

POPULAR COMMUNICATIONS

AUGUST 2011

Shortwave Listening • Scanning • AM & FM • Radio History

Now, Let's Make This Perfectly Clear...

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Try Some Military Monitoring in The Hub of the Low Country, p. 76

Tips On Big-Battery Maintenance, p. 28

Plus: Hams Working 60 Meters • Reviving an HT-32A • Crystal Set Mystery



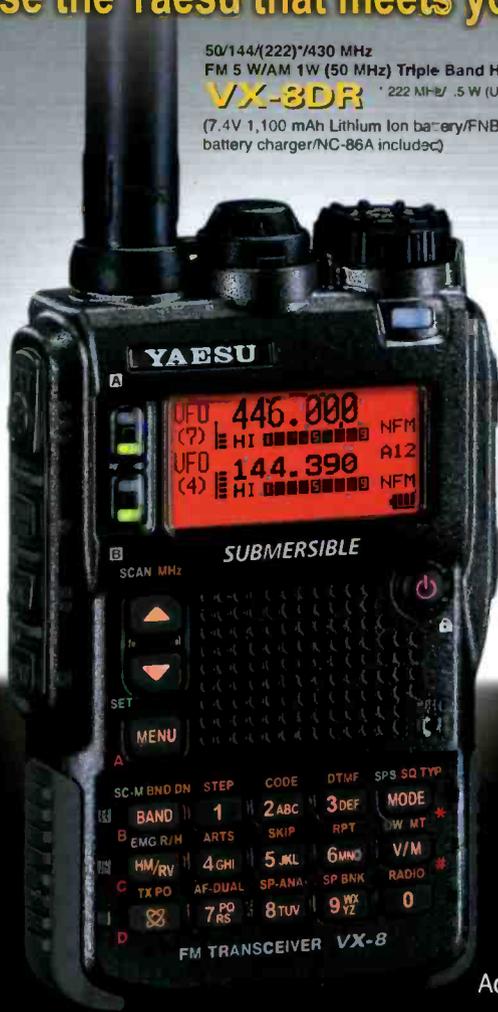
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A TECHNOLOGY BREAKTHROUGH

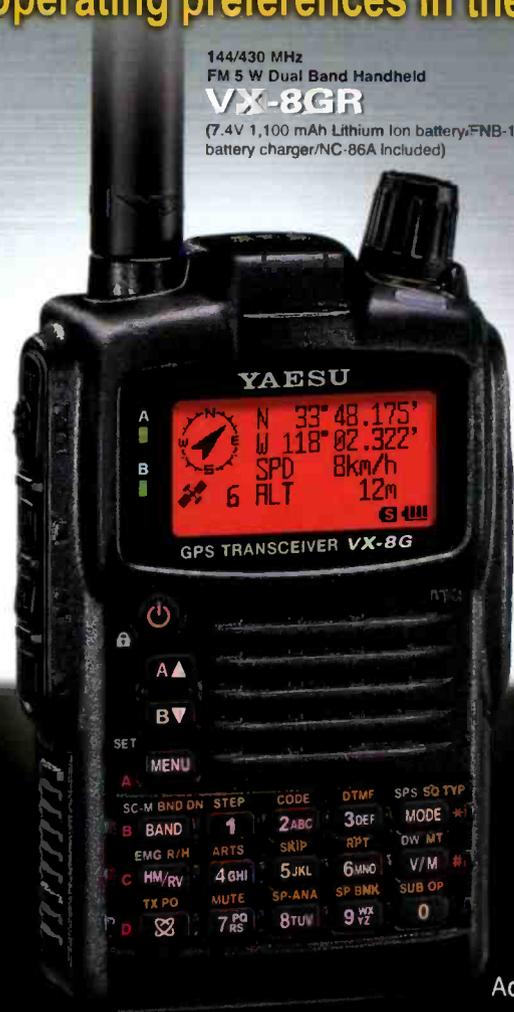
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Actual Size

144/430 MHz
FM 5 W Dual Band Handheld
VX-8GR
(7.4V 1,100 mAh Lithium Ion battery/FNB-101LI and battery charger/NC-86A included)



Actual Size

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All-in-one Prestigious Tri-band Transceiver
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GRUNDIG

Satellit 750

✓ Receive a **FREE Grundig G6** with your Satellit 750 purchase. A \$99.95 value!

G6



The Grundig Satellit 750 is an exciting portable that brings you the world of long wave, AM and shortwave reception as well as FM and the VHF aeronautical band. Your complete shortwave coverage includes the S.S.B. mode allowing the reception of ham radio operators, maritime and shortwave aeronautical stations. Tune your favorite stations by the conventional tuning knob, quick keypad entry or via the 1000 memories. Enjoy the fidelity you have come to expect from Grundig enhanced by separate bass and treble controls. Other features include: backlit LCD, wide/narrow selectivity, signal strength meter, rotatable AM ferrite antenna, earphone jack, external antenna jack, line output jack plus a 24 hour clock with dual alarm and sleep feature. 14.65 x 7.24 x 5.75".

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Grundig Satellit 750

Order #0750

List Price \$400.00

\$299.95

G3

✓ Receive a **FREE Grundig M400** with your Grundig G3 purchase. A \$29.95 value!

M400



The Grundig G3 Globe Traveler is an innovative portable radio covering long wave, AM, FM (stereo to earphone jack), continuous shortwave plus the VHF aircraft band. It features dual conversion AM/SW circuitry for exceptional sensitivity and image rejection. It offers S.S.B. - Single sideband reception. It has a large 700 channel alpha memory system with memory scan and auto tuning storage. Unlike other portables in its class, the *Globe Traveler* offers Synchronous Detection. This special feature addresses the issue of selective fading and adjacent channel interference on shortwave. Other enhancements include: Wide/Narrow selectivity, auto search, RDS, signal indicator, Local/DX switch, direct frequency entry and 24 hour clock with four alarm timers. It has an external antenna jack and a Line In/Out jack. Requires four AA cells (not supplied). If four NiMH AAs are inserted, they may be recharged inside the radio. Supplied with manual, protective pouch and AC adapter/charger. 6.62 x 4.13 x 1.1". 13 oz.

G3 Globe Traveler Order #4033

\$149.95

The Grundig M400 is an ultra compact portable radio that covers the AM, FM and shortwave in two bands: 5.9-10 and 11.65-18 MHz. The frequency display is to the nearest 1 kHz on AM and to 5 kHz on shortwave. There is a built-in clock-alarm. The left side of the radio has the tuning knob, an earphone jack and a lock button to prevents accidental frequency changes. An amazingly thin radio - under 1/2 inch! This radio operates from two AAA cells (not supplied). Supplied with a soft case that permits the radio to be played even while inserted. 2.75 x 4.33 x 0.472" 3.2 ounces. The Grundig M400 will be included **FREE** with your G3 purchase for a limited time.

This radio may also be purchased separately for \$29.95

S450DLX

NEW!



The Grundig S450DLX Field Radio receives AM, FM and shortwave continuous from 1.7 to 30 MHz. A wide/narrow bandwidth switch reduces adjacent channel interference. The main tuning knob may be set to fast tuning, slow tuning or lock. Features include: Bass and Treble tone controls, RF Gain, 50 memories, 12/24 hour dual alarm clock, Quick-Tune button, sleep timer, 9/10 kHz MW step, battery level icon, DX/Local switch, FM mono or stereo (to earphone jack only) switch, F type antenna jack for external SW/FM antenna and terminals for MW antenna and Ground. There is an AM IF Output: jack (F type) for future accessory devices such as DRM or SSB decoders. Jacks also for line level output and line level input, plus an earphone jack. The display is backlit and there is a switch to even illuminate the push button keys on the front panel. Includes 9VDC AC adapter or operates from six D cells (not supplied). 12.2 x 8.5 x 3.8". The S450DLX offers outstanding features *plus* that "great audio" you expect from Grundig!

S450DLX

Order #5450

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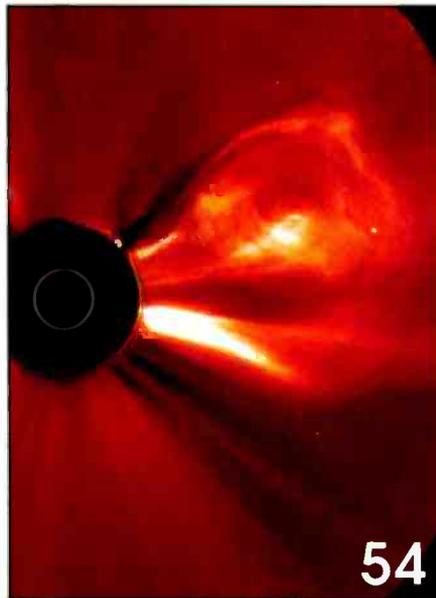
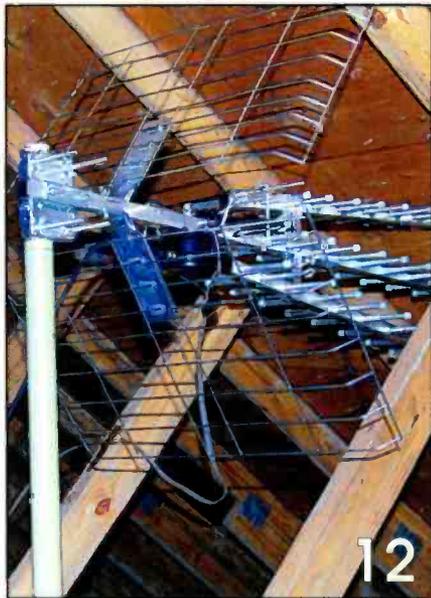
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ON THE COVER

The fun of TV DXing has taken on a whole new look with the transition from analog to digital television. Here's a simple do-it-yourself DTV antenna from Richard Fisher, K16SN, to get you into the station-logging game. It's simple, inexpensive and fun to build. ALSO. don't miss a charged-up Gordon West, WB6NOA's, primer on big battery maintenance. You want tips on getting long life out of those heavy duty cells? He's got 'em. (Photographs courtesy of K16SN and WB6NOA)

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Tap into secret Shortwave Signals

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



MFJ-462B
\$199⁹⁵

Plug this self-contained MFJ MultiReader™ into

your shortwave receiver's earphone jack.

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Eavesdrop on the world's press agencies transmitting unedited late breaking news in English -- China News in Taiwan, Tanjung Press in Serbia, Iraqi News in Iraq -- all on RTTY.

Copy RTTY weather stations from Antarctica, Mali, Congo and many others. Listen to military RTTY passing traffic from Panama, Cyprus, Peru, Capetown, London and others. Listen to hams, diplomatic, research, commercial and maritime RTTY.

Super Active Antenna

"World Radio TV Handbook" says MFJ-1024 is a

"first-rate easy-to-operate active antenna... quiet... excellent dynamic range... good gain... low noise... broad frequency coverage." Mount it outdoors away from electrical noise for maximum signal, minimum noise. Covers 50 KHz-30 MHz. Receives strong, clear signals from all over the world. 20 dB attenuator, gain control, ON LED. Switch two receivers and auxiliary or active antenna. 6x3x5 in. Remote has 54" whip, 50 feet coax. 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, \$15.95.



MFJ-1024
\$159⁹⁵

Indoor Active Antenna

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

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



MFJ-1020C
\$99⁹⁵

Compact Active Antenna

Plug this MFJ-1022 compact MFJ all band active antenna into your receiver and you'll hear strong, clear signals from all over the world, 300 KHz to 200 MHz including low, medium, shortwave and VHF bands. Detachable 20" telescoping antenna. 9V battery or 110 VAC MFJ-1312B, \$15.95. 3 1/4x1 1/4x4 in.



MFJ-1022
\$69⁹⁵

Eliminate power line noise!

Completely eliminate power line noise, lightning crashes and interference before they get into your receiver! Works on all modes -- SSB, AM, CW, FM, data -- and on all shortwave bands. Plugs between main external antenna and receiver. Built-in active antenna picks up power line noise and cancels undesirable noise from main antenna. Also makes excellent active antenna.

MFJ Antenna Matcher

Matches your antenna to your receiver so you get maximum signal and minimum loss. MFJ-959C Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload. Select 2 antennas and 2 receivers. 1.6-30 MHz. 9x2x6 in. Use 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.

High-Gain Preselector

High-gain, high-Q receiver preselector covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Push buttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.

Dual Tunable Audio Filter

Two separately tunable filters let you peak desired signals and notch out interference at the same time. You can peak, notch, low or high pass signals to eliminate heterodynes and interference. Plugs between radio and speaker or phones. 10x2x6 inches.



MFJ-1026
\$199⁹⁵



MFJ-959C
\$119⁹⁵



MFJ-1045C
\$89⁹⁵



MFJ-752C
\$119⁹⁵

Listen to maritime users, diplomats and amateurs send and receive error-free messages using various forms of TOR (Telex-Over-Radio).

Monitor Morse code from hams, military, commercial, aeronautical, diplomatic, maritime -- all over the world -- Australia, Russia, Japan, etc.

Monitor any station 24 hours a day by printing transmissions. Printer cable. MFJ-5412, \$11.95.

Save several pages of text in memory for later reading or review.

High Performance Modem

MFJ's high performance PhaseLockLoop™ modem consistently gives you solid copy -- even with weak signals buried in noise. New threshold control minimizes noise interference -- greatly improves copy on CW and other modes.

Easy to use, tune and read

It's easy to use -- just push a button to select modes and features from a menu.

It's easy to tune -- a precision tuning indicator makes tuning your receiver easy for best copy.

It's easy to read -- front-mounted 2 line 16 character LCD display has contrast adjustment.

Copies most standard shifts and speeds. Has

MFJ AutoTrak™ Morse code speed tracking.

Use 12 VDC or use 110 VAC with MFJ-1312D AC adapter, \$15.95. 5 1/4x2 1/2xHx5 1/4D inches.

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



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

N-female connector. Tripod screw-mount. Wall and desk/shelf mounts. Use vertically/horizontally. 18Wx2 3/4xHx1 1/4D inches. 2.9 ounces.

MFJ-5606SR, \$24.95. Cable connects Reverse-SMA male to N-male, 6 ft. RG-174.

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



MFJ Shortwave Headphones

Perfect for shortwave radio listening for all modes -- SSB, FM, AM, data and CW. Superb padded headband and ear cushioned design makes listening extremely comfortable as you listen to stations all over the world! High-performance driver unit reproduces enhanced communication sound. Weighs 8 ounces, 9 ft. cord. Handles 450 mW. Frequency response is 100-24,000 Hz.



MFJ-392B
\$24⁹⁵

High-Q Passive Preselector

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

Super Passive Preselector

Improves any receiver! Suppresses strong out-of-band signals that cause intermod, blocking, cross modulation and phantom signals. Unique Hi-Q series tuned circuit adds super sharp front-end selectivity with excellent stopband attenuation and very low passband attenuation and very low passband loss. Air variable capacitor with vernier. 1.6-33 MHz.

MFJ Shortwave Speaker

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



MFJ-281
\$12⁹⁵

MFJ All Band Doublet

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



MFJ-1777
\$59⁹⁵

MFJ Antenna Switches

MFJ-1704 heavy duty antenna switch lets you select 4 antennas or ground them for static and lightning protection. Unused antennas automatically grounded. Replaceable lightning surge protection. Good to 500 MHz. 60 dB isolation at 30 MHz. MFJ-1702C for 2 antennas.

MFJ-1704
\$79⁹⁵



MFJ-1702C
\$39⁹⁵

Morse Code Reader

Place this MFJ-461 pocket-sized MFJ Morse Code Reader near your receiver's speaker. Then watch CW turn into solid text messages on LCD. Eavesdrop on Morse Code QSOs from hams all over the world!

MFJ-461
\$89⁹⁵



MFJ 24/12 Hour Station Clock

Dual 24/12 hour clock. Read UTC/local time at-a-glance. High-contrast 5/8" LCD, brushed aluminum frame. Batteries included. 4 1/2x1Dx2H inches.



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EDITORIAL Tuning In

by Richard Fisher, KI6SN
editor@popular-communications.com

The Art of *Listening* At the Dayton Hamvention®

It's easy for longtime ham operators like me to look at the Dayton Hamvention® as the domain of the radio amateur. Doesn't the name say it all? *Well, no.*

In my short time as editor of *Popular Communications*, I've grown such an appreciation for the passion and skill of the people who hour-after-hour crane toward their radio speaker solely as *listeners*. The magic, challenge and sheer joy of the tuning experience fills their souls. They are fascinating. True, many are hams, as well. But there are legions of pure *receivers*.

On the weekend of May 20-22 this year I entered Hara Arena — *Hamvention-central* — with a new perspective on the communications community.

From the CQ Communications booth on the main floor of the arena, we see tens-of-thousands of people pass by during Hamvention's three days. Since our portfolio is such a smorgasbord, it's interesting to see where visitors gravitate when pawing the magazines and books we offer.

As in years past, recent editions of *Popular Communications* were surrounded by copies of *CQ Amateur Radio* and *CQ VHF* magazines piled high on the display table. A large reproduction of the June *WorldRadio Online* cover hung with the other magazines on the booth's back-drop.

Books and CDs focusing on radio's full spectrum of frequencies and interests were displayed everywhere. All served as cues for conversation and feedback. In a supercharged way, the weekend gives us a mini-readership study.

Despite the human traffic that frequently caused gridlock at the CQ booth this year, many, many of you who went immediately to *PopComm* at the booth took time to say *hello*, ask questions about the magazine's coverage and to offer suggestions for improving it. *How wonderful.*

And over and over, it was incredibly gratifying to hear so many *PopComm*

readers say, *I love this magazine*. It's testimony to the remarkable talent of the writing and editing staffs and the breadth knowledge they bring to our pages. It's a salute, as well, to the *PopComm*'s design and production department and to the advertising and circulation teams.

Perhaps most importantly, though, it's testimony to the thoughtful readers who intuitively know the *listening trends* that have helped define what appears in *Popular Communications* today — and what we need to focus upon going forward. They selflessly took the time to tell us about them, and we so appreciate that. *And we listened* — because they do, so well.

August's *PopComm* Live Internet Online Chat

PopComm readers from around the world were invited to take part in our first *PopComm Live Internet Online Chat* on Sunday, July 10. And what a time it was.

We kicked things off at 4 p.m. Eastern time (2000 UTC), bringing readers, columnists and the editor together for casual Internet conversation.

Well, it's time to do it again. This month's chat will be on **Sunday, August 7**, starting at **4 p.m. Eastern (2000 UTC)**.

Taking part couldn't be easier. Go to the *PopComm On the Web* blog : < <http://www.PopCommMagazine.blogspot.com> >. At chat time, click the *Cover It Live* box appearing on the page. Sign-in and you'll be transported to the chat area.

Of course, radio listening enthusiasts from around the world are encouraged to join in to share experiences, successes, challenges and to ask and answer questions.

For now, please save the date and sign up for an **email reminder** on the *PopComm* blog, compliments of *Cover It Live*. Hope to see you August 7.

— Richard Fisher, KI6SN

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- Dualwatch Receive
- 4-hour Digital Recorder



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- 1825 Alphanumeric Memory Channels
- 100 Ch/Second High Speed Scan
- Computer Programmable²
- Water Resistance Equivalent to IPX4



IC-R6 Pocket Compact

- RX: .100–1309.995MHz*
- AM, FM, WFM
- 1300 Alphanumeric Memory Channels
- 100 Ch/Second High Speed Scan
- Computer Controllable¹



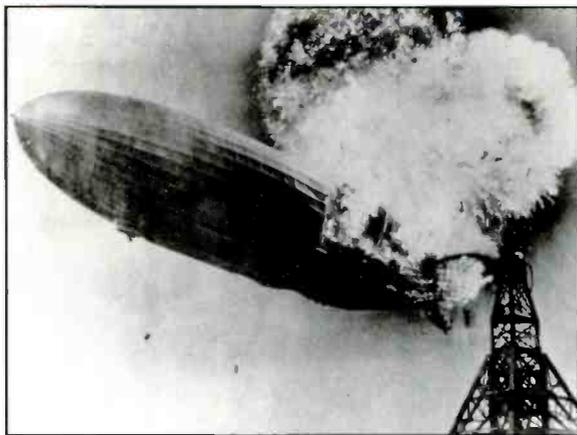
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- AM, FM and WFM (Sub)
- 1000 Memory Channels
- Optional D-STAR (UT-118)
- Optional P25 (UT-122)
- Optional DSP (UT-106)
- PC Controllable



The Weirder Side of Wireless

by Staff



The Zeppelin LZ 129 Hindenburg catching fire on May 6, 1937 at Lakehurst Naval Air Station in New Jersey. (Courtesy of Wikimedia Commons)

A Lag in Time for the Hindenburg Broadcast

One of the most famous *live* news broadcasts in radio history wasn't really *aired live* at all.

Reporter Herb Morrison's dramatic account of the crash of the German airship Hindenburg while attempting to moor in Lakehurst, New Jersey on May 6, 1937 didn't make the WLS airwaves in Chicago until the day following the disaster.

Morrison had been sent to New Jersey to record details of the landing for broadcast at a later date, and therefore didn't have the means for feeding a live report.

After the crash, Morrison and engineer Charlie Nehlsen boarded a flight to Chicago with the Presto transcription discs in hand. Parts of the recording were aired on WLS the morning of May 7. The account was later broadcast on the Red Network and subsequently to a nationwide audience.

To hear Morrison's on-the-scene report, visit: <<http://bit.ly/jl2akW>>. (Source: Various published reports)

Someone Answer That — It Could Be a Concert Calling

Hard to believe, but at one time the telephone was thought to be the perfect instrument for transmitting music. *Even in stereo.*

"At the 1881 Paris International Electrical Exhibition," Thomas H. White at earlyradiohistory.us wrote, "Clement Ader demonstrated the transmission of music from local theaters using telephone lines.

"Ader's use of dual lines also introduced the phenomenon of stereo listening — at the time referred to as 'binauricular auduition.'"

Meanwhile, Tivadar Pusk in Budapest, Hungary, started an entertainment information telephone service called *Telefon Hirmond* — launching February 15, 1893.

It featured continuous news reports, literature read by readers and other audio.

Many people tried to broadcast music over the telephone with limited success. It was called the *Electrophone* in England, and *The Telephone Newspaper*, *Phone Newspaper Service* and *The Talking Ticker*. (Source: Earlyradiohistory.us)

Two Men Die in Fall From WXXB Radio Tower

Two Texas men died in mid-April after falling 340 feet from WXXB radio's tower in north-central Indiana.

Ernesto Garcia, 29, Laredo, and Paul Aliff, 32, Mesquite, were on an assembly team contracted by Electronics Research Inc. to help add a segment to the tower, which was expected to reach 500 feet when completed.

The two men were wearing safety cables, but there was a malfunction with a parallel support device that was attached to the tower but not planted in the ground, according to a report on the *Radio Currents* Web site.

The tower segment, as well as the machine being used to install it, also fell, but no other injuries were reported. (Source: *Radio Currents*)

WCYP-LP: 'You Can't Hear Me Now'

Staff members of WCYP-LP in London, Ohio arrived at the station in March to find nearly all of its equipment had been stolen in the overnight hours.

The London Police Department recovered the stolen equipment in an apartment the next night. Information found in two stolen vehicles unrelated to the radio station theft led authorities to initiate a search of the apartment.

Police said they were trying to locate a *person of interest* in the radio station theft.

WCYP-LP is a nonprofit station run by volunteers. (Source: Radiomagonline.com)

Mystery: 2,000-Foot TV-FM Tower Tumbles in Wisconsin

Investigators were trying to determine what caused a 2,000-foot, TV-FM tower in Eau Claire County, Wisconsin to crash to the ground the evening of March 22.

The tower served WEAU-TV and WAXX-FM.

According to published reports, the weather was windy and icy, although it is not yet known if that was a factor in the structural failure.

With its antenna disabled, WAXX was transmitting programming on 92.9 MHz, its sister station WECL-FM. The WECL program was being streamed online.

WEAU was streaming its programming online and transmitting on a multicast channel of Eau Claire ABC-affiliate WQOW. The tower was reportedly built in 1966. (Source: *Radio Currents*)

News, Trends, And Short Takes

by D.Prabakaran
< bcdxer@hotmail.com >

Dutch Radio Ship Gets New 15-kW Transmitter

The radio ship *Jenni Baynton* — home to Dutch commercial stations *Radio Waddenzee* and *Radio Seagull*, is being equipped with a new, more powerful transmitter. Besides the existing Redyvon 1- and 2-kW RCA reserve transmitters, the arsenal on board will soon be expanded with a 15-kW, medium-wave transmitter — a replica of the Continental Electronics transmitter on board the legendary radio ship *MV Mi Amigo*.

The 50-kW capacity of the original transmitter is too much of a strain on the *Jenni Baynton*, but with 15 kW, the available transmission power of the vessel is increased substantially.

Because the *Jenni Baynton* regularly receives requests to be borrowed as a temporary solution for stations with transmitter problems, the owners decided that the available capacity needed to be extended.

The requests usually come from stations that need more power than the current stations on the ship can provide. With the new purchase, it's hoped there will be more opportunities to provide and operate the radio ship for other broadcasters.

Visitors to the ship during the summer period will be able to view the new transmitter. Information in English on visits is available at: < <http://bit.ly/mbZz75> >. (Source: *Radio Waddenzee*)

Deutsche Welle Announces Major Shortwave Cuts

Germany's international broadcaster Deutsche Welle (DW) announced major changes in its methods of distribution. From the start of the winter transmission period B11, daily output on shortwave will be reduced from the current 260 hours to 55 hours.

The remaining shortwave broadcasts will be directed to Africa and parts of Asia. As a result of these cuts, the shortwave relay stations in Trincomalee (Sri Lanka) and Sines (Portugal) will be closed.

Starting July 1, 2011, Deutsche Welle (DW) was scheduled to make major changes in how and when its radio programming is broadcast in Asia and Europe, as well as German radio programming as a whole.

The measures carry forth the development of DW to a multimedia organization. With the exception of Africa and parts of Asia, linear shortwave broadcasts will be discontinued due to limited usage.

In the future, DW will work with partner stations in Central and Southeast Europe to broadcast regional TV magazines and produce online services — each in the regional language. Starting July 1, the FM services for Bulgarian, Greek, Croatian, Macedonian and Romanian were reduced and will eventually be discontinued.

The frequencies that were purchased or rented in Sofia, Bucharest, Pristina and Tirana will be returned, as well as the corresponding licenses. The FM broadcasts in Albanian, Bosnian and Serbian will be reduced.

In the future, these services will focus on selected partnerships with local FM stations. A service in Romania will be maintained for the time being. For Ukraine, DW is currently examining whether or not an agreement can be made with a partner to broadcast a reduced amount of FM radio programming that has been tailored to fit their needs. Radio programming for Hindi was discontinued July 1.

On November 1, DW will be discontinuing shortwave broadcasts in German, Russian, Farsi and Indonesian. For English, the shortwave broadcast will be limited to Africa.

The broadcasting times for Chinese programming will be reduced from 120 minutes to 60 minutes. For these languages, starting in November, DW will be broadcasting radio programming via shortwave only in the following languages: Amharic, Chinese, Dari, English and French for Africa, Hausa, Kiswahili, Pashtu, Portuguese for Africa and Urdu.

The shortwave program currently broadcasts 260 hours daily with DW's own or rented relay stations — with the new focus on Africa and regions in Asia that will be reduced to just 55 at the beginning of the winter season.

Only the relay station in Kigali (Rwanda) will be needed for shortwave broadcasts in Africa. The stations in Trincomalee (Sri Lanka) and Sines (Portugal) can no longer be used to capacity.

The financial operation is no longer possible and the relay stations will stop being used on November 1, and closed at the next possible point in time. (Source: *Deutsche Welle*)

HCJB Axes DX Partyline On 50th Anniversary

The DX Partyline (DXPL) radio program for shortwave hobbyists ended with broadcasts the weekend of May 28-29 — 50 years after it first aired

(Continued on page 82)

Capitol Hill And FCC Actions Affecting Communications

by Richard Fisher, K16SN

New Senate Bill Would Shield Amateur Radio Spectrum from Auction

A new U.S. Senate bill, similar to the U.S. House's HR 607, has been introduced by Senators John McCain (R-Arizona) and Joe Lieberman (I-Connecticut) — with a major difference related to amateur radio.

The Senate's *Broadband for First Responders Act of 2011*, unlike the House version, does *not* call for auctioning any portions of amateur radio spectrum.

Both HR 607 and S 1040, as it has been designated, call for the allocation of the so-called "D block" of spectrum, 758-763 and 788-793 MHz, "to facilitate the development of a public safety broadband network," according to the American Radio Relay League's *ARRL Letter*:

"It is gratifying to see that S 1040 avoids impacting our spectrum allocations," ARRL Chief Executive Officer David Sumner, K1ZZ, said.

"Sumner explained that while some media reports are referring to S 1040 as the *Senate version of HR 607*, it is important that radio amateurs *not* oppose S 1040," the Letter reported. "There is no reason for us to do so," Sumner said. "We support the creation of an interoperable broadband network for first responders. Other than to oppose any method that would impact amateur spectrum use, we do not support one method over another of achieving that objective. We only oppose one aspect of HR 607, not the entire bill."

S 1040 has been referred to the Senate Committee on Science, Commerce and Transportation, chaired by Senator Jay Rockefeller (D-WV). Senator Rockefeller earlier introduced S 28, his own bill to address the same general topic. Neither S 28 nor S 1040 would impact amateur spectrum.

(Check the Pop'Comm Web site < <http://www.popcommmagazine.blogspot.com/> > for updates to either piece of legislation. — Ed.) (Source: *ARRL Letter*)

Sports Group Asks FCC to Ban NFL Broadcast Blackouts

SportsFans.org has asked the Federal Communications Commission to put an end to National Football League broadcast blackouts.

"Sports fans have become a political football in retransmission consent disputes," the nonprofit group's filing said. "In the recurring smack-down negotiations between big broadcasters and big pay-TV companies, games are pulled right before the action starts, leaving fans in the cold.

SportsFans.org has asked the FCC to eliminate sports blackout rules, network nonduplication rules

and syndicated exclusivity rules, according to a report on *NFPost.com*.

"Fans who are vital to the success of sports and who have contributed through multiple public and private expenditures are treated like fumbled pigskins," the organization said. (Source: *NFPost.com*)

NOOK and Touch eBook Readers Get FCC Wireless Approval

Barnes and Noble unveiled its new touchscreen NOOK eBook reader in May — the same month the device won FCC approval for its WiFi capabilities.

Coincidentally, the new NOOK received FCC approval at about the same time the Kobo Touch eBook reader got its WiFi OK.

According to a report on *WirelessGoodness.com*, "FCC documents don't reveal anything new about the NOOK, which is referred to in FCC filings as the BNRV300. Barnes and Noble has already released specs for the device, which include a 6-inch, touchscreen eInk display with an 800 x 600 resolution, 2GB of internal memory with additional memory supported via microSD card, 802.11 b/g/n WiFi and a microUSB port.

"The new NOOK measures 6.5" by 5.0" by 0.47" and weighs only 7.5 ounces. The device's battery is expected to last up to two months on a single charge with WiFi off. The NOOK also has access to Barnes and Noble's eBook store, which currently offers over 2 million titles." (Source: *WirelessGoodness.com*)

Equipment Seized From Alleged Boston Pirate By FCC

Broadcast equipment of alleged Boston pirate radio station *Datz Hits Radio 99.7* has been seized by the FCC, a story on *Radio-Info.com* reported.

"The unlicensed operation — which had been moved since an earlier visit and warning from the FCC — was allegedly interfering with FAA signals at Logan Airport, as well as a licensed FM station in Boston," the Web report said. "Federal officials executed the warrant on May 13 and seized the equipment of *Datz Hits Radio* from 'a residential building at 25 Outlook Road, in the Mattapan area of Boston.'"

According to the story, "the next stage is for a forfeiture action, to permanently take possession of the broadcasting equipment hauled away in the May 13 raid.

"It is easy to take for granted the variety and quality of sound we enjoy in local radio stations," U.S. Attorney Carmen Ortiz said. "Underlying this is the licensing authority of the FCC, which ultimately ensures that legitimate stations can operate without interference from pirate stations." (Source: *Radio-Info.com*)

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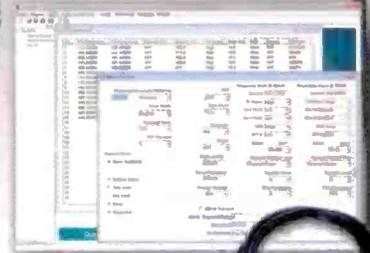
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Technologically, What Does the Future Hold For Ham Radio?

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“Just as computerized devices have infiltrated our lives everywhere else, there is no reason to think they won’t continue to do so in the ham arena . . . It seems the handheld computer or smartphone are most likely the devices that will become highly integrated with amateur radio.”

In recent years, there has been much discussion of the future of amateur radio. With good reason.

From a technological point of view, the radios we are using are changing and the hobby is changing with them.

The last several generations of hams have witnessed the transformation of the radios from the “boat anchors” to the incredibly sophisticated radios of today.

They have also witnessed the miniaturization of the radio. Today’s handhelds will allow operators to communicate on multiple bands, receive anything from longwave to the gigahertz range and will easily fit in your pocket.

There’s not much doubt that those trends will continue for a while. The increasing sophistication of consumer devices suggests that other changes will happen, too. Just as mentioned in last month’s discussion of scanners, it is inevitable that technologies common in smartphones will find their way onto ham radio. (For a primer on smartphones, visit: < <http://bit.ly/mTYGOc> >. – Ed.)

These technologies include touch screens and database-driven frequency recall (*why not put the entire U.S. and Canada repeater list in a database and load it on a chip in the radio?*) easy setup (*enter your call sign and use the GPS chip to select possible repeaters*), and more.

Looking Ahead Without Forgetting the Past

In the high-frequency realm, visual tuning aids are already common on higher-end radios and with the decreasing cost of displays, it seems likely those will continue to improve.

We’ve already seen that software defined radios (SDR) are becoming the standard in the shortwave receiver market. It seems quite likely that similar things will happen in the transceiver market. Aside from the power and RF generation, there isn’t much that can’t be done more easily in software.

It’s easy to get nostalgic for tube radios or the radios of our youth. We shouldn’t lose sight of the fact though that if the hobby is to survive, the next generation will expect the radios to work in a familiar way. Thus, it makes sense for manufacturers to go this route. And probably inevitably.

But What About Antennas?

The one place where innovation has been slowest is in the antenna realm. The reasons for this, I suspect, are due to the physics involved.

It’s much harder to devise a replacement for the dipole or Yagi antenna that is just as effective at radiating the necessary radio frequency energy where you want it to go. With increasing limitations in

space for antennas in urban areas and legal restrictions, developments in this area would be welcomed by hams for which installation of a half-wave dipole, for example, is simply not possible.

One Word: Computers

What about developments in technology aside from the radios? The tempting answer here, to borrow a famous line from *The Graduate*, is: “I just want to say one word to you. Just one word.” Computers.

Just as computerized devices have infiltrated our lives everywhere else, there is no reason to think they won’t continue to do so in the ham arena. If you asked me five years ago, it would have been tablet or netbook computers that would be key components of the ham shack. They may be now or still be in the near future. Now, it seems the handheld computer or smartphone are most likely the devices that will become highly integrated with amateur radio.

We already see debates about whether computerized contacts such as those via Echolink, technologies such as APRS, QSLs via email and Facebook and more belong as “legitimate” ham radio. It’s not the point of this column to take a position on this but I fully expect those types of activities to continue to increase.

Left for Future Generations

How radio amateurs participate in the hobby in 50 years will be much different than now — just as the hams of today are taking part in a much different hobby than it was 50 years ago. *Better? Worse? Both?*

Ultimately, it will be for hams in 2061 to decide since it will be their hobby at that time.

There is a bigger question though. No discussion of the future of amateur radio would be complete without asking the question about where technology is taking us. After all, before Faraday, Maxwell, Marconi and others, there was no man-made radio, let alone “ham radio.” It’s hard to imagine, as central as radio frequency communication is to us today, that there will be a time when there won’t be ham radio. I suspect that will not happen for many, many years. However, history suggests that someday, sometime, the hobby will fade away. I won’t hazard a prediction when or how — let alone what will replace it. Let’s hope it isn’t for a very, very long time.

Is there a technology you want on your ham radios that they don’t currently have? Let me know using the technology of your choice. I’m always happy to hear from you with your reaction to these columns. More thoughts on the future next month.

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To A Neighbor's Rescue: Now She Can See Her DTV

A Primer on Digital Signal Reception in The New TV World Part 1 of a Two Part Series

by Phil Karras, KE3FL
< <http://cs.yrex.com/ke3fl> >

The question continues to be asked: Do I really need a "digital antenna" to receive digital TV (DTV)?

No, you don't. First, there is no such thing as a *digital antenna*. Second, my experience shows that old TV antennas designed for the predigital analog era can work fine in many cases.

I've tested antennas that were not made for TV and even these can be used to receive the current DTV signals. In fact, some of these non-TV antennas worked far better than I expected.

I am a firm believer in the *try it* method and love to experiment with *this, that or the other thing*. Whenever I have a new idea, I jot it down so I can try it when I have the opportunity.

Receiving, 101

Let's start with the basics of receiving any kind of radio-frequency (RF) signal, focusing on DTV. For DTV in the VHF/UHF range we're interested in line-of-sight (los) signals. (NOTE: *los* is not LOS, which is used for Loss Of Signal. – Ed.)

