a linked dipole, SOTAbeams has introduced the High Hopper III, **Photo C**, which is designed for the lightweight portable specialist.

The High Hopper III covers three HF bands (20, 17, and 15 meters) with a high-efficiency, full-size half-wave dipole on each band. It's also designed to allow you to get the feedpoint high. Band selection is by jumpers which enables the user to quickly change bands.

The custom designed centerpiece fits on a tapered pole where it can slide down to the optimum height. If you don't have a tapering mast, the centerpiece has slots for cable ties, too, so you can attach it to mostly anything. Don't like masts? The centerpiece has an attachment point for a throwing line to use in the forest.

Unrolling the dipole elements is made easier using the Wirewinders supplied. When you unroll the elements you will notice that the Wirewinders are attached to 13 feet of nylon braided extension cords. This not only means that you cannot lose them but also that in rocky areas you can guy your pole by putting the Wirewinder in a crack in the rocks or just by putting it under a rock. The Wirewinders also work as snow anchors. SOTAbeams also provides pegging loops for use with their own pegs.

The feeder is a 33-feet-long, RG-174 wire with a pre-terminated BNC plug that is wound on a third Wirewinder. Also on the third Winder is a 33-foot back guy for your mast.

The lightweight package consisting of the antenna, the Wirewinders, the feeder, and the back guy weighs in under 14 ounces and there is no need to adjust the High Hopper III, it is supplied pre-tuned.

The MSRP of the High Hopper III is $58.33. For more information, contact SOTAbeams, 89 Victoria Road, Macclesfield, Cheshire, SK10 3JA, UK. Phone: 07976 688359. Email: <richard@sotabeams.co.uk>. Website: <http://www.sotabeams.co.uk>.

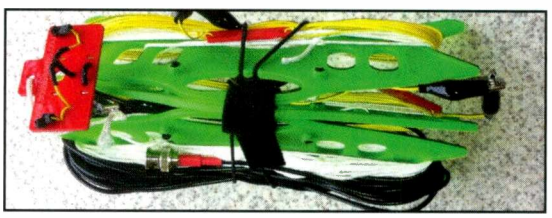


Photo C. SOTAbeams newest High Hopper is a linked dipole that operates on the 20-, 17-, and 15-meter bands. *(Courtesy of SOTAbeams)*

The Night the Sparks Flew At 'The Homebrew Crew'

*(**Editor's Note:** Shannon Huniwell, WPC2HUN, is on an investigative broadcasting nostalgia assignment who-knows-where. Standing in for her this month is 15-year-old Ryan Archer, KPC6KPH, who was first introduced to readers in the May 2013 edition of Pop'Comm — "a youngster who likes to write about the electronics that first glowed before he was born.")*

By Ryan Archer, KPC6KPH

"As if lassoing a runaway doogie at the OK Corral, Pop gave a wild yank to the power cord, ripping it from the wall with such force it took sail like a bullwhip."

My first column may have left the impression that my great-grandpa, Herbert "Roary" Wallace was what some people refer to as "an appliance operator." In other words, he'd spent a lifetime in his creaky, cobweb-draped radio workshop fiddling with the dials of commercially-made receivers and accessories, but never really getting inside of them.

Well, nothing could be further from the truth. You'd only have to look on the planks of the wooden floor beneath his workbench to see the solder splats that had landed there when Pop was tinning the tip of his WEN iron. He loved getting "under the hood."

It wasn't surprising, either, to find burn marks in the pages of his electronics reference books where Pop had carelessly let his soldering iron linger. "Herbert, you're going to burn this place to the ground," great-grandma would shout from the landing leading into Pop's radio sanctum — just as white smoke curled from the pages of an open radio book. "I'm going to take that thing away from you and hide it if you aren't more careful!"

Pop would give me a sly wink, turn to granny and promise, in a tone dripping with mock sincerity: "I will never, never, *ever, everrrrrr* allow my iron to misbehave again, my *dearest, darling* Margaret." Great-grandma would turn in a huff: *"That man is just immmm-possible!"*

'The Crew' in Pop's Radio Sanctum

Imbued with decades of solder smoke and the unmistakable smell of vintage radio equipment, Pop's radio workshop was a three-ring circus for the sensory system.

Early morning sun rays streaming through the southeast windows picked up on millions of particles floating in the air. I liked to think these were microscopic bits of the tools of our trade, such as carbon resistors, cloth-covered wire, ceramic vacuum tube sockets and paper "condensers," as Pop liked to call them — all remnants of great-grandpa's skill for bringing electronic things to life.

By *"our trade,"* I mean Pop's and mine, because since I was very little, he made me a full partner in his radio adventures.

When I was nine, Pop decided it would be fun for us to make a radio from scratch. No "appliance operator" was he. Nor me!

He told great-grandma at supper one night we were "The Homebrew Crew," to which she

Photo A. It is clear to see that our *"Little Electrical Disaster Survivor"* has succumbed to time, scavenge, and the perils of Pop's radio sanctum since it was built six years ago. In happier times, the front panel was a thing of regenerative beauty with the band-set capacitor control on the left. In the middle, you can see the four holes where a nice vernier drive was mounted for band-spread tuning. The regeneration control was at the right and audio at the bottom. To the left of the audio was the headphone jack and the gaping hole on the upper right was where Pop and I put a pilot light — to remind me not to reach behind the front panel when the power was on. We made a little chart of capacitor settings and glued it near the top of the panel for easy reference. I'm not sure what that gunk is that dripped down the regen's face. It could be just about anything, given the rather "untamed" condition Pop's radio workshop was in. *(Photography courtesy of KPC6KPH)*

