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Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local YAESU Dealer for specific details.

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Choice of the World's Top DXers
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Enjoy exciting international radio reception with the Icom IC-R75 communications receiver. With full coverage from 30 kHz to 60 MHz; all longwave, medium wave and shortwave frequencies are supported plus extended coverage to include the 6 meter amateur band. Some innovative features of the R75 include: FM Mode Detection (but not the FM broadcast band), Twin Passband Tuning, Two Level Preamp, 99 Alphanumeric Memories, four Scan Modes, Noise Blanker, Selectable AGC (FAST/SLOW/OFF), Clock-Timer, Squelch, Attenuator and backlit LCD display. Tuning may be selected at 1 Hz or 10 Hz steps plus there is a 1 MHz quicktuning step and tuning Lock. The front-firing speaker provides solid, clear audio. The back panel has a Record Output jack and Tape Recorder Activation jack. The supplied 2.1 kHz SSB filter is suitable for utility, amateur, or broadcast SSB. However, two optional CW/SSB filter positions are available (one per I.F.). The formerly optional UT-106 DSP board is now included and factory installed! Free Icom ball cap.

Order #0012 $619.95

The Yaesu FT-450D amateur transceiver operates 160 to 6 meters with 100 watts on all bands. The superb receiver covers 30 kHz to 54 MHz. Operating modes include USB, LSB, CW, AM and FM. A built-in TCXO provides outstanding stability. The Yaesu FT-450D expands on the success of the previous FT-450, providing features such as: built-in antenna tuning system, classically designed knobs, dedicated data jack for FSK-RTTY, CTCSS, user configurable functions, digital voice announcement of frequency, mode and S-meter, 50 regular memories and two voice memories, CW beacon function, 10 kHz roofing filter, key illumination, foot stand plus 500 and 300 Hz CW filters. If you are in the market for a good shortwave receiver, with the idea of going into amateur radio in the future, this may be your ticket. The FT-450D comes with: MH-31a hand mic, mic clip and DC power cord. This radio requires 13.8 VDC at 22 amps.

Yaesu Free Yaesu orange mug with FT-857D/897D.

The Yaesu FT-857D is the world’s smallest HF/VHF/UHF multimode amateur transceiver covering 160m to 70 cm with 100 watts on HF. Now with 60 meters and DSP2 built-in.

The Yaesu FT-897D is a multi-mode high-power base/mobile transceiver covering 160 m to 70 cm including 60 meters. Now with TCXO.

Yaesu Free Yaesu canvas urban case with FT-817ND.

The Yaesu FT-817ND is an improved, deluxe version of the hugely popular FT-817. It includes 60 meter coverage plus the new high capacity FNB-85 battery. This radio has an excellent shortwave receiver built-in and is a fully self-contained, battery-powered, low power amateur MF/HF/VHF/UHF QRP transceiver.
FEATURES

12 First Steps In Amateur Radio
Tips And Suggestions For Exploring This Rich And Wonderful Hobby
by Bob Witte, KØNR

20 Shortwave Relay Race
Making Sense Of The Broadcast Transmitters That Pass The Signal Baton On To You
by Gerry Dexter

27 Tech Showcase:
The Wouxun KG-UVD1P Dualband Transceiver
This Budget Import Handheld Offers Great Functionality For Ham, Business, Public Safety, And More
by Chuck Gysi, N2DUP

FEATURED COLUMNS

32 ScanTech
Portable Power For The New Gizmo Generation
by Ken Reiss

37 Broadcast Technology
Dress Up Your DX With A Bowtie: A New Configuration Of Broadband Loop Antenna
by Bruce Conti

59 RF Bits
Having Fun With Digital Voice (D-Star)
by Dan Srebnick, K2DLS

ON THE COVER

There’s no radio like ham radio. And with easier licensing and terrific bargains on gear, there’s never been a better time to get started—or to get back involved. Bob Witte, KØNR, tells you how in “First Steps In Amateur Radio,” starting on page 12. (Cover Image: Eric Owen, KD4MZM, a member of the Sarasota Amateur Radio Association, pitches in with antenna maintenance atop Sarasota Memorial Hospital, Sarasota, Florida. Photo by Larry Mulvehill, WB2ZPI)

COLUMNS

10 Horizons
Your Pocket Is Talking
by Rob de Santos

42 World Band Tuning Tips
World News, Commentary, Music, Sports, And Drama At Your Fingertips

46 Global Information Guide
Black January, But A Few Glimpses Of Sun
by Gerry Dexter

56 The Antenna Room
In The Belly Of The Beast—Biological Antennas
by Kent Britain, WA5VJB

62 The Propagation Corner
Sunspot Cycle 24 Makes Progress
by Tomas Hood, NW7US

66 Ham Discoveries
Printed QSL Cards Still Necessary? You Bet!
by Kirk Kleinschmidt, N70Z

70 Civil Aviation Monitoring
Basic Necessities For Air Scanning
by Tom Swisher, WA8PYR

73 Shannon’s Broadcast Classics
Judging A Station By Its Cover
by Shannon Huniwell

78 The Wireless Connection
The Zenith 8G005 Trans-Oceanic Restoration Challenge—Part IV
The Final Chapter...
by Peter J. Bertini

84 The Loose Connection
Keyed Up In Cowfield
by Bill Price, N3AVY

DEPARTMENTS

4 Tuning In
An Editorial

6 Newsworthy
Unwired, InfoCentral, And Washington Beat

44 Radio Fun
Trivia And Toons

45 Power Up
Radios & High-Tech Gear

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**Super Active Antenna**

"World Radio TV Handbook" says MFJ-1024C is a "first-rate easy-to-operation 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. Switches into tuned or 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.

**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...good for date...performs very well indeed." Tuned circuit 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.

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Plug this compact MFJ all band active antenna into your receiver and you’ll hear strong, clear signals from all over the world, 300 KHz to 200 MHz including low, medium, shortwave and VHF bands. Detachable 20" telescoping antenna. 9V battery or 110 VAC MFJ-1312B, $15.95. 3/4x1/2x4 in.

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, weather, aeronautical, commercial and maritime traffic...performs very well indeed." You’ll read interesting commercial, military, diplomatic, weather, aeronautical, commercial and maritime RTTY.

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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.

**Easy to use -- just push a button to select modes and features from a menu.**

It’s easy to read -- front-mounted 2 line 16 character LCD display has contrast adjustment. It’s easy to tune -- a precision tuning indicator makes tuning your receiver easy for best copy.

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Changes In Radio... And Changes In Popular Communications

The French phrase rolls trippingly on the tongue: Plus ça change, plus c’est la même chose. English speakers say “the more things change, the more they stay the same.” We lose the lyrical quality, but keep— I think—the nonsensical value. The more things change, the more we have to adapt.

Last month, I wrote about les changes in the BBC World Service, which is for all I can remember where I first heard the French expression and which is busily engaged in slashing its foreign language services, budget, and jobs. This month, the slab of bloodied broadcasting meat on the chopping block is home-grown, the Corporation for Public Broadcasting. Both governments say they are simply out of money, and both corporations were just elitist, and, well, so yesterday. No more taxpayer money for them!

Of course, what’s really changed, far more than tastes and technologies—and even the available funds when you see what still gets spent—are priorities. Education is going out of style, because the profits it creates are not neatly measured on the bottom line of a spreadsheet. Heck, we might not see any return on imparted knowledge for decades! And who can measure that kind of stuff anyway? Red pen, please.

No doubt plenty of Pop’Comm readers were no fans of the CPB—even before NPR’s latest self-inflicted wound—believing that it has a left-wing tilt. But you gotta admit, even propaganda tries to engage the brain. Clear Channel, not so much. Forget about the stuff that crawls onto television. I could go on, but I’ve got a lot of ground to cover...

Any readers with steel-trap memories may think the title of this editorial sounds familiar. They’re right. It’s the same one I used almost exactly four years ago, in June 2007, when I introduced myself as the editor. This month, I use it to bow out of this position and hand this page, and the reins of the magazine, to a new editor. I have absolutely loved this job—working with the regular columnists, the feature contributors, the readers at trade shows, and learning so much from all of the above. If there was one thing I could have changed about it, it was the unforgoing monthly deadlines that kept me tied to a computer most of the time and cut into my globetrotting adventures/misadventures (I log my countries on site). So, since I couldn’t change the nature of the magazine business, I’ve decided to change my association with it, switching to freelance writing and editing, and untethering myself to remove that one sticking point.

I’m happy to report that what skills I may have gathered over the years will still be put to use in a way that involves both radio and many of the wonderful people I’ve met through it. When he heard the news that I was stepping down, Thomas Witherspoon, founder and director of the non-profit organization Ears to Our World (if you don’t know about them you haven’t been paying attention) asked me to join ETOW’s board of directors, a position I have humbly accepted. I hope my hitherto completely self-serving media involvement and globetrotting can now also serve a little good.

Between these new challenges and the red-wing blackbirds returning to the marsh near my house, I have so much I’m looking forward to. I sincerely wish you all the same.

Introducing (Drum Roll)...

Richard Fisher, KI6SN, Pop’Comm’s long-time “Washington Beat” columnist and the editor of sister publication World Radio Online since its April 2010 issue will be taking the editor’s chair I’m vacating. He’ll still serve as WRO’s editor and continue to write his regular columns for that magazine, Pop’Comm, and another sibling, CQ. Richard’s interest in the radio hobby goes back over 50 years. Moreover, he’s been a writer and journalist for nearly as long. In short, he is eminently qualified to guide Pop’Comm through changing times. While he’ll of course place his own stamp upon it, in his hands I know it will remain the high-quality, interesting, and fun publication it’s always been.

OK, I misspoke at the outset: In this one instance, the more things change, the more they stay the same. Vive la Pop’Comm!

by Edith Lennon, N2ZRW
editor@popular-communications.com
Icom has the receivers for the experts...

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- 0.005–3335.000MHz*
- USB, LSB, CW, FSK, FM, WFM, AM
- 1020 Alphanumeric Memory Channels
- P25 (Option UT-122)
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- 1250 Alphanumeric Memory Channels
- Dualwatch Receive
- 4-hour Digital Recorder

**IC-RX7** Track Ready
- RX: 0.150–1300.0MHz*
- AM, FM, WFM
- 1825 Alphanumeric Memory Channels
- 100 Ch/Second High Speed Scan
- Computer Programmable
- Water Resistance Equivalent to IPX4

**IC-R6** Pocket Compact
- RX: 0.100–1309.995MHz*
- AM, FM, WFM
- 1300 Alphanumeric Memory Channels
- 100 Ch/Second High Speed Scan
- Computer Controllable

**IC-R2500** 2 Wide Band RX in 1 Black Box
- 0.01–3299.99 MHz*
- AM, FM, WFM, SSB, CW (Main)
- AM, FM and WFM (Sub)
- 1000 Memory Channels
- Optional D-STAR (UT-118)
- Optional P25 (UT-122)
- Optional DSP (UT-106)
- PC Controllable

For those just getting started...

**IC-R75** Wide Band Receiver
- 0.03–60.0 MHz*
- Triple Conversion
- Twin Passband Tuning
- Digital Signal Processing (DSP)
The Weirder Side Of Wireless

You Can't Say That On (Or At) TV!

Martin Soloman, a retired plumber and ex-seaman, was convicted by a court in Gloucester, England, of disturbing his neighbors by launching foul-mouthed rants at politicians on his TV. In a report in The Daily Mail's MailOnline.com, the F-bomb laced tirades invariably happened late at night after stops at the local pubs and frequently woke neighbors and their young children. Two prior convictions did little to change the man's behavior so the judge imposed an unusual sentence: After serving jail time of 14 months the former sailor was banned from having a radio or TV in his home. The magistrate decreed, "You shall not have in your possession at any time during the next two and a half years any radio or TV receiving device. If that is the catalyst for your antisocial behaviour it will not be present when you come out of custody."

So please, dear readers, remember this cautionary tale: If a sailor can go to jail for cursing, no one is safe. Oh, and better not drink and watch TV.

Jerky Boys

Prince Albert may no longer be in the can and Amanda Kissenhug is nowhere to be found, but every generation finds a way to indulge in that most juvenile uses of communications: the prank call. The gamut typically runs from mildly amusing to pretty darn offensive, but people cross the line when they interfere with emergency bands. WFTV 9 Orlando recently reported on a story out of Lake County, Florida, where three men, ages 19 to 21, were arrested after stealing an off-duty detention deputy's radio from his personal vehicle and making fake calls for help, including one saying shots fired, officer down. A bloodhound was used to track the men for a short distance, and a piece of evidence along the trail—an empty beef jerky package—led deputies to the local 24-hour CVS Pharmacy, where the three men were seen on surveillance video entering and exiting the store prior to the burglary. Once again criminals foiled by littering.