The Basics:

The questions to consider when trying to receive Over The Air (OTA) DTV are:

- Where are stations located that I can expect to receive? What directions are the signals coming from? Visit: < <http://bit.ly/k7TsAC> >.
- How far away are they? How strong are the transmitters? Is more gain needed in my receiving antenna? Visit: < <http://bit.ly/k7TsAC> >. (Your DTV or converter box has a *signal strength measuring function*. Look for it in the device's MENU. – Ed.)
- What frequencies are the local stations using? Is a different antenna needed for any of the stations? Visit: < <http://bit.ly/mIs3jR> >.
- What is between the stations and the antenna? Should the antenna be higher or should it be moved? If moved, which way? Visit: < <http://bit.ly/k7TsAC> >.

Visiting these URLs, notice I reference < www.TV Fool.com > for addressing most of the questions. Be aware that it uses the same theoretical evaluation the FCC came up with to determine what you should be able to receive.

"On June 12, 2009, full-power TV stations across the U.S. were mandated by the FCC to have completed an historic transition from analog to digital broadcast. During the past two years, DTV viewers have settled-in to clear, free-access reception . . . or have they?"

It is usually overly optimistic. The only true way to find out what you can and cannot receive is to *put up an antenna and try it*.

Getting Started

Your first step should be to do whatever is easiest. Do you already have an antenna up from the analog era? Try it with your DTV converter or digital TV.

If you were able to get all your analog TV stations using a set of rabbit ears, then try those.

If the older antenna used a 300-ohm, twin-lead feed line, then go to the local hardware store or RadioShack to get a 300- to 75-ohm impedance transformer.

You can first simply connect the 300-ohm, twin-lead to the TV and see what happens. I noticed that when I did this, the TV (and converter box) had no problems with it. I did it by removing the innards from a 300- to 75-Ohm impedance transformer and soldered the leads directly to the 75-ohm F-connector. (To see an F-connector, visit: < <http://bit.ly/ldjky> >. – Ed.)

We're not transmitting here so we don't really need an impedance transformer to keep the transmitter happy — a receiver is far more forgiving. In my case, I found that this worked so well that I left the transformer out.

'How Strong Are the Transmitters?'

The power allowed to transmit has been reduced and while, the 8VSB digital signals require 16 dB less energy for the same coverage and, in theory . . . have exactly the same coverage as the higher power NTSC signals, it has been shown in numerous online forums and in articles already published in *Popular*

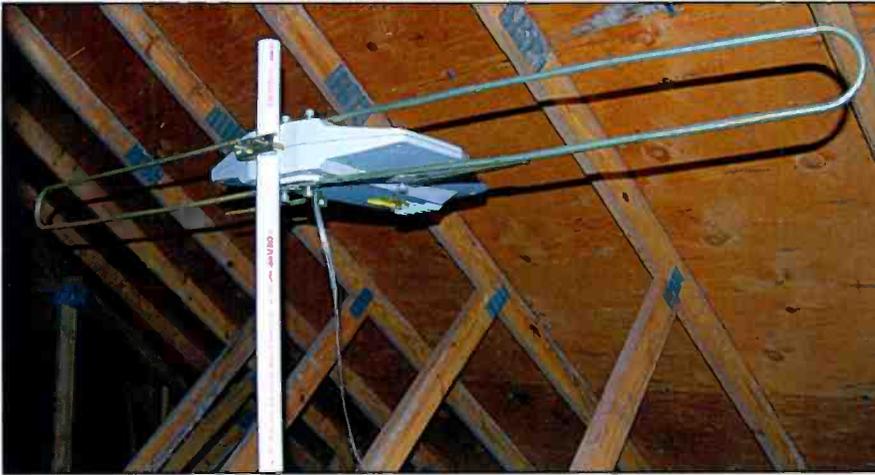


Photo A: Archer antenna mounted.

Communications, that the theory used is overly optimistic. My experience bears this out, as well.

In our case, OTA DTV viewers have to take that into consideration. Since this was not done by test engineers in the field under various weather conditions prior to the changeover, we're stuck with picking up the slack with the higher-cost, high-gain antennas or RF amplifiers — or both.

The use of high-gain directional antennas may be able to bring some stations back, but I cannot tell you that you will be able to receive all the stations you once enjoyed when TV used analog signals.

Also, an RF amplifier is used for countering the losses in the coax, splitter, combiner, connections and going from the antenna to your TV or multiple TVs.

It is *not* for making a weak station strong enough for the TV to receive. An RF amplifier can only amplify what is on the input port. It *cannot* put a signal on the output port it does not have on the input port.

So, the job of the antenna is to get enough signal from all stations wanted before we use an amplifier. You may or may not need an amplifier to counter losses in coax and signal splitters. The way to tell is to measure signal levels at the antenna.

If you have good signals there, then there will be a way to get that level of signal to your TV. If not, then more work needs to be done with the antenna before considering the need for an amplifier.

My experience has shown that in some situations there will be no way to receive all of the stations once enjoyed.

A good reference can be found in the June 2010 *Popular Communications* article by Bruce A. Conti: *The Future Is*

Fuzzy For Free TV. He followed it in September with: *Broadband Vs. Broadcasters: The Debate Heats Up*.

"DTV continues to get poor reception reports," he writes. "This technology was not really well worked out before being made *prime time* anyway. I think TV as we knew it is really gone."

It seems to me that the *fringe area* has moved closer to the transmitters for DTV. Also, many who were considered to be in the extreme fringe area are now left out in the *no-receive-zone*. Conti provided examples of what some viewers have had to do to get the OTA analog stations they used to watch.

'What Frequencies Are the Local Stations Using?'

This may seem strange to those who have dealt with National Television System Committee (NTSC) TV for so long, because the channel number was synonymous with the frequency range for a transmitter.

This is no longer the case. The FCC has allowed stations to change frequencies and yet keep the old channel numbers as identifiers. The frequencies of some of your favorite stations may have changed. In my area, the Washington NBC station, Channel 4, went from the Channel 4 TV frequencies to the UHF Channel 48 frequencies.

After the change was completed, all stations were allowed to go back to their old frequencies. Many chose not to, *but* even if they did *not* return to their former channel and frequencies, they are still allowed to identify with their *old* channel numbers!

So in my area, Channel 4 is using

Channel 48 frequencies but still identifies as Channel 4 and so the channel identifier may no longer have anything to do with the actual frequencies being used.

How is one to know? Search online resources < www.TVFool.com > and < www.wikipedia.org > to find the channel designation and the actual channel associated with that designation.

Then, if needed, you can find the frequency range on a page on the < www.wikipedia.org > site.

'What is Between the Stations I Want To Receive and My Antenna?'

Here, again, things may have changed. When some stations changed frequencies for the DTV tests they ran, they may have also changed the location of their transmitting antenna — and sometimes even the *smallest* location change of either the transmitting or receiving antenna can cause LOS.

Again, < www.TVFool.com > is a good reference. Remember, though, it uses the same overly optimistic theory to generate tables for your location as the FCC. These are the *best* you can expect and, in all likelihood, you may not be able to get all of the "green" (most likely-to-be-received) stations.

"An indoor 'set-top' antenna is probably sufficient to pick up these channels," as *TVFool.com* classifies them. Another disadvantage is that we no longer have a reservoir of people who know the answers to these questions for reception in your area.

In the past, we were able to ask the local TV repair shop person, radio retail employee or even a neighbor or two. Today there are few if any TV repair shops to be found and radio retailers in general are *not* the answer folks they may once have been.

If you look around at your neighbors' houses, you may be hard pressed to see an outside TV antenna, unless it's very old and likely no longer used.

You'll find all sorts of dish antennas for various satellite services, while other neighbors have nothing visible, which probably means they have cable or other wire or fiber.

Help Thy Neighbor . . .

I was planning to use my TV reception as the main example for this article, but a friend of mine needed to get Channel 13



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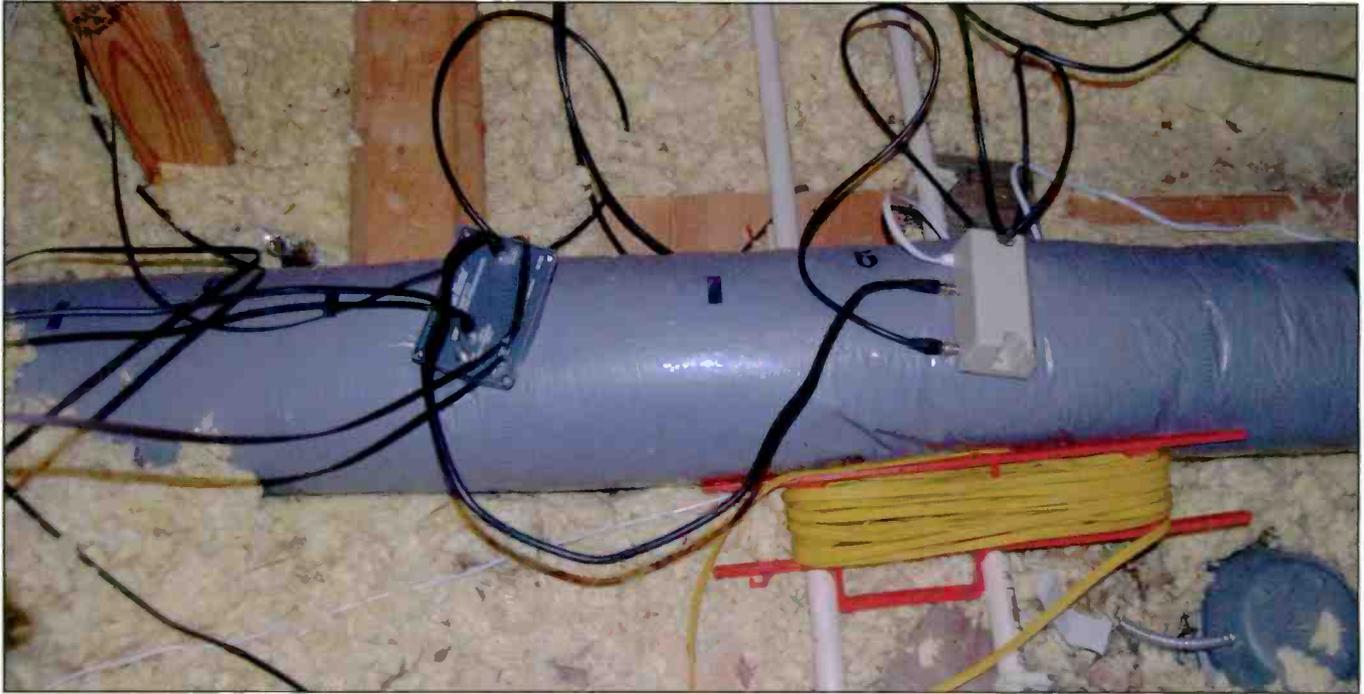


Photo B: New high-gain TV amplifier.

and her case was much more interesting than mine — as was the solution.

Her TV problems were many. She lives in the same town as me and the same initial theoretical data from < www.TVFool.com > was used to see what she should be able to get and what the actual frequencies of the identified channels are.

Since we live in the same ZIP Code, the online evaluation sites all predict we *should* be able to receive the same stations. The problem: We are not in the same geographical situation. I live east of the Mount Airy Ridge in Maryland. She lives almost on top of it. She told me that even with the old analog TV she could get only a few Baltimore stations and the one Hagerstown station, which are in opposite directions for her antenna.

While the saying, *location, location, location* is important for realtors, it is even more important for line-of-sight — *los* — RF signals.

Where is the transmitter's antenna located? Where is the best location for my antenna to receive it? What height do I need to get over whatever is in the way?

Or, where do I have to move the antenna to get around whatever is in the way? And, as long as you can go high enough or wide enough, property lines allowing, you *should* be able to get over or around the problems, but don't count on it.

Again, < www.TVFool.com > simply gives you the best information it can about

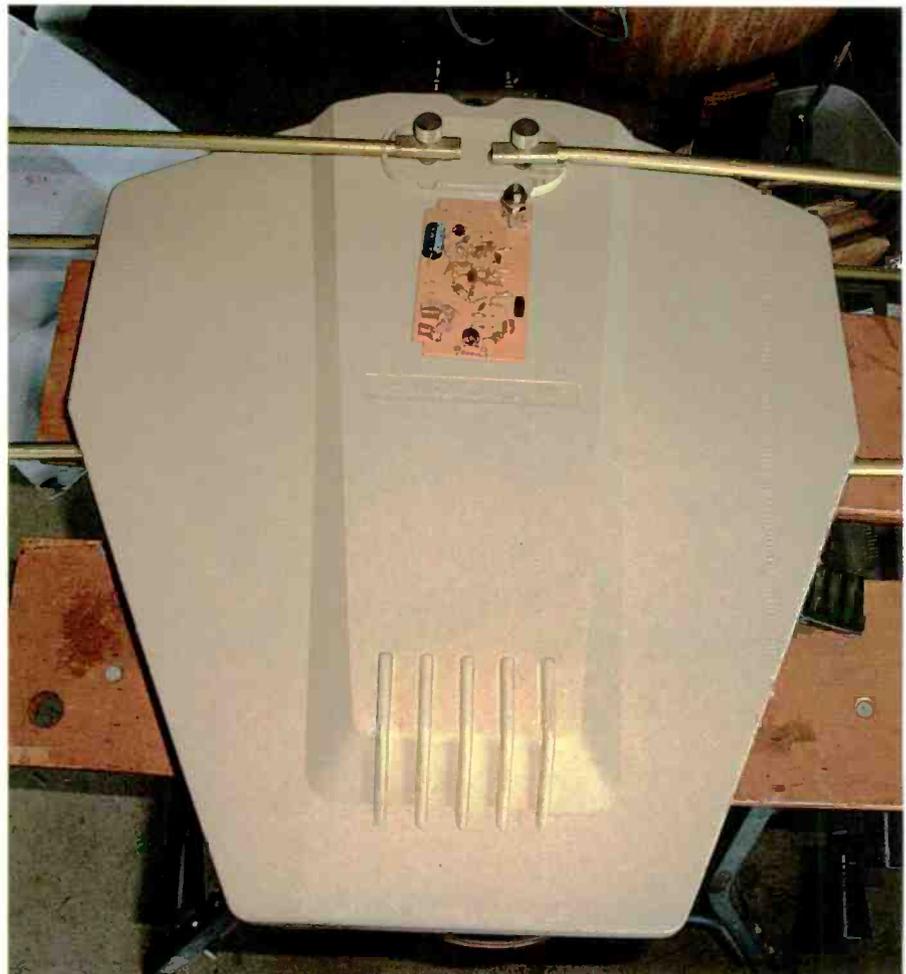


Photo C: Archer antenna and removed amplifier board.

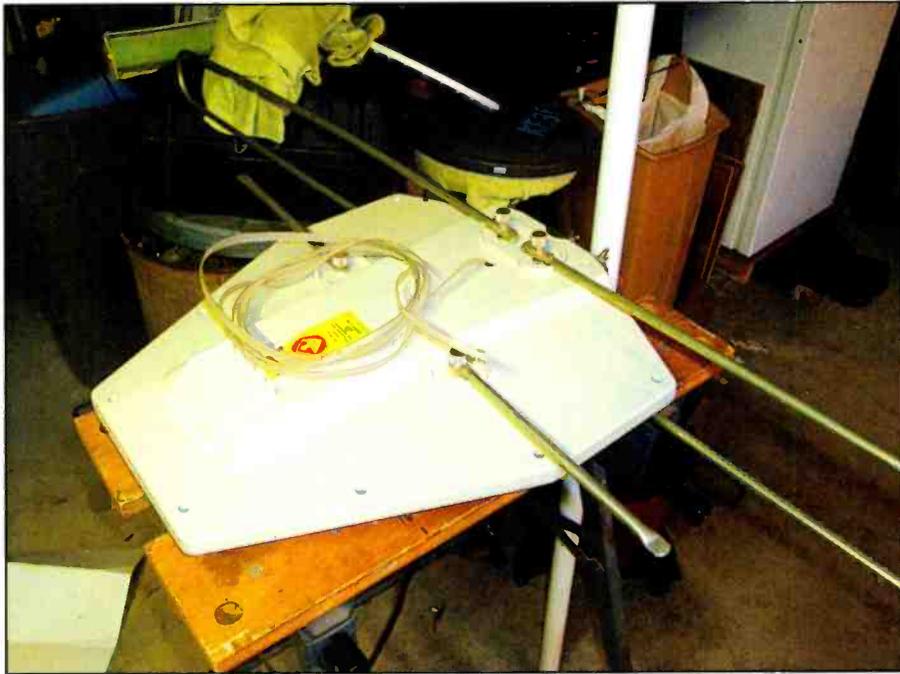


Photo D: Archer antenna with twin-lead added.

your situation. It does point out that a signal is — as far as they know — *los*, one or two edges before you receive it.

The basic initial data from *TVFool.com* shows Mount Airy residents should probably be able to get 20 channels with nothing more than a *set-top* antenna. The stations ZIP Code 21771 *should* be able to receive are: 2, 4, 5, 7, 9, 11, 13, 14, 20, 22, 22*, 24, 26, 32, 45, 50, 54, 62, 66 and 67. That's 19 "stations."

Baltimore: 2, 11, 13, 24, 45, 54, 67

Washington: 4, 5, 7, 9, 14, 20, 26, 32, 50, 62

Others: 22, 22*: (125 and 305 degrees True, 62:237d T) (167 T is Washington)

My Friend's Situation

My friend was able to get only the old analog channels 11 and 13 from Baltimore and 25 from Hagerstown. Her digital reception was at least Channel 13 but when the trees had all their leaves, her reception went to zero stations received.

I tested with the portable TV and its included extendable antenna to get a base line, both in one of the upstairs bedrooms with only one wall south and east, and in the attic. Nothing was received.

Yet we both live in 21771. *Well, so much for theory.* That means none of the "green" stations were actually receivable with just a simple portable indoor antenna.

Looking at the situation, I noticed her antenna was in the attic. It was an old Archer VHF/UHF antenna attached to a

rotator, which could not rotate due to the physical constraints (Photo A).

There was also a power supply for the built-in antenna RF amplifier and an amplified splitter as well. The system was installed with good quality RG-59 coax throughout the house to the two TVs, the master bedroom (upstairs) and the living room (downstairs).

The amplifiers were needed to overcome the coax loss even with the old analog TV signals. This did not bode well for the newer DTV lower power signals at all, especially with the initial tests coming up completely empty, with not even a few stations of the *not worth watching* level.

Seeking Solutions

The first thing I did was to buy a newer higher-gain RF amplifier — a Channel Master Model 7777, 26-dB UHF, 23-dB VHF (Photo B), and a new high-gain UHF TV antenna.

I installed these and removed the older system and she was now able to get some of the Washington TV stations — 4, 5, 20 and 62 — which she had never gotten before. But Baltimore Channel 13 was still lost.

I did not use an FM trap (*unless the amplifier already has one built in, but I don't believe it does*) and the results speak for themselves. As you test, don't be surprised if you end up with FM radio interference.

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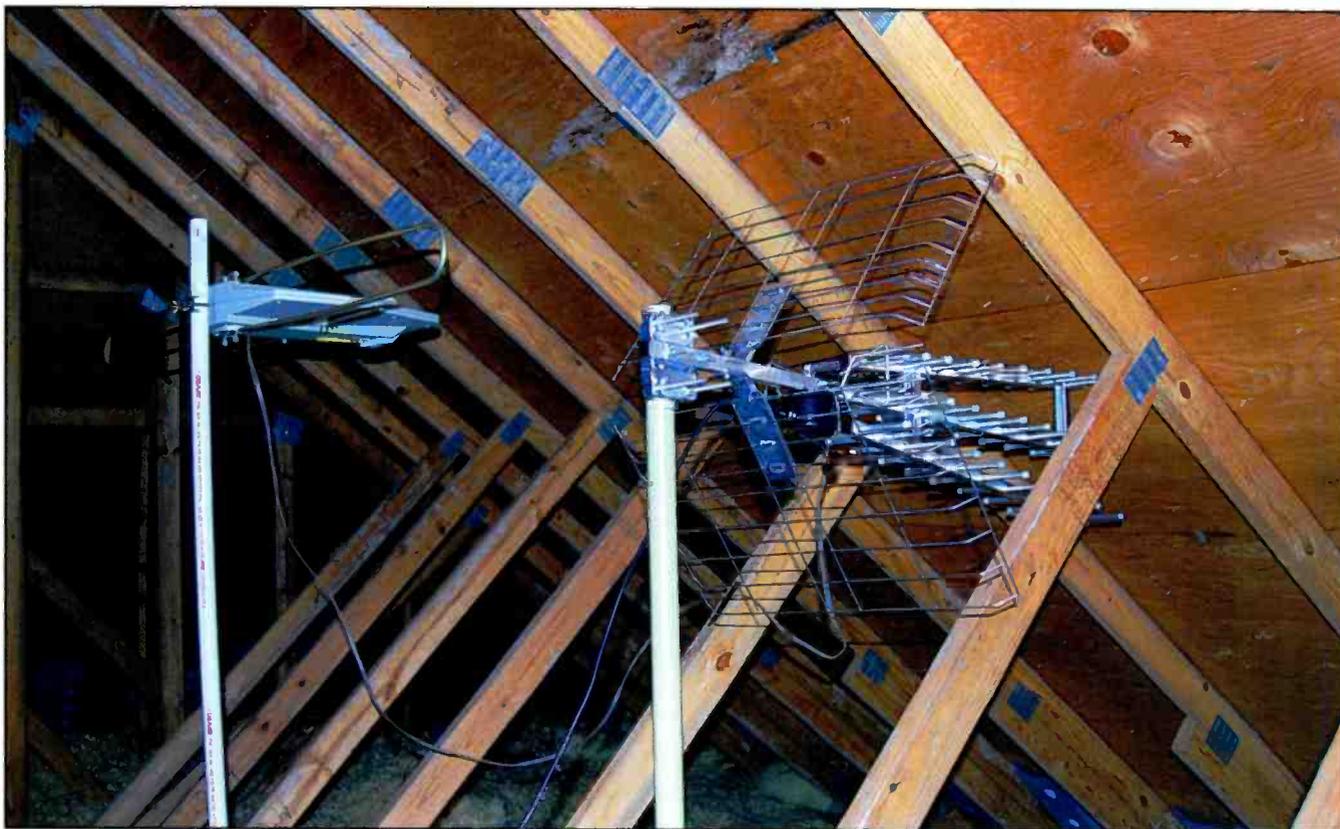


Photo E: The two antennas connected.

In looking the situation over, I next noticed that even from her attic her antenna was pointing into the middle of all the trees between her and Baltimore.

To the west she was apparently high enough to have *los* with the Hagerstown Channel 25 antenna, which is likely also on top of a mountain east of Hagerstown.

The *view* to the south toward Washington was a bit more complex. Her house is on the ridge, but between her and the Washington stations are more ridges and more trees.

Apparently, the added gain of the antenna helped with this situation. But what was the problem with Baltimore? What gave me hope was that just after the conversion, she was still able to get Channel 13. It was not perfect, but it was mostly watchable until the summer bloom. Her real problem occurred when the leaves were fully out on the trees to the east of her. These apparently blocked enough of the signal to cause its complete loss.

More Study Needed

At this point, I did a little more research and found that Channel 13 is still on its 210-216 MHz band and so was not a UHF station. Baltimore Channel 11 is also on its ~200-MHz frequency, so her older VHF/UHF antenna should still be able to get both.

I took her old antenna home with me and modified it by first removing the internal amplifier and then adding twin-lead feed-line to bring about 6 feet of feed-line out of the antenna. My idea was to just experiment with attaching the two antennas together using the twin lead and then attach this combination directly to the new RF amplifier (**Photos C and D**).

A source at *Popular Communications* said the frequencies used by Channels 11 and 13 are the second harmonics of FM

broadcast transmitters and that I would probably need an FM filter and also need to combine the antennas using a signal combiner.

Well, the losses of using a combiner would be 3.5 dB per antenna. I didn't have one to test with and I'm not sure I could afford to lose 50+ percent of the available signal to begin with. So, I tested with what I had. There was no loss of any station being received from the high-gain antenna, which was only picking up Washington, DC stations anyway.

The added antenna simply picked up the missing Channel 13 and a few other Baltimore stations. The stations well-received now were: Channels 2, 4, 5, 11, 13, 20, 45, 54, 62.

Channels 24, 27, 32, 66 are *in and out* as my friend says. This means:

Baltimore: 2, 11, 13, [24], 45, 54
Washington: 4, 5, 20, [32], 62, [66]
Others: [27]

Overcoming Knotty Issues

I ran into a small problem when attempting to attach the older antenna — still in excellent condition and with my modifications — to the new antenna. I noticed I could loosen the screws of the active element but I could not tighten them enough.

When I did try to tighten the screw, the head cut right through the twin-lead wire. This meant two things: There were unattached internal nuts. The wire needed to be protected.

The new high-gain antenna was taken down and taken apart. Washers were fabricated out of rectangular pieces of aluminum from a pie-tin to protect the twin-lead wire. These were then put under the UHF dipole elements and then everything was tightened down.

The UHF antenna was placed back on its pole and the Archer antenna was attached to the PVC pipe that I had brought along (Photo E).

Once I faced the Archer antenna's VHF elements to the east toward Baltimore, and plugged the amplifier back in, we had solid reception of both channels 11 and 13. I didn't even have to play with the length of the twin-lead between the two antennas.

The Bottom Line

My friend now has more channels than ever before due to having two antennas — one with much better gain, and both pointed in the desired directions — and with the use of a higher gain amplifier to keep the signal strength up even through a splitter and more than 100 feet of RG-59 coax.

Note that I was testing ideas by the *seat of my pants* here and because of the lack of, time, effort, analysis and a combiner, I really do not know why this all ended up working as well as it does.

My ideas are:

- The antennas are for different bands, UHF for one and VHF for the other.
- The signals are 90 degrees from each other so the antennas are pointed in somewhat different directions, but they are not as far different as I expected.
- Perhaps this is the telling reason the new UHF antenna was only receiving Washington stations even when pointed more east than south and the VHF antenna was *never* able to receive Washington stations.

Perhaps each antenna had nothing to add — more likely, subtract — from what the other was receiving well. While the fact is there are far more ways for the signals to combine to cause worse reception than better reception, I am a firm believer in the *give-it-a-try* method.

If something like this doesn't work for you (*and because of the above truth it may not*) buying a combiner (with 3.5-dB loss per antenna) and/or properly phasing the antenna array will be required.

I may have been lucky with my *seat-of-the-pants* analysis and tests for my friend, and you can, of course, try it this way since it will *not* cost more to try this way first and then add the time and effort and perhaps more money to properly phase the antennas.

So, go get that new or better antenna, new or better amplifier (don't forget to get

one with the FM filter/blocker if you have strong FM stations nearby) and better coax.

If most of the run can be done with twin-lead, you might want to try using that.

Always: Safety First!

Please be careful if you're on the roof or a ladder, and please watch out for any

overhead electrical wires. Put your antenna far enough away from them to be sure there is no contact — no matter what, *ever*.

Next month: In Part II, find out how Philip Karras, KE3FL, used a VHF/UHF splitter/combiner with only a 0.5-dB insertion loss to get all the DTV signals back at his location. Stay tuned. — Ed.

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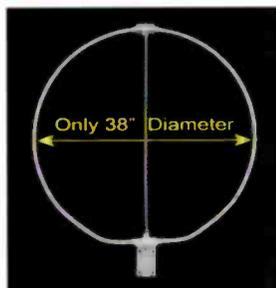
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Seeing is Believing: Build a Simple DTV Antenna

First of Two Parts

By Richard Fisher, KI6SN

The TV DXing bug bit me in the early 1960s when one summer afternoon ghostly gray bars were rolling down the face of the little black-and-white Admiral television in our den. There was another station trying to come through on top of WBZ-TV, Channel 4, in Boston — *but from where?*

Fiddling with the rabbit ears antenna, we were able to null 'BZ somewhat, but the picture and audio from the other station couldn't quite overtake the local.

While turning the dial to see what was on Channel 2 we noticed there was a clear picture and sound on Channel 3. *What? We'd never seen a station on Channel 3! What's that all about?*

After a pitched battle with the TV-signal skip conditions — rabbit ears flying every which way — we managed to hold the signal until the top-of-the-hour station break. It was WCIA-TV, Champign, Illinois. *Holy cow!*

My friends and I were amazed and hooked. For the rest of that summer, and many summers to come, we kept an eye out for those rolling gray bars and logged stations from around the Midwest and southern U.S. *What fun.*

With the shift from analog to digital television broadcasting in 2009, it's easy to get bitten by the TV DX bug all over again. There are a slew of new channels across the U.S., and just picking up the locals can present a formidable challenge.

In this new world of digital, there's room for experimenting with simple receiving antennas that can rival — even surpass — some of the commercially-made units on today's market.

Here's a design that has worked quite well here in Southern California, and can be built using simple parts — most of which you can likely find around the house: metal coat hangers, screws and washers and a piece of wood to mount them on — **Photo A**.

The only exotic components are a small impedance-matching transformer, **Photo B** and **Photo C**, and 75-ohm, coaxial TV cable **Photo D** — both of which can be purchased at Walmart, RadioShack and many other stores.

The indoor antenna featured in this *how-to* column easily picks up 86 Southern California stations.

A slightly different outdoor version of this antenna pulls in 115 DTV stations. Make that 115, and counting. More on the outdoor antenna later.

Let's Get Started

This indoor DTV antenna uses eight V-shaped coat-hanger pieces as elements, connected to the impedance transformer and coax via two, coat-hanger phasing lines.

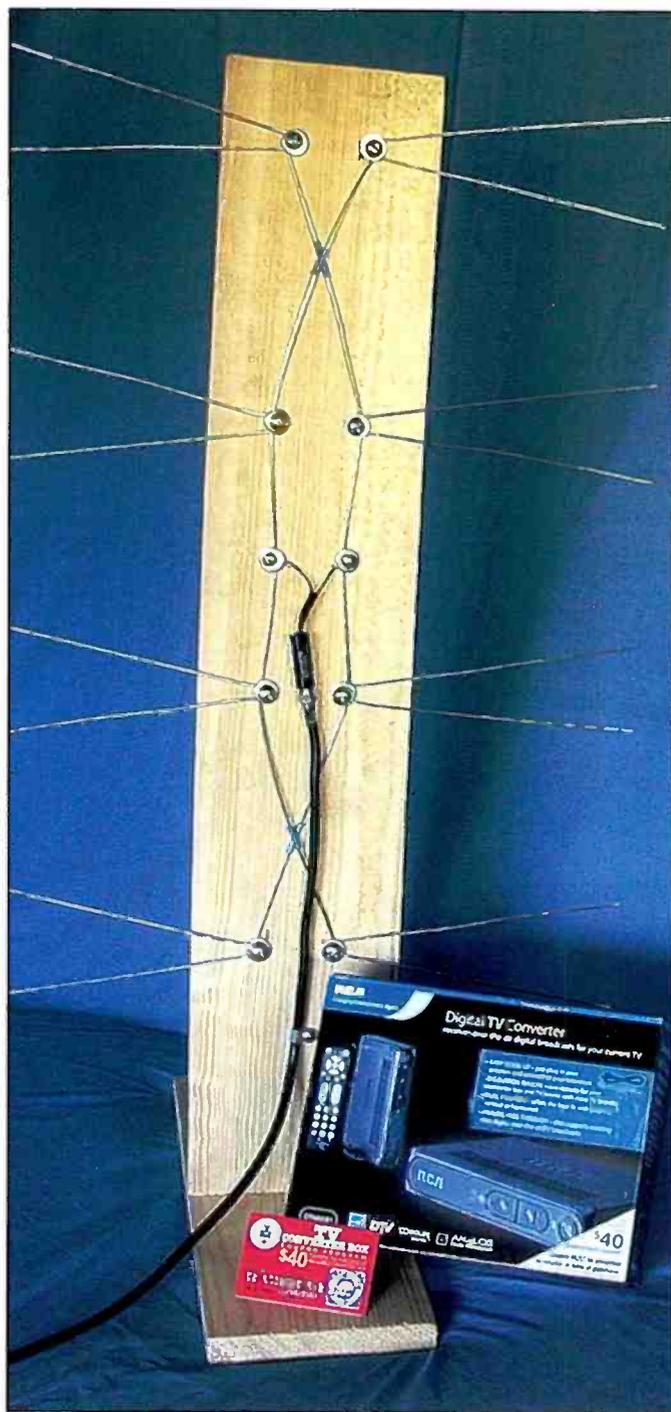


Photo A: This simple DTV antenna can be made for less than \$20 and is capable of pulling in signals even in many fringe reception areas. (Photographs courtesy of KI6SN)

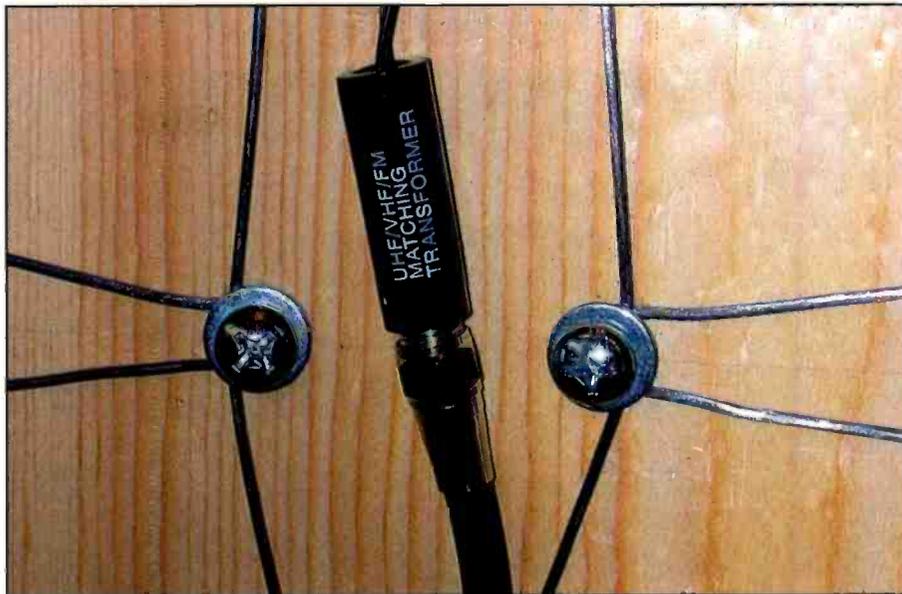


Photo B: The impedance transformer is positioned at the DTV antenna's feed point.



Photo C: It's necessary to get a good impedance match between the DTV antenna and your TV. An inexpensive transformer, available from many stores, including RadioShack and Walmart, will match your 75-ohm coaxial cable to your 300-ohm DTV antenna.

A search of the Internet will give builders a variety of spacing and size options for the elements and lines. So, the dimensions for this simple indoor antenna are only one of many ways to go — **Figure 1**.

First, gather at least six metal coat hangers. With wire cutters, remove from each the *hanging hook* — the curved piece at the top.

Next, straighten the wire into one long piece. With coarse sandpaper, remove the

lacquer coating. When you're done sanding you should have six pieces of shiny, silver-colored wire — **Photo E**.

Now we'll form the eight "V" elements, which are 8 inches long on a side.

Cut an 18-inch-long piece from one of the shiny wires. Find the approximate center of the piece at about 9 inches. Using a dowel or a pencil as a former, bend the wire around it to make the "V." Using a ruler, starting at the bend, measure along the wire 8 inches and cut each side to that length. *Voila*. You've got one "V" element completed. Repeat this process seven more times — **Photo F**.

Next, completely remove the lacquer from the two remaining long hanger pieces. They'll be your shiny-silver phasing lines.

We bought a 6-foot-long, 6-inch-wide, 0.75-inch-thick piece of pine at The Home Depot for \$3.22. That would be more than enough real estate to mount the antenna elements and to make the base for it to stand on.

The wood vertical portion is 30-inches tall. Now we'll mark the points where the screws and washers go to mount the wires. Use the measurements in **Figure 1**.

Once that hardware is loosely mounted on the board, **Photo G**, it's time to start adding the antenna parts.

We begin with the two phasing lines — going from top to bottom of the board — **Photo H**. Follow the curvature pattern

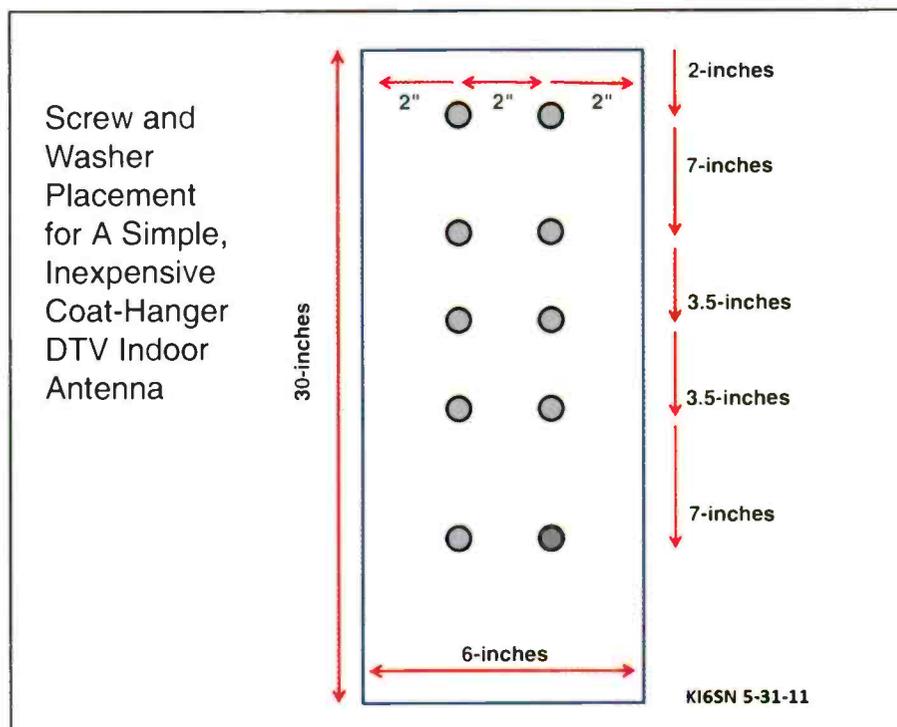


Figure 1.