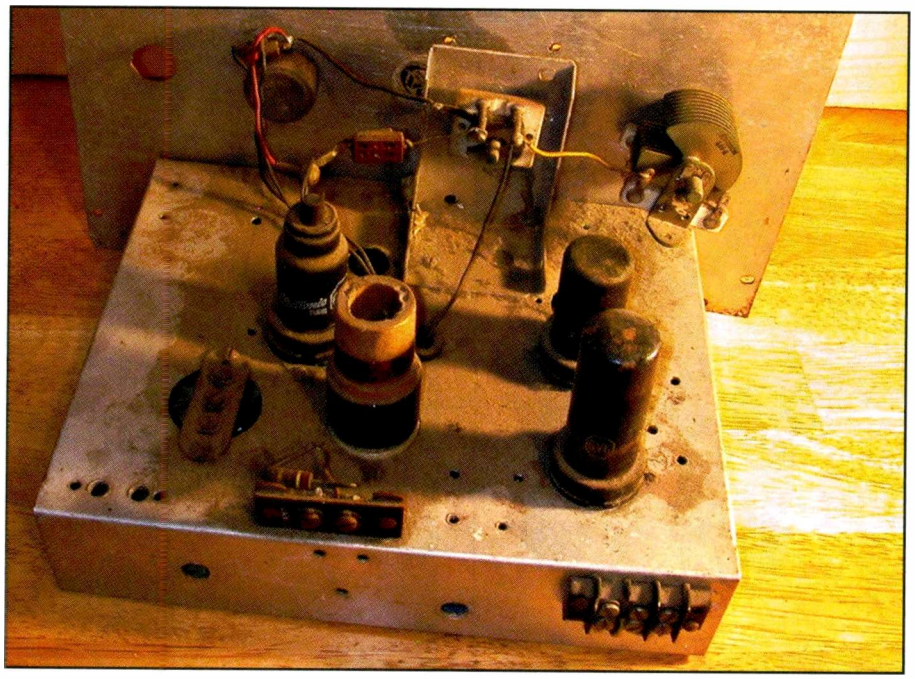


Photo B. When I rediscovered what was left of "The Homebrew Crew's" regenerative receiver, it included a hefty layer of dust covering the top of the chassis behind the back panel. We used part of an aluminum project box to mount the band-spread capacitor on, behind the vernier drive. The terminal strip across the hole in the chassis to the left was where the speaker was connected. The one on the top of the back panel was for the antenna connection, and the one on the back panel was for power connections. On the left is the 6J7. To its right is the 6J5. And closest to the back of the chassis is the mighty 6V6.

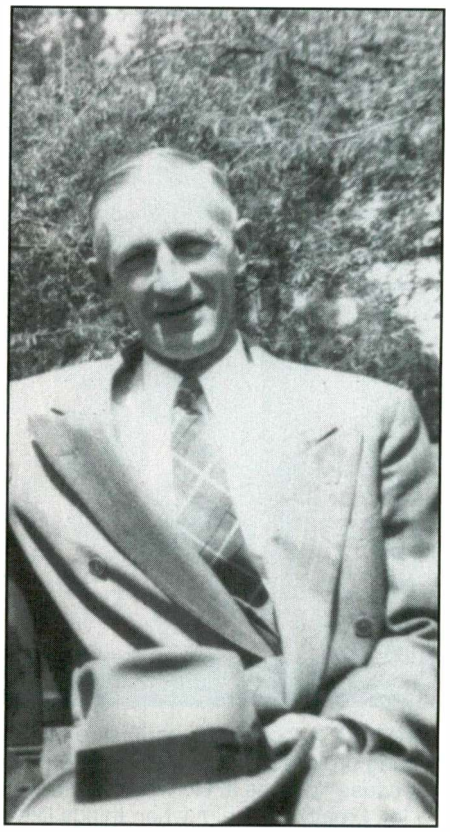


Photo C. Herbert "Roary" Wallace always dressed up when it was "picture takin' time." But in the radio sanctum he wore a lumberjack-style long sleeve shirt and dungarees, with deep pockets. "You know what those are for, don't you Ryan?" he'd say. "They're to put one hand in when you're working around high voltage." It was Pop's way of reminding me that one hand touching an HV line and the other touching ground makes for a potentially lethal mistake. I'll never forget that!

replied: "You give that child *one sip* of beer and I'll crown you!"

Granny's steaming chicken potpie was delicious, but *sooooo* hot — making it impossible to gobble quickly. We were chomping at the bit to get started on our radio.

After dinner, we'd draw a schematic and begin scrounging around for the parts and a chassis to mount them on.

Let's Make a Receiver

"How about a three-tube regen?" Pop said. "It'll be your own *'row-daddio'* and we'll make sure you'll have lots of dials to turn!"

What little kid wouldn't like to hear that? "You're *the bomb*, Pop. Let's do it!" Granny could only shake her head incredulously as she stood at the sink doing the dishes. "Now you boys be careful!"

Back in the radio workshop, Pop and I huddled on two stools at the bench. A gooseneck lamp's incandescent bulb put a warm glow on the pad of paper he'd use to sketch his mysterious radio-wave catcher.

He began drawing this "genny" using schematic symbols, which were only vaguely familiar to me. Scribbling, Pop said, "whadahya say we start with a 6J7 pentode for the regenerative detector, follow it with a 6J5 triode for a first-audio stage, and top it off with a 6V6 second audio? Your great-grandma will be able to hear this beauty when she's hanging out the clothes by the barn!"

"Perfect!" I replied, understanding only the part that promised this would be *one loud receiver.*

Away Pop went, quickly scratching out the plan, stopping occasionally to whisk away bits of pencil erasure where he'd made a modification.

" ... and let's put in a bypass *that-way.* There!" he said, pushing the pad in front of my nose, which from the stool was only about three inches above the workbench. Feigning it made complete sense to me, I assured Pop: "Perfect!"