Twelve Homogenous Men

Sure he seems fair and unbiased, but let's see what his Facebook friends have to say about him...Reuters recently reported on the latest trend in jury selection: checking out potential jurors on social networking sites like Facebook. The goal is to use the information to get the most favorable juror possible. Lawyers and jury consultants are using the Internet to ferret out some of the most intimate details of potential jurors' lives including income level, personnel history, politics, and how well their Farmville building and Mafia Wars are going. Lawyers are restricted to the types of questions they can ask potential jurors, often just name, age, and marital status, but Goggle can often be much more revealing.

Was That A Sin? Don't Worry, There's An App For That

"Bless me father for I have sinned, let me get the details from my iPad," might soon be intoned to clergy, thanks to Confession: A Roman Catholic app, available for iPad and iPhone users for $1.99. Targeted to people who may not get to the confessional booth very often—and presumably therefore have a long list—this software developed by Little iApps helps people keep track of their sins. It also helps them decide just which sins have been committed by taking the user through a review process, including the Ten Commandments, with questions attached to each—a process known as an examination of conscience. Luckily the app lists questions with check boxes in case one forgets answers to questions like "Have I wished evil upon another person?" or "Have I used any method of contraception or artificial birth control in my marriage?" While designed to spur Catholics on the fast track to repentance, the app does not distribute absolution or penance—you still need a real, live priest for that...for now...
Iran's Cyber Army Hacks VOA, U.S.-backed Websites

An Iranian cyber group announced that it has hacked the Voice of America (VOA) and all its affiliated websites. The Iranian news agency Fars said the move came in response to what it called "the false reports released by the VOA and other websites on the spread and progress of seditious moves in Iran." According to the news agency, which is thought to have close ties to Iranian authorities, "VOA and its affiliates have long been supporting anti-Islamic Republic groups and sought to provoke unrests in Iran. The Voice of America is the official external radio and television broadcasting service of the United States' federal government, but it acts as a complementary and media arm of the US spy agencies." (Source: Fars News Agency)

New Shortwave Service To Be Launched

Taiwan-based PCJ Media has announced the creation of a new international shortwave radio service with targeted programming to Latin America, Eastern Europe, Asia/Pacific. PCJ sees an opportunity to fill a void being left by large publicly funded broadcasters. In the last few months a number of well-respected international broadcasters have announced that they will drop their shortwave transmissions to these regions in favor of the Internet and podcasts. In response, PCJ’s new service would broadcast in five languages (Farsi, Mandarin, Spanish, Ukrainian/Russian, English) with programming targeted to audiences of those languages. New distribution platforms such as the Internet will also be used. Frequencies and schedules were to be announced at a later date.

(Source: Radio Netherlands Worldwide Media Network Blog)

UK Abandons Plans To Switch Off FM In 2015

The UK’s Broadcast Minister Ed Vaizey has confirmed to a group of MPs that the FM waveband will not be switched off in 2015 and will remain as one of a number of multi-platform transmission options for local commercial radio. He also confirmed that he was prepared to take a look at the recent decision by Ofcom to limit license renewal terms for local commercial stations to just seven years.

(Source: www.mediauk.com)

BBCWS Could Return On SW To Cover Major Events

The BBC is considering plans to reinstate axed shortwave World Service radio broadcasts on a short-term basis to regions where major events are taking place, following the revolution in Egypt, reports The Guardian. Shortwave radio broadcasts of the BBC Arabic service, which has around 400,000 listeners in Egypt, were to be significantly reduced as part of plans to save £46m from the World Service budget, a 20-percent cut from its £253m annual budget. World Service broadcasts on shortwave are being cut back in the Middle East, Europe, Africa, and Asia as part of the cost savings drive. An email sent to Bush House staff by Peter Horrocks, the BBC’s global news director, revealed plans to respond to major events in particular regions by buying up shortwave radio capacity, against a backdrop of violent political uprising sweeping across the Middle East.

(Source: The Guardian)

Deutsche Welle Satellite Transmissions Jammed

Deutsche Welle has experienced jamming of its signals from the Hotbird 8 satellite. Engineers at Deutsche Welle detected interference of transmissions coming from the Hotbird 8 satellite beginning Monday at 13:07 UTC. It is believed the DW transmissions are being “jammed” by foreign signals, though the source of the signals could not be confirmed. Deutsche Welle last experienced jamming in February 2010, which was believed to have emanated in Iran. The disturbances affected DW-TV Europe, DW-TV Arabia, as well as very high frequency (VHF) and shortwave signals in regions including Europe, the Middle East and parts of Asia. TV live streaming on Deutsche Welle’s multi-language news website was also affected by the disturbances.

(Source: Deutsche Welle website)

DRM Shortwave Broadcasts Starting In Malaysia

DRM broadcasts were to begin from Malaysia following the recent installation of HF Transmitters in Malaysia. DRM Members Continental Electronics recently completed the installation of three HF transmitters in Malaysia and following a recent series of successful trial broadcasts planned to begin regular DRM broadcasts. There has also been an undertaking to purchase a large order of DRM receivers. According to a press release from Continental, Radio-Television Malaysia has acquired three 100-kW DRM-ready HF transmitters, along with associated equipment. They were installed in the RTM Transmitting Station at Kajang, which will enable RTM transmissions in digital DRM format as well as conventional analog AM.

(Source: DRM Consortium)
House Resolution Puts Public Broadcasting Funding In Peril

By a vote of 235 to 189, the U.S. House of Representatives has passed a resolution that in part would eliminate funding for the Corporation for Public Broadcasting—a potential loss of more than $400 million in subsidies to the Public Broadcasting Service (PBS), National Public Radio (NPR), and about 1,300 locally owned stations nationwide. H.R. 1, the “Full-Year Continuing Appropriations Act, 2011” was approved by a 46-vote margin in the early morning hours of February 19. The CPB receives around $420 million from the federal government annually—or $1.40 cents per capita—according to a report published on ParkRecord.com, citing CPB grant calculations. Conservatives in particular had called for pulling taxpayer support of CPB. Shortly after gaining majority status, House Republicans set their sights on the corporation in an effort to slash $61 billion from a government spending bill, according to McClatchy Newspapers and other published reports. The Democratic-led Senate and White House were expected to defend the CPB. The GOP would eliminate CPB’s funding, which totals $445 million for fiscal 2012, or 0.01 percent of President Obama’s proposed $3.7 trillion budget. “We will continue to work closely with our member stations, other national public broadcasting organizations and the millions of Americans who support public television to make our case to Congress,” PBS President and CEO Paula Kerger said in a statement.

House Bill Takes Aim At Radio Amateurs’ 70-cm Spectrum

A bill introduced by a powerful U.S. House of Representatives committee chairman could endanger use—as the Federal Communications Commission and the new session of congress put a high priority on creating a nationwide interoperable broadband network for emergency responders. “Virtually all plans involve dedicating certain frequencies in the 700-MHz band to creating the network,” an Internet story from CQ Amateur Radio reported. “These frequencies were freed up by the migration of television broadcasting from analog to digital transmissions, and were initially scheduled to be auctioned off for commercial broadband use.” According to CQ, the FCC issued a Third Report and Order and Fourth Further Notice of Proposed Rulemaking in an ongoing proceeding to set up the service. “In addition, several related bills have been introduced into the new session of Congress, notably one by Senate Commerce Committee Chairman Jay Rockefeller (D-West Virginia) and another by House Homeland Security Committee Chairman Peter King (R-New York).”

According to the American Radio Relay League, King’s bill, HR-607, “includes a provision to provide alternative spectrum to commercial users who would lose potential frequencies through the creation of the emergency response network,” CQ said. Among the frequencies that would be subject to reallocation are 420-440 MHz, part of the 70-centimeter band currently shared by amateurs and federal government radiolocation services, such as PAVEPAWS radar. The ARRL has promised to fight that portion of Rep. King’s bill and is encouraging radio amateurs to write their congresspersons to oppose HR 607 (see http://bit.ly/f9S5JJ).

AM Station Punished For Staying Up Too Late

A New Orleans-area daytime AM station is being fined $14,000 by the FCC for staying on the air later in the evening than authorized. KGLA (1540 AM), “Radio Tropical Cafiente,” may broadcast “for a limited period of time before and after sunset,” according to the Commission. It says the station—owned by Crocodile Broadcasting and based in Gretna—“willfully and repeatedly violated the rule by operating later than allowed.” The 1-kW daytime-only station was cited for failing to keep a complete public inspection file, as well. “When questioned about night-time operations, the general manager admitted that the station had been operating at reduced power throughout the night for a number of years,” FCC documents revealed. “He stated that he thought the station was authorized to operate at night.” The investigation was initiated when it received an interference complaint from another station. “A commission agent from the Enforcement Bureau’s New Orleans Office witnessed the station operating after 8:30 p.m.”

Commission Targets Illegal Cell And GPS Jamming Devices

The FCC announced that it is mounting “new efforts to clamp down on the marketing, sale, and use of illegal cell phone and GPS jamming devices,” according to published reports. “The Bureau released two Enforcement Advisories and a downloadable poster on cell phone and GPS jamming that warn consumers, manufacturers, and retailers that the marketing, sale, or use of cell, GPS, and other jamming devices is illegal,” a report on RadioInk.com said. In February “the Bureau issued warnings to four well-known online retailers—including the company that markets the TxTStopper—directing them to cease marketing jamming devices to customers in the U.S. or face stiff fines.”

NEWSWORTHY
Washington Beat

Capitol Hill And FCC Actions Affecting Communications

by Richard Fisher, KI6SN
PSR-800 EZ Scan
Digital P25 Scanning Receiver

Scanning just got easier!

The first scanner that lets you hear what you want to hear without knowledge of local communication systems!

- Select only the local systems you want to monitor!
- Special requests? No problem – you can add favorite frequencies with the included PC software.
- The PSR-800 combines simple controls like those used in an MP3 player with the power and sophistication of a state-of-the-art scanning receiver!
- Designed to provide unprecedented ease of use, for beginners and experts!
- Includes a 2GB micro SD Card equipped with a special onboard library containing the entire USA and Canada database for all known digital & analog trunking systems and many conventional frequencies.
- The media player type menu allows you to instantly access trunking systems and conventional frequencies used by Public Safety, Government, and Businesses throughout the United States (and Canada) without training, without a manual - even if you have never operated a scanner before.
- Select your state, your county and view a list of objects you can monitor. Select the boxes of the items you want to hear. It is very much like using a MP3 player - that is, if you could buy an MP3 player with all music already installed!

Visit your favorite GRE dealer today to find out more about the PSR-800!

www.greamerica.com
Your Pocket Is Talking

by Rob de Santos
commhorizons@gmail.com
Twitter: @shuttleman58

You’ve probably seen and heard about the newest credit card systems that allow you to “wave” your key ring or credit card in the vicinity of the business terminal and pay for your purchase. This is an example of “proximity card technology.” You’ve also almost certainly heard of radio frequency identification (RFID) tags. Many items of electronics and clothing are tagged for inventory and security purposes. Its closely related cousin, near field communications (NFC), is the equivalent for mobile phones and other devices. This trend represents the latest in “convenience,” and there are implications for use of the HF spectrum.

In more formal terms, NFC is a technology that allows two devices, at least one powered, to exchange information using magnetic inductive coupling. Usually each device has an embedded loop antenna, which together create an air core transformer, establishing a communications circuit within the “near field.”

So much for the definition. NFC uses a standard frequency of 13.56 MHz. The bandwidth allocated is 1.4 kHz, but it’s quite common for the signal to spread as much as 0.9 MHz on either side of the carrier. Unlike technologies like WiFi or Bluetooth that use GHz-range frequencies, this one sits smack in the HF range. If I don’t have your attention by now, you aren’t a ham or SWL. By design, the power levels should only allow effective communications out to distances of six to eight inches, but in practice, highly sensitive receiving devices such as the ones in your shack are going to pick up the hash farther away.

I’m sure to average consumers or business owners it’s “all magic” anyway. They won’t be interested in the ASK modulation or baud rates used. It won’t matter that the technology uses HF frequencies or that the actual bandwidth is more than 1,000 times wider than the specifications. Even the fact that it is electromagnetic communication isn’t important to them. But it should be important to you, the reader.

Before going further, let me be clear that I don’t necessarily oppose this technology. The frequency is allocated for this type of use and does not require licensing in most of Europe and North America. RFID devices are already using the frequency. There’s no question that more and more technologies will continue to encroach on our favorite bands for listening or transmitting. It’s inevitable as a result of technological development and the myriad commercial opportunities that exist. Potential applications include mobile ticketing, electronic payment, smart advertising, biometric identification, to name just a few. My concern is how we cope with this and where do we go from here.

Pop’Comm readers can certainly think of lots of applications for this around our own homes and perhaps can even invent one or two that would be worthy of a patent. We can also imagine the “noise” this will add to our listening environment. (Hint: Don’t keep your NFC-enabled mobile phone on the table next to your transceiver!) But it’s the classic case of “no such thing as a free lunch.” Moreover, the existing specifications and applications for NFC have serious and unresolved security and privacy issues.