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Photo D: A 15-foot length of coaxial cable was purchased to give more than enough wiggle room for placement of the indoor antenna.

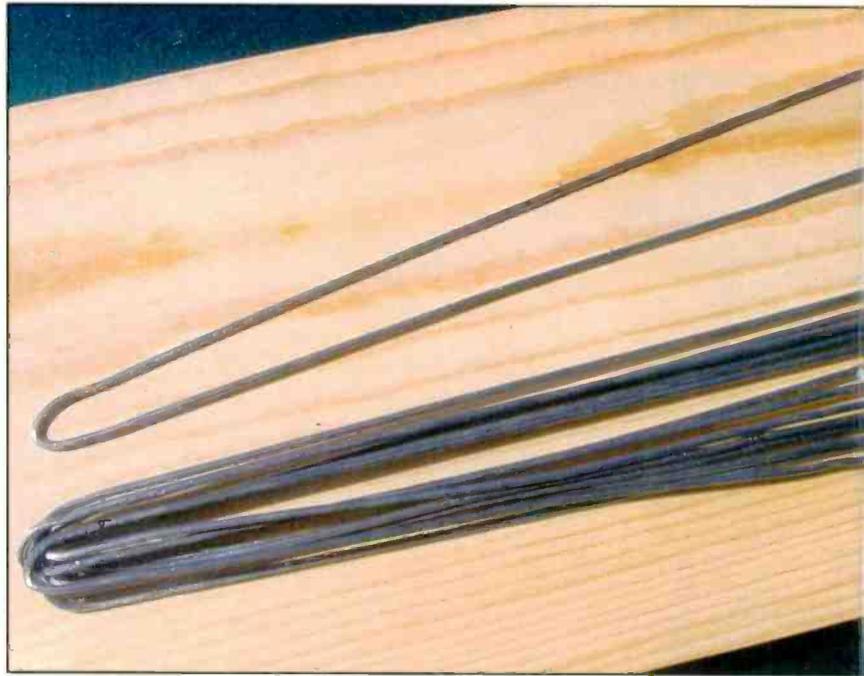


Photo F: Shaped and shined-up, the eight elements are ready to be slipped under the washers and screws on the antenna board.



Photo E: Simple hardware, coat hangers, a piece of wood and a handful of other parts are used to construct this simple-but-effective DTV antenna.



Photo G: After sketching where screws and washers will go to affix the antenna elements and phasing lines, they're loosely mounted on the wood DTV antenna board. The accompanying drawing shows where they are positioned.

shown in the photograph and be sure to slide a piece of insulation over each wire where they cross. The insulation is shown in BLUE. Electrical tape will do just fine, as well.

Now we add the eight V-shaped elements, as shown in **Photo A**. The picture shows where you'll attach the impedance transformer to the feed point, as well.

Once everything is in place, tighten down all the screws and washers. Make sure you've got good connections throughout.

We put a small plastic strain-reliever near the base of the antenna to hold the coax cable in place — preventing the somewhat fragile leads of the impedance transformer from being twisted and broken off.

Attach the coaxial cable from the impedance transformer to your DTV converter box and you're good to go. Open up the DTV converter menu and scan for new stations. You may be surprised what you find.

Are you a DTV DXer? Please share your experiences with us. Write: < editor@popular-communications.com >.

(Next month: An outdoor version of this simple DTV antenna does a surprisingly good job. — Ed.)

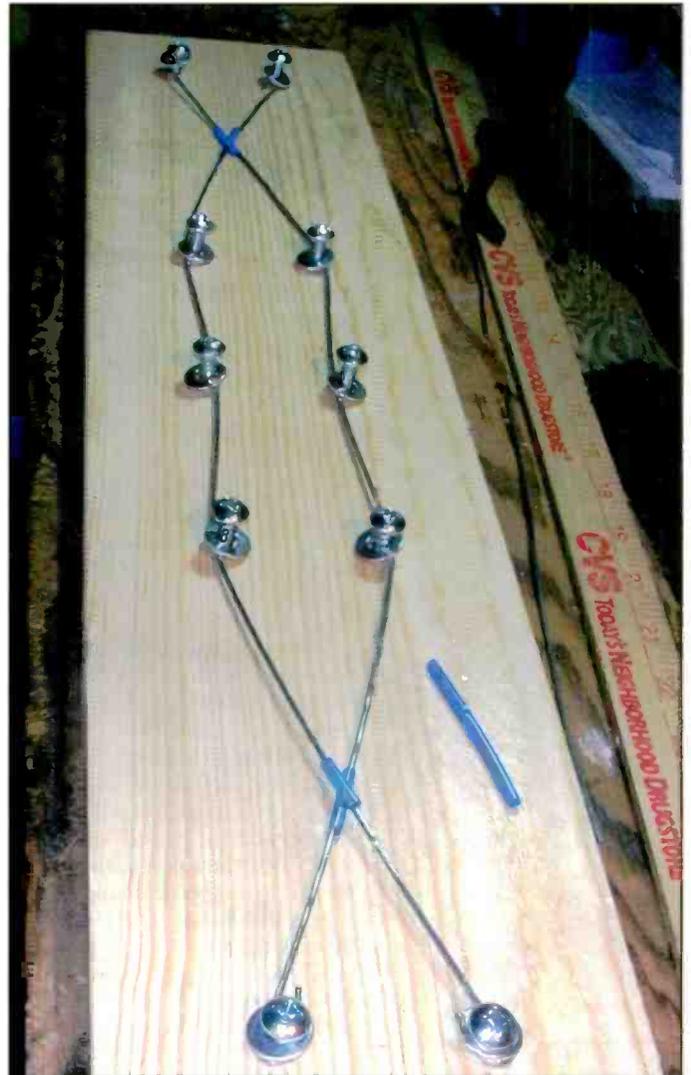


Photo H: The two long coat hanger pieces — the phasing lines — are positioned under washers as shown in the picture and held down by screws before the eight antenna elements are added.



Photo I: There are many DTV converter box models on the market today. When the switch from analog to DTV was being launched, viewers could apply for credit-card-style coupons worth \$40 toward purchasing the converter.

Trivia

by R.B. Sturtevant, AD7IL

Q: *I've been reading about the battle of Stalingrad. How good was the German's radio communications with their higher headquarters?*

A: In any military operation contact with higher headquarters is vital to a commander's ability to fight his opponent.

The battle for the city of Stalingrad took place between August 23, 1942 and February 2, 1943. Since the Germans were completely surrounded, radio was their only way to ask for relief, reinforcements and resupply.

According to a Soviet Military magazine, the Nazi Headquarters for 6th Army — commanded by Field Marshal Friedrich Von Paulus < <http://bit.ly/jn41L2> > was desperately trying to get in touch with their headquarters — German Army Group South, commanded by Field Marshall Erich von Manstein.

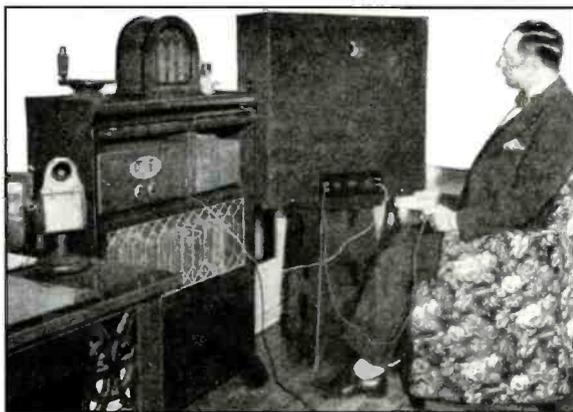
Von Paulus tried for some time to make direct contact but was unable to do so. In time, the German radio operators tried to make a relay contact through another station.

At first the relay station did not come up, but finally the desperate connection was made. During the next 24 hours, 16 urgent messages were passed through the relay station on to Army Group South.

The only problem was that the German speaking radio operators in the relay station were all in the Red Army. *Right frequency. wrong QTH.*

Q: *Why does a "Camel Back" telegraph key have a hump on it? Does it serve some kind of purpose?*

A: For questions about keys and their design I always turned to Marshall Emm of Morse Express, who knows more about keys than anyone else I can



Hugo Gernsback, editor of *Radio News*, receiving the television broadcasts from WRNY at his home in New York City. "For purposes of the test, the neon tube and loud speaker were connected in series temporarily, with successful operation simultaneously." (Courtesy of Wikimedia Commons)

turn to. Marshall said he didn't know but had a better guess than I did.

Apparently in the early days, many telegraphers had to build their own keys. Somebody somewhere built his (or her) key with whatever was handy. They found a piece of brass or steel stock with a curve in it. It was used for the lever.

Other operators saw this key and thought it looked *cool*. In the late 1800s, style was beginning to matter, so others were made *in the latest style* and the trend became a permanent fixture in the design of keys.

Things like a need to raise the lever over the contacts or lowering the knob to be closer to the table just don't make sense. In 150 years, museum curators and archeologists will probably be arguing about why we have ball bearings and magnets in the keys of today.

Maybe one of the hams using CW at that time will tell them. Yes, about 65 percent of us are still pounding brass and the numbers are growing.

Q: *Hugo Gernsback is well known as a science-fiction writer and publisher. What did he have to do with amateur radio?*

A: Hugo Gernsback was born in August 1884 in Luxembourg City, the capital of Luxembourg. He studied electrical engineering at the Technikum, a technical university in Germany.

During his studies he perfected a portable transmitter. After graduation he came to the U.S.

One of Gernsback's business ventures was to design and build a marketable version of his transmitter. His major problem was getting a reliable supply of parts like he was accustomed to finding in Europe.

Realizing he would need a steady supply of components for his manufacturing as well as his personal experimentations, he began importing parts from Germany and became the Electro Importing Company.

This may have been America's first electronics importing firm. He began selling the transmitter — The Telimco Wireless Telegraph — in 1905 mostly by mail order as well as at Macy's, Gimbell's and Marshall Fields stores for \$8.50 with a receiver.

Gernsback started a catalogue for his company and began writing articles in it to educate the public about the uses of electricity. This led to his beginning the magazine *Modern Electrics* — the first of several radio magazines he would publish.

Gernsback also started the Wireless Association of America and the Blue Book (1908) — a registry of radio amateur receiving and transmitting stations. He also helped shape the Radio Act of 1912.

In 1925 he also became owner of WRNY Radio in New York City. Pretty good for a guy whose main claim to fame is the *Hugo Award* for science fiction writing.



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by Gordon West, WB6NOA

Boat owners and RVers are always looking for ways to extend the life of their 12-volt, lead acid and newer sealed AGM (absorption glass mat) batteries.

“Lead acid batteries work by releasing energy through an interaction that occurs between the positive and negative lead plates and the lead sulfates in the electrolyte,” said John Bell, the public relations consultant with PulseTech Products Corporation.

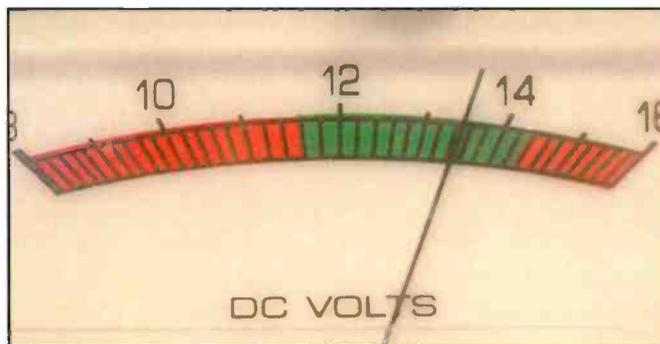
“Sulfation buildup occurs as lead sulfates form on the battery plates during the normal charge and discharge cycles,” he said.

“During the charge and discharge cycles, some of the sulfates enlarge to the point where they won’t accept energy, so they stay on the plate. Over time, these sulfates can build up until they reduce efficiency, and the battery dies,” Bell said. It’s a very common occurrence.

Emergency communications (EmComm) battery systems, receiving a small continuous maintenance charge, develop plate sulfation rapidly. Think of an athlete who gets food with almost no exercise. the system can no longer deliver peak output.

“Just like handheld Ni-Cad batteries, big battery systems also require regular exercise to keep them in top shape,” said Bill Alber, an emergency communications specialist who regularly works on mountain repeater back-up battery supplies.

Ever wonder why your RV starting battery lasts for five years,



An expanded voltmeter is used to detect small changes in starting voltage.

Universities Evaluate Pulse Charging in Two-Year Test

by Gordon West, WB6NOA

For two years, Oakland University in Rochester, Michigan and Ohio State University in Columbus conducted separate evaluations of the patented PulseTech pulsing technology. During these studies, sulfation — crystalline buildup — was regularly charted using X-ray defraction methods.

“The X-ray defraction data confirms the positive effects of the application of pulse technology on battery plate morphology,” test data revealed.

“It shows a more even distribution of lead sulfate crystals over the surface area of the battery plates. It also revealed significant reduction in the size of the lead sulfate crystals. These microscopic changes, kind of an electromechanical or cleaning action of the plate surface, appears to improve a battery’s ability to accept and store more energy,” the report indicated.

These published results may reveal a reconditioning reforming process of the battery plates by continuous pulsation. Electron-scanning microscopy as well as X-ray spectroscopy shows the reasons for the preservation process.

During the storage of a battery without pulsation, a formation of large crystal graphic domains is observed on the surface of positive electrodes. This is in contrast to the morphology of the battery stored with pulses.

Significantly smaller crystals were formed during the storage process of the battery undergoing the pulsation effect.

Read more of the results at: < <http://bit.ly/jqstlp> >.



For a good, long life, big batteries need exercise and a smart charge cycle. (Photographs courtesy of WB6NOA).

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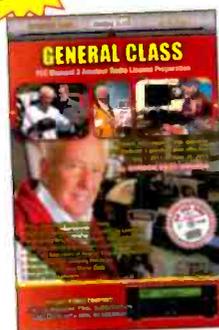
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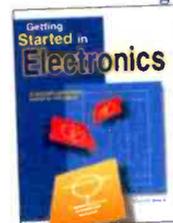
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Here's a 2-amp, marine-RV pulse charger.

yet the house batteries on constant charge in the storage yard last only a couple of years?

"As good as today's batteries are, including standard flooded as well as sealed AGM types, *all* lead-acid batteries suffer from the same main failure mode where 80 percent fail due to the damaging effects of sulfation buildup," Bell said. "The lifespan of today's lead-acid battery typically ranges from as little as a half year to four years, though only 30 percent survive for the entire four years." Sulfate found in the electrolyte will crystallize and root onto the battery plates, and eventually result in premature battery failure.

"This is especially true with seasonal-used vehicles and boats, or communi-

Pulse Charging: What One Independent Test Reveals

Although not scientific, Steve Swartz, who enjoys battery technology, spent nearly a year testing pulse charging versus conventional equipment charging. Swartz made the assumption that 120 cycles would equal one year for an average battery.

"It took about a month and a half to achieve 120 cycles, per battery, cascaded from four batteries to zero batteries, done over eight months," reports Swartz.

"Fourteen-amp-hour batteries were first discharged with a 10-amp light bulb. Allowed to rest for 30 minutes, and then recharged using pulse charging on one, and conventional charging on another. Pulse charging did not leave the heavy sulfates that we see with conventional charging, over many cycles of charge and discharge," reports Swartz, as seen in this photograph.

— Gordon West, WB6NOA

4 Year Comparative - Battery Plate Testing - Pulse Technology vs Conventional Charging

PulseTech
Products Corporation

Batteries Used: Exide # XT12M14-3A - 270 cca - 14 Ah - Date Code 2-18-05 - 10 batteries with consecutive serial numbers

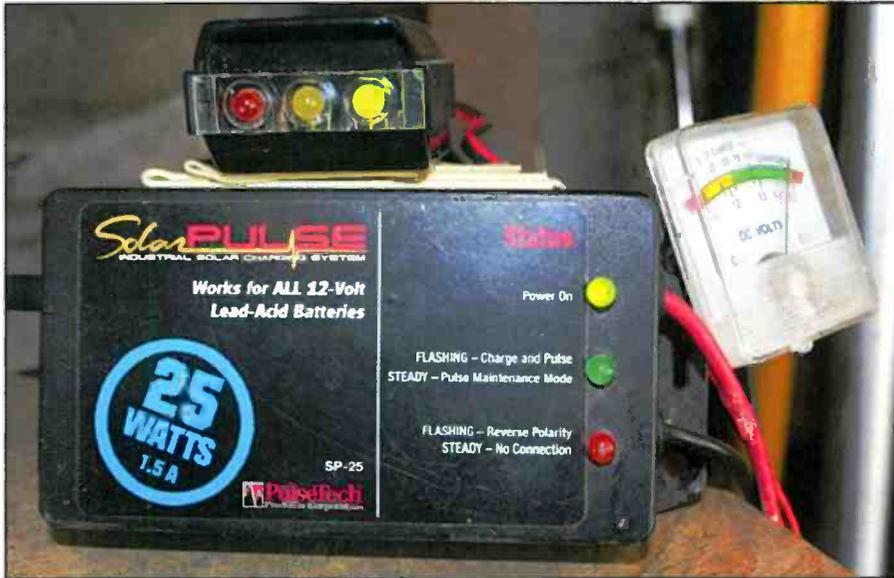
Test Parameters: 8 pcs cascading by 1 yr increments for evaluation / comparison : Load: All 8 pcs - resistive 5 amp load (light bulb)

Discharge Cycle: On alternate days - all 8 batteries discharged from 12.8 Vdc (full charge) down to 50% (voltage of 12.1 Vdc)

Charge Cycle: On alternate days - all 8 batteries were charged for up to 12 hours and / or up to 12.8 Vdc (full charge)

Row 1: Charged with Pulse Tech model # IC100 - fully automatic electronic charger - Rating at 2.5 amp actual - 5.0 amp effective output

Row 2: Charged with transformer type - Schumacher model # SE1020 - 4/10/20 amp selectable - all 4 pcs at recommended 4 amp charge rate.



This is a solar panel pulse charger status indicator, with added voltage monitors

cation system backup batteries that rarely see any action," Alber said.

About 10 years ago at a boat show, I attended some seminars from a company called PulseTech Products Corporation: < <http://bit.ly/jqstlp> >. It had all sorts of ongoing tests with battery cut-aways showing healthy new plates; three-year-old, relatively healthy plates; and very ugly, one-year-old sulfated plates where the battery was left on a constant trickle charge.

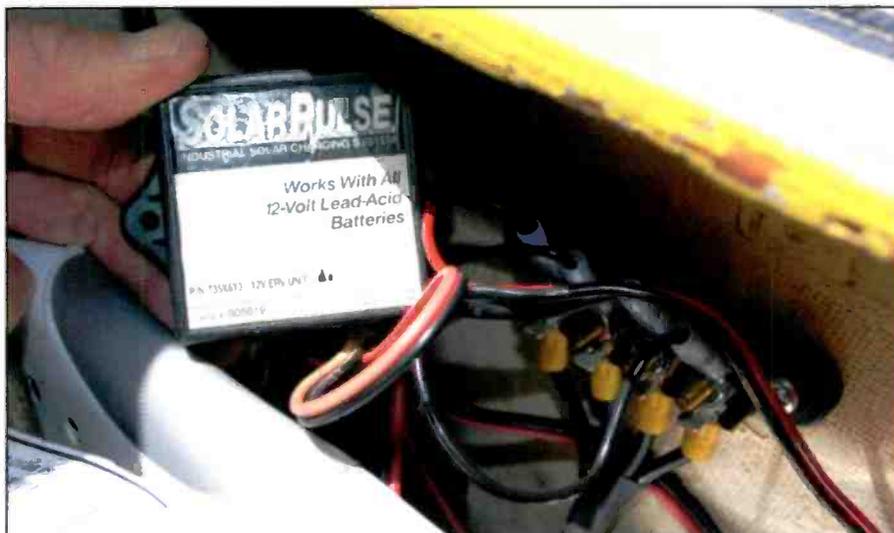
This is year four that I have been testing PulseTech products in our communications van, as well as my classic '76 communications wagon, along with the yellow dune buggy. All systems are still going strong, with some of the batteries at 5 years old.

I monitor battery health by observing

an analog, expanded-voltage voltmeter during engine cranking. A healthy battery may dip to 10 volts during repeated engine starts. When that voltage dips down to 9.5 volts and then 9 volts or lower on engine starting, I have either lost battery electrolyte from plain old evaporation or the well-watered battery has gone into sulfate occlusion.

On the van with a 454 engine, I use the PulseTech solar pulse industrial charging system. It only puts out 1 amp, but its pulse action keeps the entire van's battery system clean.

On the wagon, stored in the garage, I use the marine XTREME 5 stage maintenance charger, which offers bulk, saturation, float and maintenance stages. But unlike a nice smooth DC output, the



Small, 300-milliamp, solar pulse charger electronics are used in WB6NOA's dune buggy.

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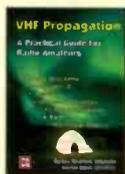


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PulseTech products output quick two-millisecond pulses every half second, to exercise the battery plates to minimize sulfation.

Like you, I was skeptical — and I'm not about ready to saw open one of the batteries to see for myself — but I watch starting voltage and load current and voltage under load, which don't lie. The batteries are still healthy.

You can see the sharp pulses on an oscilloscope, and see slight



A small solar panel is used with the pulse charger in Gordo's dune buggy.



With a crowd as its backdrop, a table for testing solar charger pulse charging capabilities was set up at the Quartzfest (Arizona) Ham-RV Rally.

Pop'Comm August 2011 Reader Survey



A Solar Pulse charging system sits on top of a solar panel during the tests in Arizona.

fluctuations in the output voltage line. There is a five-second analysis period before the pulses settle in to their pattern.

I was concerned that the proprietary sealed microprocessor might be noisy on high frequency, but the system is very quiet — even with its almost narrow square wave pulses. My FM scanner didn't complain and there was no trace of square waves and their inherent harmonics on the HF receiver.

It takes an oscilloscope to see the pulse action. I have several other old technology chargers that produce every-two-second bursts of increased voltage, but the scope reveals PulseTech square wave action with the much higher voltage

amplitude.

The PulseTech Web site shows additional plots of their pulse action. The listing of their products gives you several links to additional scientific studies, PulseTech users, and a Society of Automotive Engineers technical paper on effective battery charging.

I like the solar charging system best, because I can take it with me when out in the communications van, totally *unconnected* to shore power, and watch the panel meter read out the pulse action. Best of all, the communications van starts with a voltage excursion like a nice fresh battery!



A pulse charger, battery and test gear help tell the story during testing at Quartzfest.

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

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

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

Should *Pop'Comm* include more construction articles, similar to this month's DTV antenna?

- Absolutely. Challenge me. 1
Depends. If they're for beginners, OK... 2
No, I'm not interested in building things 3
Only if you don't give up any other content. 4

Have you ever built a piece of radio gear from scratch (not from a kit)?

- Yes, and it worked great. 5
Yes, it worked, but not well. 6
Yes, but it never worked. 7
No, but I'd like to 8
No, I have no interest in building things. 9

Have you ever made an antenna from scratch (not from a kit)?

- Yes, and it worked great 10
Yes, it worked, but not well. 11
Yes, but it never worked 12
No, but I'd like to. 13
No, I have no interest in making an antenna 14

What kinds of construction articles would you like to see featured in *Pop'Comm*? (Use the comment line.)

Take This Reader Survey Online

You can now participate in this reader survey via the Internet. Simply go to *Pop'Comm On the Web*: < <http://www.popcommmagazine.blogspot.com/> > and click the link to the *Pop'Comm August 2011 Reader Survey*. It's quick and easy.

And the Winner Is . . .

For participating in the *Pop'Comm Readership Survey*, the winner of a free subscription or extension is **Robert Scott of Milwaukee, Wisconsin**. *Way to go, Robert!* And thanks for your suggestion about adding a *Guest Columnist* feature.

Axis Sally The American Voice Of Nazi Germany

By Richard Lucas

Reviewed by Gerry Dexter

“As Soviet troops entered the Reichs Radio building on April 30th, 1945, Axis Sally exited through the back door and into a scene of nearly complete devastation. Suddenly, she was on her own.”

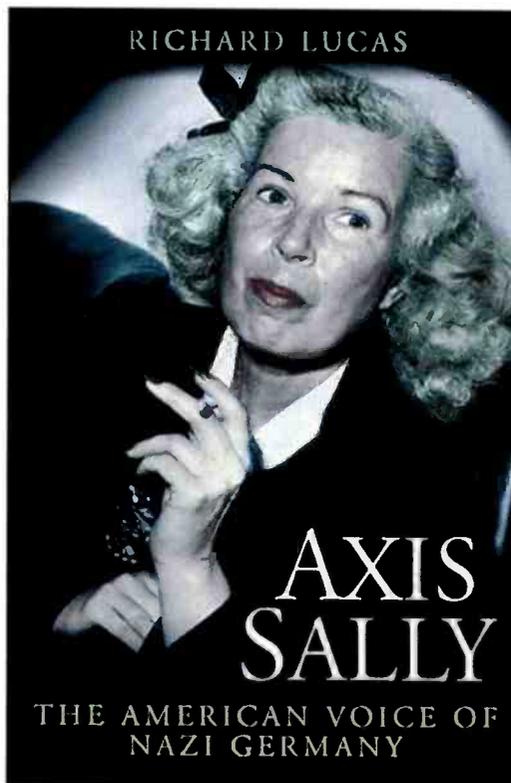
WYour imagination is engaged before you even open the book. Her picture on the dust jacket looks as though she might have been some nearly forgotten silent screen star, unable to make the transition to talkies and so relegated to life in one of those old “painted lady” homes. Or perhaps she’s a well-off widow driven by her own Morgan Freeman facsimile to Sunday dinner at her sister’s. Tuesday afternoons he brings her remaining friends over to gossip, sip black tea (or more likely Smirnoff’s), and talk about how things used to be...

In reality Mildred Gillars’ life, as compellingly recounted in the book *Axis Sally, The American Voice of Nazi Germany*, by Richard Lucas, was very different. She began her life in harsh circumstances, the daughter of a rough-hewn blacksmith who drank heavily—when he wasn’t smoking opium or beating her mother, Mae. Mae soon divorced the beast and married an itinerant dentist who apparently wasn’t that much higher on the quality scale and is believed to have sexually molested Mildred. By her teen years Mildred was a blossoming beauty who avidly sought attention; she desperately wanted to be somebody.

Through schooling and a brief time at Ohio Wesleyan University (where she was heavily involved in theater), she was a flirty, stylish, popular girl—especially with the guys—though not thought very bright. As her grades went downhill one professor encouraged her to forget school and try for a career on the stage. Shortly, she found herself in New York City, trying to get noticed but finding only minimal success, which she supplemented by writing occasional articles and doing some modeling. But nothing seemed to click for her, so she decided to try her luck in Europe.

Over the following years, through various acquaintances, employers, and brief romances,

she found herself visiting or living in Paris, London, Marseilles, Algiers, and finally, Berlin. She didn’t find fame, but she managed to convince herself that Europe offered more opportunity. So she decided to remain in Germany and eventually wound up helping a film critic friend write commentary and reviews of current German cinema, just about the time the Nazi regime was busy consolidating its grip on the nation. The film



Axis Sally, The American Voice of Nazi Germany, by Richard Lucas, recounts in gripping detail the life of one of the most notorious figures in broadcast history.

industry and its related activities fell under the Goebbels' Propaganda Ministry.

Mildred needed income badly and applied for a job with the European section of Reich Radio. She began as an ordinary "shift" announcer, doing IDs and introducing records. Soon, however, she came to the attention of the German Foreign Office, which hadn't been happy with the way its broadcasts to America were being presented and wanted to use people who spoke English with an American accent. Shortly after having been hired by the radio's European Section, she met and fell in love with a Dr. Max Otto Koischwitz, who was involved with German radio's "USA Zone" broadcasts.

Over time, with a honing of her talents and a powerful supporter in Dr. Koischwitz, "Axis Sally" was born. In all, she would spend from early 1940 to spring 1945 broadcasting to America and its troops abroad on such programs as Midge at the Mike, Home Sweet Home, Medical Reports, Survivors of the Invasion Front (which included POW interviews), and others. (You can hear a couple of brief excerpts of Axis Sally's broadcasts by going to < www.earthstation1.com > and then clicking on the "Axis Sally" links.)

She seems to have taken her position quite seriously, making strong objections to the existence of another "Axis Sally" broadcaster on Italy's Radio Roma. Politically, she also made strong objections to Germany's partnership with Japan after the attack on Pearl Harbor.

As Soviet troops entered the Reichs Radio building on April 30, 1945, Axis Sally exited through the back door and into a scene of nearly complete devastation. Suddenly, she was on her own. Cancer had taken her lover, Koischwitz. She was left without funds, friends, or food. Gillars spent almost 11 months on the run before she was tracked down and arrested by U.S. Army Counter-Intelligence.

Around this point in the sorry saga, Axis Sally loses a bit of its Ludlum-like page-turner quality, as the story begins to involve her not-so Perry Mason-like lawyer taking on the Justice Department. We learn about the case as set against antagonistic public opinion (Walter Winchell spent much of his program time condemning her), the allowance of ill-considered trial testimony, legal maneuvers, counter-moves, and so on. Nor did a somewhat prejudiced judge help her cause.

There was never any question that

Gillars broadcast for and on behalf of the Nazis. In her testimony she employed any number of half-truths to justify her actions, claiming she loved America and was seeking to save G.I. lives, was working to defeat Communism, and such.

Had she been tried in today's more lenient courts, she might have gotten six months confinement and three years of community service. Instead she was sentenced to 10-30 years for treason. After serving 12, a deal was arranged that gave her over to Our Lady of Bethlehem Convent, where she spent several years teaching languages and choral music to high school girls. Ironically, for the first half of her life all she wanted was fame; for the second all she craved was seclusion, anonymity, and the comfort of the church. Axis Sally provides not only a fascinating history of this most notorious broadcaster, but also offers hints about the broken being who uttered the treasonous words.

This book is indeed a prize, especially for those interested in radio history.

The appendix includes selected transcripts of her broadcasts (recorded on acetate discs by the FCC Monitoring Post at Silver Hill, Maryland). Also noteworthy is the mention of amateurs and short-wave listeners monitoring the POW broadcasts and notifying relatives, as also discussed in the World War II Heroes review in a few issues back.

Beyond that, however, reading this tale gives one a feel for those dark times and provides a useful reminder that our difficulties pale in comparison to what the world was like then. I would highly recommend Richard Lucas' *Axis Sally, The American Voice of Nazi Germany* as a fine addition to your library.

Axis Sally, The American Voice of Nazi Germany, by Richard Lucas. Casemate Publishers 2010, 288pp, hardcover w/photos. ISBN: 978-1-035149-43-9. \$29.95.

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“Get those broadband loop antennas up, test and weatherize connections and organize a target list of stations. Instead of tuning aimlessly, a target list provides a sense of direction by identifying frequencies and locations that could put new and exotic entries in the logbook.”

The dog days of summer are upon us — a time to lazily soak up the warmth of the sun before returning to school or the daily grind.

It’s also a good time to start preparing for the cold nights ahead at the AM radio dial. Get those broadband loop antennas up, test and weatherize connections and organize a target list of stations.

Instead of tuning aimlessly, a target list provides a sense of direction by identifying frequencies and locations that could put new and exotic entries in the logbook.

Solar activity has been on the rise, and that means improved reception from tropical locales. When the A and K indices are up, so are signals from the south.

With that in mind, here’s a target list of tropical signals for inspiration. There have been a few changes since the last tropical target list. Jamaica has abandoned AM radio, the once easy-to-receive Turks and Caicos is now difficult DX and another split frequency station moved on-channel.

Emisoras de la Revolución

Número uno, Cuba tops the list as the easiest of the Caribbean islands to receive, except on the U.S. west coast where anything tropical beyond Mexico is a challenge.

Though broadcasts are exclusively in Spanish,

the high-power signals of the *Radio Rebelde* national network on 670, 710 and 1180 kHz are easily identified by non-Spanish speaking listeners simply by comparison of audio on different frequencies, referred to as parallel frequencies or parallels for short.

If the Spanish audio matches, then you’re well on the way to making positive identification. The *Radio Rebelde* shortwave relay on 5025 kHz is another good parallel. *Radio Rebelde* is often received on numerous frequencies by east coast North American DXers, including 550, 560, 600, 610, 620 and 1620 kHz. Enter all the parallel frequencies into your receiver memory so when one signal is coming in strong it’s easy to check the others.

Radio Rebelde broadcasts a variety of music, sports and political programs. The hourly network identification, *Radio Rebelde, la emisora de la revolución*, is accentuated by a distinctive nine-note cuckoo-clock-like sounder.

Radio Progreso is another Cuban national network that broadcasts a variety of programs, typically cultural. Listen for the identification on the hour, *Radio Progreso, cadena nacional, desde la Habana, Cuba, la onda de la alegría* and news with the slogan *Noticiero RP*. Affiliates at 640 and 690 kHz are the most widely heard.

Radio Reloj is the Cuban national all-news network and the easiest of all to identify. The tick-tock of a syncopated clock that sounds similar to the WWV shortwave time signal runs continuously in the background as announcers read news items, and a beep marks each minute followed by RR Morse code identification, usually supplemented by a voice ID and time check: *Radio Reloj*, beep, *Dos cincuenta minutos*, then RR in Morse code — except on Sundays when it’s replaced by doorbell-like chimes during the second half of the hour.

At midnight, time checks for locations worldwide are announced. Listen for the clock and RR Morse code on 570, 790, 870, 950, 960 and 1020 kHz, among others. Often on 790, 950, 960 and other frequencies more than one station can be heard carrying *Radio Reloj*, with the delay between co-channel stations resulting in a double RR code ID.

World-renowned DXer Mauricio Molano of



QSL card from *Radio Rebelde*, Cuba.



QSL card from XEEP Mexico.

Spain recently compiled what is probably the most accurate listing of Cuban AM radio stations to date, available at: < <http://bit.ly/miISJq> >.

The list was compiled from the Cuban version of Wikipedia: < <http://bit.ly/kzkHXP> >. Far more radio stations than previously known to exist are listed, including multiple stations on specific frequencies designed to block reception of the U.S. in Cuba. For example, 36 *Radio Rebelde* affiliates are listed on 1180 kHz, obviously to block reception of VOA *Radio Martí* broadcasts beamed from Florida.

¡Viva México!

Though Mexico is number two on the list, some DXers may argue that it should be at the top.

Mexico is received throughout North America, and for listeners in the southwest it's a dominant presence across the dial. The most widely received stations are the clear-channel, three-letter-callsign powerhouses of Mexico City: 690 XEN, 730 XEX, 900 XEW, 940 XEQ and 1220 XEB.

Especially clear frequencies for listeners in the northeast are 690 and 940. Canadian 50kW clears 690 CINF (formerly CBF) and 940 CINW (formerly CBM), each in Montreal, signed off the air in 2010 and simply turned in their licenses, leaving the frequencies open for long-distance signals.

XEQ 940, which broadcasts nostalgic music under the slogan *Bésame* — a close equivalent to the *Kiss* moniker of U.S. radio stations — is easy to identify by its offset frequency of 939.86 kHz.

Alternative targets include 540 XEWA San Luis Potosí, 1060 XEEP *Radio Educación*, which relays 6185 shortwave overnight, 1570 XERF *Ciudad Acuña* (a former Wolfman Jack border blaster), and at the very end of the dial 1700 XEPE, Tijuana, which broadcasts news/talk in English to San Diego.

Traditionally, the Mexican national anthem is broadcast by all stations at midnight local time which help to identify signals by time zone.

Big Things Come in Small Packages

Despite its size, the tiny Caribbean island nation of St. Kitts and Nevis is well represented on the AM radio dial and rates as number three on our target list.

This Month in Broadcast History

75 Years Ago (1936): Radio Prague, Czechoslovakia, began broadcasting. (Sadly, Radio Prague from what is now the Czech Republic, closed its shortwave service at the end of January 2011 though it's still relayed to North America via Radio Miami International.)

50 Years Ago (1961): *Michael* by the Highwaymen topped the Live 55 music survey on 1150 KXLR Little Rock, Arkansas.

25 Years Ago (1986): The FCC released an agreement between the United States and Mexico regarding the modification of frequency allocations in the AM broadcast band, "desiring to continue their mutual understanding and cooperation concerning AM broadcasting and recognizing the sovereign right of both countries in the management of their own services, taking into account the provisions of Article 31 of the International Telecommunications Convention, Nairobi, 1982 and articles 6 and 7 of the Radio Regulations, 1982, annexed to the Convention, in order to protect the broadcasting stations in the two countries and to improve the utilization of the frequency band 535-1605 kHz allocated to this service."

— Bruce A. Conti



Station ZIZ is hard to miss on the *split* frequency of 555 kHz. It's the only signal in the world transmitting on this frequency, and the last of once numerous split frequency stations across the dial.

So even if you can't get readable audio, just detecting a signal on 555 kHz should be enough for at least a tentative entry in the logbook. ZIZ broadcasts local talk, cultural and music programs and relays the BBC World Service into the predawn hours.