The 6J7 was a tube that saw a great amount of duty during World War II. Pop had a particular fondness for them because the grid connection was on its top. "Ain't these pretty?" he'd say, pulling one from a box teeming with 'em. They were often mated with the 6J5 in receiver circuits, so it was a natural for "The Homebrew Crew." Pop called the 6V6 audio amplifier the *crème de la crème.* "*Ohhhhhhhhhh, baby,* fasten your seatbelt, my friend."

I made sure to start my homework as soon as I got home from school. This would free up the evenings to work with Pop on our radio. And mom made it clear to me — and to *her* grandfather — that the first bad report card would get me pulled from the project. *"No ifs, ands or buts ... is that clear?"*

Gathering Components from Everywhere

Given Pop's massive stockpile of parts, it didn't take long to gather what we needed. There were two variable capacitors — oops, *condensers* — a handful of resistors and fixed capacitors, a

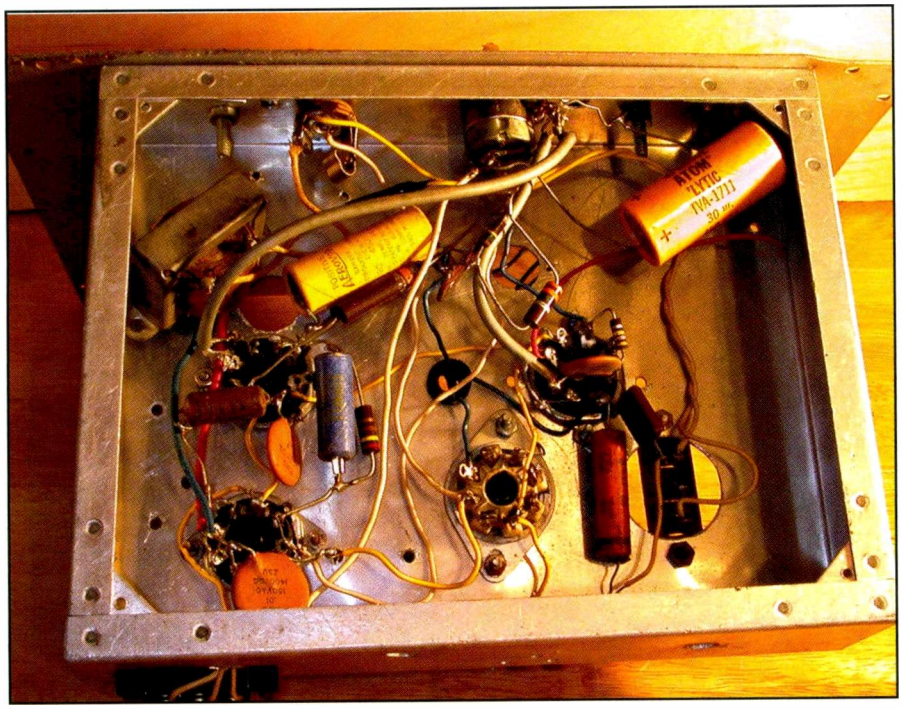


Photo D. A look at the underside of the regen's chassis shows my soldering and wiring prowess. I laugh at it now, but Pop swore it was a "thing of beauty" — mostly because I'd done it. He worked at my side through the whole project and taught me a lot. I really miss him when things like this bring back memories of our good times. He'd tell you the only thing Pop did was "blow the solder smoke away" during our radio's homebrew. But you know he did so much more than that.

Photo E. Edwin Howard Armstrong, "The Major," was Pop's radio hero. I guess the kids in my generation usually think of the invention of the transistor as the place radio — as we know it — got its start. Pop taught me that it was people such as Major Armstrong who really paved the way. And to think this amazing inventor jumped out a window to his death in 1954. "That's so hard for me to understand, Pop," I once said. "It's hard for *any of us* to understand," great-grandpa replied.

couple of potentiometers for regeneration and audio gain, an audio choke, tube sockets, jacks, a rubber grommet, terminal strips, and other hardware. I'm probably forgetting something, but you get the idea.

"*Now ... lookie ... here,*" Pop said, as if he'd just caught their springer spaniel "Fin" drinking from the toilet. He was holding up an aluminum chassis full of holes and dangling electronic parts. "Do you think this'll do? You can strip 'er down and clean 'er up before we get started." What else could I say: "Perfect!"

Pop had a method to his madness. That "*stripping down*" and "*cleaning up*" would allow me to practice my soldering and de-soldering skills and set the tone for the whole project. I resolved silently that this would be the most beautiful piece of aluminum Pop had ever seen when I got done with it.

He came across a piece of metal originally used as the bottom plate of a long-forgotten aluminum chassis. "Here's our front panel," he said. "This is gonna be a beauty!"

What Goes Where?

We began by figuring out the location of the tube sockets on the chassis. "Where do you think we should bring the antenna into the receiver?" Pop wondered. "How 'bout here?" I suggested, pointing to left of center atop the back of the box. "Perfect!" Pop said, mimicking me. "So that means our 6J5 detector should go right about here," he said, tapping his index several times on the shiny metal I'd burnished with steel wool. "And where do you think you'd like your speaker to be connected?"

"How about here?" I said, motioning to a gaping hold at the back-left of the chassis. "Yeah, the 6V6 will go perfect right over there," Pop said. "And we'll put the 6J5 right between it and the 6J7! What a plan."

Let 'the Build' Begin!

For the next couple of weeks we — or more accurately, "*I*" — methodically toiled away, slowly adding parts on the underside of the chassis, drilling holes on the front panel and mounting the variable capacitors and potentiometer, adding a headphone jack and terminal strips for antenna and power connections.

It was all under the watchful eye of Pop, who appointed himself the guy *whose only job* was to blow away the solder smoke so we could see. Of course, that's not true. He guided my every move and checked my work as we went along. "Gosh, you're building a beauty of a regen," he'd occasionally stop to say.