If, in your opinion, the downside of NFC outweighs the upside, it’s worth considering that rear-guard “don’t touch my frequency” campaigns aren’t likely to work. Even if you add all the scanner listeners, SWLs, hams, and any “organized” communications hobbyists together, we’d still fall short of the numbers needed to win that kind of battle. What we can do instead, as evidenced by the broadband over power line (BPL) saga, is point out where spectrum needs protection and how we can co-exist with NFC and other technologies. More wireless technologies are coming and we need to be aware and involved.

As I noted in past columns, many of us are the “technological sophisticates” of our social and family groups. We can lead by example and by providing well-thought-out arguments concerning the pros and cons of these uses of the RF spectrum. We can support our hobby organizations so they have the resources to act on our behalf. We also need to understand that some of these technologies might be our friends! You really don’t want to give up your TV remote, mobile phone, or Bluetooth earpiece do you?

How do you feel about technologies such as NFC? Do you have, or would you consider using, a mobile phone, credit card, or passport that used it? Drop me a line using something other than NFC and let me know what you think.
The HOME PATROL is unlike any scanner you’ve ever had. Talk about easy...how about simply entering your zip code or city on the touchscreen and you’re there. Connect an optional GPS receiver and the HOME PATROL automatically selects channels for your precise area even as you move area to area.

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Work the world—and beyond—with ham radio. Expedition 11 Flight Engineer and NASA ISS Science Officer John Phillips enjoys an amateur radio contact with students at the Albany Hills State School in Brisbane, Australia. Phillips’ callsign is KE5DRY. (Image courtesy of NASA)

First Steps In Amateur Radio

Tips And Suggestions For Exploring This Rich And Wonderful Hobby

by Bob Witte KØNR, bob@k0nr.com

Are you just starting out with your brand new FCC Technician license? Or maybe you’ve been licensed for a while but have taken a break from the hobby? It is easy to “get stuck” somewhere along the way, so let’s look at some ideas on how to get started (or re-started) with the hobby.

With no Morse code requirement, the knowledge you need for the entry-level Technician license can be easily acquired via self-study or attending a license class. After passing the FCC exam, the question quickly becomes: what do I do next? The Technician license is just a beginner’s permit; the starting point for becoming an amateur radio operator. And for some, actually getting on the air and gaining some experience with radio communications can occasionally pose a bit of a challenge.

With the Technician License, you have access to all the ham bands above 50 MHz. You also have voice privileges on the most popular section of the 10-meter band (SSB from 28.3 to 28.5 MHz). Of course, if you want to use Morse code, you can take advantage of working the other high-frequency bands. And it doesn’t take much equipment, either (see “Basic FM VHF/UHF Starter Kit”), so diving right in is easy. Let’s take a look at just a few of your operating options.

FM: The Utility Mode

A logical first step for a new Tech is to get up and running on the local VHF and UHF FM repeaters. This provides some
very practical communications and a connection with the local ham community. VHF FM gets used for so many activities—from public service and emergency communications to just chatting across town—that it's sometimes referred to as the utility mode. While you'll likely want to expand beyond FM, it is the logical starting point.

To use repeaters, you'll need a basic FM transceiver, either a handheld or mobile radio. Some hams just choose to pick up a single-band 2-meter radio, but the multiband radios are an attractive option (especially for the 2-meter and 70-cm bands). The additional cost is not that great and there are lots of additional frequencies and repeaters available there.

How do you find your local repeaters? Get a copy of the ARRL Repeater Directory, which is the authoritative guide for repeater listings, and see what repeaters are in your area. You can also do some searching on the Internet, looking for radio clubs that support the local machines.

The next step is to program your radio with the proper frequency, transmit offset, and access tone for each repeater. You'll also find activity on the 2-meter and 70-cm simplex frequencies, so be sure to program them into the radio, as well. In particular, include the FM calling frequencies (146.52 MHz and 446.00 MHz), which are useful nationwide. Modern FM VHF radios are packed with features, so it can be a challenge to get it all programmed correctly. Once you get the local repeaters and simplex frequencies programmed into memory, however, life gets easier.

Repeaters tend to attract a particular set of users who form a kind of commu-
SATELLIT 750
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FIELD RADIO S450DLX
AM/FM/Shortwave Field Radio with Liquid Crystal Display

TRAVELER II DIGITAL G8
AM/FM/Shortwave Radio with World Time, Great for The Global Traveler

Available at: amazon.com, RadioShack, The Source, Universal Radio Inc.
A common way to get started on the VHF/UHF bands is to obtain a dualband handheld transceiver and a few key accessories. Get a transceiver that covers at least the 2-meter (146 MHz) and 70-cm (440 MHz) bands, with 5-watt output power. Give some careful consideration to some key accessories, namely a spare battery pack, an extended length antenna, a 12-volt power cord, and a small magnetic mount antenna for mobile use.

Handheld radios are very convenient and versatile, but the battery has limited capacity and will always go dead when you least expect it. Having a spare battery and a cigarette plug power cord can really help with this issue. The “rubber duck” antenna that comes with every radio is also convenient, but it radiates like a wet noodle. A longer antenna (1/2-wave is best) will provide a much bigger signal without consuming additional battery capacity. The same thing goes for a magnetic mount antenna, which puts your signal on the outside of the vehicle when you are mobile.

Below are some typical prices for new gear—you can always shop around for a better price on new or used equipment, too:

- Dualband FM Handheld Transceiver (Yaesu FT-60, ICOM IC-T70A, or similar): $220
- Spare rechargeable battery (matches handheld radio): $30
- Longer antenna for handheld use (Diamond SRH77CA, Comet SMA24, or similar): $20
- Magnetic mount antenna (Comet M-24S, Diamond MR77 SMA, MFJ MFJ-1724B, or similar): $30
- 12-volt Cigarette Plug power cord (matches the handheld radio): $25

For satellite work, a small dualband directional antenna is the way to go, such as the Arrow II 146/437 antenna or the Elk 2M/440L5 antenna (approximate cost: $120–$140)

The Beyond FM Station

If you want to work 10 meters and/or 6 meters, you’ll need a transceiver capable of SSB on these bands. Typically, this is going to take you to a full-blown HF transceiver that also includes the 6-meter band. There are many choices out there starting with mobile rigs, such as the Yaesu FT-857D, ICOM IC-7000, Kenwood TS-480SAT (approximate range: $800–$1300) and extending up into more advanced transceivers. Some of these radios include all modes on 2 meters and 70 cm, which is a real bonus.
Meet Some People

Obviously, one way to meet and get to know other radio amateurs is by talking on the air. But here’s a little secret: you may meet people on the air but often the face-to-face interaction you have will really cement the relationship. Meeting someone in person who shares a common interest and (maybe) working on a project together really helps. Luckily it’s often easy to move from being an unknown voice on the radio to someone who shows up in person.

Your local amateur radio club is a great place to meet other hams, so look around for a radio club that matches your interests. Just like repeaters, each club tends to have a different focus and personality. The ARRL has a good listing of clubs on its website (see “Web Links”). And here’s another secret: Ham radio clubs are often in need of volunteers to make the club function, so consider offering to help with club projects. You’ll get a lot out of the experience.

Find A Purpose

You got started in amateur radio for one reason or another. It might just be the general notion of wanting to play with radios, or it might be more specific than that. Whatever it is, use this interest as a springboard to getting on the air. For example, many new hams are motivated to help with public service and emergency communications. This is a key tenet of the Amateur Radio Service, and it’s a fun and useful way to get involved.

There are several different organizations that are engaged in public service. The Amateur Radio Emergency Service (ARES) is part of the ARRL Field Organization, but you do not need to be an ARRL member to participate. The Radio Amateur Civil Emergency Service (RACES) is officially recognized by the National Weather Service. SKYWARN spotters provide essential information for all types of weather hazards, with special emphasis on identifying and describing severe local storms. Depending on location, these three programs may be tightly connected or organized separately. Contact the local leadership of these groups and find out when they meet and how they’re organized. Be prepared to show up with a positive attitude and the willingness to learn and help out.

Beyond FM And Repeaters

As practical as FM and repeater operation is, there’s much more to explore in amateur radio. For instance, many people have an interest in working more distant stations on the high-frequency bands. The ARRL Field Day (always the last full weekend in June) is an excellent opportunity to operate any of the ham bands under the supervision of a suitably licensed control operator. (See “Getting Ready for Amateur Radio Field Day,” by Chip Margelli, K7JA, in the June 2010 issue of Pop’Comm for a thorough description of this great event.)

Your Technician Class license provides voice privileges on two important bands that can provide long-distance communication via sky wave propagation: 6 meters and 10 meters. (I don’t mean to overlook using CW on the HF bands, which is another fun option, but most Technicians are going to start out on voice).

Getting on these bands will require some additional equipment, namely an SSB-capable transceiver that covers these bands. These days there are very few single-band SSB tranceivers offered, with the common configuration being an HF transceiver that covers 160 meters through 10 meters. Often 6 meters is included as a bonus (and some rigs go up into the UHF range.) One option is to go ahead and gear up with an HF transceiver, one that includes 6 meters, even though as a Technician you can’t use all of the capability yet. You’ll also need to have an antenna that is tuned for those bands. Your first antenna does not need to be very exotic: a simple dipole can work wonders for either 6 or 10 meters.
The most common sky wave propagation on 6 meters is sporadic E (abbreviated $E_s$). As the name implies, $E_s$ is not very predictable, but it occurs much more often during the summer months in North America. That means that June and July are excellent months to try out 6 meters. Most of the operation is on SSB, starting at the calling frequency of 50.125 MHz and working up from there. The DX window of 50.100 to 50.125 MHz is kept open for QSOs to other countries. You will find some 6-meter activity on FM (calling frequency is 52.525 MHz), which some of the multiband FM transceivers cover.

Since the propagation tends to come and go, a good strategy is to monitor the calling frequency, listening for band openings. The summertime VHF contests are excellent opportunities to try out 6 meters, and there are usually lots of hams on the air. This year the ARRL June VHF QSO Party will be held June 11–13 and the CQ Worldwide VHF Contest is on July 16–17.

The 10-meter band is another option for SSB voice activity, with the potential for worldwide DX contacts. This band has good propagation during periods of high solar activity but it also benefits from $E_s$ propagation. When 10 meters opens up, it’s possible to work anywhere in the world. As the sunspot activity increases over the next few years, this band will be hot!

### Work The Birds

Another fun activity that you can explore with your Technician license is working the amateur satellites. The first step down this path is learning how to track orbiting satellites and receive their downlink as they pass overhead. Actually, you can do this without even having an amateur license—you just need a receiver capable of receiving FM transmissions on 2 meters or 70 cm. Later, you can add the transmit side and work other stations via satellite.

At press time, the ARISSat-1 satellite (also called KEDR or RadioSkaf V) was positioned on the International Space Station (ISS) ready to be deployed on a future EVA (Extra Vehicular Activity). One of the astronauts will take the ARISSat-1 out the hatch and toss it into orbit. (Check the AMSAT and ARISSat-1 websites for the latest information.) This satellite has a number of features to make it a little more fun to track, with simultaneous 2-meter FM, CW, BPSK, and transponder transmissions. The 2-meter FM transmissions on 145.95 MHz will cycle between a voice ID, telemetry, 24 international greeting messages, and live SSTV (slow-scan television) images. You can decode the images being sent by connecting your FM receiver to your computer sound card and running some free SSTV decode software.

ARISSat-1 has a linear transponder that receives signals in the range of 435.742–435.758 MHz and retransmits them on 145.922–145.938 MHz. Note that this is not an FM repeater: only CW or SSB signals are allowed. Use one of the FM birds (such as AO-51) to make FM contacts via space. The Work-Sat website by Clint Bradford, K6LCS, has a lot of excellent information on working ARISSat-1 and AO-51.

### Just Do It

We’ve covered a few radio operating activities to get you started, but there are plenty more to discover and explore. Whatever your interest, don’t let yourself become one of those Techs who get their licenses but never really get on the air. Amateur radio has many different things to offer, so the key thing is for you to find one that motivates you and then go for it. Set a specific goal, get on the air, and have some fun!