The Voice of Nevis (VON), more commonly identified on the air as *Von Radio*, is a former split frequency signal that used to transmit on 895 kHz. VON moved on-channel to 860 kHz in 2010. Though not as widely heard on the new frequency due to co-channel interference, VON still manages to break through the clutter, often heard with distinctive Caribbean island music along with R&B.

Radio Paradise, yet another former split now on 820 kHz, is perhaps a better target than VON. Most of its programs broadcast overnight are from the Trinity Broadcasting Network, a familiar shortwave broadcaster. The best time to catch the station identification has been at sunrise during local programming.

Time Shifted Targets

The Bolivarian Republic of Venezuela is TNT number four, where 750 YVKS Caracas and 780 YVMN Coro are among the most common signals. YVKS identifies as *RCR*, which stands for *Radio Caracas Radio*, broadcasting news and sports programs. Listen for Venezuelan baseball play-by-play in Spanish

interspersed with English terminology such as strike, foul and home run, along with a *Take Me Out to the Ballgame* organ instrumental theme.

YVMN identifies as *Radio Coro* with the slogan *Patrimonio de la comunidad*, broadcasting primarily popular and nostalgic Venezuelan music.

Another favorite DX catch is YVLB *La Voz de Carabobo*, which transmits on the offset frequency of 1039.61 kHz. The off-frequency signal is easy to detect. Audio can sometimes be separated from the nominal 1040 signals in ECSS mode.

Tune to 1039.61 lower sideband (LSB) with a tight filter selected. Use a directional antenna to peak the signal and with any luck you'll extract some audio.

Venezuelan President Hugo Chávez time-shifted the nation from UTC-4 back to UTC-4.5 hours at the start of 2008, returning to the time zone used prior to 1965.

So expect to hear full station identification at what's the bottom of the hour for the rest of us. Listen for the state and national anthems broadcast by most stations at midnight (0430 UTC) and morning sign-on.

Also expect to hear long-winded speeches by President Chávez simulcast on all stations — not very entertaining, but good for finding Venezuela parallels.

La Radio de Colombia

Next door to Venezuela and next on the list is Colombia. The two most-easily identified are the *RCN (Radio Cadena Nacional)* stations on 760 from Barranquilla and 770 from Bogotá, the latter with 100 kW of power.

Frequent identifications and jingles include the slogan *La radio de Colombia*. Using the parallel identification technique, match up the audio between frequencies for a tentative entry in the logbook, then wait for RCN identification to secure the catches. *CARACOL* is the other big national network with stations on 1100 and 1170 kHz logged most often. If XEN Mexico or *Radio Progreso Cuba* aren't dominant on 690 kHz, then listen for *Radio Recuerdos (Memories)* from Bogotá playing nostalgic Spanish tropical music.

Dominant Dominicans

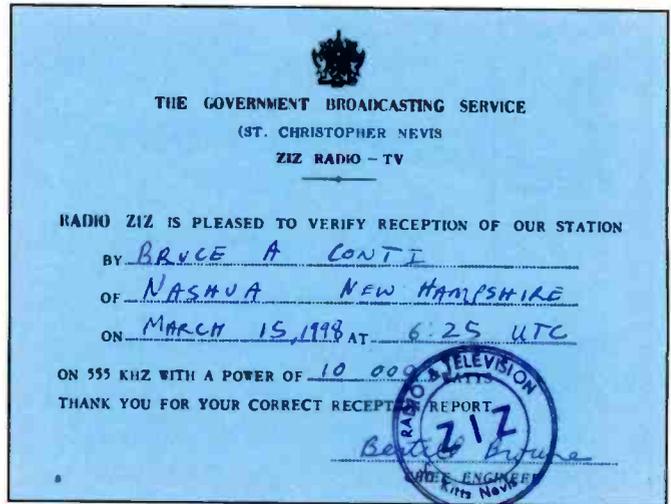
The remaining five nations on the TNT list are essentially a toss-up with reception heavily dependent upon solar conditions.

The Dominican Republic places at number six on the list due to several expanded band stations and a shortwave harmonic. Most often heard in the sparsely populated, expanded band at the high end of the AM radio dial are *Radio Juventus Don Bosco* on 1640 kHz and *Radio Senda* on 1680 kHz.

A harmonic of 1140 *Radio Anacaona* has been logged on 2280 kHz shortwave. 580 *Radio Montecristi*, 1060 *Radio Amanecer* and 1070 *Hibi Radio* have been logged by east coast DXers but rarely make it very far inland. At least 1070 is a clear frequency in the northeast with the departure of CBA New Brunswick, leaving only co-channel CHOK Ontario as a primary source of interference. Of course, DXers in the west still have to deal with KNX Los Angeles.

Brazil Biggies

Brazil might be big, but its reach on the AM dial is rather small by comparison — rarely heard beyond the immediate east coast. Given perfect propagation conditions, the powerful *Radio Globo* network stations at 1100 kHz from São Paulo and 1220



QSL card from ZIZ on the split frequency of 555 kHz from St. Kitts and Nevis.

kHz from Rio de Janeiro, both with 150 kW of power, are known to carry well inland.

Listen for characteristic excited shouting in Portuguese and whistling during sports and talk programs.

Nicaraguan Non-Nominal

A widely received off-frequency signal gets Nicaragua on the list. *YNOW Radio Corporación* from Managua stands out as a solitary target from this Central American nation.

Offset at 540.18 kHz, the signal is often detected into the northeastern U.S. and beyond. 540 is a relatively clear frequency with the primary sources of co-channel interference from CBC network stations in Canada, XEWA Mexico and the WFLF relay of WFLA from Florida. Additional domestic stations broadcast 24/7 on the frequency but with significantly reduced power overnight.

Bendiciones de PJB

Netherlands Antilles is well known for the once powerful 500-kW, *TransWorld Radio* signal from station PJB Bonaire on 800 kHz. Though power is reduced to 100 kW, it's still a wide reaching signal, utilized to relay the ministry of *Radio 4VEH* from Haiti after the earthquake devastated Port au Prince. Most broadcasts are in Spanish.



Vintage QSL card from *Radio 4VEH*, Haiti.

Listen for *Radio Transmundial* identification on the hour.

Ici Radio 4VEH

Last but not least on our top 10 tropical target list is a salute to *Radio 4VEH* on 840 kHz. Broadcasting from Cap Haitien on the north coast, *Radio 4VEH* was spared any earthquake damage and continues to broadcast a message of encouragement and hope to the citizens of Haiti.

The distinctive Caribbean-accented French language broadcasts are often logged despite co-channel interference from WHAS Louisville, Kentucky, and CMHW *Dobleve* from Santa Clara, Cuba.

Tropical TNT Top Adds

No top 10 list is complete without honorable mentions.

WIPR San Juan, Puerto Rico, on 940 kHz is a good alternative target if XEQ Mexico isn't in the clear.

Check 1620 kHz for WDHP St. Croix, U.S. Virgin Islands, *The Caribbean Powerhouse*.

Another possible Central American target, *Radio Reforma*, Panama, has been logged in the northeast on 860 kHz. *Radio Colonia*, Uruguay, on 550 kHz is an extremely rare catch, but has been heard in New England, yet it's regularly reported by DXers across the pond in olde England.

The *Radio Vision Cristiana* flagship on 530 kHz from the Turks and Caicos Islands, operating with flea-power since sustaining hurricane damage years ago, and now seldom reported by DXers, could someday return to its former glory.

While keeping an ear on 530 kHz, listen for the distinctive easy listening *elevator music* programming from *Radio Enciclopedia*, Cuba, which brings us back to where we started at the top of the list.

Your Reports, Por Favor

As the DX season gets underway, let us know what you're hearing via email and on Facebook.

Share your success with this target list or submit your own suggested targets to help fellow DXers. If solar activity produces sustained aurora conditions, this winter could be hotter than normal with exotic tropical DX across the AM broadcast band.

Until next time, as always, 73 and Good DX!

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BROADCASTING

World Band Tuning Tips

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	UTC	Freq.	Station/Country	Notes
0000	15360	BBC, Thailand Relay		0300	4985	Radio Brazil Central	PP
0000	4775	Radio Tarma, Peru	SS	0300	9900	Radio Cairo, Egypt	AA
0000	9685	International Radio of Serbia		0300	4780	Radio Djibouti	FF/AA
0000	4975	Pacifico Radio, Peru	SS	0300	6125	Radio Exterior de Espana, Spain	SS
0000	17715	Radio Australia		0300	6140	Radio Havana Cuba	SS
0000	9820	Radio Austria International	GG	0300	11760	Radio Havana Cuba	SS
0000	15190	Radio Bandeirantes, Brazil	PP	0300	11925	Radio Japan, via Bonaire	JJ
0000	11700	Radio Bulgaria	BB	0300	11935	Radio Japan, via Bonaire	JJ
0000	9250	Radio Cairo, Egypt	AA	0300	3250	Radio Luz Vida, Honduras	SS
0000	4955	Radio Cultural Amuata, Peru	SS	0300	5010	Radio Nacional, Madagascar	Malagassy
0000	15160	Radio Exterior de Espana, Spain	SS	0300	15720	Radio New Zealand International	
0000	6115	Radio Farda, USA, Kuwait Relay	Farsi	0300	9645	Radio Romania International	
0000	15275	Radio Thailand		0300	12070	Radio Rossii, Russia	RR
0000	7430	Voice of America, Kuwait Relay		0300	7425	Radio Tirana, Albania	Albanian
0100	6155	All India Radio	Urdu	0300	4052.5	Radio Verdad, Guatemala	SS
0100	9870	All India Radio	Hindi/EE	0300	12005	RT Tunisienne, Tunisia	AA
0100	7395	BBC, Cyprus Relay		0300	4976	UBC Radio, Uganda	
0100	4815	Radio El Buen Pastor, Ecuador	SS	0300	7175	Voice of the Broad Masses, Eritrea	AA
0100	7385	Radio Romania International	FF	0300	15180	Voice of Korea, North Korea	FF
0100	11905	SLBC/Radio Sri Lanka	Hindi	0300	6175	Voice of Vietnam, via Canada	VV
0100	13760	Voice of Korea, North Korea		0300	9735	Voice of Russia	SS
0100	9955	WRMI, Florida	EE/SS	0300	7475	Voice of Greece	Greek
0200	4965	CVC-One Africa, Zambia		0300	7415	WBCQ, Maine	
0200	3985	Voice of Croatia		0300	9370	WTJC, North Carolina	
0200	11710	Radio Argentina al Exterior		0400	15285	Broadcasting Service of the Kingdom, Saudi Arabia	AA
0200	11815	Radio Brazil Central	PP	0400	6190	BBC, via South Africa	
0200	4885	Radio Clube do Para, Brazil	PP	0400	9870	Radio Voice of the People, (to Zimbabwe)	vernacular
0200	3350	Radio Exterior de Espana, Spain, Costa Rica Relay	SS	0400	6010	La Voz Concencia, Colombia	SS
0200	3320	Radio Sonder Grense, South Africa	Afrikaans	0400	9705	Radio Ethiopia	Amharic
0200	7375	Voice of Croatia, via Germany		0400	9805	Radio France International	
0200	9515	Voice of Turkey		0400	17810	Radio Japan	JJ
0200	7440	Voice of Russia, via Ukraine		0400	5960	Radio Japan, via Canada	JJ
0200	7325	Radio Austria International	GG	0400	5950	Radio Taiwan International, via Florida	CC
0300	9460	BBC, Seychelles Relay		0400	4790	Radio Vision, Peru	SS
0300	6145	BBC, via South Africa		0400	4920	VOA, Botswana Relay	
0300	7230	Channel Africa, South Africa		0400	3340	Voz Missionaria, Honduras	SS
0300	9560	China Radio International	SS	0400	3185	WWRB, Tennessee	
0300	9570	China Radio International		0400	5995	TWR, Swaziland	
0300	9610	Vatican Radio, via Canada		0400	9780	Republic of Yemen Radio	AA
0300	6110	Radio Fana, Ethiopia	Amharic	0400	11960	Radio Jordan	AA
0300	6165	Radio Nederland, Bonaire Relay	SS	0500	11875	BBC, via South Africa	
0300	15515	Radio Australia					

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0500	15255	Channel Africa, South Africa		1300	7340	Family Radio/WYFR, USA, via Russia	VV
0500	4990	Radio Apinte, Suriname	Dutch	1300	15550	Islamic Republic of Iran Broadcasting	AA
0500	6185	Radio Education, Mexico	SS	1300	11685	Islamic Republic of Iran Broadcasting	Urdu
0500	11725	Radio New Zealand International		1300	21685	RDP International, Portugal	PP
0500	5025	Radio Rebelde, Cuba	SS	1300	11635	Voice of America, Thailand Relay	CC
0500	9500	TWR, Swaziland		1300	12055	Voice of Russia	Hindi
0500	11625	Vatican Radio		1300	11710	Voice of Korea, North Korea	
0500	4960	Voice of America, Sao Tome Relay		1400	9525	Voice of Indonesia	
0500	9840	Voice of Russia		1400	9955	Radio Prague, Czech Republic, via Florida	
0500	5005	Radio Nacional, Equatorial Guinea	SS	1500	9625	CBC Northern Service, Canada	
0600	13590	CVC-One Africa, Zambia		1800	15330	Radio Marti, USA	SS
0600	17800	Radio France International		1900	15240	Adventist World Radio, USA, via South Africa	Fulani
0600	11615	Radio France International		1900	15275	Deutsche Welle, Germany, Portugal Relay	
0600	5995	Radio Malienne, Mali	FF	1900	15540	Radio Kuwait	
0600	9655	Radio Romania International		2000	9675	Broadcasting Service of the Kingdom, Saudi Arabia	AA
0600	7250	Vatican Radio		2000	9735	Deutsche Welle, Germany, Rwanda Relay	
0600	5755	WTWW, Tennessee		2000	9705	La Voix du Sahel, Niger	FF
0600	6070	CFRX, Canada		2000	15190	Radio Africa, Equatorial Guinea	
0700	9765	Radio New Zealand International		2000	11655	Radio Nederland, Madagascar Relay	
0700	15615	Radio France International		2000	15465	RDP International, Portugal	PP
0700	7125	Radio Guinea, Guinea	FF	2000	15340	RTV Marocaine, Morocco	AA
0700	3290	Voice of Guyana		2000	9755	Vatican Radio	FF
0800	5915	Alcaravan Radio, Colombia	SS	2000	9780	Voice of America, Sao Tome Relay	FF
0800	9690	Radio Nigeria	veracular	2000	7205	Voice of Turkey	
0800	6020	Radio Victoria, Peru	SS	2000	15120	Voice of Nigeria	
0900	3925	Radio Nikkei, Japan	JJ	2100	15640	Deutsche Welle, Germany, Rwanda Relay	
0900	5954	Radio Republica, (to Cuba)	SS	2100	11865	Deutsche Welle, Germany, Rwanda Relay	
0900	6125	Radio Santa Cruz, Bolivia	SS	2100	17775	KVOH, California	SS
0900	6050	HCBJ, Ecuador	Quechua	2100	11900	Radio Free Asia, USA, Northern Marianas Relay	CC
1000	6020	Radio Australia		2100	9875	Radio Free Asia, USA, via Palau	CC
1000	5995	Radio Australia		2100	12949	Radio Havana Cuba	SS
1000	11870	KNLS, Alaska		2100	9345	Voice of Korea, North Korea	CC
1000	4825	La Voz de la Selva, Peru	SS	2100	7330	Voice of Russia	
1000	6200	Radio Bulgaria	GG	2100	9330	Radio Damascus, Syria	
1000	9770	Radio Canada International, via China	FF	2200	9580	Africa Number One, Gabon	FF
1000	5039	Radio Libertad, Peru	SS	2200	12095	BBC, Ascension Relay	
1000	6010	Radio Mil, Mexico	SS	2200	17680	CVC-La Voz, Chile	SS
1000	15110	Radio Nederland, via Philippines		2200	11670	Radio Nacional, Venezuela, via Cuba	SS
1000	6170	Radio New Zealand International		2200	6165	Radio Chad	FF
1000	9615	Radio Veritas, Philippines	CC	2200	9665	Radio PMR, Moldova/Pridnestrovia	
1000	4700	Radio San Miguel, Bolivia	SS	2200	9420	Voice of Greece	Greek
1100	2485	ABC Northern Territories Service, Australia		2200	9830	Voice of Turkey	
1100	9740	BBC, Singapore Relay		2200	15640	Voice of Greece	Greek
1100	9505	Radio Bulgaria	BB	2200	9675	Radio Cancao Nova, Brazil	PP
1100	3385	Radio East New Britain, Papua New Guinea	Tok Pisin	2200	7390	RS Belarus	
1100	17745	RDP International, Portugal	PP	2300	6160	CKZN, Canada	
1100	9935	RS Makedonias, Greece	Greek	2300	15850	Galei Zahal, Israel	HH
1100	5020	Solomon Islands Broadcasting Corporation		2300	14345	Radio Argentina al Exterior	SS
1100	7260	Voice of America, Thailand Relay	VV	2300	15585	Radio Free Asia, USA, Northern Marianas Relay	CC
1100	15650	Voice of Greece	Greek	2300	13680	Radio Nacional, Venezuela	SS
1100	4360	Radio Madang, Papua New Guinea	Tok Pisin	2300	15250	Radio Nacional, Venezuela, via Cuba	SS
1100	3945	Radio Vanuatu		2300	11780	Radio Nacional Amazonia, Brazil	PP
1200	7325	China Radio International	RR	2300	17605	Radio Nederland, Bonaire Relay	DD
1200	4950	Voice of Pujiang, China	CC	2300	9665	Voice of Russia, via Moldova	
1200	9840	Voice of Vietnam		2300	13830	WEWN, Alabama	SS
1200	12085	Voice of Mongolia					
1200	15480	Voice of Turkey	TT				
1200	5765	AFRTS/AFN, Guam	usb				
1200	9650	KBS World Radio, South Korea					
1300	6165	All India Radio	Hindi				

News About Radio Australia, Radiodifusora Macapa, Radio Veritas, RT Tunisienne . . . and More

by Gerry L. Dexter
gdex@wi.rr.com

“Radiodifusora Macapa in Macapa, Brazil, (4915) may be off the air. It should not be a troublesome thing to determine whether this easily-heard Brazilian is, indeed, active. Whether permanent or not, though, may not be so easy to determine!”

Radio Australia has beefed up its broadcast for Australians living in Japan for the duration of the continuing crisis affecting that nation following the earthquake, tsunami and nuclear power plant damage earlier this year.

The feeds normally intended for Papua, New Guinea have been extended to cover Japan as well. Also, additional transmissions have been redirected to that area for as long as the situation continues. They include 2300-0700 on 13690 kHz; 0030 to 0700 on 17750; 0200-0500 on 21725; 0700-1300 on 11945; 0700-0900 on 9710; and 1400-1800 on 5995 and 6080.

Also, a station in Scholfields — near Sydney — formerly operating on 3210, was said to be running tests later on 5050 using 200 watts. The station’s situation isn’t known at present. Some sources say the station has returned to 3210. The all-English broadcasts have been heard both playing rock and running Christian programming.

In the category of *unheard*: Indications are that Radiodifusora Macapa in Macapa, Brazil, (4915) may be off the air. It should not be a troublesome thing to determine whether this easily-heard Brazilian is, indeed, active. Whether permanent or not, though, may not be so easy to determine!

Radio Veritas, in Monrovia, Liberia — not the one in the Philippines — is apparently active again on 5470 and is being heard in Denmark up to sign off around 2200. Here in the U.S., we’ll have to wait until wintertime to have much chance at this one.

RT Tunisienne has added a service in English for North America. It’s scheduled for 0000-0100. Try for this on one of the following: 7225, 7275, 7335, 7345, 9725 or 12005 kHz.

Speaking of languages, the cutback of Mandarin broadcasts to China by the bean counters at both the BBC and VOA, has encouraged the Sound of Hope network to expand its, adding



Radio Station Belarus, Minsk, QSL’d Rich D’Angelo for his reception on 6155.

four and a half hours a day. This may or may not mean an increase in frequency usage, but if so, they didn’t tell us.

Here are this month’s logs:

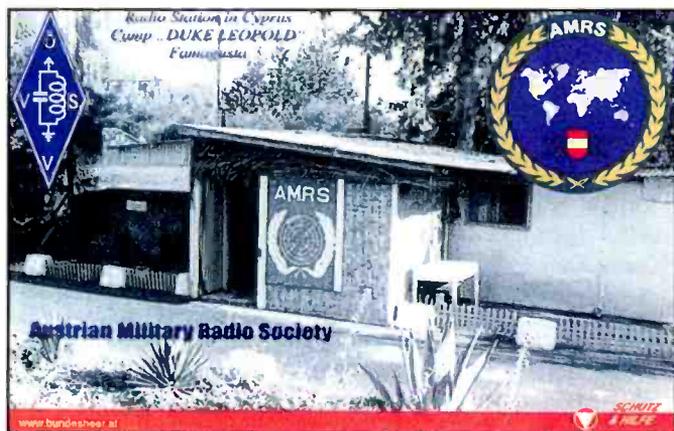
ALASKA—KNLS, Anchor Point, 11870 at 1020 with *DX Corner*. (Ng, Malaysia) 1248 with man in Bible talk and a gospel song. (Sellers, BC)

ALBANIA—Radio Tirana, 7425 in Albanian at 0340. (MacKenzie, CA)

50 Years AMRS of Peace Support Missions



50 Jahre AMRS in Friedenserhaltender Mission



The Austrian Military Radio Society celebrated an anniversary last year with a brief broadcast on 17720, heard by Rich D'Angelo.

ARGENTINA—Radiodifusion Argentina al Exterior, 11711 at 0206 with M/W in EE. (Sellers, BC) 15345 in SS at 2315 with rancheros and a "Radio Nacional" ID, mentioning that they are also aired over RAE. (Coady, ON) 2212 in SS. (MacKenzie, CA)

ASCENSION ISLAND—BBC South Atlantic Relay. 6005 in EE at 0405 and 7255 at 0325. (MacKenzie, CA) 9915 at 2130 with Middle East news. (Fraser, ME; Brossell, WI) 12095 at 2245 on Hindus and Moslems in Africa. (Brossell, WI)

AUSTRALIA—5995//6020 in Tok Pisin at 1001. (Yohnicki, ON; Coady, ON) 6140 via Singapore discussing Australian politics at 1208 and 11945 at 0710 on public libraries and reading habits. (Sellers, BC) 9710-Shepparton at 0718 with sports results and W with news at 0800. (D'Angelo, PA) 15515 at 0337 on politics, 15560 at 2202 with *ABC News*. 17715 at 0017 with news items. 17750 at 0413 on the national budget and 21725 at 0312 on Libya. (MacKenzie, CA) Preceding frequencies via Shepparton. (gld)

ABC Northern Territories Service—2485-Katherine at 1140 on their emergency network service. //2235-Tennant Creek and 2310-Alice Springs. (Brossell, WI)

AUSTRIA—Radio Ausiria International. 9820-Moosbrunn in GG at 0048 on Japanese problems. (Taylor, WI)

BAHRAIN—Radio Bahrain. 9745 at 0040 with possible call to prayer, AA vocals and pops with traditional AA music to past 0100. (Alexander, PA)

BOLIVIA—Radio Lipez. Uynui. 4796 at 0821 in (p) Aymara with rustic music and M anc. (Taylor, WI)

Radio Logos (p). Santa Cruz, 4865 at 1007 with lively pgm with M anc. over group singing in (p) Aymara but rapidly fading by 1018. (D'Angelo, PA)

Radio Santa Cruz. Santa Cruz, 6134.8 at 0025 to 0113 close with SS pops and talk. light instls. Off with a song about Santa Cruz. (Alexander, PA) 0950 in SS with a M and apparent inspirational talk, women's chorus and W talk. (Coady, ON)

BONAIRE—Radio Nederland Relay, 6165 in SS at 0330, 6190 in DD at 0310, 15540 in DD at 2208 and 17605 in DD at 2310. (MacKenzie, CA)

BOTSWANA—Voice of America Relay. 4930 at 0406 on Libya, 9885 at 0349 on aid to Central America and 15580 with *Daybreak Africa* at 0602. (Parker, PA) 11670 with *Health Beat* at 0452. (Sellers, BC) 12080 with FF/EE lessons at 2035. (Brossell, WI) 15580 in "New Dynamic English" at 1906, /by *Press Conference USA*. (Coady, ON)

BRAZIL—(All in PP - gld)

Radio Difusora Londrina. 4815 at 0258 with talk to TOH and seeming Difusora network ID. (Taylor, WI)

Radio Clube do Para, Belem. 4885 at 0409 with W doing news and sound bites of EE pundits. (Parker, PA) 0444 with M anc. and echo effects. (Wood, TN) 0559 with M/W talking over TOH time pips, ID sequence and into apparent sports. (Taylor, WI) 0902 with lively Brazilpops and ad string. (Coady, ON)

Radio Capixaba, Vitoria. 4935.2 at 0130 with play-by-play *futebol*. (Taylor, WI)

Radio Cultura do Para, Belem. 5045 at 0419 with M anc. and high-life music. (Parker, PA) 0918 with a mix of Brazilpops, humorous songs and M with a brief talk. (Coady, ON)

Radio Brazil Central, Goiania, 4985 at 0142 with W anc. probable ad string with jingles, etc. ending with an ID and M with extended talk. (Taylor, WI) 0235 with W anc. and lively songs. Also, 11815 at 0235 with W anc. Brazilpops, ID at 0246 and more music. (D'Angelo, PA) 4985 at 0350 with W and upbeat music. (Parker, PA)

Radio Senado, Brasilia. 5990 at 0449 with Brazilpops and W talk, M with brief ID and more music. (Coady, ON)

Radio Bandeirantes, Sao Paulo, 9645 at 2350 with pgm *Jornal Esportiva* in progress, many comls with music. This was my first Brazilian QSL more than 40 years ago! (Perry, IL) 11925 at 0322. (Parker, PA)

Radio Cancao Nova, Cachoeira Paulista, 9675 at 0000 with nice music pgm in progress. ID at 0002. (Montgomery, PA)

Radio Nacional Amazonia, Brasilia, 11780 at 2243 with talks. (Brossell, WI) 2301 with comments and many mentions of Brazil. (MacKenzie, CA)

Radio Inconfidencia, Belo Horizonte, 15189.9 at 0030 under WYFR with talk and ballads. In the clear after WYFR signs off at 0045*. (Alexander, PA)

BULGARIA—Radio Bulgaria, 6200 in GG at 2032 and 2123 in FF. Also 7400 in Bulgarian at 0524. (Brossell, WI) 7400 at 0352 with EE comments and 11700 in Bulgarian at 0042 with talk and singing. (MacKenzie, CA) 9505 at 1151 with commentary in BB. (Padazopulos,

Help Wanted

We believe the Global Information Guide — month after month — offers more logs than any other monthly SW publication! (Nearly 570 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 check them over before submitting. It kinda helps to include a time and frequency!

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

The Cross Radio, 4755 (Micronesia), sent Rich D'Angelo this Email QSL.

Greece) 9700 in EE at 0225. (Clermont, MO) 11600 at 0631 with sign on routine, schedule and news. (Sellers, BC)

CANADA—Radio Canada International, 9525 at 2205 with news in CC by W. (Ng, Malaysia) 9770 via Kashi (China) in FF at 2015. (Brossell, WI) 15365 at 1810, //17790. (MacKenzie, CA)

CBC Northern Service, 9625 at 1542 with *The Age of Percussion*. (Coady, ON)

CFRX, Toronto, 6070 at 0152 with ad string, ID for News-talk 1010 and more comls. (Sellers, BC) 2345 with *Randy Barhman's Vinyl Tap*. (Coady, ON)

CKZN, St. John's (Newfoundland), 6160, at 1246 on terrorism. (Brossell, WI)

CHU, Ottawa, 3300 at 0430 with FF/EE time checks. (MacKenzie, CA)

Gospel for Asia, 7215 via Wertachtal in (I) Vasavi at 0041 with M apparently story telling. (Taylor WI)

Bible Voice Network, 12140 via Wertachtal in Farsi at 1542 with man in lengthy talk. (Taylor, WI)

CHAD—Radio Nationale Tchadienne, 6165 at 2227-2301* with lively local music hosted by M in FF to ID at 2259, NA and off. (D'Angelo, PA)

CHILE—CVC/La Voz, Santiago, 17680 in SS at 2247. (MacKenzie, CA)

CHINA—China Radio International, 7210 via Albania in SS at 2159 and into the next hour, 7235-Shijiazhuang in RR at 1305, 7360-Kunming in (I) Tibetan at 1213, 7435-Nanning in CC at 1322, 7440-

Nanning in (I) Mandarin at 1215 and 11640-Xi'an in CC at 1224. (Brossell, WI) 6020 in CC at 0344, 9560 via Canada in SS at 0323, 9570 via Cuba at 0320, 9790 in EE/CC at 0355, 11840 at 2305, 11865 at 0336, 13700 via Canada in SS at 2240, 15120 via Cuba in SS at 0005, 15160 in Cantonese at 0445 and 15445 in RR at 0423. (MacKenzie, CA) (Sites, please! - gld) 9600 in EE at 1240, //9460. (Sellers, BC)

China National Radio/CPBS: 11960 in CC at 0328 and 15480 in CC at 0420. (MacKenzie, CA) CNR-1- 9455-Lingshi in Mandarin at 2230. (Taylor, WI) 11960-Beijing in CC at 0305. (Parker, PA) CNR-2-Lingshi at 11740 in CC at 2345. (Parker, PA) 7340 in (I) Kazakh at 1250. (Brossell, WI) Voice of Pujiang, 4950 in Mandarin at 1311 with a U.S. pop song. //5075 was poor, 3280 barely audible. (Sellers, BC)

COLOMBIA—Alcaravan Radio, Puerto Lleras, 5910 in SS music heavy with percussion, ID at 0059 and back to music. (Taylor, WI) With highlife music at 0447. (Parker, PA) 0451 with nice LA music, repeated mentions of onda corta and long string of IDs. (Wood, TN) 0820 with ballads and ranchero-like selections. Full IDs at 0836 and 0854. (Coady, ON) 1110 with romantic local ballads, quick ID over music. (Perry, IL)

CONGO—Radio Tele Candip, Bunia, 5066.3 with M in vernacular at 0434 at poor level. (Parker, PA)

CROATIA—Voice of Croatia, 3985-Deanovic at 0210. //7375 via Germany with local pops and folk songs. (Coady, ON) 7375 via Wertachtal in EE with news, sports and weather at 0208. (Sellers, BC) 2200 with W and "Glas Hrvatski" ID, then man with "This is Croatian Radio - The Voice of Croatia" and W going into *Croatia Today* pgm. (Coady, ON)

CUBA—Radio Havana Cuba, 6000 at 0412, 6050 at 0337, 6140 in SS at 0324, 9660 in SS at 0346, 9820 in SS at 2145, 11760 in SS at 0329, 12010 in SS at 2345, 12020 in SS at 2343, 12040 in SS at 2149, 13760 in SS at 0016, 15230 in PP at 2230 and 15370 in Quechua at 0005. (MacKenzie, CA) 11760//12020 in SS at 0245. (Padazopoulos, Greece)

Radio Rebelde, 5025 in SS at 0320. (MacKenzie, CA) 0545. (Wood, TN) 2301 with news in SS. (Padazopoulos, Greece)

DJIBOUTI—Radio Djibouti, 4780 at 0248 in FF/AA with M talk and Koran. (Taylor, WI)

ECUADOR—Radio El Buen Pastor, Saraguro, 4815 at 0112 in Quechua with a SS ballad, M/W in QQ and contemporary music. (Taylor, WI)

EGYPT—Radio Cairo, 9250 at 0022 with M and long comments in AA, poor and distorted and not //9405. (Montgomery, PA) 9305 in AA at 0350 with AA music and M with comments. (MacKenzie, CA) 9898-Zaabal (nominal 9990) with an AA phone interview at 0340. (Parker, PA)

ENGLAND—BBC, 5875 Thailand Relay with news in brief at 2130. (Ng, Malaysia) 5905 in AA at 1145, 6145 (South Africa Relay) at 0320, 9750 Singapore Relay with news at 0305, 9915 with commentary at 2357, 11760 with news at 1112, 12095 with commentary at 2357 and 15310 with sports at 1133. (Padazopoulos, Greece) 6145 South Africa at 0302 with news and *The World Today*, and 15420 Cyprus at 1622 with "football" scores. (Coady, ON) 6190 South Africa Relay at 0447, 11645 (unknown) at 0550 with *The World Today* but lost after 0600. (Sellers, BC) 7395 Cyprus Relay coming on at 0100 with time pips, World Service ID and news. (D'Angelo, PA) 9915 at 0341, 12035 Cyprus at 0316, 12095 Cyprus at 2115 and 15360 Thailand Relay at 2359 going into Big Ben and news. (MacKenzie, CA) 12095 Cyprus at 2110 on personal freedoms. (Brossell, WI)

CVC/The Voice-Asia, 6260 via Uzbekistan at 1408 in Hindi with telephone callers. (Sellers, BC)

In Times Past

Here's your "blast from the past" for this month:
Radio Frei Sranan (Radio Free Surinam), 6850 at 0059 on 9-30-83. Operated by the Council for the Liberation of Suriname.



Robert Brossell in Wisconsin is happy with this reply from the ABC Northern Territory station at Katherine (2485), but not so happy with all the frustration he went through to obtain it.

Far East Broadcasting (FEBA), 11985 via Ascension at 2204 with vocals and comments by M. (MacKenzie, CA)

EQUATORIAL GUINEA—Radio Africa, Bata, 15190 at 2015 with M and EE religious talk, W doing religious vocals. Pgm change at 2044 without an ID. (D'Angelo, PA) 2223 fighting with co-channel Radio Inconfidencia in PP. (Sellers, BC) 2245 with EE religious pgm to closing anmts at 2256, mixing with WYFR. (Alexander, PA)

Radio Nacional, Malabo, 6250 at 0536 with vocals, M talk in SS, several mentions of Malabo. (D'Angelo, PA)

ERITREA—Voice of the Broad Masses, 7175 at 0300 with M and news in AA, frequent mentions of Asmara and short segments of music. (D'Angelo, PA)

ETHIOPIA—Radio Ethiopia, 9705 at 0403 with HOA vocals, in (p) Amharic, discussion pgm hosted by W began around 0420. (D'Angelo, PA) 2020-2100* with HOA music, Amharic talk and anthem at 2059. (Alexander, PA)

Radio Fana, 6110 at 0332 with lively HOA vocals, talks in (p) Amharic, ID at 0400 and news. (D'Angelo, PA)

FRANCE—Radio France International, 9805 at 0431 with EE correspondent reports from various African cities. Also, 11615 at 0600 with EE news focusing on the Mideast and North Africa. //17800. And, 15615 at 0702 with W and E interviews. (Sellers, BC) 15300 in FF at 1132, 17620 and 17870 at 1123 with commentary. (Padazopulos, Greece)

GABON—Africa No. One, 9580 at 2252 with two M in FF, ID at 2257, f/by soft instls and W with final ID, frequency, closedown anmt and time pips at 2300. (D'Angelo, PA)

GERMANY—Deutsche Welle, 9655 Rwanda Relay, in GG at 0010 with comments on Libya. (Montgomery, PA) 9735 Rwanda at 2040 on AIDS in Africa, 12070 Rwanda in GG at 2034 and 15275 Portugal Relay on world terrorism at 1915. (Brossell, WI) 9735 Rwanda on Japan and oil prices at 2010. (Strawman, IA) 9855 Portugal in Swahili at 0349. (Parker, PA) 9865 Sri Lanka Relay in CC at 2305, 9735 Portugal with sports report at 2105, 11795 via England with *In Box* pgm at 2050 and 11865 Rwanda Relay at 2105 with *Newslink* pgm. (Ng, Malaysia) 11865 at 2030. (Coady, ON) 11780 Rwanda in RR at 0343,

12025 Rwanda in GG at 2030, 12070 Rwanda in GG at 0022 and 15640 Rwanda in EE at 2155. (MacKenzie, CA) 11875 via South Africa at 0504. (Sellers, BC) 15275 Rwanda in EE at 0624. (Wood, TN)

Deutschland Radio, 6190 with classical music and W in GG at 0146. Poor to fair but in the clear until Radio Nederland signs on at 0259. (D'Angelo, PA)

GREECE—Voice of Greece, 7475 in Greek at 0335, 9420 in EE at 0340 and 15630 in Greek at 2204. (MacKenzie, CA) 9420 at 2258 with IS, possibly Greek anthem and into Greek from 2100. Surprised to hear what sounded like a sign on as it's normally non-stop programming through this time period. (Sellers, BC) 15650 in Greek at 1137. (Padazopulos, Greece)

RS Makedonias, 9935 in Greek, with sports at 1154. (Padazopulos, Greece)

Radio Fila, 11645 with carrier on at 0457, into Greek talk to sudden off at 0554 – mostly news and talks in Greek and folk songs every 10 minutes or so. On another occasion heard at 0550 with BBC programming. (Sellers, BC) (This is one of Greece's public radio services which used shortwave for a brief time. – gld)

GUAM—Adventist World Radio, 11965 in Indonesian at 2208. (MacKenzie, CA)

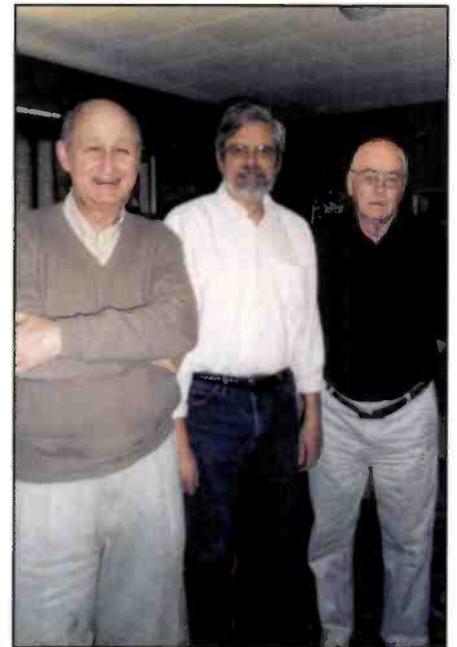
GUINEA—RTV Guineene, 7125 with highlife at 0627 and talks by M/W. (Coady, ON) 0724 with vocals and M in FF. Carrier was mysteriously cut at 0738 without announcement. (D'Angelo, PA)

GUATEMALA—Radio Verdad, Chiquimula, 4052.5 in SS at 0020 with talks and organ music. (Parker, PA) 0404 with SS preacher and soft choir. (D'Angelo, PA) 0428 with M in SS, guitar, IDs and address over a xylophone. (Sellers, BC) (p) at 0533 with a hint of inspirational music. (Wood, TN)

GUYANA—Voice of Guyana, 3290 at 0351 with pgm of country vocals, time pips at TOH and BBC. (Wood, TN) 0501 with BBC ID and news. (Sellers, BC) 0850 with tunes and ads. (Coady, ON) 0940 with Hindi pops, EE morning greetings and birthday wishes. (Perry, IL)

HAWAII—WVH, 5000 at 0913 with time anmt by W. (Coady, ON)

HONDURAS—Radio Luz y Vida, San Luis, 3250 at 0221 in SS with a slow ballad



Column reporters pay a visit to GIG HQ. Recent retiree Ralph Perry (IL) (left) and NASWA *Flashsheet* Editor Mark Taylor (WI). Yours truly is on the right.

and apparent inspirational talk. (Coady, ON) 0340 with M in SS. (Wood, TN)

Voz Missionaria/HRMI, Tegucigalpa, 3340 at 0412 with M in EE/SS preaching with phrase-by-phrase translations. (Wood, TN)

INDIA—All India Radio, 4920-Chennai at 0047-0055 with traditional music and also a more western-sounding song. (Parker, PA) 1135 in Hindi with M/W and apparent news, brief ID at 1144 f/by a phone call. (Coady, ON) 6155-Bangaluru in Urdu at 0109. (Taylor, WI) 6165-Delhi in Hindi at 1329. (Brossell, WI) 6280-Bangaluru at 2110 with M and ID for GOS. (Parker, PA) 9690 at 1330 opening the overseas service. (Sellers, BC) 9870 Bangaluru at 0110 in Hindi with EE at times. (Montgomery, PA) 15050 Delhi at 1327 in Sinhalese, but low modulation. (Strawman, IA)

INDONESIA—Radio Republik Indonesia, Ternate (Malaku), 3345 in II monitored at 1213. (Strawman, IA)

Voice of Indonesia, 9525 at 1259 ending JJ and beginning EE pgm with IDs, frequencies, website, pgm lineup and into news at 1300. (Sellers, BC) 1420 with W discussion. (Perry, IL)

IRAN—IRIB, 7375 presumed at 0305 in AA with two M commenting. A very noisy frequency. (MacKenzie, CA) 9905-Kalamabad presumed in SS at 0250. (Padazopulos, Greece) 11685 in (I) Urdu at 1320. Also, 15550 in AA at 1303. (Brossell, WI) 21630 with *News and View(s)* at 1050. (Ng, Malaysia)

ISRAEL—Galei Zahal, 15850 at 2350 with EE and domestic pops, HH anmts. (Alexander, PA)



David Weronka (NC) got this card from Polskie Radio, Warsaw.