Pop was an evangelist for this radio brainchild of its renowned inventor, Edwin Howard Armstrong. "The most important man in wireless history," he said.

"Even better than Brattain and Bardeen?" I asked, invoking the names of the Bell Labs men who invented the transistor.

"Armstrong was a titan," Pop said. "In the earliest days of wireless, who but the 'The Major' had the analytical horsepower to come up with a concept like the 'autodyne?'" as if in a verbal battle over baseball teams. "*Nobody,* that's who!"

Pop went on to pontificate about Armstrong's regenerative circuit designs that allowed electronic signals to be amplified many times by the same vacuum tube. "By golly, if Armstrong hadn't come along, we'd still be straining to hear

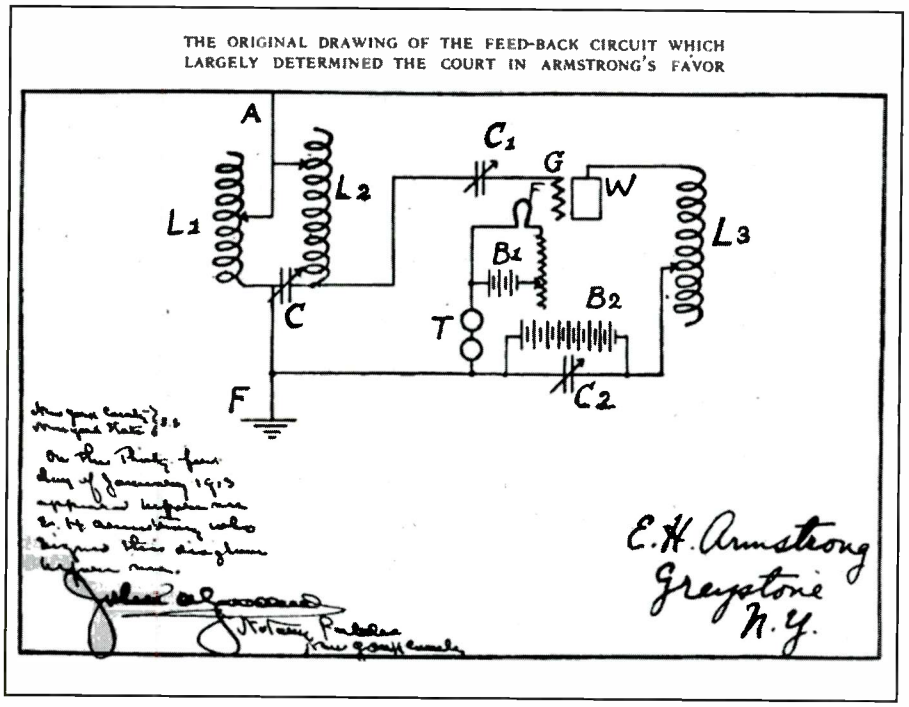


Photo F. Major Armstrong got in a huge fight with another inventor — Lee De Forest, I think Pop said — over who really invented the regenerative circuit. Great-grandpa had saved The Major's feedback drawing, which was used as an exhibit in court. It took 12 years, but Mr. Armstrong finally won the case. Pop was really happy about that.

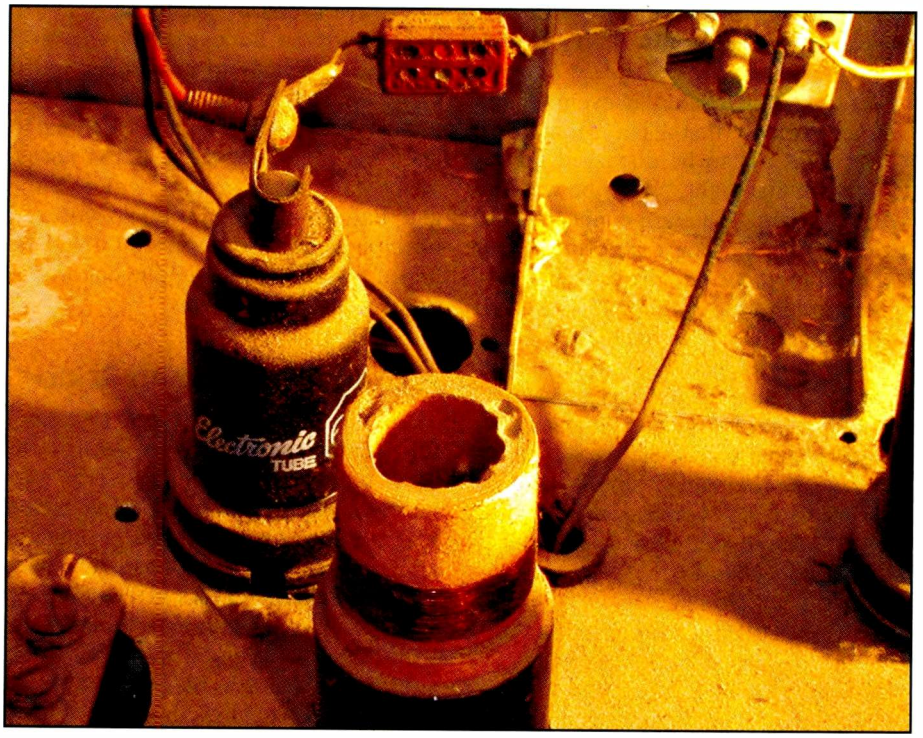


Photo G. Beneath the dust on top of the 6J7 Electronic Tube you can see the cap for its grid. That was a feature Pop really loved about this popular tube. We bent a Fahnestock clip *just right* to serve as our tube cap <http://bit.ly/1cvVw7F>. From the cap, there's a silver-mica "condenser" and a resistor going to the band spread tuning capacitor, *"per our schematic,"* as Pop loved to say. By the way, that's the 7-MHz coil in the foreground.

signals from a crystal detector," he shouted loud enough to bring granny to the radio workshop's door.