### Web Links

- ARRL, Getting Started, Finding Radio Clubs
  www.arrl.org/get-involved
- Amateur Radio Emergency Service (ARES)
  www.arrl.org/ares
- Radio Amateur Civil Emergency Services (RACES)
  http://qsl.net/races/links.html
- SKYWARN
  www.weather.gov/skywarn
- ARISSat-1
  www.arissatl.org
- CQ Worldwide VHF Contest
  http://cqww-vhf.com/
- The AMSAT
  www.amsat.org
- ARISSat-1
  www.arissatl.org
- K6LCS Work-Sat
  www.work-sat.com
HF Antenna Collection
RSGB 252 pages.
A collection of outstanding articles and short pieces which were published in Radio Communication magazine. Includes single- and multi-element, horizontal and vertical antennas, extremely small transceiving and receiving antennas, feeders, tuners and more!
Order: RSHFAC $33.00

Backyard Antennas
RSGB 208 pages
Antenna guru Peter Dodd explains how using a variety of simple techniques make it possible to achieve very high performance from a compact antenna.
Order: RSBYA $33.00

Virtual Radar Explained
By Mick Richards, G4WNC
RSGB
The reception and plotting of ADS-B transmissions for aircraft. Great for aviation enthusiasts.
Order: RSVRE $16.95

Guide to VHF/UHF Amateur Radio
By Ian Poole, G3YWX
RSGB 112 pages
Everything you will need to choose the right transmitter, receiver, antenna, utilizing the correct part if each band and more!
Order No. RSGVUAR $16.00

Sloper Antennas
By Weigl, OE5CWL
Single- and Multi-Element Directive Antennas for the Low Bands
With calculations and practical experience, this book shows which basic concepts have to be considered for the low bands.
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By Mark Francis, K1OPF
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by Walter Maxwell, W2DU
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Call: 1-800-853-9797 • Fax: 516-681-2926 • website: www.cq-amateur-radio.com
Shortwave Relay Race

Making Sense Of The Broadcast Transmitters That Pass The Signal Baton On To You

by Gerry Dexter

Last summer my wife and I were walking on Balboa Beach in Southern California, when I bent down to grab a handful of sand, as everyone walking a beach tends to do. (I think Fodor has a rule about that in their guidebooks.) For some reason, at that moment the idea for an article popped into my head. I thought, “I bet a piece on shortwave relays would probably be impossible to do. I’d have about as much chance of including them all as I would holding on to every grain of sand in my hand!” By the time we’d left the beach, walked to the end of Balboa Pier, spent an hour staring at the Pacific, and then left what, for me, is hallowed ground, I had decided to give it a go. Hence this piece!

Relays, like everything else in the shortwave world, have changed considerably over the years. I think the only thing that has remained the same are the numbers of the frequencies. I mean, 4780 is still 4780, regardless if the BBC decides to switch all of its broadcasts to telegraphy mode or you suddenly wake up in the year 2211 and discover that all your QSLs have been made into ID tags and are now hanging around the necks of runner-up Rottweiler’s at the Westminster Kennel Club show.

Raveled Relays

Today there are more relays, and they are receiving more use. Furthermore, many are no longer beholden to one particular broadcaster, which makes things even more confusing. In the good old days they’d actually tell you where they were coming from as part of the ID announcement or—as in the case of the VOA—at least at sign on and sign off (“This is the Voice of America Relay Station, Tangier. The following program is in Tiamongrelexian”). Later, you had to look it up and hope the reference source bothered to include the information.

Eventually the number crunchers got involved, and now it’s all a jumble. “This would make a lot more sense if we farmed it out, privatized it and let someone else pay to mind the meters, maintain the antennas, fix the feedlines, test the transmitters, and all that stuff,” said some Justin Justify no doubt muttered from under his green eyeshade while squirreled away in some forgotten back-of-the-building cubicle at some state-run broadcaster.

Over time the idea must have grown, spreading like a malevolent oil slick. It certainly seems that eventually all the corner towers at the Sackville, New Brunswick, site of Radio Canada International are also used by Deutsche Welle and the Voice of Vietnam.

Gerry Dexter is Pop'Comm’s “Global Information Guide” columnist.
China Radio International relies on transmitter sites in Albania, Brazil, Cuba, France, Mali, and Spain, along with a couple of others, and several within China itself.

Office suits picked it up and before you could say "Thiruvananthapuram" the halls of brass signed things over to some independent "Letsgogloba" firm, which had already decided they could turn a profit by offering their services to other broadcasters. Suddenly the Meyerton site in South Africa is not only carrying the BBC but also half a dozen German-based missionary outlets, various U.S.-IBB broadcasters, and a "Radio Fee Barton," for half an hour every other third rainy Tuesday. Not to mention Family Radio, Radio France International, Radio Nederland, and—for all we know—Radio Vanuatu! Before you can even grab your logbook you’re in a state of complete confusion, lost in a maze and surrounded by a London-thick fog.

Indeed, there are some countries that have actually given up operating transmitters within their own shores. These days, reporting logs of Radio Nederland, Deutsche Welle, and Polish Radio are a largely meaningless exercise. (There’s even a movement afoot in D.C. to shut down Greenville, the Voice of America’s last active continental U.S.-based site!) It may or may not mean anything, but some other countries found themselves on such

NHK World Radio Japan takes transmitter time supplied by Ascension, Bonaire, and a dozen others.

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AR-One Communications Receiver
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**AR8600 Mark II Wide-Range Desktop Receiver**

With an optional P25 (APCO25) decoder module, improved front end and receive audio response, display illumination control, ultra-stable TCXO and up to four optional cards that can enhance certain functions, the AR8600 Mark II covers 100kHz to 3GHz* with 1000 alphanumeric memories and free downloadable control software. Receives WFM, NFM, Super-narrow FM, Wide and Narrow AM, USB, LSB and CW.

**AR-STV Handheld Video Receiver**

See who is watching you on wireless video surveillance cameras. The AR-STV handheld receiver detects hidden NTSC or PAL analog video signals in real time. A valuable addition to any security operation, the AR-STV features a large 2.5 inch color LCD display and a USB connector that makes it easy to download stored images into a computer. With optional 4GB SD memory card, up to nearly 2000 images can be stored for later analysis.

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Whatever the monitoring need, AOR products deliver exceptional performance for use by federal, state and local law enforcement agencies, the military, emergency managers, diplomatic service, news-gathering operations, and home monitoring enthusiasts.
a path before they sang "The Party's Over," turned off the lights and went home. I guess you don't need to worry much about antenna heights or changing beams if you're "broadcasting" via the Web.

Site Specifics

By the way, in case you didn't realize it, logging and reporting one of the above-mentioned countries without including the site is akin to a broadcast band DXer reporting that he's heard ESPN Radio on 1220 kHz. 1220? Did he mean the station in Independence, Iowa, Toledo, Ohio, or Upscale, Missouri? All he really reported having heard was sound from a studio. I know many of you compile your log reports in a one-size-fits-all format. But that doesn't change the need to put in some extra effort and include the site (no matter where, or to whom, your logs are sent).

Nearly all the Web-based lists, such as EiBi (www.eibi-space.de), Aoki (www.geocities/bincrews.jp), and HFCC (www.hfcc.org), show the transmitter sites. The World Radio TV Handbook also lists sites (check the three-letter code shown opposite the frequency). Transmitter site abbreviations are also listed in the back of the book. So what's the problem with including them? (Personally, I'd like to see somebody also produce a pronunciation guide—you can't get your tongue around some of these place names!)

OK, enough for now. I'll get my sore back in motion and move the lectern back into the garage!

Cite The Site Help

The accompanying tables list the relays. Table 1 organizes them by site, with the geographical coordinates and country; Table 2 shows the broadcasters and the sites they currently

<table>
<thead>
<tr>
<th>Site</th>
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<th>Site</th>
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<tr>
<td>Agingan Point</td>
<td>15-07'16&quot;N—145-41'34&quot;E</td>
<td>Saipan, NM</td>
<td>Montinsery</td>
<td>04-53'47&quot;N—52-30'28&quot;W</td>
<td>French Guiana</td>
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<td>Almaty</td>
<td>43-13'11&quot;N—77-00'15&quot;E</td>
<td>Kazakhstan</td>
<td>Meyerton</td>
<td>26-35'11&quot;S—28-08'21&quot;E</td>
<td>South Africa</td>
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<td>Armavir</td>
<td>45-28'23&quot;N—40-06'11&quot;E</td>
<td>Russia</td>
<td>Mykolaiv</td>
<td>46-49'10&quot;N—32-12'40&quot;E</td>
<td>Ukraine</td>
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<td>Bamako</td>
<td>12-44'37&quot;N—08-03'11&quot;W</td>
<td>Mali</td>
<td>Nakhon Sawan</td>
<td>15-48'37&quot;N—100-03'51&quot;E</td>
<td>Thailand</td>
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<td>Biblis</td>
<td>49-41'15&quot;N—08-29'25&quot;E</td>
<td>Germany</td>
<td>Nauen</td>
<td>52-38'52&quot;N—12-54'31&quot;E</td>
<td>Germany</td>
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<td>Bijelina</td>
<td>44-42'02&quot;N—19-09'58&quot;E</td>
<td>Bosnia</td>
<td>Okeechobee</td>
<td>27-27'27&quot;N—80-56&quot;W</td>
<td>United States</td>
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<tr>
<td>Brasilia</td>
<td>16-36'40&quot;S—48-07'53&quot;S</td>
<td>Brazil</td>
<td>Novosibirsk</td>
<td>55-29'34&quot;N—83-41'26&quot;E</td>
<td>Russia</td>
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<td>Caiari de Porocoi</td>
<td>10-00&quot;N—83-30&quot;W</td>
<td>Costa Rica</td>
<td>Pulaug</td>
<td>15-28'03&quot;N—119-54'57&quot;E</td>
<td>Philippines</td>
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<td>Cerrik</td>
<td>40-59'47&quot;N—19-59'58&quot;E</td>
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<td>Paouchung</td>
<td>23-43'36&quot;N—120-18&quot;E</td>
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<td>Cypress Creek</td>
<td>32-41'03&quot;—81-07'50&quot;W</td>
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<td>Petrovdov</td>
<td>53-11'27&quot;N—15-24'36&quot;E</td>
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<td>Dhabbaya</td>
<td>24-1007&quot;N—54-15&quot;E</td>
<td>UAE</td>
<td>Pinheira</td>
<td>42-22'40&quot;N—24-51'46&quot;E</td>
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<td>38-28'46&quot;N—68-48'15&quot;E</td>
<td>Tajikistan</td>
<td>Rampishm</td>
<td>00-17'34&quot;N—06-45'08&quot;E</td>
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<td>07-53'55&quot;—14-22'56&quot;W</td>
<td>Ascension</td>
<td>Rimavskas Sobota</td>
<td>50-48'30&quot;N—02-38'40&quot;W</td>
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<td>Gavar</td>
<td>40-24'20&quot;N—45-11'32&quot;E</td>
<td>Armenia</td>
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<td>48-42'12&quot;N—20-07'30&quot;E</td>
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<td>53-16'27&quot;N—50-13'49&quot;W</td>
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<td>Galeria</td>
<td>42-02'34&quot;N—12-19'51&quot;E</td>
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<td>Santiago</td>
<td>33-38'36&quot;S—70-51'01&quot;W</td>
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<td>Shepparton</td>
<td>36-19'24&quot;N—145-25'15&quot;E</td>
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<td>28-43'35&quot;N—120-25'02&quot;E</td>
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<td>Sines</td>
<td>37-56'26&quot;N—08-46'20&quot;W</td>
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<td>46-56'40&quot;E—01-53'40&quot;E</td>
<td>France</td>
<td>Skelton</td>
<td>54-44&quot;N—02-53'16&quot;W</td>
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<td>Jinha</td>
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<td>25-05&quot;N—121-27&quot;E</td>
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<th>Table 2. Broadcasters And Sites Employed</th>
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One of the ALLISS/HRS-type antennas in use at the Issoudun site of Radio France International, which is also used by more than half a dozen broadcasters.

Radio Nederland is about to close the Bonaire site (inset).

Another view of the Sackville site.

employ. Note that the site listed as "Havana" actually represents the three sites within Cuba. Unfortunately, the stations don’t differentiate between them—or perhaps Radio Cuba, which operates the transmitters there, doesn’t specify them. So we’re stuck with designating it as just "Havana." Also, note that Bonaire is being closed down by Radio Nederland next year so, depending on when you see these words, that entry may have been deleted and replaced by the various affected stations.

Now here’s the required word of caution: The broadcaster-site alignments given here are based on those that were active for the B-10 season. One will get you a hundred that the A-11 season will see the line-ups somewhat affected or even significantly shifted.

I haven’t gone overboard and listed all the clandestine, target, or opposition broadcasters that tend to come and go like baseball pitchers in a 22-2 rout of the home team. Nor have I included some of the minor religious groups who become active now and then only so long as the money donated by the El Paso Ladies Tea and Badminton Society holds out. Broadcasters in those fly-by-night categories are nearly impossible to keep track of and can be gone almost before news of their existence has circulated to all the hobby informational sources. Nor have I gotten into the maze of in-country broadcast sites; such a list would quickly become as outdated as a door-to-door encyclopedia salesman!

I hope the information presented here will serve to help you better navigate the shortwave bands. The bottom line: Cite the Site!

Thank you, and good luck!
The Wouxun KG-UVD1P Dualband Transceiver

This Budget Import Handheld Offers Great Functionality For Ham, Business, Public Safety, And More

by Chuck Gysi, N2DUP

"Yes, you read that right: just a little over a C-note for a dual-band handheld transceiver. They’re so inexpensive that many radio hobbyists buy more than just one."