JAPAN—NHK World Radio Japan, 5960 via Canada in JJ at 0427. 9835 via France in JJ at 1830, 13640 in JJ at 2349, 13680 in JJ at 2352, 15265 in JJ at 2318 and 17560 in JJ at 0328. (MacKenzie, CA) 9695 at 1220 with a news roundup, 11705 at 1405 with M/W newscast, 11970 via France closing EE at 0530 and 17810 at 2338 with W in Indonesian and seeming news headlines, into CC at 2340. (Sellers, BC) 6120 via Canada in EE at 1225. (Fraser, ME) 11935 via Bonaire at 0310 with JJ phone interview. (Parker, PA) 12045 via Germany in (I) Farsi at 1440. (Brossell, WI) 1350-Yamata in Burmese to close at 2355. (Ng, Malaysia)

Radio Nikkei, 3925 at 1217 with long commentary in JJ. (Strawman, IA) 1304 with JJ/EE lesson. (Sellers, BC)

KUWAIT—Radio Kuwait, 15540 at 1938 with M/W and *This Date in History*, then into pops. (Coady, ON) 17550 in AA at 2315 and off suddenly at 2359. (MacKenzie, CA)

MADAGASCAR—Radio National Malagasy, 5010 with upbeat music at 0245. (Parker, PA) 0315 with FF anmts and vernacular language, possibly a radio play, echo anmts, ads and into African instls. (Perry, IL)

MALI—Radio TV Malienne, Bamako, 5995 at 0556 opening with AA/African instls, possible NA at 0558, M/W at 0600 but too weak to ID language, 7285 barely audible and

not in parallel. (Sellers, BC) 0713 in FF and mellow Afro-pops. (Taylor, WI)

MEXICO—Radio Mil, Mexico City, 6010 at 1037 with romantic ballads, M/W SS ancrs. There is a low frequency het on this signal. What's the source? (Perry, IL)

Radio Educacion, Mexico City, 6185 at 0049 with W and amts, M with extended comments. (Strawman, IA)

MOLDOVIA—Radio PMR, 9665 at 2130 with time pips and M opening pgm including news about Pridnestrovie. (Coady, ON)

MONGOLIA—Voice of Mongolia, 12085 at 0959 to 1057* opening with IS, talk in unid language, light instl music and into half hour EE pgm at 1029. Abrupt sign off at 1057. (Alexander, PA) 1050 with a talk on a reindeer festival there. (Ng, Malaysia)

MOROCCO—RTV Marocaine, 15340 in AA at 2017. (Brossell, WI)

NEW ZEALAND—Radio New Zealand International, 9765 at 1015 with various tunes. (Montgomery, PA) 0707 with a variety of music. (Parker, PA) 11725 at 0505 with *World of Religion* pgm. (Yohnicki, ON) 0612 with a mix of 20s, and 30s crooners and W hosting "Music for a Saturday night." (Coady, ON) 0631 with interview on finance and capital requirements of getting a product from inception to market. (Wood, TN) 15720 at 0334 with *World of Sports* pgm. (MacKenzie, CA)

NETHERLANDS—Radio Nederland, 11655 Madagascar Relay at 2010 on rare paintings in Holland. (Brossell, WI) 15110 via Philippines at 1000 with *The State We're In* pgm. (Ng, Malaysia)

NIGER—La Voix du Sahel, 9705 with romantic pop ballads to anmts at 2100 tune out. (Strawman, IA)

NIGERIA—Voice of Nigeria, 15120 at 0616 and good at very brief peaks. (Parker, PA) 0643 with several IDs and pgm of electronic jazz and African music, f/by *Celebration* pgm. (Wood, TN)

Radio Nigeria, 9690 at 0837 with discussion in local language, tribal vocals and news at 0900. (D'Angelo, PA)

NORTH KOREA—Voice of Korea, 9345 in CC at 2120. (Ng, Malaysia) 11710 in EE at 1316. U.S. and S. Korea military exercises are a "design" on the North. (Fraser, ME) 1410 in FF. (Brossell, WI) 1312 with news of the Great Leader. (Coady, ON) 13760 at 0120 praising Kim Jung Il and the revolution. (Sellers, BC) 15180 in SS at 0014. (MacKenzie, CA)

Pyongyang Broadcasting Station, 2850 in KK at 1230 with M/W talk. Not heard on usual 3250 parallel. (Sellers, BC)

Korea Central Broadcasting Station, 13650 at 0313 with comments in CC. (MacKenzie, CA)

OPPOSITION—Radio Republica (to Cuba), 5954.3 at 0912 with W and SS talk and ID at 0913 "Radio Republica...su sintonia a Radio Republica...onda media..." (Perry, IL)

Radio Y'Abaganda (to Uganda), 15410 (ex-17725) on at 1700 with pops, vernacular talk and Afro-pops, then more talk to 1715 sign off. Saturdays only. (Alexander, PA)

Hamada Radio Intl (to Nigeria), 7350 at 0551-0559* in a local Nigerian language, several clear IDs and anmts. W ancr at close with drums. (D'Angelo, PA) 11945 at *1930 sign on with local music and opening ID, talk in (I) Hausa. (Alexander, PA) 11970 in listed Hausa at 0530, after Radio Japan left. (Sellers, BC)

Radio Dardasha 7 (to Africa and Middle East), 13740 at 1900-1929* with instl music and some AA music. AA talk and abrupt sign off. (Alexander, PA)

Radio Voice of the People (to Zimbabwe), 9870 at *0400 with M and opening ID, W with anmts in an African language, M with news, vocal and an interview. Poor on this new frequency. (D'Angelo, PA)

Voice of the People (to North Korea), 4450 at 1223 with long KK talk by M. (Strawman, IA)

Sound of Hope (to China), (p) 7105 at 2225 with M/W in KK, apparent anthem at 2230 and off. (Coady, ON)

Echo of Hope (to North Korea), 6003 in KK at 0951 with a somewhat strident talk and a grinding sound, presumably from a NK jammer. (Taylor, WI)

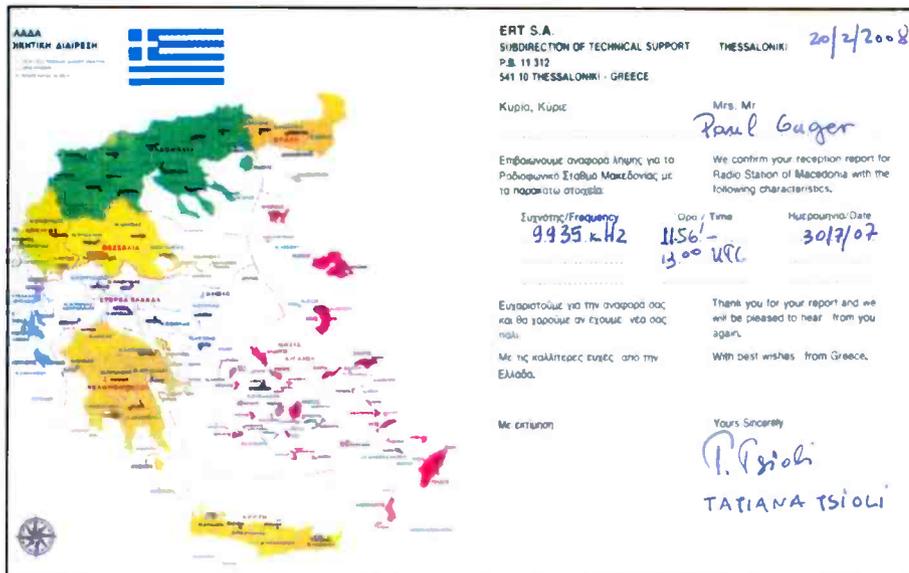
PAPUA NEW GUINEA—Radio East New Britain, Rabual (New Britain), 3385 at 1125 in Tok Pisin with nondescript instls. Horrendous QRN. (Perry, IL)

Radio Fly, Kiunga, 5960 (p) at 1134 with

This Month's Winner

To show our appreciation for your loggings and support of this column, each month we select one "GIG" contributor to receive a free book or other prize. Readers are also invited to send in loggings, photos, copies of QSL cards and monitoring room photos to me at *Popular Communications*, "Global Information Guide," 25 Newbridge Rd., Hicksville, NY 11801, or by email to gdex@wi.rr.com. The email's subject line should indicate that it's for the "GIG" column. So, come on, send your contribution in today!

This month's prizewinner is **Rick Barton** of Arizona who receives a National Geographic world wall map. So now Rick is all ready to pick up map pins to mark the places he's heard. I've done the map thing since shortly after I got my Hallcrafters S38-B, back when postage stamps were three cents and we were still stuck with a one-party telephone line. That was several decades before email!



The "other" Greek station Radio Stathmos Makedonia on 9935. (Thanks Paul Gager, Austria)

pops and relaxed a/cr with heavy accent. (Perry, IL)

PERU—Radio Tarma, Tarma, 4775 at 0047 with W in SS and a variety of Andean pops and marching band type music. (Taylor, WI)

Radio Vision, Chiclayo, 4790 in SS at 0111, usual M preacher. (Taylor, WI) 0535 with SS preacher. (Wood, TN) 0840 with huaynos, regular IDs and TCs. Runs all night except Sundays. (Perry, IL)

Radio La Voz de la Selva, Iquitos, 4824.5 at 1031 with excited M and upbeat pops and cumbias. DJ yells and TCs with deep reverb. (Perry, IL)

Radio Cultural Amauta, Huanta, 4955 at 0042 with M in SS. (Parker, PA)

Pacifico Radio, Lima, 4974.9 at 0028 colliding with Radio Iguatemi (Brazil) on 4975. (Parker, PA)

Radio Libertad, Jumin, 5039.2 in SS at 1011 with animated SS talk. Andean music. (Taylor, WI)

Radio Victoria, Lima, 6019.2, at 1050 with Sunday morning religious pgm, lush instl theme at 1056 f/by church bells. Splatter from Australia-6020. (Perry, IL) 0855 with M and SS inspirational talk, but killed by Radio Australia's sign on at 0858. (Coady, ON)

PIRATES—WBNY, 6955 at 2327 with their annual Easter special, parody ads and skits. P.O. Box 1, Belfast, NY 14711. (Wood, TN) 2338 with talk from Commander Bunny. (Alexander, PA)

Channel Z Radio, 6925 2311 with rock oldies. Email to <channelzradio@gmail.com>. (Zeller, OH) 2333 lots of summer type songs. (Hassig, IL)

Radio Mushroom, 6925u at 0040-0048*, *1910-1912* and 2132-2147 with classic rock. <radiomushroom@gmail.com>. (Zeller, OH) 2140-2146* with folk and rock. (D'Angelo, PA)

Wolverine Radio, 6925u at 0232-0321 with oldies, European siren, train horn, SSTV/FAX segments. (Hassig, IL)

Radio GaGa, 6925u at *2256-2334* with blues and classic rock. (Zeller, OH)

The Crystal Ship, 6815 at 0045-0245 with heavy metal and usual slogan/ID. (Hassig, IL) 6875.5 at 0034-0113 plus with various rock/pop things. tcsshortwave@gmail.com. (Hassig, IL)

Wolverine Radio, 6950u at 0157 with various pop oldies. (Hassig, IL)

Radio Timtron relay, 6925u at 0110 with talk and laughing, heavy metal, WBCQ jingle and variety of rock/pop. (Hassig, IL)

Radio Marlene, 6925u heard at *2253-2140* with classic rock with female themes. <radiomarlene@gmail.com>. (Zeller, OH)

International Bowling League Relay Service, 6925 at 0417-0452 several parodies of Beatles, Green Acres and others. "You are listening to the International Bowling League Relay Service right here on 6925 shortwave." (D'Angelo, PA)

Radio Ronin Shortwave, 6925 at *0001-0049* and 1417-1453 with rock, closed with gmail address. (D'Angelo, PA) 2320-2341* with rock, much of it before a live crowd. <radioroninshortwave@gmail.com>. (Zeller, OH)

WPON, 6925u at 2143-2202* and 2320-2356* with a drama, Peter Gunn theme and audio clip from the "Network" movie, W with ID at close, also IDs as "W-P-O-N - the weapon" f/by 2 gun shots. (D'Angelo, PA) 2335-2350 with political radio drama. (Alexander, PA)

Northwoods Radio, 6925u at 2355-0004 with rock, call of the loon at 0000. (Alexander, PA)

WPOP, 6925u at 0150-0218 with rock, heavy metal and punk. (Hassig, IL)

WMPR, 6925, 0105 with techno and lots of

IDs. "6-9-2-5 shortwave". (Coady, ON) 0114-0129 with IDs at 0117 and 0125. (D'Angelo, PA)

Captain Morgan Shortwave, 6925v at *0001 with classic rock oldies. <captainmorganshortwave@gmail.com>. (Zeller, OH) 0009-0043 sort clips of various tunes. Twilight Zone theme. "Captain Morgan coming at you at 186,000 miles per second." Also 0038 with pops. (Coady, ON) 0250-0304* with blues, several IDs and gmail address, Also 0248-0258*, 0305-0329* and 2336-2350. (D'Angelo, PA) 2330-2346* with rock, ID, email address. (Alexander, PA) 2335-2344 with various rock themes from 60s cartoons and email address. (Wood, TN)

PHILIPPINES—FEBC, 9435 in II at 2230. (Ng, Malaysia)

Radio Veritas Asia, (p) 9615 at 1045 in CC. No KNLS on this date. (Montgomery, PA)

PORTUGAL—RDP International, 15465 with live sports coverage in PP at 2020. (Brossell, WI) 17745 in PP at 1126 and 21655 with news in PP at 1300. (Padazopoulos, Greece)

ROMANIA—Radio Romania International, 7310-Tiganesti, at 2130 with news, //6115. (Fraser, ME) 7385 at 0100 sign on with classical music, W in FF, 9645, //7335 and 11895 with sports at 0326, 9855 with news and sports at 0535. (Sellers, BC) 11875 in at 1235 in GG. (Brossell, WI) 11880 with *Radio Newsreel* at 2030. (Ng, Malaysia) 15150 with FF commentary heard at 1120. (Padazopoulos, Greece)

RUSSIA—Voice of Russia, 4975 via Tajikistan at 1359 with Moscow bells, sign on in EE, 7285 via Moldovia in RR at 0053. (Sellers, BC) 7330-Moscow with *Music and Musicians* at 2140. (Fraser, ME) 7335 via French Guiana in SS at 0312, 9735 in SS at 0355, 9810 in FF at 1706 and 13774-Vladivostok at 0352. Also, 15425-Petro-pavlovsk in EE at 0342 (MacKenzie, CA) 6170-Khabarovsk in CC at 1250 and 12055-Moscow in (I) Hindi at 1300. (Brossell, WI) 7440 via Ukraine with ID at 0205 and 9800 with *Outlook* pgm at 2214. (Coady, ON) 9665 via Moldova with news about Libya at 2305. (Yohnicki, ON) 9745 via Moldova closing FF at 2158. (Strawman, IA) 9735 in SS at 0306. (Padazopoulos, Greece) 9840-Petro-pavlovsk-Kamchatka at 0533 ending discussion on government economic development actions. (Taylor, WI) 9800 at 2205 and 15170 at 0905. (Ng, Malaysia)

Radio Rossii, 12070 in RR at 0310. (MacKenzie, CA)

Tartarstan Wave, 15110 in RR at 0449. (MacKenzie, CA)

SAO TOME—VOA Relay, Pinheira, 4960 in (I) Hausa at 0517 and 9780 in FF at 2020. (Brossell, WI) 4949 at 0402 in EE and 4960 in Hausa at 0515. (Parker, PA)

SAUDI ARABIA—Broadcasting Service of the Kingdom, 9555 at 2249-2257* with M in AA and ME music. (D'Angelo, PA) 9965 in (I) Turkish at 2040. (Brossell, WI) 15285 in AA at 0452. (MacKenzie, CA)

SERBIA—International Radio of Serbia, 9685 at 0031 with national news. (Sellers, BC)

SEYCHELLES—BBC Indian Ocean Relay, Mahe, 9460 at 0336 with various news features. (D'Angelo, PA)

SINGAPORE—BBC Far Eastern Relay, 6195 at 1350. (Sellers, BC) 9740 at 1121 on the World Cup. (Coady, ON)

SOLOMON ISLANDS—Solomon Is. Broadcasting Corp., 5020 being noted as early as 1030. Reception is best when Rebelde is in talk mode. A rousing orch NA just past 1201 and OC at 1203, then cut. (Perry, IL)

SRI LANKA—Radio Sri Lanka, 11905 at 0034 in (I) Hindi. No annts heard during frequent checks. (Sellers, BC)

SPAIN—Radio Nacional Espana, 3350 Costa Rica Relay in SS at 0226. (Coady, ON) 3350 in SS at 0425, 5965-Nobeljas in SS at 0423, 6125 in SS at 0329, 9535 in SS at 0325, 9620 in SS at 0027, 15110 in SS at 2236, 15160 in SS at 0012, 15190 in SS at 2342 and 17755 in SS at 1746. (MacKenzie, CA) 5970 with news in EE at 0000. (Fraser, ME) 9690 at 2044. (Brossell, WI) 9690 via China with EE news at 0309 and 15585 with an interview in EE at 1127. (Padazopoulos, Greece)

SOUTH AFRICA—Channel Africa, 7230 with comments by 2 M at 0332. (MacKenzie, CA) 15255 with talks in EE at 0612. (Parker, PA)

Radio Sonder Grense, 3320 at 0152 with slow ballads. (Brossell, WI) 0214 with EZL music and M in Afrikaans. (Coady, ON) 0432. (MacKenzie, CA)

SUDAN—Radio Omdurman, 7200 at 0406-0430* with AA news.



Radio Tirana offers a lot of variety in their replies. (Thanks Paul Gager, Austria)

ID at 0409, more news. Brief instl music, various talks until carrier cut in mid-sentence. (D'Angelo, PA)

SURINAME—Radio Apinte, Paramaribo, 4990 at 0510 in vernacular with M ancr and slow music. (Parker, PA)

SWAZILAND—TWR, 5995 at 0418 in EE with ID and close at 0418. (MacKenzie, CA) 9500 with EE preacher at 0522. (Sellers, BC)

TAIWAN—Radio Taiwan International, 5950 via Florida in CC at 0434. (MacKenzie, CA) 11710, 11730, 11740, 11825 and 12035 with news in CC at 1115. (Padazopoulos, Greece)

THAILAND—Radio Thailand, 15275 at EE sign on with instl music, M/W ancrs. (Sellers, BC) 0013 ending news and coml for Bangkok Airways. (Coady, ON)

TUNISIA—RTV Tunisienne, 12005 in AA at 0320. (MacKenzie, CA) 0330. (Parker, PA)

TURKEY—Voice of Turkey, 7205 at 2045 with a press review. (Ng, Malaysia) 9515 in TT at 0330. (MacKenzie, CA) 0309 with M doing news and 9830 at 2200 with time signal, M/W with ID, sked and pgm lineup. (Coady, ON) 15480 in TT at 1240. (Brossell, WI) 15525-Emirler with EE news at 1651. (Padazopoulos, Greece)

UGANDA—UBC Radio, 4976 with news headlines at 0352. (Brossell, WI)

UNITED STATES—Voice of America, 7235 Northern Marianas Relay with news at 1300, 7390 Northern Marianas in (I) Cantonese at 1319, 11635 Thailand Relay in CC at 1315, 11840 Sri Lanka Relay in (I) Farsi at 1430 and 15580 via Bonaire with African news at 2036. (Brossell, WI) 6170 Kuwait Relay at 0034 in Special English and 7260 Thailand Relay in VV at 1116. Also, 7325 via Germany with variety of music at 0020. (Coady, ON) 7430 Kuwait with *American Story* at 0045. (Ng, Malaysia) 7575 Thailand with news items at 1223 and 9780 Sri Lanka with *Daybreak Asia* at 0129. (Sellers, BC) 13635 at 1725 with *Sonny Side of Sports*. (Fraser, ME) 15580-Greenville at 2239 and 17855 Sri Lanka in an Asian language at 0525. (MacKenzie, CA)

Radio Free Asia, 9785 via Palau in CC at 2105 and 11900 Northern Marianas in CC at 2137. (Brossell, WI) 11945 Northern Marianas in CC at 1823 and 15585 Northern Marianas in CC at 2330. (MacKenzie, CA)

Radio Farda, 6115 Kuwait Relay in Farsi at 0045. (Strawman, IA) 11690 in Farsi at 1107. (Padazopoulos, Greece)

Radio Marti, 15330 in SS at 1815. (MacKenzie, CA)

Sudan Radio Service, 17745 via Portugal at 1502 to 1600 and later with almost continuous local Afro-pops and HOA style music and occ. AA annts. (Alexander, PA)

Family Radio/WYFR, 6240 via Taiwan in Mandarin at 1357. (Sellers, BC) 7340 via Irkutsk in VV at 1316, 9840 via Wertachtal in AA at 2025. (Brossell, WI) 15520 via Ascension with listener letters. (Brossell, WI)

WRMI, Miami, 9955 at 0120 with *Media Network* at 0120. (Montgomery, PA)

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WBCQ, Maine, 7415 at 0344 with someone selling a religious book. (Montgomery, PA)

Adventist World Radio, 15240 via South Africa in (I) Fulani at 1910. (Brossell, WI) 9800 via Monaco at 0721. (Sellers, BC)

WTJC, North Carolina, 9370 at 0346. (MacKenzie, CA)

WTWW, Tennessee, 5755 at 0601. (Wood, TN)

KVOH, California, 17775 in SS at 2140. (MacKenzie, CA)

WWRB, Tennessee, 3185 at 0445. (MacKenzie, CA)

WWCR, Tennessee, 3215 at 0335 and 4840 at 0326. (MacKenzie CA)

WEWN, Alabama, 13830 in SS at 2332 and 15610 at 2152. (MacKenzie, CA)

SWAZILAND—TWR, 4775-Manzini in GG at 0407. (MacKenzie, CA) 9500 with Bible teaching at 0508. (Taylor, WI)

VATICAN—Vatican Radio, 6040 in SS at 0142, 9660 via Madagascar at 0514. (Taylor, WI) 7250 with news at 0636. (Coady, ON) 7305 in SS at 0320. (Montgomery, ON) 11675 in Somali at 0345. (MacKenzie, CA) 9645 at 0638 with talk about Portugal. Also, 11625 at 0524 with EE interview. (Sellers, BC) 9660 via Madagascar with news at 0310. (Padazopoulos, Greece) 9755 in FF at 2041. (Brossell, WI)

VENEZUELA—Radio Nacional, 11670 via Cuba in SS at 2250. (MacKenzie, CA) 15250 via Cuba in SS at 2300. (Yohnicki, ON) 2311 with EE coverage of the visit by the Uruguayan president. (Sellers, BC)

VIETNAM—Voice of Vietnam, 6175 via Canada in SS and VV at 0316 (MacKenzie, CA) 9610 at 0305 with comments on people meeting the Pope. (MacKenzie, CA) 9840 with news at 1233. (Sellers, BC)

ZAMBIA—CVC/The Voice-Africa, 4965 at 0256 with choir, ID and 13590 at 0633 with Christian pops. (Parker, PA) 4965 at 0309 with a sermon. (Brossell, WI)

And, once again, order is restored! Raise you glass in a salute to the following who supplied their logging notes this month: Joe Wood, Greenback, TN; Stewart MacKenzie, Huntington Beach, CA; Harold Sellers, Vernon, BC; William Hassig, Mt. Pleasant, IL; Ralph Perry, Wheaton, IL; Peter Ng, Johor Bharu, Malaysia; Mark Coady, Peterborough, ON; Fotios Padazopoulos, Zaharo, Greece; William Clermont, St. Louis, MO; Rich D'Angelo, Wyomissing, PA; George Zeller, Cleveland, OH; Robert Brossell, Pewaukee, WI; Robert Fraser, Belfast, ME; Mark Taylor, Madison, WI; Jerry Strawman, Des Moines, IA; Robert Montgomery, Levittown, PA; Richard Parker, Pennsburg, PA; Brian Alexander, Mechanicsburg, PA and Michael Yohnicki, London, ON. Thanks to you all and, until next month, good listening!

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SPURIOUS SIGNALS

By Jason Togyer KB3CNM



We're Obsessed with Spots, But Don't Forget Space Weather and Geophysical Conditions

by Tomas Hood, NW7US,
nw7us@arri.net

Regular readers of this column know that we're obsessed with sunspots, and the month-to-month progress of the Sun's overall activity level.

Dedicated fans know that sunspots are an important part of good worldwide shortwave radio propagation conditions. What might not be as clear is how space weather and geophysical conditions affect radio signal propagation of shortwave frequencies.

This column has received a lot of questions recently, inspired by the recent increase in the Sun's activity. With more sunspots, more X-ray flares are erupting and other solar phenomenon is occurring.

How does all of this affect shortwave radio? Is it good for reception of exotic DX? Many people are confused because it would seem that with more sunspots, conditions should be better on a given day. Yet, there have been periods when daily sunspot counts were increasing, while the conditions on the high frequencies were worse than during the Sunspot Cycle minimum just a few years ago. *How can that be?*

In simple terms, there are two types of activity that affect the propagation of radio waves in the shortwave spectrum: solar activity and geomagnetic activity. Solar activity influences geomagnetic activity through the Sun-Earth connection, and both affect radio signal propagation.

Geomagnetic Activity

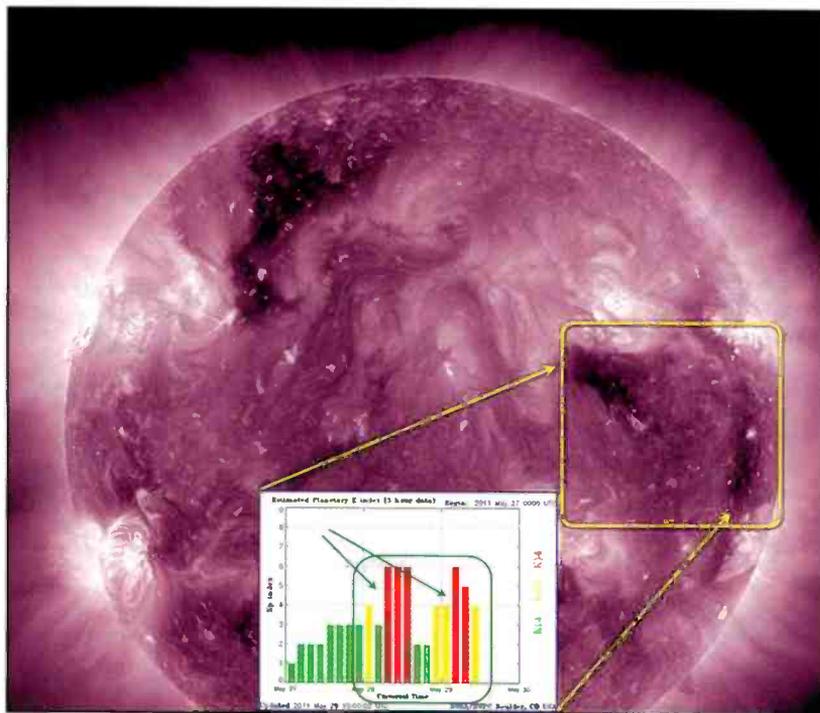
Geomagnetic activity is the movement of the Earth's magnetic field. In a perfect environment, a pole magnet has a donut-shaped magnetic field, formed from one pole to the other. *Remember grade school and the metal shavings that your teacher used to reveal that donut-shaped magnetic field?*

The Earth, a type of pole magnet, is not in a perfect environment. It is constantly buffeted by the solar wind that originates at the Sun, which contains a magnetic field — known as the *Interplanetary Magnetic Field* or IMF.

As the solar wind interacts with the Earth's magnetic field — in the huge *bubble* around the Earth known as the *magnetosphere* — the magnetic donut gets warped. The side facing the Sun gets compressed toward the Earth, while the side opposite the Sun on the far side of the Earth gets dragged out into space away from the Sun.

Additionally, solar plasma released by the Sun rides along the IMF on the solar wind, and can enter the Earth's atmosphere through magnetic windows created between the IMF and the *magnetosphere*. In this way, geomagnetic activity is dynamically affected by its interaction with the solar wind and the IMF.

Why are we concerned about geomagnetic activity? Remember that shortwave radio signals depend upon the ionosphere for its refractive properties. A radio wave in the high frequency spectrum can be refracted (think of it as a reflec-



The Solar Dynamics Observatory (SDO) Atmospheric Imaging Assembly (AIA) instruments view the Sun at various wavelengths, allowing scientists to see into the Sun's "atmosphere" at different depths and at various temperatures. This image captures the Sun through the 211-Angstrom wavelength filter (which captures the iron ions known as "Fe XIV" in the active-region corona), and is one of the wavelengths at which a coronal hole may be seen. This image reveals two geo-effective coronal holes that caused a moderate geomagnetic storm on the Earth during the 2011 CQ WW CW contest weekend in May. (Source: SDO/AIA/NOAA/Space Weather Prediction Center)

tion, in simple terms) off of the F-region of the ionosphere — if conditions are *just right*. The *right* condition depends on the amount of hard X-ray energy from the Sun (energy primarily in the wavelength band from 1 to 8 Angstroms), and the amount of time the ionosphere is exposed to this radiation.

This radiation ionizes the gases in the F-region of the atmosphere, and this creates the *reflective* layer that provides the ability to propagate a shortwave radio signal around the world.

Geomagnetic activity works against this ionizing affect, causing a decrease in the density of the ionosphere, resulting in a lowering of the frequencies refracted. In short, the more geomagnetic activity, the worse the conditions will be for short-wave radio propagation.

Understanding the K and A Indexes

Geomagnetic conditions are reported in several ways. There is a short-period reporting index, known as the K-index. The K indices are a measurement of the behavior of the magnetic field in and around the earth. The K index uses a scale from zero to nine to measure the change in the horizontal component of the geomagnetic field.

A new K index is determined every three hours based on magnetometers (very sensitive instruments that measure in real-time the tiniest changes in the Earth's magnetic field) around the world. Usually, the reported K index is the *planetary K index* (K_p), which is an average of all the many K index readings from around the globe.

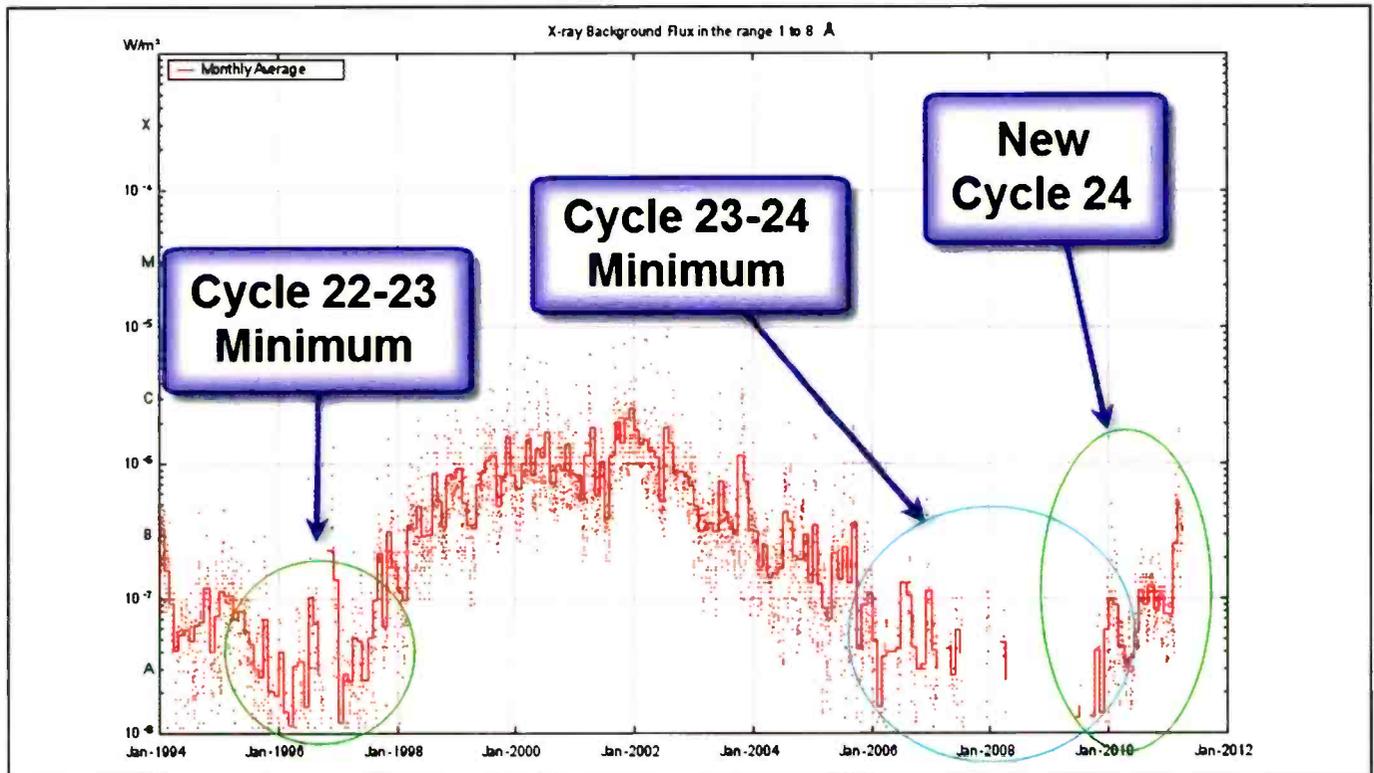
A longer-period index is used, known as the A-index, and is usually referring to the planetary A index (A_p), a daily value on a scale from zero to 400 that expresses the range of disturbance of the geomagnetic field.

It is obtained by converting and averaging the eight, three-hour K index values. An estimate of the A index is first announced at 2100 UTC, based on seven measurements and one estimated value.

At 0000 UTC, the announced A_p index consists entirely of known measurements, and the word *estimated* is dropped from the announcement.

What Do the Index Numbers Tell Us?