I watched in awe as "Roary," the nickname Pop had been given by fellow engineers at the AM radio station, whipped himself into an absolute frenzy. In his animated defense of 'The Major,' he'd backed into a corner of cobwebs and came out looking like a cross between Einstein and Frankenstein. I could understand why his colleagues had playfully connected the "roar" to "Roary."

"For heaven's sake, Pop, calm yourself," granny said. "And get those spider webs out of your hair. You look ridiculous."

Undeterred, Pop went on to explain that between the early 1920s and World War II, "regens" were really popular because of "the efficiencies gained when a vacuum tube's output was connected to its input, creating positive feedback by means of a feedback loop."

"Loopy, indeed," Granny muttered, adding, *"that man is just immmmpossible!"*

In fairness to Pop, later research on the Web proved him absolutely right about Mr. Armstrong and the autodyne circuit. The design was revolutionary and earned "The Major" a patent in 1914. And as I looked at the circuit Pop had drawn, it was becoming clearer to me *how the regenerative receiver worked.*

Since Pop passed away, I've been digging deeper into the theory behind regens. After all, what kid wouldn't like to learn more about a receiver that is so simple to build and can so easily receive Morse code, AM signals, and single-sideband phone? *They're so cool.*

AM Reception

A posting I found on Wikipedia <http://bit.ly/191r19y> said the beauty of the regen's AM signal reception is in the circuit's ability to adjust the gain of the feedback loop "so it is just below the level required for oscillation," or when regenerative receivers "howl."

*(**WATCH and LISTEN:** To a homebrew regenerative being put through its paces on AM by adjusting the regen control repeatedly across the "howl threshold." It can be heard from the 12 to 20 second points of the video <http://bit.ly/19Oq9WK>. – KPC6KPH)*

This setting increases the gain of the amplifier "by a large factor at the bandpass frequency (resonant frequency), while not increasing it at other frequen-

cies. So the incoming radio signal is amplified by a large amount."

Morse Code Reception

I learned that for Morse code — or CW — reception, "the feedback is increased to the level of oscillation (a loop gain of one), so that the amplifier functions as an oscillator (BFO) as well as an amplifier, generating a steady sine wave signal at the resonant frequency, as well as amplifying the incoming signal. The tuned circuit is adjusted so the oscillator frequency is a little to one side of the signal frequency. The two frequencies mix in the amplifier, generating a beat frequency signal at the difference between the two frequencies."

Pop's circuit was becoming so much clearer to me, and pointed to his genius as well as Mr. Armstrong's.

"This frequency is in the audio range," the regen treatise continued, "so it is heard as a steady tone in the receiver's speaker whenever the station's carrier is present. Morse code is transmitted by keying the transmitter on and off, producing different length pulses of carrier," — *dits and dahs*. "The audio tone makes the carrier pulses audible, and they are heard as beeps in the speaker."

Single-Sideband Reception

Just as it is for Morse code reception, for single-sideband (SSB), "the circuit is also set to oscillate. The BFO signal is adjusted to one side of the incoming signal, and functions as the replacement carrier needed to demodulate the signal."

Band Switching the Old Fashioned Way

With these kinds of attributes, although unknown to me at age nine, it was good we pushed ahead to completion of the wiring. Pop had saved the best for last: winding the coils that would create the feedback loop and determine the frequencies our regen would be receiving.

As I came to learn, Pop had a love for homemade inductors — *coils* — that he'd pass along to me.

He'd calculated the windings based on a 1-inch diameter form — a size chosen because the thread granny used in her sewing room was wound around cardboard tubes just that size. And Pop had collected a million of them. Slipped into another piece of cardboard tube about one-and-one-eighth inch in diameter, it fit snugly inside a discarded octal tube base. "We'll make a set and plug in which one we want to change bands," Pop said with a smile.

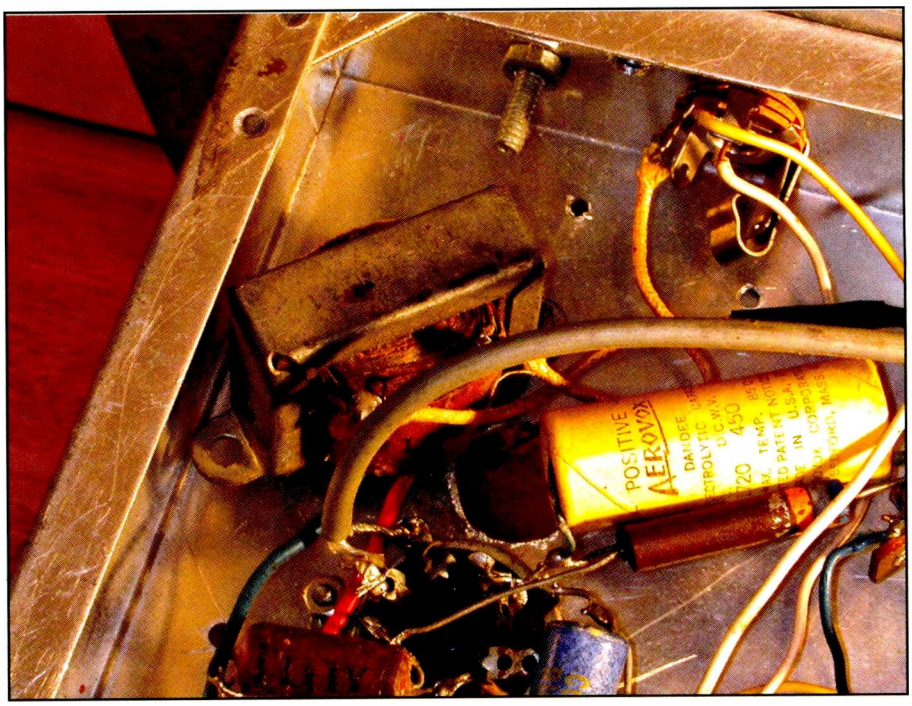


Photo H. We must have been in a hurry to get things wrapped up, because our audio choke was attached to the chassis with only one bolt. The other side is floating in mid-air. Pop always put substance over style. The beauty was in how well a radio worked, not so much in how it looked. I liked that about my great-grandpa. Pop was every bit a "titan" to me as Major Armstrong was to him.