Every once in a while, a two-way radio comes onto the market that offers an incredible amount of functionality in a small package and at the right price. The Wouxun KG-UVD1P dualband handheld two-way does that—and so much more.

With many of the hallmarks of the once-feared "Japanese Invasion" of the two-way radio market a few decades ago, we seem to be on the cusp of a "Chinese Invasion." Radio hobbyists started importing this great little handheld from China and Hong Kong through eBay and Internet vendors after learning how versatile it is. But what makes the Wouxun KG-UVD1P stand out is that, unlike most other handheld transceivers imported from Asia, it has been type accepted by the Federal Communications Commission for use in Part 90 radio services. This means that it may be used in the United States for the public safety and industrial/business radio services.

The manufacturer’s vendors are pushing this handheld as an amateur dualbander, though, and it has quickly become wildly popular among hams in the know who have found it to be an excellent performer at an incredible price.

The Wouxun KG-UVD1P covers UHF and VHF in a variety of band plans, depending on which version you purchase. For instance, the most popular version covers VHF from 136-174 MHz and UHF from 400-470 MHz. That’s a lot of spectrum. Another version offers UHF coverage from 420-520 MHz, which is good for those who have UHF T-band (470-512 MHz) activity.

Chuck Gysi, N2DUP, is a former columnist and editor of Popular Communications, long-time journalist, hobby communications author, and a non-profit marketing executive.

Hector Padron, AD4C, of Florida uses his Wouxun KG-UVD1P for amateur radio on both 2 meters on VHF and the 440-MHz band. He has his own repeater on UHF and keeps in touch with friends with his Wouxun radio. He says it works great everywhere and also monitors satellites on the radio.

How Do You Pronounce Wouxun?

There are many suggestions out there about how to pronounce the name Wouxun, the Chinese manufacturer of the KG-UVD1P/2/3 radios. Some say it’s pronounced like the English word “ocean.” Those who don’t know any better try to pronounce it like it’s spelled in English, wocks-un. The correct pronunciation, according to the folks at Wouxun.US, is o-shing.
Ken Peakman, KJ4CTZ, of Florida, uses this setup to communicate with the International Space Station with his tiny Wouxun KG-UVD1P radio. The long boom antenna is aimed at the station. Note the radio mounted on the bottom end of the boom. Ken is showing off his QSL card and a QSL he received from the space station after talking to it with his Wouxun.

in their area. Or you can opt for a model that replaces UHF coverage with 216–280 MHz to allow operation in the 222–225 MHz amateur band. Finally, there’s a version for 350–470 MHz, which apparently was designed more for the international market as the 350–420 MHz band does not see much use in the U.S. The coverage allows this radio to operate on so many different frequencies, such as the 420–450 MHz ham band, the 451–453 and 461–465 business bands, the 144–148 MHz ham band, and many business and public safety frequencies in the 151–160 MHz band. Talk about versatile.

Over the years there haven’t been many two-way radios that were frequency versatile without some type of modification. In the 1980s, the ICOM IC-H16 and IC-U16 VHF and UHF handhelds were easily modified to be keyboard frequency-agile. By entering a six-digit code and pressing the right keypad functions, you could easily change frequencies and CTCSS tones. Some Regency mobile radios also could be made frequency agile by adding a switch and using programming keystrokes to change your operating channels from the front keypad. But other than modifiable amateur gear, keypad-friendly two-way radios that were FCC approved for the Part 90 radio services were hard to come by—until now.

The Right Kind Of Sticker Shock

The KG-UVD1P and its sisters, the KG-UVD2 (made for Wouxun.US in North Carolina) and the KG-UVD3 (made for Powerwerx.com), are best known for their price. While you have to factor in shipping for this radio, especially if you import it from an overseas vendor, you can expect to spend anywhere from slightly over $100 to as much as $135. Yes, you read that right: just a little over a C-note for a dualband handheld transceiver. They’re so inexpensive that many radio hobbyists buy more than just one.

Initially, the radio was only available from exporters, however, a handful of sellers in the United States now carry this little handheld. Prices can range widely, but there are a variety of packages available, which may include computer programming cables and software, spare batteries, speaker-mics, earphones, etc. They all help mask the true price of the radio, but some items you actually may want in a package deal. I strongly recommend that you take the software and programming cable to program this radio on your computer. The software will have you on the air in no time with minimal effort.
Do an Internet search of the specific radio model you’re interested in to find the best price. If you’re comfortable dealing with Asian exporters, also check eBay to get a good deal.

More Than Just A Bargain

Bargain pricing should never be your only consideration, of course. So let’s take a look at some highlights of what the Wouxun KG-UVD1P offers.

- Dual-band VHF/UHF or 222-MHz/VHF versions.
- Part 90 type acceptance means the radio may transmit in the public safety and business/industrial radio services.

- It may be used on the VHF and UHF amateur radio bands.
- While this radio is not type accepted by the FCC for Part 95, which covers General Mobile Radio Service, Family Radio Service (462 MHz and 467 MHz), and Multi-Use Radio Service (151 MHz and 154 MHz), it is capable of operation in those bands, albeit not legally (see the sidebar “A Lure With A Catch” for more on this). The same applies for VHF marine frequencies.
- Dual-band operation with dual-watch capability on both bands at the same time, or monitoring VHF frequencies on both the main and sub bands at the same time, or monitoring UHF frequencies in the same fashion.

That’s a mighty good start for this pocket-size gem. There are

At A Glance

The Wouxun KG-UVD1P, KG-UVD2, and KG-UVD3 Transceivers

Major Features and Specifications

Transmit (and receive) bands: Available in a variety of band plans for international use; however, most U.S. versions are 136–174 MHz and 400–470 or 420–520 MHz. Also, a 136–174 and 216–280 MHz version is marketed in the U.S. Some vendors of the KG-UVD2 and KG-UVD3 radios sell them disabled for all but the 144–148 and 420–450 MHz amateur bands. Software can be used to open up the additional ranges for commercial frequency use.

FM broadcast receiver: 76–108 MHz

Dual-band modes: VHF-VHF, UHF-UHF, UHF-VHF

Tone squelch: 50 CTCSS tones, 105 DCS codes

Power output: 5 watts VHF, 4 watts UHF high, 1 watt low VHF and UHF

Memory channels: 128 alphanumeric

Special features: VOX function, stopwatch function, Chinese/English voice programming prompts, flashlight illumination, DTMF pad

Channel bandwidth: capable of wide (25 kHz) and narrow-band FM (12.5 kHz) bandwidths

Frequency steps: 5, 6.25, 10, 12.5, 25, 50 and 100 kHz

Software programmable: PC program available on manufacturer and vendor websites

Keypad programmable: Also, DTMF pad for over-the-air use

Included accessories: antenna, high-capacity Li-ion battery, charger, belt clip

Price

List: Unknown

Street: Varies, but typically $105–$135, depending on number of accessories

For More Info

KG-UVD1P  www.wouxun.com
KG-UVD2  www.wouxun.us
KG-UVD3  www.powerwerx.com

Also see:
Facebook Users’ Group  www.facebook.com/Wouxun
Northeast Iowa Radio Amateur Association Wouxun info  www.w0mg.net/links/Wouxun.html

The dual-slot charger for the Wouxun allows the radio to charge at the same time a spare battery charges behind the radio. The standard charger that comes with the radio charges only the radio. (Photo by Chuck Gysi, N2DUP/scancomm.net)
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A Lure With A Catch

If you’re an amateur radio operator, you need to keep in mind that while you may use commercial radio equipment on amateur frequencies, you may not use amateur equipment on commercial channels. You often hear hams using radios such as Motorola on amateur repeaters. This Wouxun radio not only allows hams to transmit on amateur frequencies, but also on commercial frequencies (proper licensing required).

For instance, in addition to using the Wouxun KG-UVD1P/2/3 radio on ham frequencies, an amateur could also use it in a workplace (if employer uses VHF or UHF frequencies), in service of a volunteer fire department, or on a local government repeater for SKYWARN communications. In addition, multiple Wouxun radios would let users keep in touch with their families or friends, and even operate on MURS or GMRS/FRS frequencies.

However, as I mentioned earlier, this radio is not type accepted—or approved—by the FCC for use on anything other than Part 90 radio frequencies in the U.S. Part 90 covers public safety and commercial (business/industrial) frequencies. Technically, the FCC says that this radio may not be used on GMRS/FRS, MURS, or VHF marine channels. That’s not to say the radio can’t operate on those bands; it’s just that the manufacturer did not get type acceptance in anything outside of Part 90. FRS radios must have a non-detachable antenna, thus this radio could not be used on FRS. Power output also is an issue as you could technically transmit with power in excess of the 1/2-watt allowed on FRS channels.

Note that some U.S. vendors have chosen to sell this radio programmed so it can transmit only on amateur frequencies and not have access to commercial radio channels. There is software available that will unlock these versions, or you can state your case for full access to the vendor and they may allow you to purchase a full-range radio.

many other features that you’ll like, too, many of which you won’t find on any other handheld radio.

Why You’d Want One

So how does this radio work? Like a champ! Its compact size makes it easy to use in many applications. You won’t mind this radio sitting on your belt, in your hand, in your purse, or on your desk. Let’s look at some of the specs for this palm-size beauty.

The Wouxun KG-UVD1P packs 5 watts output on high power on VHF and about 1 watt on low power. On UHF, the radio offers 4 watts high and 1 watt low power. The version that includes the 222-MHz ham band has the same power output: 5/1 watts on VHF and 4/1 watts on the 220-MHz band. You might even experience slightly higher power outputs, as most operators have found.

Even if you aren’t a licensed amateur radio operator, this radio can do much for you. At the very least, it’s an inexpensive dualband handheld scanner that also transmits, if you need to in a pinch. The scan rate is slow, and like amateur gear, it either scans and holds the conversation for a few seconds and then continues or it scans and stops on a channel with activity. That’s annoying for those of us used to scanners that scan and stop on a channel for the full conversation before resuming scanning.

Now, The Gravy

Here are some additional features of this radio that I think you’ll like:

FM broadcast receiver—While it’s not the most sensitive receiver for monitoring FM broadcast frequencies, it’s nice having this capability in a two-way radio. It tunes from 76–108 MHz, mainly to cover other countries’ FM broadcast bands as well.

Narrow and wide FM transmit bandwidths—This is important as radio services are migrating from wideband FM to narrowband. By 2012, all Part 90 radio service users need to be using narrowband widths for transmitting. While other radio services are also changing, GMRS and amateur radio are not planned to change anytime soon. This radio will allow you to operate both narrow (12.5 kHz) and wide band (25 kHz) and be in compliance when all radio systems switch. The MURS frequencies, for instance, are narrowband for the three 151-MHz channels and wideband for the two 154-MHz frequencies.
CTCSS and DCS channel squelching—The radio offers 50 CTCSS quiet-channel codes and 105 DCS codes.

A built-in flashlight—This is a very cool feature. Hit the switch on the radio and you have a bright white LED that helps light your way in the dark!

Voice programming—When you’re programming the Wouxun through the keypad, functions and frequencies will be read out to you in English or Chinese, your choice. This makes it easy for vision-impaired users to operate, and is even convenient just so you know for sure what buttons you’re pushing. You can also turn the voice off if you wish.

Software programming—The 128 channels and various features of this radio can be programmed two ways: the old-fashioned method via the keypad or through software. Download the software from various vendors’ websites and use a programming cable for the fastest method of getting on the air. I highly recommend the software method. Be sure to follow all instructions carefully to eliminate difficulties with connecting your PC to the radio.

Variety of accessories—You’ll find many helpful accessories that you can use with this radio, including speaker-mics; mobile packs that slide on the back of the radio in place of the battery for plugging into a 12-V cigarette lighter; high-capacity and spare batteries; a charging stand that accommodates both the radio and a spare battery; a variety of antennas depending on the radio’s bands; and cloning cables.

128 channels in a main band and sub band—This allows you to monitor two frequencies at the same time. You also can set it up to scan one band while being locked on a single frequency on the sub band.

Stopwatch—Don’t use it unless you need it because it will help run down the battery faster, but if you’re involved with public service in amateur radio or GMRS radio duties, such as helping with a race, you may appreciate the built-in stopwatch.

VOX—The voice-actuated transmit function on this radio works great. Get a headset speaker-mic, just start talking, and it will transmit for you. It’s a neat function to have if you’re a heavy radio user.

Caveats

Having a Chinese handheld radio comes with some caveats, too. For instance, while we’re used to connectors such as BNC and others on radio antennas, this one has an SMA connector. If you have a BNC or other type of antenna you want to use on this radio instead of the stock antenna, you may need to use an adapter.

Some functions come with different nomenclature, too. For instance, what most hams know as VFO mode is called frequency mode on this radio. Likewise, memory mode is called channel mode on this handheld. The trick to moving from frequency to channel mode on the KG-UVD1P is to press MENU + TDR. Function 21 must be used to get back into the name display mode. The KG-UVD2 version of this radio fixed this issue by allowing you to press MENU + TDR to change back and forth between frequency and channel mode with the name remaining on the display.