For the radio DXer, the simple way to interpret these numbers is that the higher the index, the worse the ionospheric con-



This graph plots the daily (red dots) and monthly (red line) average of the background “hard” X-ray energy in the 1- to 8-Angstrom wavelengths, as measured by the GEOS satellite. The hard X-ray energy produced by the Sun from the wavelengths of 1 to 8 Angstroms provide the most effective ionizing energy throughout all of the ionospheric layers in our atmosphere. The GEOS satellites measure these wavelengths and the resulting measurements are reported as the “background X-ray level” throughout the day. A daily average is reported, as well. Just like X-ray flares, the background hard X-ray level is measured in watts per square meter (W/m^2), reported using the categories, A, B, C, M and X. These letters are multipliers; each class has a peak flux ten times greater than the preceding one. Within a class there is a linear scale from one to nine. If one records the daily background X-ray levels for the course of a sunspot cycle, one would discover that the background X-ray levels remained at the A-class level during the sunspot cycle minimum. During the rise and fall of a solar cycle, the background X-ray energy levels remained mostly in the B range. During peak solar cycle periods, the background energy reached the C and sometimes even M levels. Overall, the monthly average background “hard” X-ray level is rising (as seen by the following plot), showing a change from deep solar cycle minimum. We are certainly in the rising phase of Sunspot Cycle 24. While it has been a slow up-tick over the last 18 months, expect to see a more rapid rise during mid to late 2011. (Source: GEOS-14 data, plotted with the gnuplot program)

ditions. In a practical sense, this means that if the K-index reading climbs above four, expect the maximum usable frequency over a given path between a radio transmitter site and a receiver to be lower by as much as 10 to 30 percent!

The temperature of the Sun's atmosphere is so high that its gravity cannot hold on to it. The plasma streams off of the Sun in all directions at speeds of about 400 kilometers per second (about 1 million miles per hour). This is known as the "solar wind."

The speed of the solar wind fluctuates, and carries with it magnetic clouds. These magnetic clouds are interacting regions where high-speed wind catches up with slow-speed wind. The solar wind speed is high (800 km/s) over coronal holes and low (300 km/s) over streamers.

A coronal hole is an area in the Sun's "atmosphere" that has a weaker magnetic field than the surrounding area. A greater amount of the Sun's plasma escapes the Sun from a coronal hole than from the rest of the Sun's atmosphere.

This solar wind affects the geomagnetic field as discussed earlier. When a coronal hole is located in a geo-effective region of the Sun — a location that lines up such that the solar wind from the coronal hole blows directly on the Earth — the higher-speed solar wind from the coronal hole causes greater geomagnetic activity, possibly creating a moderate to severe storm (with a K-index reading as high as nine).

Elements of Space Weather

Solar activity includes a whole slew of things, from X-ray flares to coronal mass ejections. Space weather is the current condition of the solar wind, and solar activity at any given moment. Many solar events can cause the geomagnetic field to become disturbed, while other solar activity can be a positive influence on the ionosphere, helping shortwave radio propagation. On the other hand, some solar events like an X-ray flare cause sudden ionospheric disturbances (radio blackouts).

It is well known that sunspots are necessary for good shortwave conditions. That's because we need the hard X-ray radiation (in the 1- to 8-Angstrom wavelength band) to ionize the ionosphere's F-region, so we can *bounce* our shortwave radio to far-off lands. When there are many sunspots, conditions on shortwave are generally better.

But, higher sunspot activity brings other solar activity: the Sun unleashes X-ray flares and coronal mass ejections. These solar events do not help shortwave radio propagation.

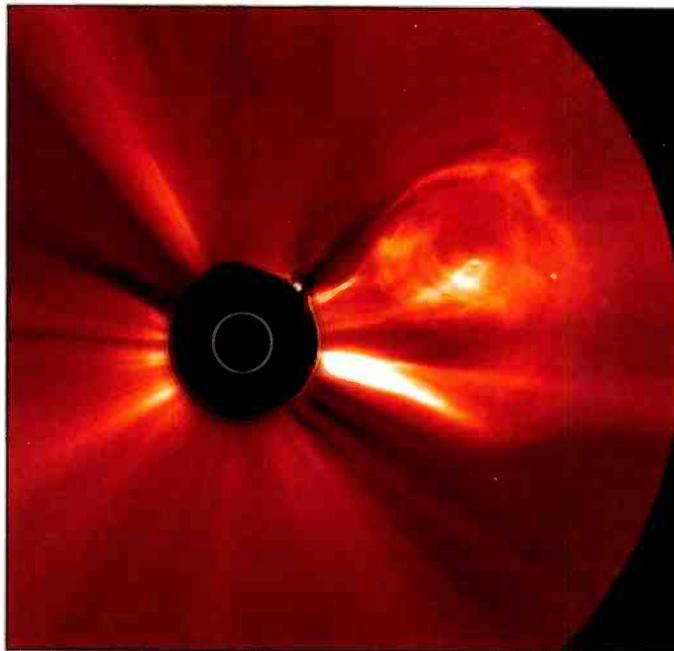
Several months ago we discussed X-ray flares, which originate in active sunspot regions. During an X-ray eruption, incredible amounts of X-ray and other energy is released.

At the speed of light, this X-ray radiation races toward Earth. Eight minutes later, this energy penetrates the ionosphere, instantly ionizing each layer to some degree. The most ionizing occurs at the lowest region, the D-region. The least amount of ionizing occurs at the F-region. The more intense the X-ray flare, the more each layer of the ionosphere becomes energized.

It is the energizing of the D-region that causes most of the radio blackout that occurs during these sudden disturbances, properly known as a *Sudden Ionospheric Disturbance* (SID) event.

The D-region absorbs shortwave radio signals, effectively blocking all propagation. After an X-ray flare, the ionosphere slowly recovers and the shortwave bands come back alive, again.

A coronal mass ejection is a burst of solar plasma typically blasted out away from the Sun, caused by a nearby X-ray flare erupting. The cloud races along the solar wind, and when it hits



The Sun unleashed a good-sized coronal mass ejection (CME) that roared out into space (May 20-21, 2011) as the STEREO (Ahead) spacecraft observed. Soon after, as a bonus visual, a sun-grazing comet came streaking in (from the right) heading for the Sun. Its tail could be seen elongating substantially as it approached the Sun and apparently disintegrated. Judging by its trajectory, this comet likely belonged to the Kreutz family of comets, the residual pieces of a much larger comet that broke up long ago. The Sun (represented by a white circle) is blocked out by an occulting disk (central red circle) so that fainter structures can be seen in the Sun's outer corona. (Source: NASA/SOHO)

the Earth's *magnetosphere*, it causes a shock wave and can trigger a sudden geomagnetic storm, much like when the solar wind is elevated from a coronal hole.

The difference is the amount and speed of change from quiet geomagnetic conditions to nearly instant storm-level magnetic activity. Such a sudden change causes what is known as a *sub-storm* and typically is part of the recipe for Aurora — Northern and Southern Lights.

We like low A_p and low K_p readings for shortwave radio DXing. We like high sunspot counts. However, we must accept that with high sunspot counts, we will have X-ray flares and other solar events, because with increased solar activity comes the *bad weather*, too. During the solar cycle minimum years, everything was stable and quiet, with very little change. Now that the Sun is more active, we'll have a wide variety of things happening. We have to accept that. Some moments will be very great, and then conditions will get very bad. It is the nature of having space weather.

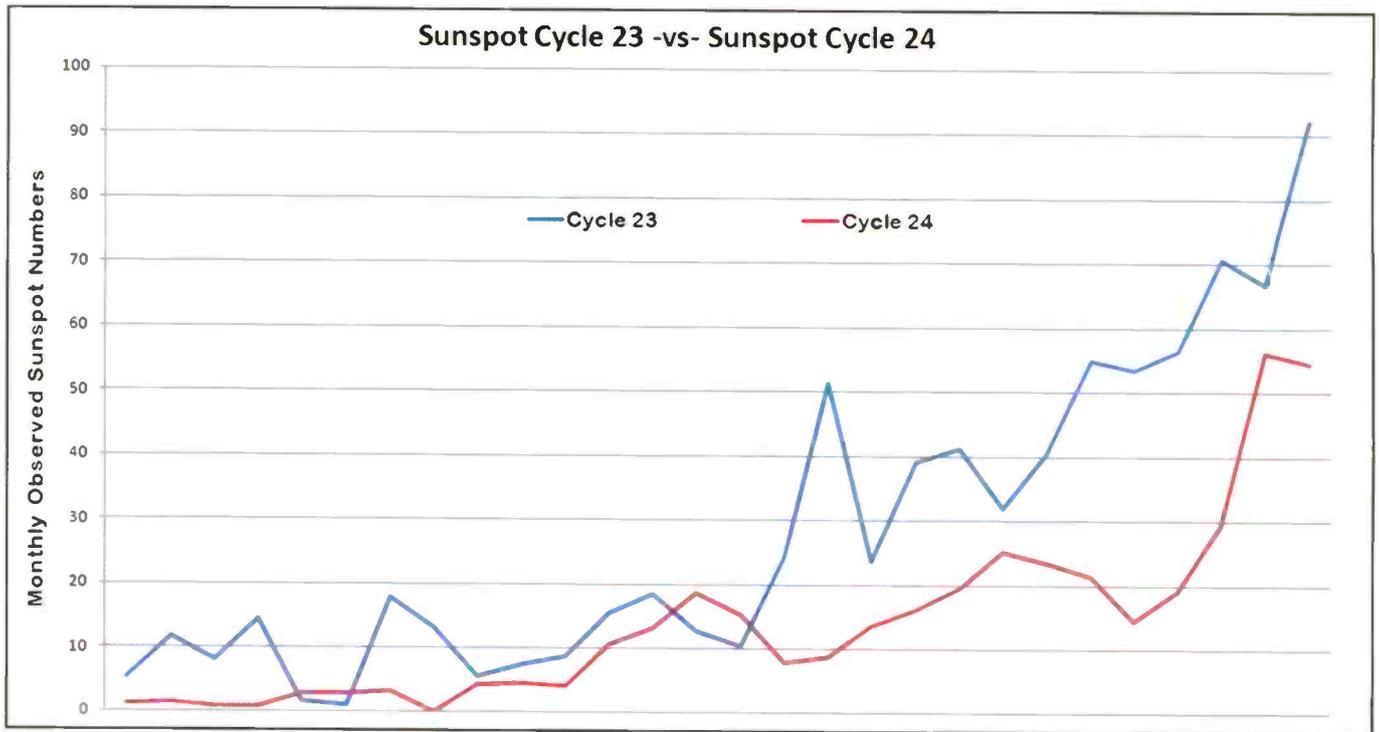
Turning Back the Clock

One year ago, the Sun was just *waking up* after a number of years of *slumber* — a long run of months and months when no sunspots appeared. Since then, the Sun has truly increased in sunspot activity.

Right now, though, we are going through a lull in activity — yet, this lull is nothing like those years without sunspots. We have sunspots, and we have interesting activity on the Sun.

Optimum Working Frequencies (MHz) - For August 2011 - Flux = 119, Created by NW7US

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



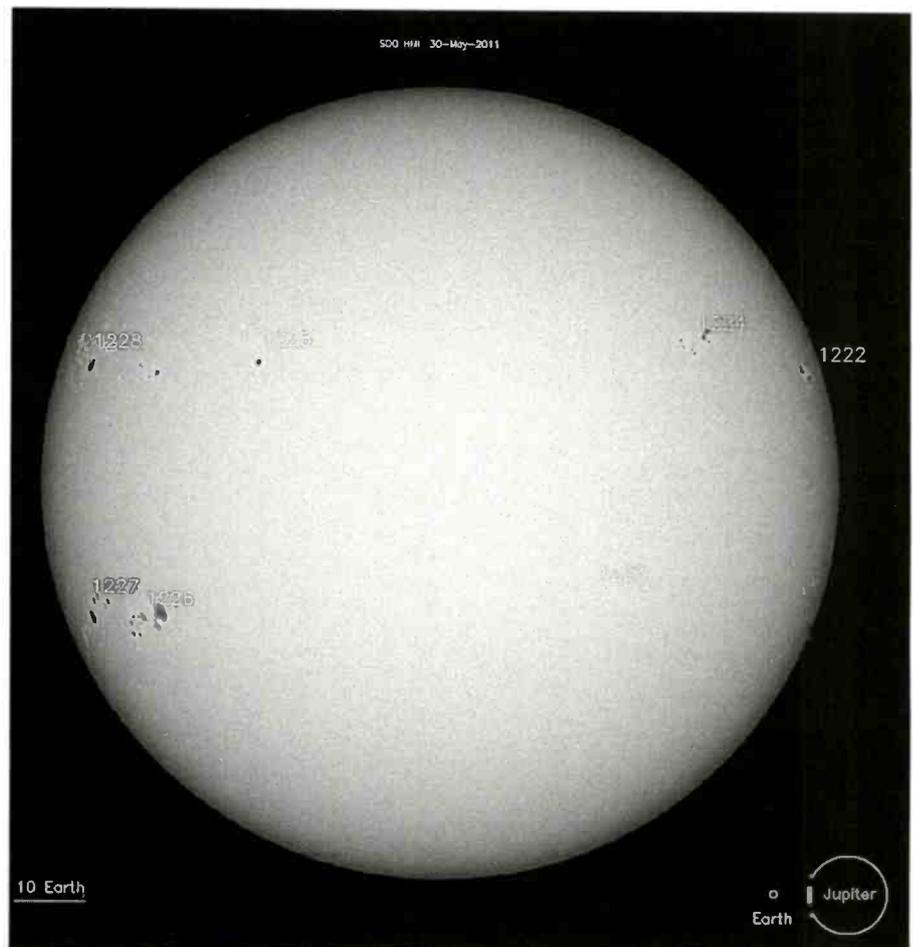
A comparison plot of Sunspot Cycle 23 and Sunspot Cycle 24, showing the two cycles from each cycle's beginning. Cycle 24 is not yet as active as Cycle 23, at the same point in the progression of months, yet, it is clear that the cycle is gaining in monthly energy. What is clear from each cycle, though, is the variable nature from month to month; it is normal to see a swing in activity. Some months may dip lower than previous months, as the cycle gains in activity. (Source: NOAA/NW7US)

Remember, though, as you watch the numbers dip at times, that it is normal during the upswing of a solar cycle to have *moments* of less-active swings, so don't fret. It will change in short course, and the space weather will increase even more. Then it will probably become so stormy and active that some radio hobbyists will complain that there is too much activity and X-ray flares are causing too much disruption of their favorite DX band!

HF Propagation: When and Where to Listen

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

The Sun as seen by SDO on May 30, 2011. The month of May saw fewer sunspots overall, than the previous few months. Nevertheless, there were sunspots on every day of the month. On this day, the Sun was peppered with active regions, and the 10.7-cm flux was rising above 110. Note the scale shown in the image: the size of Earth reveals the size of these sunspots! (Source: SDO/HMI)



Upper HF frequencies are going to be unusable over most paths, but when Sporadic-E (E_s) openings occur, expect good domestic signals. These E_s openings will be strong at times, and fairly common, but might be short-lived.

Nineteen and 22 meters will compete with 16 for the best daytime DX band during August. These bands will open for DX just before sunrise and should remain open from all directions throughout the day, with a peak in the afternoon.

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

The 25- and 31-meter bands have an incredible amount of activity since many broadcasters target their audiences during prime times (morning and early evenings) in the target areas. Expect 11 MHz to be an excellent band for medium distance (500 to 1,500 miles) reception during the daylight hours.

Longer distance reception (up to 2,000 to 3,000 miles) should be possible for an hour or two after local sunrise, and again during the late afternoon and early evening. Heavy congestion will occur here, too, as many international and domestic broadcasters make use of 25 meters.

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

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

Don't expect any improvement in nighttime DX conditions on 41 through 120 meters during August, since we are not yet close enough to the seasonal decrease in the static levels of winter.

The 5, 3 and 2 MHz shortwave bands are used mostly in designated tropical areas for domestic broadcasting. The entire 4 MHz band is set aside for domestic broadcasting in Asia, and some of this band is used throughout Europe.

On all of these bands, during daylight, reception should be possible from up to 500 miles away. After sunset until an hour or so after sunrise, reception of signals from 1,000 to a possible 2,000 miles away is possible.

There will still be a high level of static during August, so these bands will be a challenge to those looking for long-distance DX of exotic tropical stations. The best time to search for these would be just before sunrise and an hour or so after daylight.

VHF Conditions and Sporadic-E

Sporadic-E propagation is still expected to provide DX on the lower VHF spectrum. Statistical studies show that a sharp increase in Sporadic-E propagation takes place at mid-latitudes during July and August.

Short-skip propagation over distances ranging between approximately 600 and 1,300 miles should be possible on as high as 50 MHz and an occasional surprise E_s opening as high

as 150 MHz could happen during periods of intense sporadic-E ionization, with stations up to 1,300 miles away.

While Sporadic-E short-skip openings can take place at just about any time of the day or night, statistics indicate that conditions should peak for a few hours before noon and again during the late afternoon and early evening. Openings may last from a few minutes up to hours.

Current Sunspot Cycle 24 Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for April 2011 is 54.4, just a couple of points shy of March's 56.2. The lowest daily sunspot value of 40 — yes, 40! — was recorded on April 5, 10 and 25. The highest daily sunspot count was 91 on April 15. The 12-month running smoothed sunspot number centered on October 2010 is 23.2, up from September's 19.6. A smoothed sunspot count of 64, give or take about 9 points is expected for August 2011.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 112.6 for April 2011, just a slight decrease from 115.3 for March. The 12-month smoothed 10.7-cm flux centered on October 2010 is 85.3, up from September's 82.4. The predicted smoothed 10.7-cm solar flux for August 2011 is 119, give or take about 9 points.

The observed monthly mean planetary A-Index (A_p) for April 2011 is 9, up two points from March's 9, but one point less than a year ago. These figures still indicate very quiet geomagnetic conditions overall. This will change by next year as we watch the quicker rise in solar energy and sunspot activity. The 12-month smoothed A_p index centered on October 2010 is 6.4, about the same as September's 6.3. Expect the overall geomagnetic activity to be varying greatly between quiet to moderate storm level during August, since the increased sunspot activity also includes flares and related space weather.

Refer to the Last Minute Forecast for the outlook on conditions during this month, as published in *CQ Amateur Radio* magazine. You can find the current online version of this outlook at < <http://sunspotwatch.com> >

Connections . . .

Do you have a question that you'd like me to tackle in this column? Drop me an e-mail or send me a letter, and I'll be sure to cover it. I'd love to hear any feedback you might have on what I have written. You may email me, write me a letter or catch me on the HF amateur bands.

If you are on Facebook, check out < <http://www.facebook.com/spacewx.hfradio> > and < <http://www.facebook.com/NW7US> >. Speaking of Facebook — check out the *Popular Communications* fan page at < <http://www.facebook.com/PopComm> >.

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. Please come and participate in my online propagation discussion forum at < <http://forums.hfradio.org/> >.

Until next month,

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Is 60 Meters Your Next Offbeat Challenge?

by Kirk Kleinschmidt, NT0Z
kirk@cloudnet.com

“It’s hard to believe that the 60-meter ham band will soon be 10 years old. And if the FCC rules favorably on proposed changes, additional operating modes and power increases may make the band more interesting to operators who aren’t so interested in a challenge!”

Many of the challenges we face in the *real world* are externally imposed. Whether we’re talking about crumbling finances, bulging waistlines or out-of-control college tuition, these challenges are rarely chosen — they just have to be dealt with if we want to get through the day.

Hams, however, much like certain athletes or the lucky few who have mastered the Rubik’s Cube and want to solve it as fast as possible, *enjoy* challenges and often take them up “just because they can.”

Hams are also known for exploring the spaces *in-between*. If, for example, you become familiar with propagation, noise, antennas and the like on 80 meters, chances are good that you’ve already begun a similar exploration of the same things on 40 meters. It’s only logical.

But what about the space *between* the bands? That mysterious zone hosts clandestine utility stations, broadcasters in the tropics, a time station or two and a fair bit of military-government communications.

Forty meters is quite a jump from 80 meters, and there’s bound to be some interesting differences, right? We discovered this big-time when the WARC bands became available and we learned how wonderful life could be on 30 meters, which is pretty close to being smack-dab in the middle of 40 and 20 meters.

Being a challenge-minded ham, though, you wouldn’t want to rush in and make your explo-

Frequencies and Tuning

Channel Center	Amateur Tuning
5332 kHz	5330.5 KHz
5348 kHz	5346.5 kHz
5368 kHz	5366.5 kHz
5373 kHz	5371.5 kHz
5405 kHz	5403.5 kHz*

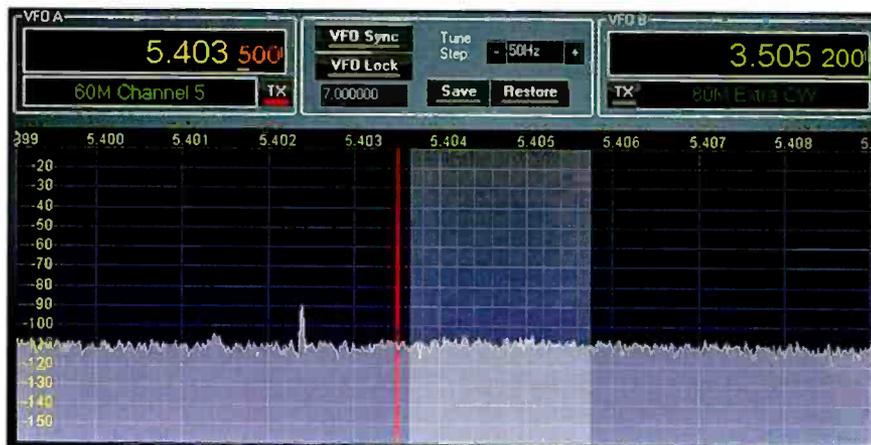
* common with UK channel allocation

ration of no-man’s land *too easy*. Where’s the fun in that?

To up the ante you could limit your operation to five discrete channels, cut your power to about half of what many radio amateurs normally run, and restrict yourself to using a generally crummy antenna. You could also throw away your Morse code key and disable your PSK31 software, relying instead on SSB voice — the most inefficient communication mode short of full-carrier AM!

That, you think, will make for a suitable challenge!

We’re talking about the 60-meter band, of course, and the FCC has already set the challenging limitations. It’s hard to believe that the 60-meter ham band will soon be 10 years old. And if the FCC rules favorably on proposed changes, additional operating modes and power increases may make the band more interesting to operators who aren’t so interested in a challenge!



If you want to work DX on 60 meters, Channel 5, 5403.5 kHz USB, is the place to be. Alas, at my QTH, in the middle of the night, a lone carrier at 5402 kHz was the only signal in the vicinity. (Courtesy of NT0Z)

So, if only to say that you knew the band before it got famous, get in the game and give 5 MHz operation a try! Sixty meters — five discrete channels between 5332 and 5405 kHz — could definitely be your next offbeat challenge!

60 Meters: The Only Channelized Ham Band

In 2003, the FCC gave U.S. amateurs secondary access to those five discrete channels on 60 meters. That's certainly not your typical ham band, and operating there isn't for everyone.

Sixty-meter ops have to be well-disciplined, endure significant restrictions, both operational and "electronic" and stay out of the way of military and government ops who are the primary users of the band. That's what secondary access means: Hams can't interfere with communications between primary users, and we have to stop transmitting on a particular frequency when asked by primary users.

The U.S. ham frequencies are centered on 5332, 5348, 5368, 5373 and 5405 kHz — the last of which is allocated to UK hams, who have a similar channelized allocation at 5 MHz.

A channelized band plan, as opposed to a small ham band such as our secondary allocation at 10 MHz, was the result of a

compromise between the National Telecommunications and Information Agency (NTIA), which administers spectrum occupied by government licensees, the band's primary users and the FCC.

Essentially, the FCC was seeking a small secondary allocation near 5 MHz (at the request of hams), but the NTIA balked at the 11th hour, agreeing only to the five discrete channels, which are available to General and higher-class radio amateurs only.

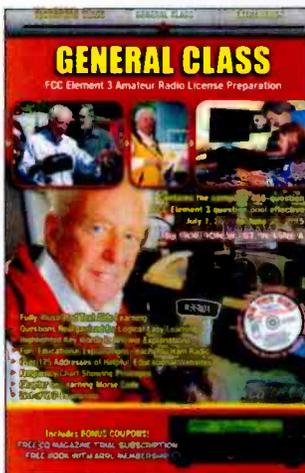
Hams may transmit *only* USB (upper sideband) at a maximum of 50-watts effective radiated power (ERP) with an audio bandwidth that doesn't exceed 2.8 kHz. All transmitted energy must be centered on the prescribed channels. That makes sense in government-speak, but takes some translating to make sense to ham operators and the way we describe frequencies and sidebands.

What You're Up For (and Against) on 60

Let's look at these restrictions, *et*, challenges, in greater detail:

Channel Centering and USB: When the NTIA and FCC specify that your transmitted signal must be centered on 5332 kHz, for example, and not exceed 2.8 kHz in *width*, that makes perfect sense to bureaucrats and policy wonks — but, as

Aspiring General Class Ops Get a Telephone Elmer



Gordon West, WB6NOA, veteran ham instructor and long-time *Pop Comm* contributor, has just released his 2011-2015 *General Class Study Manual*.

Purchasers get a welcome, if unexpected bonus. In addition to covering the entire Element 3 question pool in great detail, the author, affectionately known as Gordo, will answer questions on the phone.

West says he "receives five to ten phone calls a day from students preparing for exams and from recent graduates who have passed their licensing tests." His personal phone number is mentioned many times throughout the book, so getting connected isn't difficult.

Gordon's free consultation service "can lead students through tricky math formulas for Extra-Class and Commercial exams, as well as one-on-one discussions about simple antenna projects."

The book, priced at \$24.95, includes Gordo's *On the Air!* audio CD that introduces readers to HF operations and General-Class privileges.

Backing up the License Guide with expert telephone support is a nice touch. Information on the new 2011-2015 *General Class Study Manual* and Gordon's other training materials can be found at < <http://bit.ly/isJxDp> >.

— Kirk Kleinschmidt, NTØZ

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hams, we don't measure SSB emissions as *centered* on a particular frequency.

We measure our carrier frequencies, which are offset 1.5 kHz above or below the carrier depending on whether we're using upper or lower sideband.

In practical terms, which also happen to be approved by the NTIA in this situation, hams should set the frequencies displayed on their radios to 1.5 kHz *below* the allocated channel frequencies to make sure their USB signals are properly centered. Sound confusing? It's not, really.

For channel 1, 5332 kHz, set your rig to 5330.5 kHz. See the tuning chart for the rest of the frequencies. For best results, enter the correct amateur tuning frequencies into your rig's memory for fast and accurate access.

Although it's the amateur convention to use LSB below 20 meters, government and military ops mostly use USB for clear-voice communications, so allowing only USB gives primary users a better chance of communicating with hams who happen to be on the same frequency.

50-Watts ERP: Our maximum power for 5-MHz operation is equivalent to running 50-watts to a half-wave dipole. That's a ton of power for QRPers, but not a whole lot for typical hams.

If you have an antenna that performs better than a dipole at 5 MHz, you have to do the math and reduce your RF output power to match the effective radiated power (ERP) limit set for the band. Conversely, if you're using a short mobile whip on your car, you must similarly do the math to determine how much additional power you can transmit to reach the 50-watt ERP limit.

Thankfully, the ERP limit applies *only* to transmitting power. If you're fortunate enough to have a giant array of Beverage antennas or rhombics for *receiving*, feel free to use them. For transmitting, it's back to the dipole, or whatever.

No Hi-Fi Audio on 60 Meters: Most modern ham rigs have transmitted audio bandwidths between 2.4 and 2.8 kHz, and some DSP-based radios have transmit bandwidths that are adjustable. And while it's difficult to imagine a 50-watt USB signal interfering with a primary user, there are a few precautions that make sense.

This isn't the place to try out your *broadcast-quality* audio. Don't over-modulate, and turn off your RF speech processor, RF clipper, etc.

If you have the ability to tailor your transmit audio with a microphone equal-

izer or DSP, reign in those high- and low-frequency audio responses. Not enough to sound muffled and muddy, but enough to maintain compliance.

In what is perhaps the briefest declaration by a government agency to date, the FCC's rules for 5-MHz operation total only about 150 words and are spelled out in §97.303(s). You can see them at < <http://bit.ly/IJfczP> >.

Let's Look At the Radios

Many modern amateur radio transceivers can operate at 5 MHz or can be made to do so. Some rigs work right out of the box (especially the latest models), some can be enabled by simply downloading new firmware and some require cutting a diode or jumper wire on an internal circuit board.

These tweaks may also enable your rig to operate from *dc to daylight*, far outside the 60-meter band, so be sure to consider the consequences in advance if you decide to modify your transceiver.

In addition to *greatly expanded* operation, snipping that diode may void your warranty. For more information, visit: < <http://bit.ly/IQPKyj> >.

If you have a favorite classic rig that works fine for SSB on the traditional ham bands, but doesn't have memory capabilities or drifts up and down a bit, don't try to use it on 60 meters. Remember, if things get out of hand, the NTIA could eliminate our fun with a wave of its mighty hand.

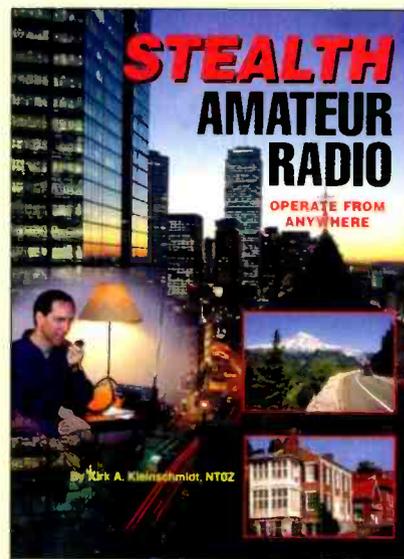
Band Conditions — Both Human and Atmospheric

Operating at 5 MHz with 50-watts SSB isn't always casual, although with everyone similarly limited, there are no *big guns* to step on your signal. Winter operation usually brings less noise and better propagation at low frequencies, but the band is active year round.

With only five available channels, two of which are in use by primary users pretty much around the clock, 60-meter operation will probably be a real departure from what you're used to.

Working hams on 60 meters is a bit like working through a repeater. It's not as formal, but hams break in now and then for quick signal reports and short QSOs.

Ragchews aren't the norm, but when conditions are open locally or regionally, but shut down for longer ranges, longer conversations are possible. And because emergency communications between the



Ham Radio On the Sly

If you live in an apartment or condo and want to get on the air without attracting unwanted attention, or if you're under siege from intrusive homeowner's associations, draconian deed restrictions and unfair CC&Rs, I wrote *Stealth Amateur Radio* to show you exactly how to get on the air and enjoy ham radio on the sly. I'm busy collecting data for a second edition, but because of steady demand for the original book, it's now available at < <http://bit.ly/j2UISp> > and soon on the Kindle and the Nook. So far, my first foray into digital publishing has been quite an eye-opener!

(Courtesy of NTØZ)

Southeast U.S. and the Caribbean actually prompted the creation of a 5-MHz allocation, you'll even hear regional emergency nets practicing for the real thing.

Because of the band's operational and technical restrictions, 60-meter ops tend to be supportive, friendly and downright cordial — a lot like 160-meter ops. You should do the same. There's not enough room for traditional hamming at 5 MHz, but there's always room for courtesy and cooperation.

With 50 watts of SSB to a dipole, 60-meter signals will rarely *peg* your S-meter. QRP ops, however, will be in hog heaven. We've spent years working CW and SSB on 80 and 160 meters with 10-watts PEP or less, so 50 watts is big-time! Start by listening and, if you have the right gear and an appropriate license, test the waters.

As you can imagine, propagation falls between 80 and 40 meters, with daytime signals out to several hundred miles, and nighttime signals to both coasts and beyond — with a lot of static and potential interference from primary users. You'll soon learn whether 5 MHz is your kind of band!

Clubs and 'Wallpaper'

The thought of hams working DX on 60 meters makes some bureaucrats types shudder. The entire U.S. allocation at 5 MHz is a little tenuous. And DX fever can prompt illegal high power, a quick switch to illegal killer antennas and, worst of all, unsporting behavior on a few channels in the middle of *radio nowhere* that are supposed to be beacons of cordiality.

This fear also extends to awards chasing, contesting and anything else that might be fun!

So, remember that good behavior and strict compliance are *mandatory* for our continuing use of our tiny 5-MHz, channelized, power-limited sliver of a band.

And, as long as you can behave yourselves, check out the CQ Sixty Meters Web site at < <http://bit.ly/kKBu9N> > for a ton of information about rules, regulations, awards, contests, propagation — the works. (*CQ Sixty Meters* is not affiliated with *CQ Amateur Radio* magazine or *CQ Communications, Inc.* — Ed.)

Be sure to scroll down the entire page and view the entire site because there are a lot of desirable links. You can also simply Google *60 meters*, which brings up enough links to keep you busy for quite some time.

A bunch of hams have worked all U.S. states and a ton of "countries" on 60 meters. UK hams share a common 5-MHz channel with U.S. hams and work across *the pond* regularly, and

several other countries (the list grows regularly) have similar 60-meter allocations (not all of which dovetail with U.S. channel plans). Many that don't have official status there seem to *look the other way* when their hams work stations at 5 MHz, as well.

Changes in the Wind?

After nearly eight years of hassle-free use by hams as secondary users on the five channels that make up the 60-meter band, it's probably clear to the government and military that our limited use of the *band* isn't causing any problems.

We can only hope that reason and sanity prevail as the FCC considers its options in ET Docket 10-98, a Notice of Proposed Rule Making (NPRM), based on a 2006 ARRL petition to modify the rules of the road for 60 meters.

The proposed changes would substitute a new channel for one that is almost always being used by fixed-service primary stations, increase the power-output limitations to 100-watts ERP, and add CW, PSK31 and PACTOR-III to the operating menu — with a few provisions to make sure that such operations would be compatible with primary users.

The NPRM was official in May of 2010 but, as this is being written, no action has been taken either way. The ARRL is looking at ways to expedite the process. Cross your fingers, as PSK31 operation at 5 MHz would be killer, even if restricted to 10-watts!

So far, 60-meter operation has gone smoothly and seems to be well managed, with few reports of intentional interference, bad behavior and excessive power. If you're looking for an off-beat challenge, 60 meters may fit the bill nicely. See you on the low-band repeater!

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On A Given Day, the World's Most Boring Crystal Radio

by Shannon Huniwell
melodyfm@yahoo.com

“When the local (station) went quiet, Mr. Tribley delicately twisted the dials until another signal softly sang through the headphones. He sat the renewed Heathkit on the ‘ready’ shelf. That’s where it remained — except for a brief excursion — for nearly a decade.”

Shortly before closing time on April 11, 1954, somebody walked lazily into Hank Tribley’s home-based radio and TV repair shop and slid a partially-built crystal radio kit onto his varnished plywood counter.

Other than that inauspicious occurrence, it had been an unusually dead day. Even the newscaster on Tribley’s hometown station apologized for having to substitute public service announcements about upcoming local events for top stories in the noon news. “There just isn’t much coming over the wire or even happening around here,” the radio journalist shrugged before mercifully breaking for a commercial.

And at Tribley’s shop, everything that needed fixing was already done, shelved and ready for pick-up. But no one had retrieved a single revitalized radio all that morning or afternoon. The bits and pieces of crystal receiver now resting in front of Hank Tribley represented a stark contrast to that AC/DC electronic legion he’d recently doctored off the injured list.

Tribley looked at the poor little set’s tangle of wires accented by hopelessly lumpy solder joints, and asked the fellow, “Having trouble getting this to play?”

“Haven’t even ever tried,” the guy drawled. “Found it a month or so ago in an ash can over on Martin Street. Wondering what you’d charge to make it work.”

“Well, let’s see here,” considered the shop’s pro-

prietor. “It appears to be missing a few components, but I’d estimate that \$2 would cover parts and labor.”

“Ain’t that a might pricey for something that come out of an ash can?” the man wondered.

“Tell you what,” Tribley admitted, “due to the fact that you’re the only person who has stopped in today and because I’d hate to have had the place open for nothing, I’ll finish your crystal set for a buck, not including an earphone which you’ll need in order to listen to it.”

“I think I got one of them earphones somewhere, anyway,” the man noted. He reluctantly divulged an address so Tribley could fill out a claim ticket, took the “customer” portion of it, and then left.

Eager to break the day’s incredibly unproductive spell, Hank Tribley got to work clipping out the shorted guts of what was supposedly a Heathkit model CR-1. With some skillful rewiring, installation of a couple capacitors and one replacement germanium diode, the newly revamped crystal set easily pulled in the final 30 seconds or so of the local daytimer’s national anthem sign-off.

When the local went quiet, Mr. Tribley delicately twisted the dials until another signal — this one from a clear channel giant about an hour away — softly sang through the headphones. And then he removed the cans, unplugged the ground wire, disconnected the antenna lead and sat the renewed Heathkit on the “ready” shelf. That’s where it



Here’s a bona fide Heathkit model CR-1 crystal receiver. Not uncommon for something often built and owned by kids, this one is missing three-quarters of its faceplate screws and suffered a chip out of the corner of its bakelite case. Above the number 20 and between 60 and 70 of the Heathkit’s tuning range (right-hand dial) there’s tiny lettering noting “CD” approximating the 640 and 1240 kilohertz *Conelrad* Civil Defense frequencies readied during the Cold War. I’d love to find one of these compact sets, but always seem to get outbid for the examples offered on eBay.