At supper on a Saturday evening, Pop warned granny that "The Homebrew Crew" was not to be disturbed during their work that night. "We'll be winding wire," he said. "The turn counts have to be exact. The coil taps are critical. Our concentration *must not* be broken" — to which granny gave a dramatic eye roll worthy of an Oscar nomination.

Back at the bench, Pop proudly held a chart he'd made for winding our No. 22 enameled wire for regeneration and coverage on three bands. He'd even calculated the approximate position where the bandset variable "condenser" should be turned — based on the front-panel dial he envisioned. *Genius!*

- 1.8 MHz: 68 turns with a cathode tap at 9 turns. Bandset about 4.
- 3.5 MHz: 30 turns, cathode tap at 3.5 turns. Bandset 3.
- 7 MHz: 19.25 turns, cathode tap at 3.75. Bandset about 7

"Aren't those ham bands?" I asked Pop. "Indeed they are," he said, "but we'll have enough 'fudge factor' to cover the shortwave broadcast frequencies above and below them. Believe me, Ryan, you'll have more signals to copy than you'll know what to do with."

Pop had always encouraged me to learn the Morse code. He didn't necessarily want me to become a radio amateur, but I think deep inside he regretted never becoming one himself. And he hoped I wouldn't pass up the opportunity if I wanted to be a ham.

A Long and Winding Road

As if making a fine watch, Pop carefully demonstrated his coil-winding technique before handing things over to me.

"See, putting the spool of enameled wire on this dowel clamped in our vise allows us to turn the cardboard tube gently without getting kinks in the wire," he said. "Keep your left thumb pressed to the wire that's winding on the tube, while your right hand turns the coil form."

And with that, I took the reins: "That's one, two, three." I counted aloud as the brownish wire began to cover the form — one turn snuggled against the next, but never overlapping.

We came to turn No. 9 on the 1.8 MHz coil. "Time for your cathode tap," Pop

said. While I held all the turns in place, Pop assisted by using a 1/16-inch drill bit to make a hole through the cardboard form. We'd cut the wire with enough of a "tail," as Pop called it, to go through the hole, reaching to what ultimately would be the connection point in the discarded tube base. Running another "tail" through the same hole, I began winding the remaining 59 turns for the 160-meter coil.

When I'd reached the total turns count, Pop let out a "hallelujah," and helped drill the final pass-through hole for the coil. We scraped the enamel from each of the coil's wires and soldered them carefully to the proper pins of the octal tube base, *"per our schematic,"* Pop loved to say, with military bearing.

After checking our work, we pulled out the Duco® cement and glued the cardboard sleeves firmly in the socket. One down, a few more to go.

We spent several evenings at this, marveling at the quality of our work with each new coil. Unknown to Granny, she'd "donated" a cardboard box to the cause that had previously been home to a brick of Kraft® American cheese. "This is where we'll keep each of your coils," Pop said. "You don't want to be rooting around the whole workshop for them every time you want to change bands." What else could I say? "Perfect!"

Photo I. Here's a close-up of our coil-winding skills. Pop and I weren't stingy when it came to putting on the Duco® cement! The enamel was scraped from the No. 22 wire, and the coil's leads for the top, bottom, and cathode tap were carefully pushed into the proper pin on the tube base. We were very careful in doing this work, because one mistake could result in having to start *all over.* It usually took a full evening to make one from start to finish. We got better at the process with each new plug-in we made.

Time for the 'Smoke Test'

The regen had finally taken full form. Pop knew my soldering and construction techniques left a lot to be desired, but it was a thing of beauty to me. And I'm sure it was to him, as well.

Digging through a dusty pile of radio gear in the shadows near the door, Pop emerged with a power supply he'd obviously built himself. "Lookie here," he said, raising the supply above his head in mock victory. "A 5U4G rectifier, transformer, and filtering to provide your regen with the cleanest 250 volts of DC this side of the Mississippi," he said.

Carefully attaching the filament voltage, B+ and ground connectors to my radio, Pop smiled, taking a deep sigh. "Are you ready to attach the aerial and earphones?" he asked. "It's time for your 'smoke test!'"

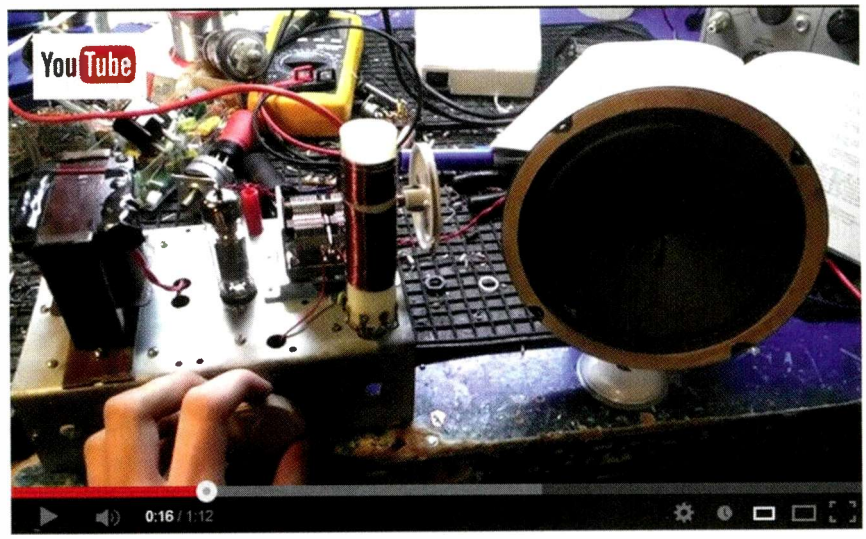
"What could go wrong?" I asked myself. We'd checked and rechecked my wiring. It conformed perfectly to Pop's schematic. Everything appeared in order. I turned to Pop: "Ready if you are." Eyes wide with anticipation, Pop said: "Perfect!"