Get ‘em While They’re Hot

The first users of this radio imported it from Hong Kong eBay vendors, but now you can purchase it from sellers here in the United States (do an Internet search for a list of vendors). As previously mentioned, Wouxun.US and Powerwerx.com carry their own versions of the KG-UVD1P, the KG-UVD2 and KG-UVD3 respectfully. (The KG-UVD2 is much like the KG-UVD1P, except that it has a slightly different case and a minor difference in display functions. The KG-UVD3 also has a redesigned case, an upgraded 1700-mAh Li-ion battery, and the latest firmware with additional firmware features.) Wouxun also markets a variety of other two-way radios around the world, but the KG-UVD1P/2/3 has taken the radio world by storm because of its flexibility and incredible price.

This Wouxun handheld is so hot right now that we received word at press time that Powerwerx.com was expecting a shipment of a new version of the KG-UVD3 model, complete with new features they won’t even know about until the radios arrive from China. The folks at Powerwerx.com were very excited about this; check their website for updates.

Also at press time, we were awaiting word on a new mobile radio Wouxun is preparing for sale very soon, the KG-UV920R, which will offer 1,000 channels on VHF and UHF and be as flexible as the handheld radio. It also will offer extended reception, including FM, AM, and HF, and dualband cross-band repeat.

Now that’s a dynamic marketplace.
Portable Power For The New Gizmo Generation

by Ken Reiss
radioken@earthlink.net

Periodically something from real life inspires you to think about some novel uses for some of the stuff you encounter every day. As a case in point, I recently found how convenient an external power supply (aka battery) can be in a new application.

I teach evening classes at one of the local universities a couple of nights a week. The school had recently refurbished the computer labs, apparently adding more gizmos to plug in, and now one lab in particular no longer has a convenient AC outlet for me to plug in my iPad for class use. I had to resort to a power cord that crossed the path where I walked back and forth, and nearly tripped over it (providing instant entertainment for the students). That was a bad option, and I had to find a solution.

While my iPad has a great internal battery, I use it all day long so it needed a little boost to make it through a busy evening class, too. If I'd had an outlet handy, an extra power supply would have worked great, but in this one room required me to look outside the box, so to speak.

I've long been a proponent of having charged batteries on hand for power outages and emergency operations. That's been a very handy thing more than once around here. One useful device I picked up is an external battery pack from a company called New Trent (www.newtrent.com) that provides power via a USB jack connected to a device. Just the ticket for my classroom problem and it works fabulously.

Power Sharing

Like many of you I'm sure, we have tons of gadgets around our house that can recharge from a standard USB port, and more are arriving all the time. These include things like most phones, MP3 players, iPods, a few gimmicky flashlights, and ebook readers. The bottom line is that this battery can be used for all kinds of gadgets in all kinds of circumstances. Just having a quick way to charge or extend the battery life of a gizmo along on an outing or just in the car is a big help.

New Trent's IMP-1000 and its newer IMP-1100 offer 11,000 mAh of power, which just about doubles the iPad's life, but extends things like the iPod Touch four or five times its life and the Kindle ebook reader for much longer as well. The IMP-1100 also comes with a custom case for the iPad, but the battery is removable and can be used separately. It's so flat and compact that it fits in my briefcase's filing compartment without being noticeable.

Lots Of Battery Choices

There are many companies that make such devices, and some of them feature a standard 12-volt cigarette lighter plug, which may be more useful for you if you're looking to supply radios with a charge. Many scanners and ham transceivers can be easily powered from a cigarette lighter with an adapter of some kind. Power supplies of this type usually have a fairly high current capacity, expressed in Amp hours (Ah) or milliAmp hours (mAh).
The IMP-1000 comes with a kit including a case and several common adapters that can charge many devices. Of course, anything that has a standard USB cable can be plugged into the USB jack on top.

It’s not an exact science, but generally if something pulls 1 Amp of current for 1 hour, that’s a 1Ah device and a 20Ah battery should be able to power it for about 20 hours. Most scanners pull something more in the 200mA range, so that same 20Ah battery would keep it running for 100 hours. That’s a lot of scanning.

Unfortunately, those super high-capacity batteries are usually lead acid or variants like gel cell or a newer type called AGM (absorbed glass mat) and come with an equally super high weight. One that I’ve looked at from PowerStream Technology (www.powerstream.com) provides 20 Ah and weighs in at 15 pounds! You’ll probably not want to carry that one far, but it does make a great emergency power supply. It also is available with a voltage regulator at almost any voltage you desire, so you could set one up for a specific device if you wanted to, eliminating the need for extra 12-volt to 6 or 9-volt adapter/converters. Another high-capacity choice I’ve found is Schumacher’s PPO-2200, which features a massive 22Ah battery and a 400-watt power inverter. It comes with a 12-volt accessory outlet to power cell phones, GPS units, and more.

Others available from companies like Energizer and Duracell includes both 12-

The newer, purpose-built IMP-1100 features the same 11000mAh battery but in a much flatter form factor, perfect for mating with the iPad in the included leather case. The case holds the battery and the iPad and doubles as a stand in a variety of positions.

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**Pop’Comm**
May 2011
**Reader Survey Questions**

This month we’d like to ask you about how we can improve Pop’Comm. Please use the Reader Survey Card and circle all appropriate numbers. We’ll pick one respondent at random for a free one-year subscription, or extension, to the magazine, so don’t forget your address. Thanks for participating.

Is Pop’Comm meeting your needs?
Yes.......................... 1
No............................. 2
Jury’s out.................... 3

What would you like to see more of?
Traditional technology........ 4
Traditional operating modes... 5
New technology................ 6
New operating modes.......... 7
More radio history............ 8
More emerging radio trends... 9

If you could add one column, what would it be? (use comment line)
If you could request three features, what topics would they be on? (use comment line)

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**January Survey Highlights**

Our January survey was quite informal: we just asked people to jot down on the comment line what technology is next up on their “To Try” list. Winning the popularity contest was Internet radio, which was mentioned by the greatest number of respondents. Other hobby categories receiving repeat mentions were digital modes (look for an upcoming feature on this) and D-Star (see “RF Bits” in this issue). The Uniden Home Patrol and scanners like it (such as the GRE EZ Scan) were the devices most drooled over.

The winner of a free subscription or extension to Pop’Comm this month is Neal Sumrell of Chocowinity, North Carolina. Congratulations, Neal!
volt battery power and a power inverter to create AC outlets for limited use. Some include jumper cables and air compressors for car applications, as well. Have a look at Amazon or your favorite online automotive retailer for these types of external supplies.

PowerStream and New Trent also offer batteries with the much newer and much lighter Lithium Polymer material. The 11Ah battery from New Trent weighs in at only 8 ounces, including the case. New Trent focuses on the USB charge output (as well as replacement laptop batteries) that’s so useful for the new crop of devices we’re all using. PowerStream has a lithium polymer battery, with selectable voltage output, that might be of interest if you’re powering only radio equipment, or for older devices that operate above the 5-volt USB level. (I’m only familiar with this model through the company’s website so I can’t offer any personal experience). Either one will be quite useful for multiple devices should the need arise.

Don’t Be Caught Powerless

Whether you’re looking to power a device for an extended use, or for an emergency supply for devices you consider essential, it’s worth checking out the new crop of external battery packs. You’ll no doubt find lots of uses for them, just like I have.

Until next month, Good Listening!

This Schumacher PPO-2200, available from Amazon for $70, includes a cigarette lighter output and a 400-watt power inverter for powering AC devices. Its 22Ah battery can provide power for small devices for a long time, depending on load. Unfortunately, all that power weighs in at over 16 pounds.

This heavy-duty charger from Duracell includes both jumper cables for your car, a 12V cigarette lighter output, and an AC inverter with the AC outlets seen on the front panel. It’s a very versatile unit, if the roughly 32 pounds or $190 price don’t bother you.
Dress Up Your DX With A Bowtie: A New Configuration Of Broadband Loop Antenna

by Bruce A. Conti
contiba@gmail.com

"Broadcast engineer Craig Healy decided to put the Bowtie to the test...The results were impressive."

The terminated broadband loop is the outdoor antenna of choice for AM broadcast DXing. It combines the unidirectional reception of a beam with the inherent low-noise performance of a loop, without the need for antenna phasing and pre-tuning. The Bowtie configuration is the newest arrival in this antenna family. Computer modeling and experimentation prove its worthiness.

Terminated Broadband Loop Designs

The original terminated broadband loop outdoor antennas were the Flag and Pennant configurations, developed by Hideho Yamamura, JF1DMQ; Jose Mata Garriga, EA3VY; and Earl Cunningham, K6SE, for low-band amateur radio applications. Then AM broadcast DXers discovered that these antennas performed admirably at mediumwave frequencies as well. Follow-up experiments by broadcast DXers resulted in the development of the Delta and SuperLoop configurations. The Flag, Pennant, Delta, and Super Loop are now widely recognized for low-noise directional reception of AM radio stations over long distances.

The design is simple: a single loop of wire in the vertical plane with a series termination resistor and RF matching transformer. The configuration is defined by the physical shape of the antenna and the placement of a termination resistor and noise-reduced lead-in. The Flag looks like the outline of a flag waving on a pole, the Pennant like the outline of a pennant, the Delta like the Greek letter or triangle shape, and the SuperLoop a super-sized version of the Flag.

While there are standard sizes for the different loop configurations, the recommended dimensions are for reference only as the overall design is very forgiving. Just about any size and shape that’s convenient will work. Normally a loop of wire will produce a figure-8 antenna pattern, but the addition of an in-line/series termination resistance forces the pattern into a cardioid or heart-shaped beam with a deep backside null. The termination resistance varies depending upon ground conductivity, antenna dimensions, and surrounding environment, usually between 800 to 1100 ohms. A good value to start with is 1000 ohms.

RF Matching Transformer Assembly

The most critical component of any terminated broadband loop outdoor antenna is the RF matching transformer, which connects the antenna to the lead-in. The combination of transformer and lead-in is what’s called a noise-reduced lead-in. The high- and low-impedance windings of the transformer must be isolated—no common ground! This is extremely important. Without isolation the antenna will be noisy, picking up radiated interference from household electronics, such as televisions and computers. Unfortunately the commercially available RF matching transformers for amateur radio and shortwave applications do not provide an isolated ground option, so the best option is to wind your own.

Winding transformers and assembly in a weather-resistant chassis is really easy. Only a few simple parts and tools are required: a Fair-Rite model 2873000202 binocular-type-73 ferrite core, light gauge (30 AWG typ.) solid hook-up wire or enamel-coated magnet wire, two chassis-mount binding posts, a chassis-mount coax connector, a plastic chassis, wire strippers, solder, soldering iron, hand drill, pliers, and a screwdriver. Remember to protect your eyes with safety glasses while drilling and soldering. The Fair-Rite ferrite core is the only specific component required and is available from Newark Electronics (www.newark.com). Everything else can be obtained from a local electronics shop or national on-line retailer.

Transformer winding might appear challenging at first, but once you get started you’ll realize that it’s not so hard after all. The wire is threaded through one hole and then back through the other hole of the binocular core to complete one turn of a transformer winding. The number of turns is determined by the square root of the impedance ratio. For a 16-to-1 (16:1) impedance
Four examples of typical terminated broadband loop antenna configurations.

ratio, the transformer winding ratio is 4:1. (The square root of 16 is 4.)
To apply this ratio in simplest terms, for every four high-impedance turns, you’ll need one low-impedance turn. Depending upon the gauge of wire used, 16 turns of wire for the high-impedance winding and four turns for the low-impedance is a no-brainer. Maintaining the same mathematical proportion of 4:1, 12 and 3 turns will work for a heavier gauge wire, while 20 and 5 turns of #30 magnet wire will easily fit on the core. Although more turns should improve coupling at lower frequencies, the difference for all practical purposes is negligible. Use wires with different insulation colors or mark the transformer to designate the high from the low impedance.

The high-impedance winding is connected to the antenna via binding posts, and the low-impedance to the lead-in via a coax connector. (In this example, the lead-in is standard 50-ohm coax cable. For generic twisted pair, speaker wire, or similar balanced lead-in, use a 9:1 impedance ratio.) Once the transformer is wound, it’s a simple matter of drilling mounting holes in the plastic chassis to accommodate the connectors and then soldering the transformer wires to the connectors. Done.

The Bowtie Loop
The Bowtie configuration of the terminated broadband loop antenna was inspired by the development of the “split” loop design. George Wallner, AA7JV, was the principle developer of the Double Half Delta Loop (DHDL) antenna, the first of what became known conceptually as the split loop. (Refer to the August 2010 edition of Pop’Comm for more about split loop developments.) Experiments with a Split Delta and Split SuperLoop soon followed.