Heathkit RESISTANCE SUBSTITUTION BOX KIT

The Heathkit Resistance Substitution Box kit represents one of the handiest "gadgets" available for electronic work. It has many applications for service work such as experimentally determining the value of an unmarked or charred resistor, using it to change values of resistors in circuits during actual operation, as a means of determining maximum circuit performance, etc.

In circuit development work, several Resistance Substitution Box kits will provide the necessary degree of flexibility required to quickly change the resistance values.

The Heathkit Substitution Box provides switch selection of any one of 36 RTMA 1 watt 10% standard value resistors ranging from 15 ohms to 10 megohms. The entire kit is priced less than the retail value of the resistors alone.



"You mean me, Popee?"

"Well, Clarence Vudume, or whatever that kooky character's name was, lost his chance years ago," Tribley declared while cutting the tag string from the variable capacitor shaft. "Now I would like to present you with the only physical evidence from that weird and boring day, back on . . ." the inveterate grandfather paused pensively as he put on his glasses and read, ". . . on April 11th in the year of our Lord, nineteen hundred and fifty four. We can christen it *the world's most boring crystal radio.*"

"Wow! Thanks Popee!" Timmy smiled. "Can we see if it still works?"

"*Snagged Seven Signals In Sixty Seconds.*" That heading appears on an essay by Timmy Tribley. He says nobody, except sometimes his wife, calls him by that name anymore. *Timothy* is how he signed the cover letter that accompanied a photocopy of the grade school English assignment chronicling his oddly-acquired crystal radio and its related adventures.

Affixed to the paper's last page is a postcard of an equally unusual radio station building, the studio-transmitter site of KPRK in Livingston, Montana. After I noted the essay's title, the image quickly caught my eye and got me wondering how any crystal set — endowed with mystical powers or not — could ever detect seven signals in the ruggedly rural vicinity of Yellowstone National Park, near KPRK's main footprint.

It turns out, though, that the *seven stations heard in one minute* feat took place in Timothy's grandfather's shop shortly after the crystal radio had been deeded to him. Hank Tribley's workbench had connection points to a very potent long-wire antenna and a remarkably effective cold water pipe ground.

Around sunset — and mated to those sources and a sensitive, tight-fitting set of Brush-Cleavite headphones — the now-happy Heathkit CR-1 couldn't stop talking.

After blasting RF of the upper broadcast band local saying goodnight, the crystal set delivered audio from a 5-kW regional on the low side of the AM dial. With the hometown station off the air until morning, the top and middle sections of the standard broadcast spectrum were sufficiently cleared out for the presence of skywave from five flame-throwers originating throughout the Midwest.

Though none of these outlets were specifically identified in Timothy's

While the CR-1 Heathkit crystal radio reportedly didn't go into production until 1957, the Resistance Substitution Box kit shown in Heath's 1951 flyer sure looks like it was designed in a similar format. No doubt that somebody at the Benton Harbor company tasked with developing the crystal set kit got a *eureka* moment after studying the Resistance Sub unit.

remained — except for a brief excursion — for nearly a decade.

Please Help Me! I'm In Deep Storage!

"Is that one way up there an old transistor radio, Popee?" Hank Tribley's 11-year-old grandson wondered during the first day of a weeklong winter vacation visit in 1963.

The boy was standing on tiptoes and pointing to the crystal set covered in a film of dust. He'd been especially fascinated with transistor radios since a kid in his class had brought a 10-transistor model for *Show and Tell* and later impressed the heck out of everybody with it out on the playground.

"Well, Timmy," the old gentleman chuckled as he focused upwards. "That sad little thing . . . I guess we could say that's a boring radio with a mystery behind it."

An accomplished grandfatherly story teller, Tribley made an elaborate process of retrieving the crystal set via a yardstick, with gentle prodding and a catch worthy of some ninth inning World Series heroics.

He blew off the device's blanket of dust, handed it to Timmy and then took great pleasure in unfolding the history of the receiver. The tale concluded with an inflection suitable for an account of midnight UFO sightings. "Timmy, my boy," Tribley admitted, "the strange fellow who

brought in the very radio you've now got in your hands never returned for it."

"Gosh!" Timmy exclaimed. "Whatever happened to him, Popee?"

"Well, sir, that's just it . . . No one knows for sure. I never solved the mystery, anyway. See the name and address written on the tag strung to the tuning dial?"

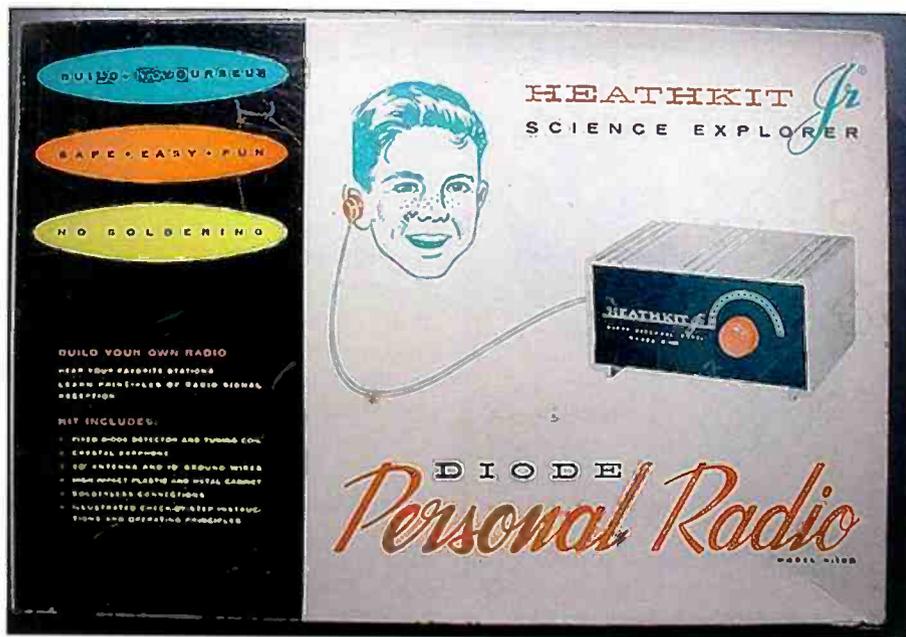
"Clarence Vudume, 221 Maple Street?"

"That's just it, Timmy . . . About a year after this *Clarence guy* left the radio for me to repair, I got to wanting to get the dollar he owed me for fixing it. So, on one of our leisurely strolls around town, your grandmother and I walked over to Maple Street with the darn thing in order to see if we could remind the man to pay up."

"Did you find him, Popee?"

"My boy, that's the mystery of it. Not only did we discover there was no place numbered 221 on Maple Street, but not a Maple Street soul out on their porch that summer evening had ever heard of a Clarence Vudume or of anyone by a similar name.

"Nor did my description of the unusual fellow ring a bell with anybody . . . Not even with my police buddy, Sergeant Jennings. He noticed that my service tags say *Not responsible for goods left unclaimed for over 30 days*, so told me the law was on my side if I wanted to sell the radio to recoup my losses. Anyway, I placed the radio back on the shelf. I'm sure it'd be happy to have someone to care about it and listen to what it can pull out of the airwaves."



Marketed exclusively to young experimenters (and their educationally-minded parents), Heathkit's diode-enlivened *Personal Radio* hit catalogs several years after the more gadget-looking CR-1 crystal set got discontinued in 1963. With no soldering required, it was essentially a snap-together project designed to resemble the era's typical 5-tube, "All-American" design table radio. This *Heathkit Junior* series unit, though, had no speaker, nor much selectivity/sensitivity.

exposé, the aforementioned KPRK rated several pages of text and that picture. He tied it into the story by noting that the little Heathkit had accompanied his family on a summertime excursion to Yellowstone National Park.

His folks reserved a motel room in Livingston, and the establishment's tourism brochure rack included postcards of the community's architecturally interesting station. While Timmy's parents were still unpacking, he was busy unraveling a roll of antenna wire and fastening a ground clip to the finger stop of the motel room's telephone. Hooked to the Heathkit, those two vital ingredients cooked up nice reception of the novel station on the card.

Space Suitable For A Spacey-Looking Station

According to Jan Lowry's radio histories, Montana movie theater and hotel proprietor Paul McAdam rounded up a half dozen Livingston area folks who liked his idea of starting a broadcasting station and then asked the Federal Communications Commission for the right to build one.

The Commission approved McAdam's Yellowstone Amusement Co.'s request during the first week of September 1946. While waiting for that OK, McAdam had

toyed with call letter choices and decided upon K-P-R-K so that his proposed AM could be dubbed *K-PARK* in recognition of Livingston's close proximity to the famed park at Yellowstone.

Though new "local" (then categorized as *Class IV*) broadcast band outlets were not uncommon in the immediate post-World War II era, McAdam's fledgling 250-watt on 1340 kilocycles was headquartered in a mighty unusual studio/transmitter facility that Jan Lowry's documentation calls "a single story classic Buck Rogers-styled building on East Park Street on the eastern edge of Livingston."

Perhaps McAdam got the inspiration for the venue's space-age tower motif atop KPRK's entranceway from the Saturday matinee sci-fi flicks shown in his movie house. Had either Hanna or Barbera seen the place, they'd have surely included a 2-D interpretation of it in the opening animation of their *Jetsons*.

In any event, with the help of a *functional* guyed tower in the backyard that, unlike the fun little faux self-supporting set-up on the roof, was actually hooked to the transmitter, KPRK blasted off on January 10, 1947.

The station enjoyed a four-year honeymoon with its community as an independent outlet, until establishing a relationship with the regionally-focused InterMountain Network and the Mutual

Broadcasting System news-features that came with the IMN connection.

Mutual served as KPRK's window on the world through early 1958 when IMN upgraded its affiliate package to include programming from the American Broadcasting Company.

There's an arcane FCC rule that requires full-time stations to operate until at least 10 p.m. (No air-time was mandated for Sundays). In today's 24/7 media environment, the need for such a requisite seems as counter-intuitive as a restaurateur posting signs directing his hungry customers to eat.

A few decades ago, and especially in rugged rural areas where most residents lived by the adage, "early to bed, early to rise," however, some broadcasters sought relief from having to keep the transmitter awake when much of the radio audience was sound asleep. KPRK officials were among these waiver seekers.

So in April 1960, the Commission changed the station's operation schedule category from "unlimited" to "specified hours," allowing KPRK ownership to *specify* on license documentation when the station would be on the air. For years after this late Eisenhower-era OK, KPRK's tubes were hot from 6 in the morning to 9:05 p.m. This schedule continued even after a new 1,000-watt transmitter got installed during winter 1962.

The original quarter-kilowatt box was decommissioned soon thereafter, as the FCC granted KPRK a daytime power increase (to 1,000 watts). After sunset, though, the new unit had to be throttled back to 250 watts in order to prevent interference to other AMs on or near 1340 kilocycles.

A Kid's Candid Snapshot Of One KPRK Moment In Time

In order to raise funds to acquire Helena, Montana-based KBLL, KPRK's founder sold his Livingston facility (for \$71,000) to an outfit headed by the station's general manager, Jack Hinman, in the summer of 1963.

This is the version of KPRK that Timmy Tribley captured in his crystal set's headphones and then briefly on paper for that school report. "There were some cowboy songs and some regular music, too," he then wrote — and now laughs — was *incredibly vague*.

According to his amateur exposé, "One song played at the wrong speed until the DJ apologized and shifted the record player into the correct gear. KPRK had

commercials for places like a bank, car dealer and grocery store. They also ran a program where the DJ read advertisements from people who were trying to sell their stuff like a used, wringer washing machine, baby clothes and tires for a tractor. Also on this show called *Swap-Shop*,

a woman called the DJ to have him announce that she had some goats that were missing. Except when the professional news got piped in from ABC in New York, the Livingston station's news didn't include anything that would upset anybody but a busybody. Compared to big

stations in Chicago," the boy editorialized, "KPRK sounded slower and more neighborly with DJs who only had to talk like a normal person."

And things at KPRK didn't change much through the 1960s and into the early 70s. The only exceptions were a slight reconfiguring of ABC offerings in early 1968 when KPRK chose to run the network's *American Information* service.

Jan Lowry's information pegs this era to KPRK's smoothing of its musical formatting to where the station branded itself as "middle-of-the-road" by about 1972. Several years later, principal KPRK owner Jack Hinman passed away. His widow sold the station to Holter Broadcasting Corporation as 1978 was coming to a close.

The transaction coincided with a format move to "Countryopolitan" (or sophisticated country/pop crossover) music. The new KPRK management tried airing rock records in the evening for the younger crowd who presumably listened while doing their homework.

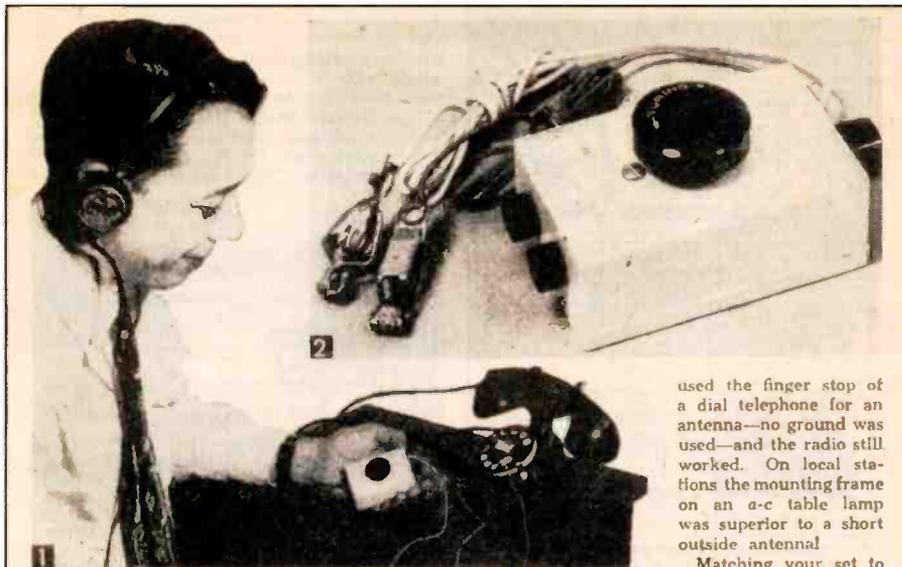
This experiment — along with the "specified hours" designation — ended in 1983, so the station could stay on past the 9 p.m. network news and run country music full-time. Three years later, KPRK was FCC-approved to boost night power to a kilowatt.

In 1989, the daughter of the station's majority stockholder purchased KPRK under the banner of Livingston Broadcasting, Inc. Though this licensee operated KPRK (and a companion FM outlet) for a decade, when it sold out in 1999, the unusually-housed AM went through another four owners — including Clear Channel Communications — before landing in a portfolio of licenses held by a media firm where stations destined for subsequent sale are parked.

As of this writing, KPRK simulcasts a talk format of a sister Montana AM: KMMS of Bozeman. Along this journey, however, the Livingston station had aired formats like "Kool Country" and "Classic Hits" — typically from 5:30 a.m. until midnight.

Anything In the Kid's Report About What Was Inside K-PARK's Cool Building?

Surprisingly, the answer to that heading is a disappointing "No!" Timmy's mom and dad did consent to drive slowly past the station and even stopped in the parking lot so he could venture into the lobby and ask for a look-see.



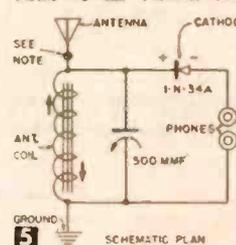
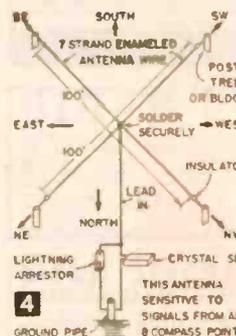
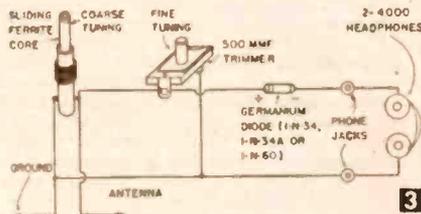
Super-Sensitive Vestpocket Crystal Radio

A "high-Q" antenna coil makes this set a real performer

By T. A. BLANCHARD
Radio Editor

FAR from being a throw-back to the days when radio coils were wound on oatmeal boxes with doorbell wire, this tiny crystal set separates stations—without batteries or a complex circuit.

Aside from selectivity good crystal set results depend upon antenna and ground. For long-distance reception, use as long and high an antenna as possible. Where space is at a premium, the antenna may be installed in X fashion (Fig. 4). Use a cold-water pipe as ground, or in rural areas, a well pump pipe. However, we



used the finger stop of a dial telephone for an antenna—no ground was used—and the radio still worked. On local stations the mounting frame on an a-c table lamp was superior to a short outside antenna.

Matching your set to the particular broadcast frequency heightens crystal reception. Don't hesitate to try all kinds of objects for picking up a signal. One good antenna was a bed spring with the metal frame of a bed lamp a's ground. Another good match were two grounds at different potentials—one a water pipe, the other, a copper line to a propane tank.

The final requisite for good reception is a pair of sensitive headphones of 2000 or 4000 ohms resistance. Do not go on labels alone. Unscrew the caps from any headphones you plan

NOTE: Insert 100 to 500 mml. mica condenser to tune in 1600 to 1900kc. stations when long outdoor antenna is used.

OCTOBER, 1952

195

Radio hobbyist magazines in the mid-20th Century would dare to go very many issues without including an article about how to build some fantastic crystal set. Here's a 1952 how-to for a diode model with "high-Q" antenna coil. The author claimed his receiver worked great for grabbing local stations when the antenna lead was clipped to either a *finger stop on a telephone dial, the copper line leading to a propane tank or metal bed springs!* The latter was a perfect source for pulling hometown RF while the listener drifted off to sleep under the influence of a novice DJ playing lush instrumental records from the likes of *Mantovani* or the *101 Strings* — both considered to be exemplary purveyors of "good music" for evening programming in that prerock era.

"They said I could go, but wouldn't come with me," Timothy recalled. "I think (it was) because my father grew up in his folks little radio repair shop and was afraid that instead of being able to go to the university and he'd have to take it over someday, he didn't want to encourage me to get hooked on anything (to do with) radio or electronics repair.

"My mother sided with Dad and always tried focusing me only on interests that required a college education. Anyway, after climbing those big concrete stairs and nervously standing in front of the door to silo-like KPRK entrance vestibule," Timothy has long regretted, "I got cold feet. When I glanced back at my parents for some note of encouragement, instead I heard Dad start the car. That was a sure signal for me to forget about touring K-PARK. As soon as I got back into our station wagon, my mother began predicting what a great time we'd soon be having at Yellowstone — and away we went."

Timothy clearly remembers not responding to his mom, as he took one last look at KPRK's fanciful home. The boy then quickly uncoiled a decent stretch of his Heathkit's wire antenna, put on the earphones, and for a mile or so, compliments of the close proximity of KPRK's kilowatt, managed to hear the station fade to a goodbye.

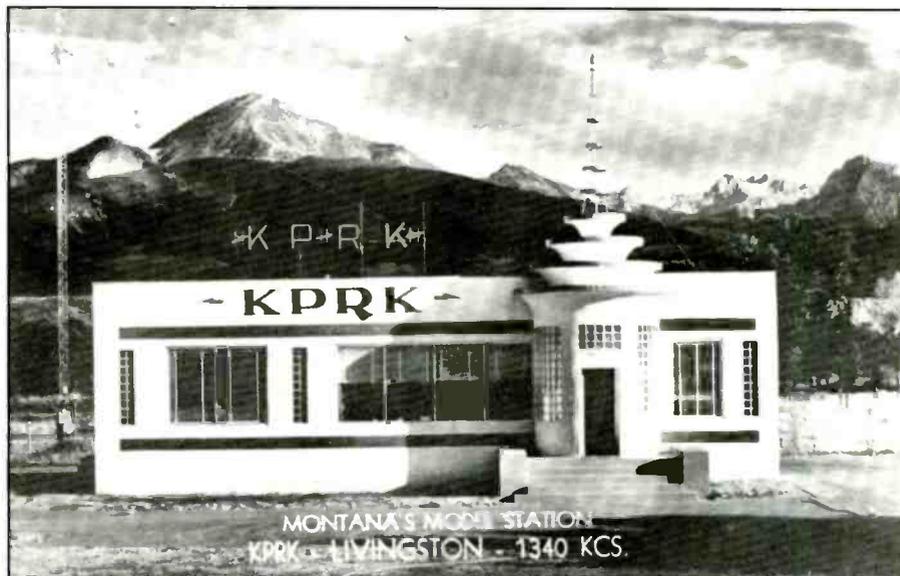
Hello? Was It Really A Heathkit?

It's a fact of life that old memories and newly-consulted chronology don't always align. A case in point is the Heathkit model CR-1 crystal radio article by Bob Eckweiler, AF6C. I discovered in a back issue of *RF*, the Orange County Amateur Radio Club newsletter, while putting the finishing touches on this month's story.

Its contents corresponded with Timothy Tribley's description of his childhood receiver, save for one major problem. Eckweiler dates Heathkit's production of the CR-1 from 1957 to 1962. But, Timothy's grandfather identified the modest radio as having been brought into his shop in 1954 — and had it tagged as such.

When I emailed Timothy an image of the CR-1, he stated that it pretty much looked like his (though lost in a move while he was away at college), but didn't recall any numbering or wording imprinted on its face.

This *lacking logo* issue and the CR-1's 1957 introduction coupled with nearly a



KPRK Livingston, Montana as it appeared on promotional postcards some 60+ years ago. The photo for this publicity item was probably taken right around the time that the "model station" hit the air. Everything, including the paint job and antenna coupling-tuning boxes at the base of the tower, looks so new. And check out the neon KPRK sign atop the roof and above the painted ID. Each featured "signal sparks" as if to shout, "This is where serious broadcast power is transmitted!" In some renditions of KPRK logos, even the stylized fake tower on the entranceway roof is shown sending out a sparky shower of radio waves. Designed by Missoula, Montana architect, William Fox, the KPRK building has long been cataloged on the prestigious National Register of Historic Places.

half century of other things also occupying Timothy's memory banks, drains my confidence in being able to unequivocally pronounce that his crystal set was of Heath origin.

Finally, after sending Timothy the following excerpts from Eckweiler's treatise on the classic do-it-yourself receiver, he recalculated his recollections and figured that his grandfather might have simply verbally branded it as a Heathkit because he had to piece the poor thing together.

In fact, Timothy's "Popee" had a scruffy old yellow cat who'd shown up nearly dead at the shop door one morning. Timothy noted that his grandfather adopted and revitalized the crusty kitty which he then named, *Heathkit*.

"The CR-1 is a simple kit that uses a sealed crystal diode instead of a cats-whisker," Eckweiler describes. "It is double tuned and drives high-impedance headphones (and) is a double-tuned circuit followed by the crystal-detector circuit that feeds the headphones.

"The CR-1 has two sets of binding posts (for antenna, ground, phones and plus) three controls (for) antenna tuning, antenna switch(ing) and detector tuning . . .

"(To operate the CR-1), one would set the antenna switch to the area of the station they wanted to tune in (high, medi-

um or low frequency) and tune for a signal with the detector tuning, adjusting the antenna tuning for the maximum signal and switching the antenna switch if the tuning control ran out of effectiveness."

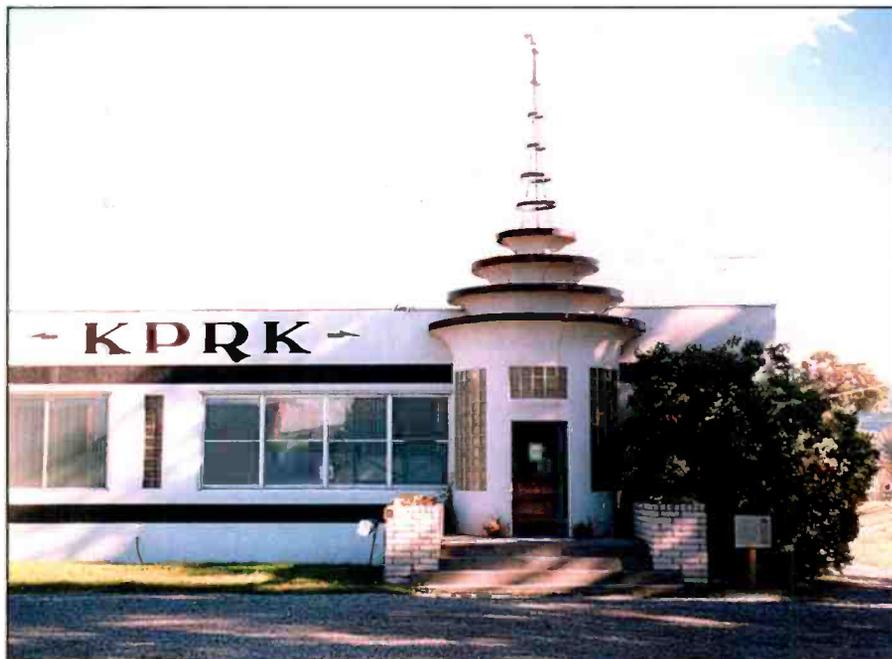
Eckweiler pointed out a good reason why radios like the small Heathkit had a following among the electrically-economical crowd: "There is no ON/OFF switch nor power source required as this radio uses only the (station transmitter's) broadcast energy as its power source."

The Least Powerful Day of the 20th Century

Although Timothy couldn't be sure about his crystal set's manufacturer, he was certain about the actual date of that slow day at his grandfather's radio repair shop. The claim tag still exists, having spent several decades in an envelope of Kodak snapshots showing his family smiling at Yellowstone Park.

When Timothy rediscovered it last spring, he sent me a digital image of the dog-eared, card-stock rectangle along with a request for an article to be written about KPRK.

For two or three minutes, I looked at the day, month and year on the tag, and kept getting the sense that I had heard



Jan Lowry captured the essence of KPRK's unusual headquarters while on a pilgrimage to this and several other notable Mountain West-area stations. Still nicely intact decades after its construction, the studio-transmitter site's signature note is undeniably the semi-circle, glass brick-rich vestibule and related triple-tiered science fiction space themed tower base-ringed tower. Can you picture our story's Timmy standing there briefly looking upward and then trying to conquer his nervousness and enter whatever strange world of radio he'd find inside? The arrangement looks a bit like something that, if reduced in size, would have made a neat crown for *Star Wars'* Queen Amidala! At the image's very right is the marker sign indicating the building's historical significance. And just to its right, one might catch a glimpse of the back of a satellite dish pulling in syndicated programming from outer space. Things are slightly more mundane to the left of the front stairs — a newspaper delivery box and garden hose attached to a spigot. Absent is the "original equipment" roof-mounted neon call letter sign, perhaps retired due to having undergone one too many repairs.

something about that date somewhere before. A *Google* search verified my April 11, 1954 *deja-vu*.

There'd been a story on National Public Radio featuring the digital findings of a British computer scientist. William Tunstall-Pedoe concocted a special program to analyze over 300 million historical events. He and his computer concluded that April 11, 1954 was the most boring day of the 20th Century.

Tunstall-Pedoe told NPR that "while on most days lots of famous people are born, famous people die, there are events happening, that particular day (April 11, 1954) was extremely notable for having almost nothing happen."

It appears that the date's dud atmosphere permeated Hank Tribley's shop, too. But what about the inescapable fact that April 11th fell on a Sunday that year? "If my grandfather didn't feel like going to church," Timothy laughed, "he would flip the OPEN sign in the shop's front

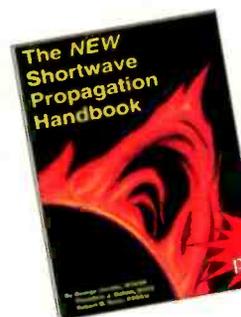
door and tell my grandmother that he had to be ready for some important customer pick-up. Then he'd shoo *Heathkit* off the cushy chair behind the counter, fire up one of the repair radios and settle in to read the paper for a while. I guess there wasn't much of interest in broadcast or print that day."

No matter its hour-by-hour computerized results, April 11, 1954 apparently has some competition for the dubious distinction of having been incredibly boring to radio audiences seeking information about current events . . .

Reportedly things were also awfully slow on Good Friday of 1930. That's when a British Broadcasting Corporation announcer walked into a quiet London studio, leaned into his microphone and admitted to BBC listeners, "*I rather hate to tell you this, but it appears that there is no news.*"

And so ends another day of broadcast history on *Pop' Comm* . . .

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Anchors Aweigh: A Hallicrafters HT-32A Boat Anchor Restoration!

Naval Jelly and TLC Will Help Bring This Classic Rig Back to Life

This is the first of a four-part series

by Peter J. Bertini
radioconnection@juno.com

“The SX-101 receiver had an introductory price of \$395.00. The companion HT-32 SSB transmitter was \$695.00. This was back in 1956. If we inflation-adjusted, today’s price for the pair would be closer to \$9,000!”

I became a licensed amateur in the early 1960s, a decade that coincided with what was to be the end of an era. Little did I realize or suspect that the reign of the large ham *boat anchor* rigs was ending. I was a youngster caught up in the magic of radio, an interest that eventually led to a long, varied and successful career in electronic, computer and communication fields.

What Is a Boat Anchor?

Let me back up a bit. Prior to the 1960s, ham equipment value and quality was judged by size and weight. Bigger was better! The most expensive ham gear — especially those produced up to the early 1960s, were massive, 19-inch rack cabinet mounted beasts!

Indeed, when the Hallicrafters SX-101 receiver was introduced in a near year-end ad campaign in 1956; the advertisements boldly claimed that the SX-101 was “*First — built like a battleship Bigger. Heavier. Second — a marvel of stability. . .*”

Tipping the scale at more than 80 pounds, and after manhandling and struggling with several while doing restorations, I agree with the bigger and heavier claims! Today, these old workhorses have been nicknamed “*boat anchors*” by many hams. The exact origins of the term are lost to time, but no doubt it can be attributed in part to the battleship references and the fact that most of these might be well suited for use as an anchor for a large ship.

One Man’s Poison . . .

Depending on your viewpoint, calling a rig a *boat anchor* can be derisive — some folks feel these relics are obsolete and belong at the end of a rope at the bottom of the ocean.

Yet, for many hams, these rigs now represent the golden age of ham radio. The lure is often based in nostalgia — we yearn to recreate the early stations we started with, or the station of an older relative or Elmer who helped us get started in the hobby.

Many newer hams are fascinated by, and drawn to, the interactive relationship between user and radio. These sets required many more steps for tune up and setting the modes, operating frequency, etc.

The numerous knobs adorning their front panels give some indication. If you haven’t been licensed for at least 40 years, the concept of *peaking* the drive tuning, setting drive for the correct grid current; while *dipping* the *final* and adjusting the *loading* control will sound like a foreign language! And if you took too long to perform these steps, you probably ended up needing a new set of pricey *final tubes* sooner than you’d liked!

Yes, these are arcane skills today, but part of the rites of passage many decades ago!

Compared to modern rigs, they were not cheap! For example, the SX-101 receiver had an introductory price of \$395.00. The companion HT-32 SSB transmitter was \$695.00. This was back in 1956. If we inflation-adjusted, today’s price for the pair would be closer to \$9,000!

So, what kind of performance do these older sets deliver on today’s crowded bands? One thing you’ll most likely lose is the ability to run *transceive* — while some of the later vacuum tube models included the ability to slave the transmitter to the receiver frequency. Generally, most transmitters required retuning along with the receiver whenever you moved frequencies.

Changing bands is even more involved. You have two band-switches to deal with, and there was no coverage for the WARC bands we gained during the 1980s. Most rigs will give you the basic five ham bands: 80, 40, 20, 15 and 10 Meters. Some include 160 meters, which is a big plus in my opinion.

You’ll give up memories, digital signal processing, and in many instances have to settle for IF selectivity that is provided by cascade IF stages and rudimentary, single-crystal IF filters.

Most will deliver acceptable performance for basic, no frills *ragchewing* and casual DX work on CW or phone. After all, they did serve their

original owners well for many years! The skill of the operator becomes more important than the hardware.

Decline of An Era

Transceivers, and the growing popularity of SSB communications, led to the development of the Collins S-Line and the Collins KWM-1 and KWM-2 SSB transceivers.

Built using lightweight aluminum chassis and sleek wrap-around enclosures, these were representative of what would end the popular massive separate receiver and transmitter packages.

Collins had an advantage in that it was able to market SSB receivers, transmitters and transceivers for both the civilian and military use, giving the company a profitable edge to support discounted ham pricing.



Photo A: These three receivers are being stored in a rack cabinet near my ham desk. While not restored, they are kept in a climate-controlled environment to prevent degradation due to improper storage. The top receiver is the Hallicrafters SX-42, which has coverage from the AM broadcast band through the FM broadcast band! While general coverage, it also features band spread tuning for the ham bands. This 1946 receiver was the replacement for the older SX-28 Super Skyriider. The larger receiver in the middle is an RCA AR-88 general coverage receiver. This receiver is more commonly found in Great Britain and Canada, being part of the lend-lease American war effort. It is well regarded by British amateurs. The lower receiver is a Hallicrafters SX-28. This 1940 receiver was produced in great numbers and is one of most desirable pre-WWII *boat anchor* receivers. It also features band spread tuning for the ham bands. In my opinion, this receiver is a classic and one of most comely receivers of that era. We'll be restoring all three of these in future columns.

Another driving force toward obsolescence was the continual improvements being made in the semiconductor field. Tube technology was considered passé, and hams were jumping on the solid-state bandwagon in droves.

For whatever reasons, many American manufacturers fell by the wayside — unfortunately they were too slow to respond to a changing market and perhaps unable to compete with the rising tide of Japanese imports.

Within a few decades, well-known and respected companies such as Hallicrafters, Hammarlund, EF Johnson and National Radio, to name a few, were either out of business or no longer involved in the amateur radio market.

Collecting Boat Anchors!

For no particular reason — other than they were available locally and I couldn't resist — I've amassed a few vintage Hallicrafters transmitters and receivers that are representative of the equipment made by Hallicrafters between 1940 and 1960.

My modest Hallicrafters collection consists of three SX-28 Super Skyriider receivers, (introduced in 1940), three SX-42 receivers (1946) and the HT-32 transmitter featured in this column.

None of these are prime collector grade, but I know I can restore them to be both useable and presentable with a little time and effort — and doing so is a big part of my hobby.

Photo A shows a few of my SX-42, RCA AR-88 and SX-28 receivers. These are rack mounted near my ham station. They are all awaiting restoration and are in generally poor condition — perhaps a *five* on a scale of *one* to *10*.

Despite fate having delivered these Hallicrafters sets into my province, there are many National Radio and Hammarlund receivers that I would love to eventually own. One of the Holy Grails on my want list is finding a National HRO-50 or HRO 60 receiver!

Unfortunately, all too many of these early radios ended up in landfills or were stored in damp cellars and garages once abandoned by their owners. Interest in *boat anchor* collecting is increasing — which means you'll probably end up paying more for the more desirable radios as time passes.

As with anything collectable, condition is everything. Collins Radio collectors have a strict set of guidelines to define condition, based on a scale of one to 10. Unfortunately, you'll see sets that should be listed being suitable only for parts or requiring extensive restoration as being in *good* condition on various Internet sites.

Another major problem is shipping costs, and that includes being able to properly package the radio to survive rough handling in transit.

Finding Your Dream Boat Anchor

Here's what I suggest: Look locally for radios. Place an ad in the local newspaper, or frequent your local ham club. Many *OTs* (old timers) still have vintage, retired sets stored away in attics, cellars or garages — and many would love to find a caring home for them.

Trust me, once you are 70 or 80 years old, the prospect of having to move one of this beasts means they'll probably not be trotted off to the local auction. Many of these radios still exist, but you have to search them out if you don't wish to pay for the convenience of shopping for one on the Internet!

For example, just last year I received a call from a gentleman two miles from my home who was cleaning out his father's

From this exclusive HIGH FREQUENCY filter originates the cleanest signal on the air!

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Figure A: This scan is of one of the original ads that kicked off Hallicrafters' HT-32 transmitter advertising campaign from the 1950s.

estate. This call yielded an SX-101A Hallicrafters receiver and a nice Barker and Williamson 5100 AM transmitter.

Unfortunately, both have rust damage and will need a lot of work. But I was able to see what I was buying before dropping a king's ransom on shipping.

The HT-32 transmitter featured in this column came from a local radio amateur who lives within walking distance of my home. He acquired it from another ham with the intention of restoring it, but ended up passing it on to me in a trade.

Condition, Condition, Condition!

At a minimum, judge what you are willing to pay based on condition. The chassis should be free of rust or damage caused by rodents. The front panel should be clean, and all of the knobs should be present and not chipped or damaged.

While you shouldn't power up an older radio that hasn't been played in years to see if it "works," you can remove the rectifier tube(s) to see if the filaments light up to verify that the power transformer hasn't been fried. You'd be amazed how many early rigs were made and sold without fusing!

Be wary of radios with cut power cords. Hams were known to cut off power cords to remind them not to plug a radio in — a missing cord could forewarn that it may have a bad power transformer or similar serious problem.

Even if you're lucky enough to find *boat anchor* radios locally that look new and tickle your fancy, they all need some degree of

restoration before they can be returned to the airwaves and enjoyed. Wax paper capacitors need to be replaced, old filter caps will fail and cause damage and chances are many of the resistors will be way out of tolerance. A radio that is in too poor shape may discourage you from attempting to restore before you even begin.

I'll reveal what you need to know and do as we progress with the HT-32 restoration and subsequent SX-101A receiver companion.

What About Tubes?