The Grandma Finale!

"Marrrrrgrettttttt!" he shouted toward the radio workshop's door — not wanting granny to miss this. "We're about to launch the *SS Ryan Archer.*"

"What we have here," Pop said as granny reaching the shop's landing, "is some of the finest radio craft ever produced by the one, the only 'Homebrew Crew,'" at which he burst into an off-key rendition of *"Hail to the Chief."*

Photo J. Here's the Kraft American Cheese box Pop suggested we use to house the regenerative receiver's coils. The two on the left are for 160 and 80 meters. I'm not sure where the two on the right came from. They look as though they might be part of some transmitter project, but Pop never became a radio amateur — which I think he regretted. I wouldn't have put it past him to have been a "bootlegger" at one time, however. As you can tell from his workshop antics, Pop had a way of getting into mischief. You'll notice on the cheese box cover an invitation to send away for monogrammed pillowcases. "We'll get ours to say 'THC,'" Pop said. "The Homebrew Crew!"



One-Tube Regenerative Mediumwave receiver

Photo K. This video gives a good demonstration of how the autodyne circuit can go into a "howl" at the threshold of regeneration <http://bit.ly/19Oq9WK>. I think Pop would have admired this guy's homebrewing. The regen control is on the front of his radio, but he has to reach around the right to adjust the tuning. Probably good exercise. But I like the layout of the radio Pop and I made a lot better. *(Internet screen grab)*

"Put on those 'cans,' laddy," he instructed, handing me a set of high-impedance headphones.

"May I do the honors?" Pop asked as he whipped his arm in baseball wind-up fashion to place his index finger on the toggle of the power supply's ON switch. "Perfect!" I replied.

'Land Sakes Alive!'

And with a ceremonial flip, *KA-BOOM!* A plume of smoke billowed from the power supply transformer with white sparks flying in all directions. I dove beneath the workbench as granny shouted, "Oh, my land sakes, alive!" hands held to her heart.

As if lassoing a runaway *doogie* at the OK Corral, Pop gave a wild yank to the power cord, ripping it from the wall with such force it took sail like a bullwhip.

To add a happy ending to what granny described as an "electrical disaster," a proper power supply was quickly unearthed from the shadows and my regen came to life for the first time! It covered the high-frequency bands proudly on the shortwave and amateur bands for several years.

A Picture of Disrepair ☹

As you can see from the accompanying pictures, though, time and scavenging have not been kind to our *"Little Electrical Disaster Survivor,"* as Pop would forever call it. He and I would go on to many other successful projects, but under strict orders from granny that *"whatever you two are building better not need to be plugged into the wall."* We had no good defense for that.

"OK, Margaret," Pop softly lamented — his chin hanging to his chest.

"Perfect!" I said, with a sigh of relief.

And, as always, granny turned in a huff: *"That man is just immmm-possible!"*

With Appreciation to Ms. Huniwell

I want to thank Ms. Shannon Huniwell, who made it possible for me to write about Pop and my passion for radio. To everyone who has written to me about my first column: *Thank you!* I appreciate hearing from readers and can be contacted at <editor@popular-communications.com>. The editor will see I get it. And *please* let me know if I got any facts wrong. Pop wouldn't want it any other way.

– Your Friend, Ryan Archer, KPC6KPH

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The Death of a Radioman ... Kinda, Sorta

By Bill Price, N3AVY
(a.k.a Willie Lowman)

"If I find a CB radio to convert to 10 meters, the microphone will be the first thing to go. The kids next door can have fun playing airline pilot."

Perhaps my byline should be appended this month with: *a.k.a. Willie Lowman.*

So, I finally got an antenna on the end of my little handie-talkie. You could say that I have a choice of antennas, since I got two mag mount bases and about six whips.

Right now I've settled for the 5/8-wavelength whip for 2 meters, since I have little use here in Cowfield County for any 450-MHz signals just now.

This evening, I found myself in the drive-through behind another ham (whose call also started with N3) and thought I'd try him on 146.52 simplex. He didn't hear me, but the kid in McDonalds did. He looked up in the air as if someone was hovering over him, talking letters and numbers and gibberish. Not something he could interpret as a spiritual event.

The guy in front of me got his order and drove off into the night, never knowing what an interesting person sat behind him just itching to strike up a conversation. *Oh, well.*

Once the wind fills my sails, the next step is to re-solder that other magnet mount base and run the cable through the window near my comfy chair in the living room. It's nice to consolidate one's activities into one area. It's also the chair from which I shoot my air rifle into the dining room — with pellets passing safely below the chandelier into a target with a safe backstop. The *extremely* long-suffering Mrs. N3AVY has long since given up on getting me to stop shooting in the house, and is thrilled by the prospect of my just sitting there chatting on 2 meters. I assured her I'd use an earphone so as not to disturb her.

I have never won a contest involving amateur radio, though there is a letter in my service record acknowledging my working more weather observation and merchant vessels reporting message traffic than any other Coast Guard ship in the north Atlantic. I did, however, win first place in my division shooting that air rifle this past Saturday — which might have softened Mrs. N3AVY's heart toward my shooting in the house.