Essentially one end of the loop antenna is rotated 180 degrees so that the antenna is twisted or split into two geometric shapes in the vertical plane. It was found that the split loop configuration provided improved suppression of high-angle skip and nulling off the sides of the cardioid pattern for a somewhat tighter beam. EZNEC antenna models of the Bowtie indicate a backside null of -35 to -40 dB typical, with about -5 dB or more improvement off the sides, and a lower angle elevation off the horizon than the standard loop. The Bowtie is the simplest of the split configurations to implement and perhaps the most effective. Just flip or twist one end of a Flag antenna by 180 degrees, and it becomes a Bowtie.

Broadcast Loggings
Broadcast engineer Craig Healy decided to put the Bowtie to the test. A Bowtie terminated broadband loop antenna was erected near the site of 1340 WNBH in New Bedford, Massachusetts, where Healy works. Fellow DXers Chris Black, N1CP, and I were invited to assist with the test. The results were impressive.

Here’s a sample of what was logged at the WNBH site, captured in just a couple hours of monitoring on the WiNRADiO Excalibur SDR receiver. The Bowtie was aimed south with the termination resistor adjusted to maximize the null of Boston radio stations to the north. A 1340-kHz notch filter prevented overload from the nearby WNBH transmitting antenna. All times are UTC.

550 WPAB Ponce, Puerto Rico, at 0100 fair, over WDEV and others; Puerto Rico jingle and announcements.
555 ZIZ Basseterre, St. Kitts & Nevis, heard at 0100 excellent; soca vocal, “You Make Mama Cry.”
This Month In Broadcast History

75 Years Ago (1936)—"The relation between lightning discharges and atmospherics in radio receiving" by Harald Norinder Ph.D. was published in the Journal of the Franklin Institute. It compared observations on cathode ray oscillographs with sound from radio loudspeakers. "A method of reducing disturbances in radio signaling by a system of frequency modulation" by Edwin H. Armstrong was published in Proceedings of the Institute of Radio Engineers. It described FM theory along with accounts of experimental broadcasts from the Empire State Building in New York City.

50 Years Ago (1961)—Radio Havana Cuba was founded. Radio Swan, a clandestine anti-Castro station thought to be backed by the CIA, broadcast coded messages to U.S. forces during the Bay of Pigs invasion. "Love You So" by Ron Holden topped the Swinging Sixty music survey on WDRC 1360 AM and 102.9 FM in Hartford, Connecticut.

25 Years Ago (1986)—The rock band Journey released the "Raised on Radio" album. President Reagan talked about tax reform in one of his weekly radio addresses, suggesting that the unfair and complex tax code be replaced with a clear and simple system.

560 Radio Rebelde, Moa, Cuba, at 0100 fair; jazz vocal, ID accompanied by organ music, "Rebelde la habana, emisora de la revolución," parallel 600, 610, 620, and 670 kHz.

570 CMDC Radio Reloj, Santa Clara, Cuba, at 0058 good; syncopated clock, minute marker, RR code ID, etc.

580 WKAQ San Juan, Puerto Rico, at 0059 good; promo, "...por WKAQ" and ID, "...WKAQ 580 AM San Juan, WUKQ 1420 AM Ponce, WYEL 600 AM Mayaguez."

600 CMKV Radio Rebelde, Urbano Noris, Cuba, monitored at 0101 good; ID, "Deportivamente" program parallel 670 kHz.

610 CMAN Radio Rebelde, Bahía Honda, Cuba, heard at 0100 under Newsradio 610 WIOD Miami; Rebelde ID into Deportivamente program.

The Bowtie antenna configuration with corresponding EZNEC computer modeling of azimuth and elevation plots.

www.popular-communications.com
The turns of the low-impedance winding are wound on the ferrite core (left), followed by the high-impedance turns marked by a dot on the completed transformer (right).

620 Radio Rebelde, Cuba, at 0100 over an unidentified Latin American signal; parallel 600 kHz.

630 Radio Progreso, Pinar del Río, Cuba, at 0058 under WPRO Rhode Island; salsa music parallel 640 kHz.

650 HIJKH Antena Dos, Bogotá, Colombia, at 0100 good, over Radio Progreso Cuba; time marker, “...deportiva mejor, Antena Dos.”

660 CMHG Radio Progreso, Santa Clara, Cuba, at 0058 under WFRAN New York; salsa parallel 640 kHz.

670 CMQ Radio Rebelde, Arroyo Arenas, Cuba, heard at 2300 good; Rebelde sounder and news with distinctive attention signal between items.

680 WAPA San Juan, Puerto Rico, monitored at 0101 fading up and over WRKO Boston; ID with “Felicidades” and jingle, “Noticias más importantes...Wapa Radio...”

690 HJCG Radio Recuerdos, Bogotá, Colombia, at 2300 choral national anthem, Radio Recuerdos jingle, under Radio Progreso Cuba.

690 Radio Progreso, Jovellanos, Cuba, at 0058 good; salsa music parallel 640 kHz.

730 CMBB Radio Progreso, Nueva Gerona, Islas de la Juventud, Cuba, at 0100 under CKAC Montreal; salsa parallel 640 kHz.

750 CMHV Radio Progreso, Trinidad, Cuba, at 0100 over/under WSB Atlanta and YYKS Venezuela; salsa parallel 640 kHz.

750 YYKS Caracas, Venezuela, at 2358 good, over Radio Progreso Cuba; “RCR... una produccion nacional...”

760 HJJJ Barranquilla, Colombia, at 2300 good; choral national anthem, “RCN Noticias.”

770 HIJX Bogotá, Colombia, at 2300 choral national anthem under WABC.

780 ZBVI Roadtown, Tortola, British Virgin Islands, at 2358 excellent; Madonna “Vogue” into time marker, ID, “The big Zed...Zed-BVI 780 on your AM dial and at www.zbviradio.com” and reggae music.

790 CMAQ Radio Reloj, Pinar del Río, Cuba, at 0058 under WPRV Rhode Island; syncopated clock, minute marker, RR Morse code.

800 PJB TransWorld Radio, Bonaire, Netherlands Antilles, monitored at 0058 fair; Spanish contemporary Christian vocal.

810 ZNS3 Freeport, Bahamas, monitored at 0100 good, over WGY Schenectady; “Your inspirational voice, Zed-NS 810 AM.”

811 Radio Progreso, Guantánamo, Cuba, at 0100 good with the off-frequency signal producing a loud het against 810; salsa parallel 640 kHz.

820 TBN Radio Paradise, Charleston, St. Kitts & Nevis, monitored at 0100 excellent, over Radio Reloj Cuba; “...from the Trinity Broadcasting Network.”

840 Radio 4VEH, Cap Haitien, Haiti, at 0100 good, over Newradio 84 WHAS Louisville; “...i Radio 4VEH.”

850 Radio Reloj, Nueva Gerona, Cuba, at 0059 minute marker and RR code way under WEEI Boston.

860 Voice of Nevis, Bath Village, St. Kitts & Nevis, heard at 0058 good, over Radio Reloj Cuba and an unidentified Latin American; speech regarding government in Caribbean-accented English through the hour.

870 CMDT Radio Reloj, Sancti Spiritus, Cuba, at 0058 good; over an unidentified Latin American; news, syncopated clock, etc.

900 CMKP Radio Progreso, Cacocum-San Germán, Cuba, at 0100 good; salsa parallel 640 kHz.

930 Radio Reloj, La Habana and Santiago de Cuba, Cuba, at 0058 echo from delay between stations, also heard an unidentified Cuban wobbler.

940 WIPR San Juan, Puerto Rico, at 2300 good; “Esta es WIPR AM...” and nostalgic salsa music.

950 Radio Reloj, La Habana, Cuba, at 0058 good, over WPEN; syncopated clock, etc.

960 Radio Reloj, Cuba, heard at 0100 good, over domestic/Latin American jumble; “Radio Reloj,” minute marker, “Ocho en punto.”

1000 HJAC Cartagena, Colombia, heard at 0101 fair, over an unidentified Latin American; sports commentary with RCN mention.

1020 Radio Reloj, Jobabo, Cuba, at 0058 fair, under KDKA Pittsburgh; syncopated clock, etc.

1039.61 YVLB La Voz de Carabobo, Valencia, Venezuela, at 0058 identified by offset frequency with tropical music and messy het against 1040 kHz.

1140 Radio Rebelde, Cuba, at 2300 Rebelde sounder into news...
The 580-foot-tall transmitting antenna of 1340 WNBH New Bedford, Massachusetts.

with digital attention signal between items, parallel 1180 kHz; through unidentified 1181 het and 1130 WBBR New York splatter.


1160 VSB3 Hamilton, Bermuda, at 2359 fair; BBC Five Live promo, bbcworldservice.com promo.

1170 HJNW Cartagena, Colombia, at 0100 over/under “Ke Buena 1170” WCNX North Carolina; “Caracol” IDs into news.

1180 Radio Rebelde, Villa Maria, Cuba, monitored at 0100 good; ID and Deportivamente program para Pel 670 kHz.

1200 YVOZ Radio Tiempo, Caracas, Venezuela, at 0000 fair, through WXKS Massachusetts; promos, “Radio Tiempo 1200 AM.”

1280 VSB2 Hamilton, Bermuda, at 0000 good, over WADO New York and WCMN Puerto Rico; “This is BBN, on WYFQ FM Wadephoro-Charlotte” and SRN news.

1280 WCMN Arecibo, Puerto Rico, at 0100 under/over WADO; multiple station ID, “En todo Puerto Rico...Ponce, WCMN 1280 Arecibo, y WNEL 1430 Caguas...” and NotiUno slogan.

As the logbook shows, the Bowtie configuration proved to be a real winner for us! Actually, all the terminated broadband loop configurations with a noise-reduced lead-in will outperform the random longwire thrown out the window or the noise-susceptible indoor antenna for AM broadcast DXing. Pick the configuration that fits best for your unique situation, and then prepare to be surprised by the results. Until next time, 73 and Good DX!
## World Band Tuning Tips

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 the time of day, time of year, your geographic location, highly variable propagation conditions, and the receiving equipment used.

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

### UTC Freq. | Station/Country | Notes
--- | --- | ---
0000 9570 | China Radio International, via Albania | Various
0000 9590 | China Radio International | Various
0000 6240 | Radio Pristina, Moldova | Various
0000 9305 | Radio Cairo, Egypt | Various
0000 5970 | Radio Exterior Espana, Spain | Various
0000 9525 | Radio Romania International | Various
0000 9660 | Radio Taiwan International, via Florida | Various
0000 13650 | Voice of Korea, North Korea | Various
0100 9870 | All India Radio | Hindi
0100 6200 | International Radio of Serbia | Various
0100 6190 | International Radio of Serbia | Various
0100 7400 | Radio Bulgaria | Various
0100 17860 | Radio Veritas Asia, Philippines | Urdu
0100 3250 | Radio Luz y Vida, Honduras | Various
0100 6025 | Radio Amanecer, Dominican Republic | Various
0200 12133.5 | AFN/AFRTS, Florida | USB
0200 11985 | All India Radio | Kannada
0200 4965 | CVC-One Africa, Zambia | Various
0200 6100 | International Radio of Serbia | Various
0200 11935 | NHK Radio Japan, via Bonaire | Various
0200 5040 | Radio Havana Cuba | Various
0200 11880 | Radio Filipinas, Philippines | Various
0200 11995 | Radio Taiwan Intl, via French Guiana | Various
0200 6130 | Radio Tirana, Albania | Various
0200 4052.5 | Radio Verdad, Guatemala | Various
0200 4717 | Radio Yura, Bolivia | Various
0200 11710 | Radiodifusora Argentina al Exterior | Various
0200 3350 | REE,Spain,Costa Rica Relay | Various
0200 15180 | Voice of Korea, North Korea | Various
0200 6175 | Voice of Vietnam, via Canada | Various
0200 3340 | Radio Misiones Internacional, Honduras | Various
0200 5045 | Radio Cultura do Para, Brazil | Various
0200 9645 | Radio Bandeirantes, Brazil | Various
0300 7255 | BBC Ascension Island .Relay | Various
0300 3345 | Channel Africa, South Africa | Various
0300 4885 | Radio Clube do Para, Brazil | Various
0300 5915 | Islamic Rep. of Iran Broadcasting | Various
0300 5915 | Islamic Rep.of Iran Broadcasting | Various
0300 6155 | NHK Radio Japan | Urdu
0300 4915 | Radio Difusora, Macapa, Brazil | Various
0300 4780 | Radio Djibouti | Various
0300 12025 | Radio Free Europe/RL, Thailand Relay | Various