The Internet has made access to replacement tubes easier than it was even when these rigs were new. Fortunately most tubes were produced in abundant numbers and are still cheap. There are exceptions: many rigs relied on inexpensive TV sweep tubes. These are easily damaged and short lived, and thus are in very short supply and expensive.

Other once-common tubes, such as specific brands of the 12AX7A, are in high demand for HiFi audio applications, but there are lower-cost imports still being made that will do well for ham use.

Also, many early RF power amplifiers and transmitters used cheaply-available WWII surplus RF tubes — and again, supplies for some types are scarce.

Research before you buy. Each radio has its own set of problems and quirks. Researching first will give you some idea of what to pay and what to look for — and what to avoid.

Finding Your Boat Anchor Dream Radio

The HT-32 debuted in ads in the Fall of 1956. A scan of one of the first ads — **Figure A** — accompanies this column. The HT-32A came out in 1980, and the final revision — the HT-32B — was marketed between 1960 and 1964.

These were five-band SSB, CW and AM transmitters featuring a compliment of 20 tubes. The later models offered modest improvements such as push-to-talk (PTT) mike keying and FSK (frequency-shift keying) operation for RTTY (radio-teletype).

I'll show some simple modifications in the concluding column. My feeling is that Hallicrafters gave its engineering team a blank check to develop the best SSB transmitter possible, regardless of cost.

SSB crystal filters were first discussed in the ham literature only a few years earlier. Hallicrafters used two filters in cascade to achieve the desired SSB bandwidth and unwanted sideband rejection.

The VFO is a work of art, and is surprisingly accurate and stable.

The rig's circuitry is amazingly complex, to the point of excessiveness, and uses 20 tubes. Admittedly throwing money at a project doesn't always yield the best product, but the HT-32 is an impressive example of American engineering.

The replacement for the HT-32 transmitter was the model HT-37. It looked more modern, but it also looked to be a step down in quality. SSB generation was via a phasing-type generation scheme versus the costly crystal filtering used in the HT-32 models.

Phasing can yield excellent results, but it is touchier to keep adjusted. The HT-37 was obviously cheaper to manufacturer than the earlier HT-32, which featured massive, cast metal bezels and a heftier cabinet.

The companion receiver for the HT-37 transmitter, the SX-111, also looked cheesier. Obviously, the bean counters were now at work.



Photo B: This forlorn looking HT-32 was unceremoniously dumped in the back of my 1993 Voyager for the two-mile trip to my home.

I acquired the HT-32 transmitter from a technically minded local ham, and thus I had a good idea of what I was getting into. The power transformer was known to be good — this is a common weak spot in the HT-32 that will be discussed in greater detail next month.

Photo B is a shot that was taken of my just-acquired HT-32 as it sat in the back of my truck waiting for my neighbor to help me carry into the shop. Moving one of these beasts is a two-man operation.

Getting Started . . .

So, it's time to get this restoration rolling!

The first thing I needed to do was to decide how to handle the rust and chassis corrosion. Alas, **Photo C**, taken with the cabinet lifted, gives some idea the original chassis condition.

As to be seen later, it is worse than it appears here. I'd prefer to find a pristine and exceptionally clean radio — but who wouldn't? The reality, however, is this is what I could afford and what I had to work with and my goals were to return the set to one that is clean, presentable and working condition — not necessarily one in original factory condition or museum quality.

In other words, it could show some age and wear, so long as it looked cared for. I

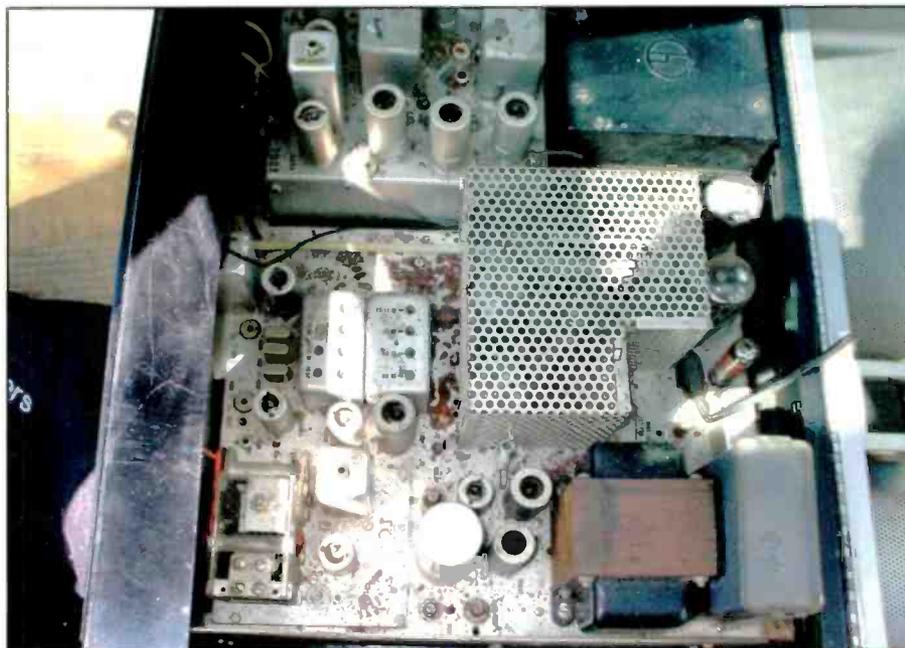


Photo C: The chassis showed signs of improper storage. Surface rust is present on the main chassis and SSB subassembly. This greatly reduces the value of radio to a serious collector.

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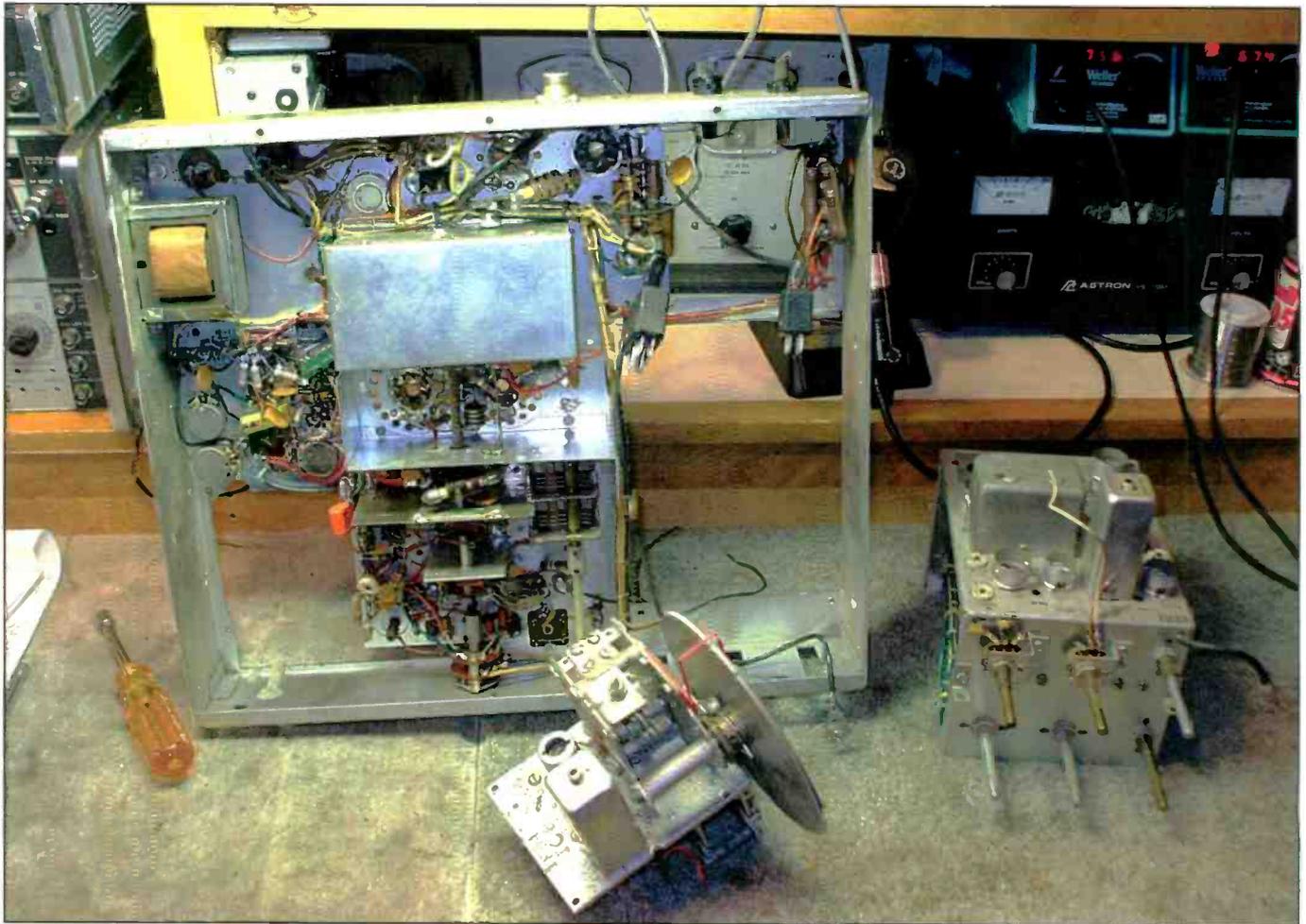


Photo D: Efficiently dealing with the rust meant removing as many subassemblies and components as possible from the top chassis.



Photo E: Alas, once the chassis was stripped of what was reasonably easy to remove, the extent of the damage was easier to see.

want my radios to enjoy and use and not be *shelf queens* only to be looked at.

Dealing With Dreaded Rust

I hate rust. Unfortunately the HT-32 main chassis and SSB generator had factory decals to show tube types and alignment points. That meant that any aggressive corrective action would most likely mean the loss of these decals.

Since the rust was deeper than the plating, the chassis was pitted. No amount of cleaning or scrubbing would fix this, and with the protective plating gone, whatever rust was removed would likely return.

An over-spray using a clear coating was considered. This would slow the rust, but the chassis pitting and discoloration would be very noticeable.

I decided that the chassis would have to be stripped of anything that could be removed. **Photo D** shows the chassis on the bench where I proceeded to remove several major subassemblies (VFO and



Photo F: Naval jelly, which uses phosphoric acid as an active ingredient, was applied with a toothbrush over the rusted areas.



Photo G: Again, naval jelly was carefully applied to the SSB generator subchassis. This product can cause more problems than it cures if allowed to come in contact with components or sockets.

SSB generator); the power transformer; filter choke and the oil-filled filter HV filter capacitor; and the PA (power amplifier) compartment components.

Photo E was taken just before the plate tuning capacitor was removed. The extent of the rust damage is evident in this photo. At times like this I wish I owned a bead blaster. Glass beads or ground walnut shells would make short work of cleaning the chassis. I used my old standby: naval jelly.

The active ingredient is phosphoric acid. **Photo F** (main chassis) and **Photo G** (SSB generator sub assembly) show the naval jelly at work.

I used an old toothbrush to apply the jelly to the rusty areas. Frequent reapplications are needed since the active ingredient is rapidly depleted due to chemical reaction with the iron oxides.



Photo H: Here's how the main chassis looked after rust was removed and all traces of the naval jelly were thoroughly washed away. Note that while the chassis now shines, blotchy areas remain where the rust has eaten through the factory plating. An unfortunate side effect was the loss of the factory decals for the tube types and alignment points.



Photo I: The SSB generator is now free of rust, but the chassis plating was ruined.

The jelly can damage electrical components, so some care is needed to keep the jelly where it is needed. As you can see, my applications were getting a bit sloppy, and I risked damaging the plating in the tube sockets and the creation of leakage paths in the variable caps on these assemblies.

Photos H and **I** show the main chassis and SSB generator after the rust was removed and after these sections had undergone further cleaning and buffing. They are masked and taped over. But we'll need to wait until next month to continue with the finishing touches on the mechanical restoration for the metal chassis and the SSB generator section.

Things will start to get interesting once we delve into the intricacies of this wonderfully old and complex transmitter. Until then, keep those solder irons warm and those old tubes glowing!

Military Monitoring in The Hub of the Low Country

by Mark Meece, N8ICW
ohioscan@gmail.com

“One-hundred-fifty years after the Battle at Fort Sumter, if we take a ride eight miles up Interstate 26 from the center of Charleston, we find the third largest city in the state — the city of North Charleston. Nicknamed ‘The Hub of The Low Country,’ it is also the home of Charleston Air Force Base . . .”

This month we travel to the U.S. Deep South to one of the original 13 colonies and a state steeped in military history.

In fact, this year marks the 150th anniversary of the American Civil War. It was on April 12, 1861 that Confederate forces fired upon Fort Sumter in Charleston Harbor. South Carolina became the first state to secede from the Union.

The battle at Fort Sumter was quickly followed by a blockade of the harbor by the United States Navy, and the bloodiest period in American history was underway.

One-hundred-fifty years later, if we take a ride eight miles up Interstate 26 from the center of Charleston, we find the third largest city in the state — the city of North Charleston. Nicknamed *The Hub of The Low Country*, North Charleston is also the home of Charleston Air Force Base, our focus this issue.

As part of a joint-use, civil-military airport, Charleston AFB shares two runways with Charleston International Airport both using the International Civil Aviation Organization (ICAO) identifier KCHS.

The history of airport operations in Charleston began in 1928 and by 1931 Charleston negotiated a \$60,000 bond issue to purchase property and develop the area for an airfield.

It operated as Charleston Municipal Airport until December, 11 1941.

Within four days of the attack on Pearl Harbor, Army Air Forces arrived at the field to establish coastal defense operations. Initially the base served as an air depot, however, by August 1942, antisubmarine missions were being flown out of the then-named Charleston Army Air Field.

As the United States became fully involved in World War II, the War Department had seen a need



Emblem for the 16th AS Special Operations. (Public Domain)



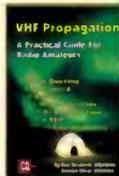
A C-17A from McChord Air Force Base comes in for landing. (Public Domain)



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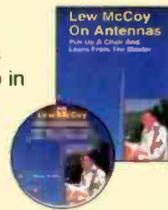
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to use the facility indefinitely. In March 1942, the city entered into a lease with the War Department so that the Army Air Forces would have full control of the facility. Commercial operations were permitted to continue.

The official name of the airport became Charleston Army Air Base on October 22, 1942. The Army Air Base portion was deactivated in 1946 after the end of hostilities.

The War Department released its 2,050 acres and \$12 million in improvements to the city of Charleston. This lull was short

lived however, as the Korean War brought about the reactivation of the base in 1952.

The arrival of 50 C-119 *Flying Boxcars* as part of the 456th Troop Carrier Wing on August 15, 1953 brought the base to operational status.

In February 1954, the 444th Fighter Interceptor Squadron was established as a tenant unit at Charleston AFB and charged with air defense of the east coast flying the F-86D Sabre fighter. The unit remained at Charleston until September 30, 1968 when it

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701 st AS	"TURTLES"	289.175	Air To Air
315 th AES		292.000	Air To Air
437 th AW	Callsigns: BASCO, GOON, IMPAC, LIFTR, MOOSE, MYRON, PALM, REACH, ROSCOE, THUG, TIN CAN, TONKA, VOLT, WANDO	301.000 314.450 319.400 340.600	Air To Air Air To Air PALMETTO OPS Command Post Air To Air
14 th AS	"PELICANS"	349.400	AMC Command Post
15 th AS	"GLOBAL EAGLES"	233.950	METRO
16 th AS		372.200	PTD
17 th AS			

Charleston AFB / Charleston International Airport (KCHS)

Aeronautical Operations:

113.500	VORTAC
119.300	Approach/Departure West
120.700	Approach/Departure West
121.900	Ground
122.950	Unicom
123.025	Helo Common
124.750	ATIS
126.000	Tower
127.325	Clearance Delivery
135.800	Approach/Departure East
239.000	Tower
257.100	Approach/Departure
284.000	Approach/Departure
291.650	Clearance Delivery
306.925	Approach/Departure West
317.450	Approach/Departure
348.600	Ground
379.925	Approach/Departure East

437th AW/315th AW Operations:

123.450	Air To Air
123.950	Air To Air
134.100	PALMETTO OPS Command Post
138.500	Air To Air
140.200	Air To Air
141.550	Air To Air
142.350	PALMETTO OPS Command Post
225.375	Air To Air

North Auxiliary Field (KXNO) Operations:

118.150	CTAF
118.500	Ground
120.475	Ground
124.150	Columbia Approach/Departure
139.600	Operations
235.775	Ground
338.200	Operations

Jacksonville ARTCC, Charleston RCAG Frequencies:

Low - Surface to 18,000 High - 24,000 to 35,000
Ultra High - 35,000 and above

120.125	Ultra High
127.950	Low
132.475	Ultra High
135.050	High
269.000	Low
282.250	Low
290.225	High
307.050	Ultra High
379.100	Low
381.400	High

(While doing research for this column, it appears Charleston AFB uses an EF Johnson P25 Trunked Radio System for land/mobile communications. I could not find information on it. If any readers have information, please drop a note to: < phioscan@gmail.com > and include Pop'Comm in the SUBJECT line. - Ed.)



An F-15 Eagle escorts a Charleston AFB C-17 over the Arthur J. Ravenel Jr. Bridge and the USS Yorktown. (USAF photo courtesy of TSgt. Russell E. Cooley IV)

was inactivated, bringing an end to fighter operations at the base.

In 1956, the USAF and the city of Charleston reached an agreement on joint use of the runways and control of the base. This agreement was superseded by a new 1973 joint use agreement. Under this new agreement, control and ownership of the airport was transferred to the newly-

established Charleston County Aviation Authority on January 1, 1979.

Command of Charleston AFB falls under the Air Mobility Command and 18th Air Force. Since 1966 the host unit has been the 437th Airlift Wing (then called the 437th Military Airlift Wing).

The 315th Airlift Wing of the Air Force Reserve Command (AFRC) is an associ-

ate unit based at Charleston Air Force Base and shares the base's compliment of C-17 *Globemaster III* aircraft with the 437th AW.

In June 1993, the 437th Airlift Wing received its first C-17. It discontinued flying the C-141 *Starlifter* in 2000.

Today, units continue to provide support operations for the Global War on Terrorism and Operation Iraqi Freedom.

In April 2009, a 210-day, \$30 million reconstruction project was started to rebuild runway 03/21. Once the reconstruction is complete in early November, the runway will have a stronger and more durable concrete-paved surface with asphalt overruns and 25-foot-wide paved shoulders.

During this time some of the crossings are closed and taxiways are being rerouted for the commercial flights. As such, commercial traffic is being redirected to the military side of the ramp causing congestion.

Runway 03/21 is not Charleston AFB's main runway. However, it does see some 30 to 35 percent of the air traffic.

Charleston AFB also controls North Auxiliary Field (KXNO) located in North, South Carolina, about 65 miles northwest of the Air Force base. It has one 10,000-foot-long primary runway



A Charleston AFB C-17 performs an air-drop training mission. (USAF photo courtesy of Senior Airman Timothy Taylor)



A Charleston AFB C-17 releases flares over the Atlantic Ocean. (USAF photo courtesy of TSgt. Russell E. Cooley IV)

(06/24) and one assault strip — 05/23. Both are asphalt.

This facility is primarily used for C-17 training by the 437th AW and 315th AW. The only personnel permanently assigned to this base are 10 USAF firefighters and one civilian groundskeeper.

You can find all information pertaining to frequencies and operational units in our *Listening In* section.

Reader Notes

We have a correction for the April 2011 issue to pass along from U.S. Navy veteran **Bruce Ames** who points out the proper name is the *SeaBee* Museum at Point Mugu. The *SeaBee* logo is a bee wearing an enlisted sailor's hat and carrying a machine gun.

The logo was popularized during WWII and *SeaBee* was Navy shorthand for C.B., or Construction Battalion.

Many thanks to Bruce for pointing out the inaccuracy and special thanks to him for his service to our great country and its citizens. (For more history, visit < <http://bit.ly/mbzpw2> >



Military Intercepts

We enjoy sharing monitoring information from our readers. If you would like to report your intercepts be it on HF, VHF or UHF, please send them to the email address listed in the column header. Please try to follow the format you see here and we will include them in a future column.

Doug Bell of Ontario, Canada, has not been monitoring as much as he would like lately due to extra working hours. Still, he provides us with our HF military intercepts for this issue heard using his trusty Sony ICF-2010 and Icom R-75 using a 50-foot-long, wire antenna.

3476: USB 0204 REACH 245 (C-17A #04-4135/
305th AMW, McGuire AFB, NJ)
wkg Gander Radio with a EQJR
selcal check.

0414 REACH 3115 (C-17A #03-3115/
172nd AW, 183rd AS, Thompson
Field, Jackson IAP, MS)
wkg Gander Radio with a CQAE
selcal check.

0421 REACH 377 (C-130H #62-1799/

19th AW, 61st AS, Little Rock AFB,
AR) wkg Gander Radio and
reporting fl 250.

5550: USB 0001

REACH 9745 (C-17A #97-0045/
437th AW, Charleston AFB, SC)
wkg New York Radio with a EQPS
selcal check.

5598: USB 0123

REACH 144 (KC-10A #79-1947/
305th AMW, McGuire AFB, NJ)
wkg New York Radio with a 050W
position report and a ESGR selcal
check.

0137

COAST GUARD 2004 (HC-130J
#2004/CGAS Elizabeth City, NC)
wkg New York Radio with
confirmation of fl 240. Flight
instructed to contact Moncton
Center on 134.9 VHF.

0142

REACH 974 (C-17A #08-8199/
305th AWM, McGuire AFB, NJ)
wkg New York Radio with a 050W
position report.

0212

REACH 691 (KC-10A #87-0118/
60th AMW, Travis AFB, CA) wkg
New York Radio with a 050W
position report and a GRFS selcal
check.

5516: USB 0228

REACH 595 (C-17A #07-7174/
436th AW, Dover AFB, DE) wkg
Gander Radio with a CSFL
selcal check.

5696: USB 0000

COAST GUARD 2113 (HU-25D
#2113/CGAS Miami,
FL) wkg CAMSLANT-Chesapeake
and reporting "operations normal."

5717: USB 0044

RESCUE 320 (CC-130E
#130320/14 WG, 413 SQ,
CFB Greenwood, NS) wkg
HALIFAX MILITARY
and SAR data passed.

0046

RESCUE 903 (CH-149 #149903/
9 WG, 103 SAR, CFB Gander, NF)
wkg HALIFAX MILITARY with
SAR data passed at 0046.

8864: USB 1249

REACH 128 (C-17A #03-3127/
305th AMW, 6th AS,
McGuire AFB, NJ) wkg Gander
Radio and receiving clearance to
climb to fl 250.

1326

REACH 524 (C-17A #99-0061/
62nd AW, McChord AFB, WA) wkg
Gander Radio with a 030W
position report and a CKPS selcal
check.

1420

CACTI 63 (KC-135R #60-0328/

		100th ARW, 351 st ARS, RAF Mildenhall, UK) wkg Gander Radio with a 040W position report.	1926	TUFF 42 (B-52H/917th BW, 93rd BS, AFRC, Barksdale AFB, LA) wkg HF-GCS Station OFFUTT and checking for latest traffic.
	2140	LOBO 01 (C-9B #160047/USMC, VMR-1, MCAS Cherry Point, NC) wkg Gander Radio with a 040W position report.	2122	REACH 944 (KC-10A #83-0075/60th AMW, Travis AFB, CA) repeatedly calling "mainsail" with no response.
8918: USB	0117	SLUFF 96 (KC-135R #60-0347/121st ARW, OH-ANG, Rickenbacker ANGB, OH) wkg New York Radio with a position confirmation.	2135	YANKY 95 (KC-130T #163311/VMGR-452, USMCR, Stewart ANGB, NY) wkg HF-GCS Station PUERTO RICO with a HF radio check.
	1603	SAM 8976 (C-32A #99-0003/89th AW, 1st AS, Andrews AFB, MD) wkg New York Radio and receiving instructions that no voice reports are required. Flight reported to be southbound to Miami. A MSFL selcal check was also performed.	11220: USB 2255	NAVY LL 006 (P-3C/"The Pro's Nest", VP-30, NAS Jacksonville, FL) wkg HF-GCS Station OFFUTT with a phone patch and mission data passed.
	1920	ASCOT 5721 (C-130J C-5/24 SQ, RAF Lyneham, Wiltshire, UK) wkg New York Radio with an airspeed confirmation.	11232: USB 2009	SENTRY 60 (E-3B #78-0576/552nd ACW, 964 th AACS, Tinker AFB, OK) wkg TRENTON MILITARY with a phone patch and flight data passed.
8983: USB	1514	CAMSLANT-Chesapeake repeatedly calling COAST GUARD 2117 (HU-25A #2117/CGAS Miami, FL) with no response.	2051	PEACH 33 (E-8C JSTARS #99-0006/116th ACW, 128th ACCS, Robins AFB, GA) wkg TRENTON MILITARY with a phone patch and weather.
11175: USB	1440	DECEE 55 (KC-135R/459th ARW, 756th ARS, AFRC, Andrews AFB, MD) wkg HF-GCS Station ANDREWS with a HF radio check.	2110	SABRE 36 (B-1B/7th BW, Dyess AFB, TX) repeatedly calling for OFFUTT COMMAND POST with no response.
	1500	REACH 648 (C-130H #86-0410/440th AW, 95 th AS, Pope AFB, NC) wkg HF-GCS Station PUERTO RICO with a phone patch and weather data passed.	2227	SHADOW 91 (E-6B #164410/"Shadows," VQ-4, NAS Patuxent River, MD) wkg TRENTON MILITARY with a HF radio check.
	1550	RHODY 40 (C-130J #06-1438/143rd AW, 143 rd AS, RI-ANG, Quonset State Airport, RI) wkg HF-GCS Station ANDREWS and flight data passed.	2231	CANFORCE 2349 (CC-130E #130328/8 WG, 436 SQ, CFB Trenton, ON) wkg TRENTON MILITARY with flight data and weather passed.
	1613	REACH 838 (C-17A #02-1099/437th AW, Charleston AFB, SC) repeatedly calling "mainsail" with no response.	13927: USB 1643	KING 982 (MC-130P #65-0982/347th RQW, 71 st RQS, Moody AFB, GA) wkg MARS Operator AFA7HS (Leawood, KS) with a personal phone patch.
	1802	REACH 409 (C-5B #86-0020/436th AW, Dover AFB, DE) wkg HF-GCS Station OFFUTT with a phone patch and flight data passed.	1734	REACH 415 (C-17A #04-4133/305th AMW, McGuire AFB, NJ) wkg MARS Operator AFA4HF (Orange City, FL) with phone patch attempt.
	1826	KING 77 (WC-130H #65-0977/920th RQW, 39 th RQS, Patrick AFB, FL) wkg HF-GCS Station ANDREWS with a phone patch to KING OPS and flight data passed.	2018	RAMA 81 (B-1B/7th BW, Dyess AFB, TX) wkg MARS Operator AFA6DD (Houston, Tx.) with a personal phone patch.

on HCJB in Quito, Ecuador May 28, 1961. Program host Allen Graham's surprise announcement came near the end of his April 30-May 1 show.

He cited as one reason HCJB Global's change of emphasis regarding direct shortwave broadcasts from Pifo, Ecuador, where HCJB terminated shortwave broadcasting in 2009 after nearly 58 years.

Three years earlier the station had ceased English-language broadcasts.

RNW moves Hörby SW transmitters to Madagascar

RNW (Radio Netherlands Worldwide) has confirmed the purchase of the three 500-kW, shortwave transmitters from the recently closed shortwave site at Hörby in Sweden.

The transmitters were being dismantled for shipment to RNW's station in Madagascar.

Recently, RNW management announced it intended to speed up the process of replacing shortwave with other distribution platforms, including the closure of its relay stations in Bonaire and Madagascar.

The Bonaire facility is scheduled for closure at the end of October 2012, but no closure date has yet been decided for Madagascar.

However, late last year RNW decided it was time to replace the nearly 40-year-old Philips transmitters at Madagascar. Rather than invest in new transmitters, the opportunity was taken to purchase the three ABB transmitters from the Swedish station at

Hörby, which was closed at the end of last year. These were installed in 1993.

There are two reasons for buying these transmitters: In order to guarantee the reliability of existing services from Madagascar it is necessary to replace the current 40-year-old transmitters as soon as possible, and the ABB transmitters are much more energy efficient, so that the relatively small investment will be recouped in a short time. (Source: RNW)

Digital+ launches 3-D demo channel on Astra

SES Astra announced that the Spanish operator Digital+ has launched a 3-D demo channel on Astra.

The new demo channel called *Canal+ 3D Demo* is broadcast via SES Astra's orbital position 23.5 degrees East and available free-to-air across Europe.

Digital+ has launched the new 3-D channel to allow installers and retailers to showcase 3-D television at the point of sale. The channel will feature high-quality 3-D content including features film clips and concert clips during daytime.

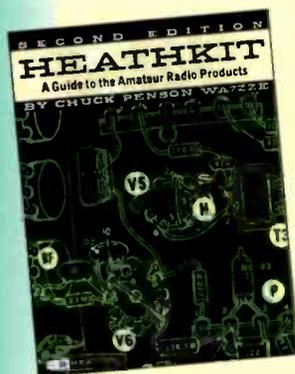
To date, SES Astra broadcasts six commercial 3-D channels from Europe's first broadcasters and program operators including *BSkyB* in the United Kingdom, *Canal+* in France, *Sky* in Germany, *Viasat* in Scandinavia and *Brava 3D* and *Penthouse 3D* for a pan-European audience.

In addition, SES Astra features its own 3-D demo channel bringing the total number of 3-D channels including commercial and demo channels to eight. (Source: SES Astra)

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* Rules & Regs

* Propagation

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Multiple Musings From Cowfield County

by Bill Price, N3AVY
chrodoc@gmail.com

"I think if the three of us ever get together in one place again, we absolutely must have a group picture taken. I might call it the Three Musketeers. Mrs. N3AVY might call us Larry, Moe, and Curly. We really are three-of-a-kind that a full house couldn't beat."

A while back I commented on a little shortwave receiver, which a friend gave to me. I guess it's common knowledge to my readers that I value receivers far more than I do transmitters, and I did mention that this little receiver worked "better" (one of my highly technological terms) than my old faithful GE Super Radio II on both AM and FM.

Well! I think I got more email about that little radio (a Grundig G3 — so you don't have to ask anymore) than I did when I said chocolate ice cream was better than vanilla!

I'm glad to know so many readers trust my judgment (and highly technical knowledge), but I'm especially happy to let everyone know that one of our advertisers (who doesn't even know I exist) is producing a product I can tell our readers about. It would take me two weeks to learn how to perform sophisticated tests of selectivity and sensitivity and rate them in decibels and milliwatts, but it's a good little radio and if you buy one I'll be glad to autograph it for you.

Highly-Charged Yard Work

The rain in Cowfield County has been falling mainly on my yard, which at one time was thigh-high, and the rain would consistently hold off until just before I was about to mow. When I finally got a dry enough day to cut it, I had the singular pleasure of wrapping a live strand of electric fence wire around the blade, which transmitted the pulsed current straight to my waiting hands.

The fence charger was several hundred yards away, and for the second time in less than a year, I opted to just "hold my breath" and untangle the wire as quickly as I could. Mrs. N3AVY says it has affected my brain. We could have a readers' poll to see if she's right.

Getting On the Air (Really), Part I

My attempts to get on the air have been stymied, but I remain undaunted. I have assembled the slingshot, the fishing reel (with line) and I stand ready to drill a hole for my coax (OK, Norm's coax) through the window sill.

Norm's trip through Cowfield County has been delayed, and so has Beezer's. It would be great if both of them got here at the same time. I could put on my hardhat and try to remember what it was like working with a tower crew.

Norm thinks he has a G5RV antenna (named for the smart ham who designed it) wrapped up somewhere in a closet, and between Beezer and Norm (with my supervision) we could have it up and running in — well — probably the best part of a long day.

By Any Other Name: The Three Amigos

On a serious note, Norm recently found that something like 98 percent of his arteries and a good portion of his digestive system were made up of glazed donuts — not a good thing, even for a young, reasonably fit and otherwise healthy individual. He had a good reaming (something that hasn't happened since we both worked at "that place that shall remain nameless") and tells me that he's recovering nicely, but will have his diet limited to tofu and sprouts for a long time.

Beezer continues fishing for food and sawing fruit from the neighbors' trees by stringing his ultra-fine antenna wire over the productive branches, while uniting happy youngsters everywhere with those precious musical instruments that will aid in their cultural development. Just like Professor Harold Hill, *only thinner*.

I think if the three of us ever get together in one place again, we absolutely must have a group picture taken. I might call it the Three Musketeers. Mrs. N3AVY might call us Larry, Moe and Curly. We really are three-of-a-kind that a full house couldn't beat.

Getting On the Air (Really), Part II

I really *do* expect to get on the air before the year draws to a close. I have the rig working and tested into a dummy load (a term that you shouldn't even bother explaining to a nonham). More importantly, I've regained possession of my extremely old Vibroplex bug, and I've been practicing diligently, making sure I can send at least twice as fast as I can copy. (Isn't that what we're supposed to do?)

There's no microphone with the rig. I've never uttered a word via SSB, and don't intend to start now. Maybe I can give out secret decoder rings for readers who want to see how bad my fist is. Special preference will be given to old time maritime and Coast Guard/Navy radiomen.

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Kenwood has essentially redefined HF performance with the TS-590S compact HF transceiver. The TS-590S RX section sports IMD (intermodulation distortion) characteristics that are on par with those "top of the line" transceivers, not to mention having the best dynamic range in its class when handling unwanted, adjacent off-frequency signals.*

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- Digital IF Filters
- Built-in Antenna Tuner
- Advanced DSP from the IF stage forward
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• 2 Color LCD

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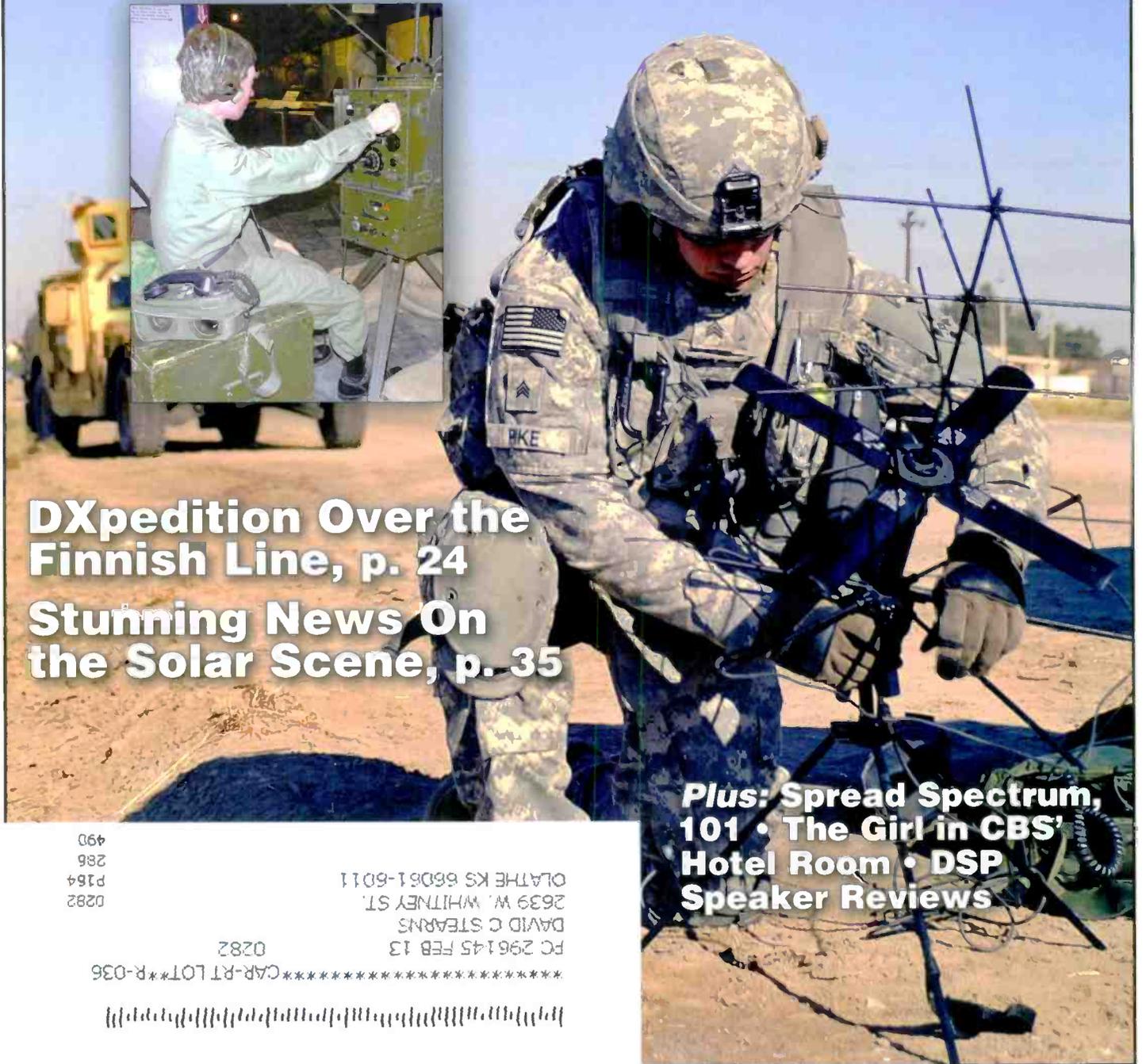
* For 1.8/3.5/7/14/21 MHz Amateur bands, when receiving in CW/FSK/SSB modes, down conversion is automatically selected if the final passband is 2.7KHz or less.

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