That little bit about the Coast Guard brings to mind a rather sour note with regard to maritime communication:

There are no more radiomen in the Coast Guard. They have abolished the rate. The wonderful group of four "sparks" we wore on our sleeves is now relegated to history. A fine kettle of fish, if you want my opinion.

I keep wanting to send a little CW on that HT of mine, but alas, there's no place to plug in a key. The best option I have for sending code on it is to key the microphone and send some code into it using a practice oscillator. I know that no one would answer. If someone did, I'd be afraid to hear what was said.

So now I'm moving into the old ham mentality of building or converting or jerry-rigging something that's both portable, can send and receive CW, and use a reasonably portable antenna.

Perhaps a nice, old 5-watt, 40-channel CB HT with its frequency moved up a bit.

It pains me to think of that, since altered CB transceivers have been the bane of the 10-meter ham band. But mine will be different. Once I find an efficient way to move up to the 10-meter band, it will have no microphone. It will have no modulator. It will have to have a BFO (that's a beat-frequency oscillator) to make CW signals sent by others audible to me, and it will have an SO-239 RF output, so that I can connect it to a base-station antenna to enhance my operating position in the living room — next to my stash of air gun pellets.

I never followed the illegal operation of CB radio in the ham bands. For all I know, some such radio might already be available at yard sales or thrift shops. But I know that if I find such a beast, the microphone will be the first thing to go. The kids next door can have fun playing airline pilot or something with it.

I still have the dusty old HF transceiver in the corner of the kitchen, just waiting for me to plug in a key and an antenna. A little too big and too powerful to run in the car, but the wheels are turning, thinking about a retuned 11-meter (that's the CB band) magnet mount whip antenna perched atop my beloved tin roof. ***(TRUTH IN REPORTING:*** *It's really steel, but tin sounds so much more romantic. – N3AVY.)*

Who knows what evil lies in the hearts of disenfranchised radiomen?

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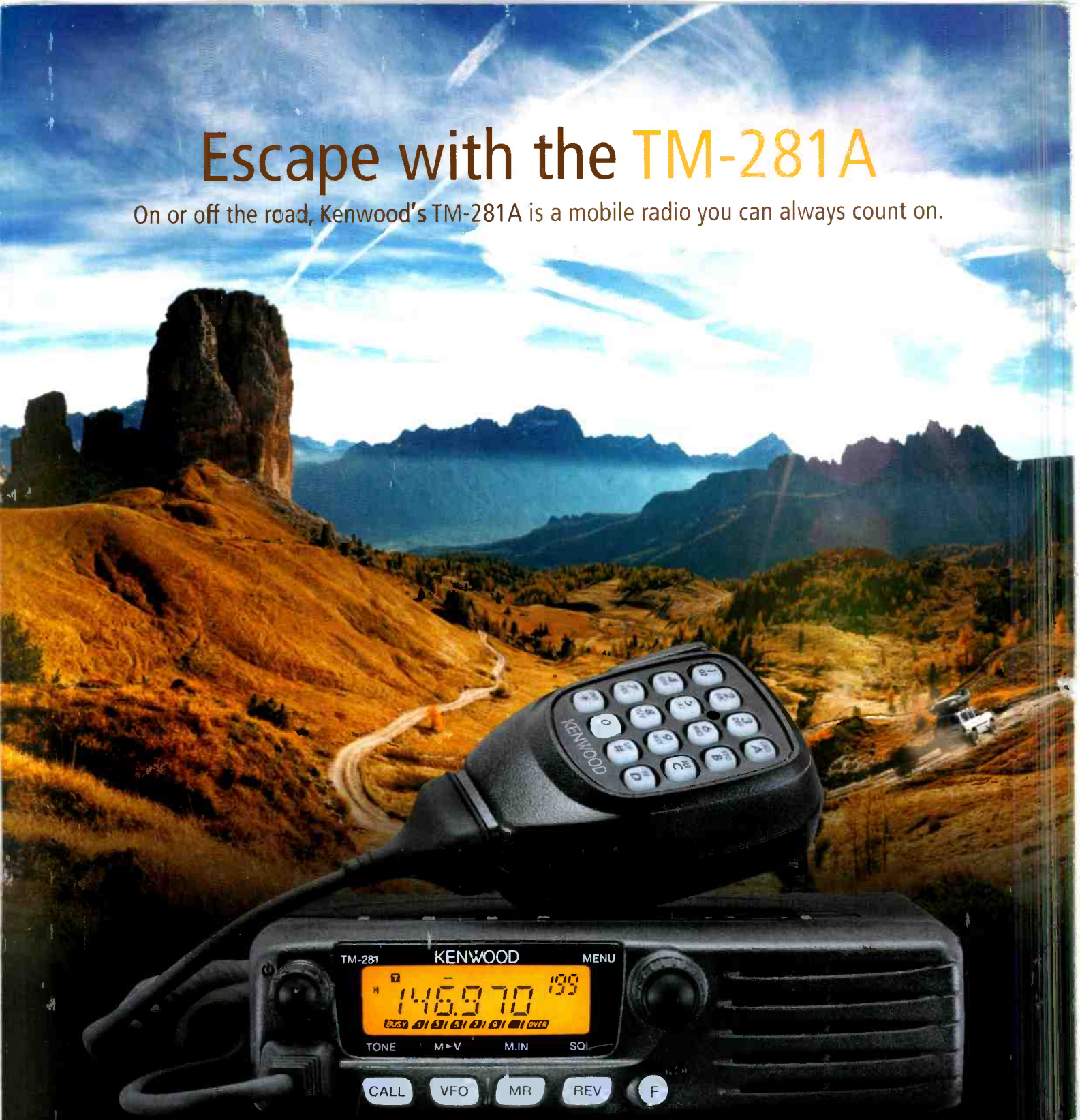

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