### UTC Freq. | Station/Country | Notes
--- | --- | ---
0300 5025 | Radio Rebelde, Cuba | SS
0300 11765 | Super Radio Deus e Amor, Brazil | PP
0300 4930 | VOA Relay, Botswana | PP
0300 7210 | Voice of Russia | SS
0300 3985 | Voice of Croatia | SS
0300 3320 | Radio Sonder Grense, South Africa | Afrikaans
0300 6015 | RT Zanzibar, Tanzania | Swahili
0300 7375 | Voice of Croatia, via Germany | Croatian
0400 5790 | BBC | RR
0400 11720 | BBC, via South Africa | Various
0400 9460 | BBC, via South Africa | Various
0400 5865 | Radio Algerienne, via France | AA
0400 4990 | Radio Apinfe, Suriname | DD
0400 4985 | Radio Brazil Central | PP
0400 5900 | Radio Bulgaria | Various
0400 11690 | Radio Havana Cuba | Various
0400 11760 | Radio Nacional Venezuela, via Cuba | Various
0400 6100 | Radio Tirana, Albania | Various
0400 7200 | RTVC, Sudan | AA
0400 4775 | TWR, Swaziland | GG
0400 4976 | UBC Radio, Uganda | Various
0400 7175 | V. of Broad Masses, Eritrea | Various
0400 9885 | VOA, Botswana Relay | Various
0400 4960 | VOA, Sao Tome Relay | Various
0430 6165 | Radio Tchadienne, Chad | FF
0500 6973 | Galei Zahal, Israel | HH
0500 5860 | Radio Farda,USA, Kuwait Relay | Farsi
0500 4790 | Radio Vision, Peru | SS
0500 5010 | RTV Malagasy, Madagascar | Malagasy
0500 7255 | Voice of Nigeria | Various
0500 9405 | WBCQ, Maine | Various
0500 7505 | WRNO, Louisiana, USA | irreg.
0500 6020 | Radio Victoria, Peru | SS
0600 9675 | Broad. Svc. of Kingdom, Saudi Arabia | AA
0600 13610 | China National Radio | CC
0600 11750 | China Radio International | CC
0600 7235 | Deutsche Welle, Germany | CC
0600 9690 | Radio Romania International | FF
0600 13620 | Islamic Rep. of Iran Broadcasting | Italian
0600 5910 | Marfil Estereo, Colombia | SS
0600 9865 | Radio Nederland, Bonaire Relay | DD
0600 11725 | Radio New Zealand International | CC
<table>
<thead>
<tr>
<th>UTC</th>
<th>Freq.</th>
<th>Station/Country</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
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<td>7335</td>
<td>RTT Tunisienne, Tunisia</td>
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<td>Radio New Zealand International</td>
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<td>0900</td>
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<td>0900</td>
<td>3290</td>
<td>Voice of Guyana</td>
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<td>0900</td>
<td>6185</td>
<td>Radio Educacion, Mexico</td>
<td>SS</td>
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<td>1000</td>
<td>6135</td>
<td>Radio Santa Cruz, Bolivia</td>
<td>SS</td>
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<td>CKZN, Canada</td>
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<td>7320</td>
<td>Madagascar Radio, Russia</td>
<td>RR</td>
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<td>1100</td>
<td>6185</td>
<td>NHK Radio Japan</td>
<td>RR</td>
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<td>Radio Australia</td>
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<td>4747</td>
<td>Radio Huanta 2000, Peru</td>
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<td>1100</td>
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<td>Radio Nacional Venezuela, via Cuba</td>
<td>SS</td>
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<td>1100</td>
<td>5020</td>
<td>Solomon Islands Broadcasting Corp.</td>
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<td>3280</td>
<td>La Voz del Napo, Ecuador</td>
<td>SS</td>
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<td>3385</td>
<td>Radio E. New Britain, Papua New Guinea</td>
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<td>JJ</td>
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<td>SS</td>
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<td>Far East Broadcasting, No. Marianas</td>
<td>CC</td>
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<td>1200</td>
<td>9650</td>
<td>KBS World Radio, South Korea via Canada</td>
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<td>9345</td>
<td>Pyongyang BC Station, North Korea</td>
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<td>Radio Manus, Papua New Guinea</td>
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<td>6170</td>
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<td>15570</td>
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<td>CFRX, Canada</td>
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<td>Radio Republik Indonesia, Makassar</td>
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<td>7295</td>
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<td>All India Radio</td>
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<td>1400</td>
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<td>BBC, Cyprus Relay</td>
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<td>BBC, Cyprus Relay</td>
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<td>17895</td>
<td>Broad. Svc of Kingdom of Saudi Arabia</td>
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<td>1400</td>
<td>5810</td>
<td>Radio Free Asia, USA via Tinian, NM</td>
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<td>21695</td>
<td>Radio Jamahiriya, Libya</td>
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<td>1600</td>
<td>15190</td>
<td>Radio Africa, Equatorial Guinea</td>
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</table>
Q. With the Dayton Hamvention coming up later this month, I got to wondering about ham history. When did amateur radio really start taking off?

A. Well, we know there were lots of people already on the air when licensing began in 1912. In addition to Marconi and his work, there were plenty of other scientific types experimenting and striving to make new breakthroughs. Others still were interested commercial aspects and trying to establish communications companies. But these people can’t be called amateurs. The first amateur radio clubs started to appear around 1909. So it’s probably a good guess that the people we’d think of as amateurs were out there trying to get someone to pick up their signals sometime around 1908. From what we know of hams, these “lone wolves” would probably have started forming clubs as soon as they became aware of like-minded folks also throwing signals out into the air! Spark gap and longwave signals in the 300- to 600-meter range were what they would have been ragchewing over back then.

Q. Who invented the near vertical incident skywave antenna and what is it used for?

A. The NVIS antenna is, in one respect, a little like radar: everybody seems to have invented it independently at the same time. A regular dipole antenna has arms, which are more or less parallel with the ground. This creates a “skip zone” between where the antennas’ ground wave signal ends and where the first “bounced signal” hits the ground on its return from the ionosphere. An NVIS antenna has the arms of the dipole set at about 45 degrees with the high point in the center (inverted V). Typically, this allows the ground wave signal and the first bounced signal to overlap, eliminating the skip zone where no signal is heard.

This design was first used by the Germans during World War II and helped them maintain radio contact between units during their Blitzkrieg movements through Europe and Russia. The British followed, employing the same approach for North Africa, and later developing a classified manual on NVIS in preparation for D-Day. Interestingly enough, the lack of NVIS antennas caused many of the communications problems the British experienced during Operation Market-Garden when the First Parachute Regiment jumped into Holland. NVIS still finds major use among military and amateur antenna designers.

Q. When the North Koreans boarded the USS Pueblo all they got was a lot of radio intercept gear, most of which could be bought “off the shelf” in electronics stores in most westernized countries. Why did they pull such a dangerous and politically loaded attack?

A. You’re right about the intercept gear. Even within the country, most of it could have been duplicated by civilian sources and a big enough budget. But the intelligence-gathering ship was carrying more than intercept equipment. The KW-7 cipher machine aboard it was the latest and greatest piece of crypto gear used by the Navy and other services on January 23, 1968, when the Pueblo was captured. Like any crypto machine, the key to set it up is one of the most closely guarded secrets of the system.

In December 1967, spy Johnny Walker started selling the monthly Key List used daily to change the setup on the KW-7. Walker also sold technical manuals and encoded messages used in the Atlantic. That opened the door for the Soviets to all of America’s naval communications, but the Soviets needed at least one KW-7 machine to actually get through that door. While difficult to confirm, the KW-7 as well as other models of crypto gear they finally got probably came off the Pueblo.
New, Interesting, And Useful Communications Products

**Dice, Livio Team Up On Internet Radio Kits**

OEM integration supplier Dice Electronics and tabletop Internet radio supplier Livio are teaming up to offer aftermarket integration kits that will enable a vehicle’s factory-installed sound system to play thousands of Internet radio stations through a connected iPhone. At January’s International CES, Dice and Livio launched a Livio Car Internet Radio app and an optional user-installable firmware upgrade for new Duo and MediaBridge vehicle-specific integration kits. When the upgraded kits are added to select factory radios, users will be able to select, display, and play thousands of Internet radio stations through an iPhone connected to the kits via USB cable. Upgraded MediaBridge kits will be available for Acura, Honda, Toyota, Lexus, Scion, BMW, Mini, Nissan, VW and Audi vehicles. The Duo will be designed for BMW, Mini, Toyota, Scion, Lexus, Honda, Acura, Nissan, Infiniti, Mazda, and VW.

The Silverline Duo integration kits enable factory-head control of both an iPod/iPhone and a Sirius satellite tuner. In the top-end Media Bridge kits, Dice adds USB control of other-brand MP3 players, playback of music files stored on USB drives in various formats, and included stereo Bluetooth with hands-free capability. It also captures the PCM audio output of an iPod/iPhone, whereas the new Duo captures analog audio.

The downloadable Dice firmware and the Livio Car Internet Radio app will be available in the first quarter at a price to be announced. The Duo and MediaBridge are user-updatable via USB. Both the Media Bridge and Duo kits feature built-in translator to convert the Sirius protocol to the protocol used by OEM entertainment systems.

The Duo kits will retail for a suggested $189 and begin shipping in January. Upgradeable versions of the company’s currently available MediaBridge kits will retail for a suggested $299 and ship in the first quarter. For more information, visit www.DIceelectronics.com and www.livioradio.com.

**App Happy PastBlast**

Streamline Publishing, publisher of top radio-industry trade publication *Radio Ink*, launched the PastBlast application for the Apple iPad. PastBlast, based on Streamline CEO B. Eric Rhoads’ book *Blast From the Past*, is the first app to be devoted to radio’s Golden Age. “Radio has a rich history, embraced by people around the globe,” Rhoads said. “This application is a way to relive some of the great shows and personalities from radio over the decades.” Users navigate through the app by clicking items in an accurately reproduced 1950s radio studio, complete with mic, turntable, and control board. Every era of radio broadcasting is represented, and you’ll hear great personalities like a young Howard Stern, Casey Kasem, Dick Clark, Jack Benny, Bob Hope, and George and Gracie Burns. Almost 1,000 rare, historic photos from radio’s golden past are included, plus audio clips of hundreds of old shows, like *The Shadow*, *The Adventures of Superman*, and *The Lone Ranger*. PastBlast also features top radio songs from every decade of radio’s 80-plus-year history, along with historic clips such as Lindbergh’s landing in Paris, the death of John F. Kennedy, and the moon landing.

Black January, But A Few Glimpses Of Sunshine

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

"The bottom line is that it certainly won't be your dad's BBC any longer, or even your uncle's!"

These are not happy days in the shortwave world, which during a single week in late January suffered several nasty blows. We've learned of the passing of beloved HCJB DX Partyline host Clayton Howard. Radio Prague ended its broadcasts on shortwave (though it will continue to be relayed over WRMI). Radio Netherlands Worldwide announced the pending closure next year of the Bonaire relay site, and the BBC announced the cessation of several of its language services.

In case you missed the items about this in last month's issue, the BBC move ends programming in Albanian, Macedonian, Portuguese (to Africa), and the Serbian languages. In addition, English for the Caribbean will be axed. Further, languages such as Azeri, Mandarin Chinese, Russian, Spanish for Cuba, Turkish, Vietnamese, and Ukrainian are going down. Several other language services, such as Hindi, Indonesian, and Swahili, were also due to end in mid-March. Broadcasts to Burundi and Rwanda (Africa's so-called "Great Lakes" region) were on the chopping block as well. English language programming will be revamped to include a number of new, shortened, or retitled programs.

It's estimated that these changes and deletions will cost the BBC about 30 million listeners—or about one-sixth of its total audience—and in the process save the corporation some £42 million. In the long run, over the next two or three years, these negatives would also cut the jobs of some 650 people (out of a total staff of more than 2,400). Needless to say a number of commissions, groups, boards, committees, unions, and other interested parties are in full ravi at this point, so we can expect the teeth gnashing, complaining, and jockeying to drag on for a while. The bottom line is that it certainly won't be your dad's BBC any longer, or even your uncle's!

RNW says that Bonaire doesn't get enough usage, despite the number of hours devoted to carrying relays of other stations. Even with that positive, the station claims the Bonaire is unprofitable. So, beginning sometime next year, Bonaire will be closed down and the RNW broadcast hours—mostly Dutch and Spanish—will be relayed by Sackville (Canada) and Montinsery in French Guinea instead.

Radio Prague, in a distressing move that we knew was coming, ended shortwave at the close of January, although one of its English programs is still carried over WRMI-Miami, but I'd guess that will be short-lived.

Finally, we mourn the passing of Clayton Howard who, for many years, was the voice of HCJB's DX Partyline program. Most "old timers" still active today cut their DXing teeth tuning in to Clayton and Helen Howard for their tips and other information about the hobby. Clayton retired from HCJB many years ago and lived in Florida for several years before moving back to Ecuador.

Clayton and Helen Howard hosted HCJB's DX Partyline for many years.
But enough. Now let’s turn the page, shake off the doom and gloom stuff, and step into the sunlight for a moment.

Some months back I mentioned the arrival of a station calling itself The Cross, operated by Pacific Missionary Aviation, from the island of Pohnpei, Micronesia.

It wasn’t long before the operation went off the air. But now it’s back and is being surprisingly well heard, despite using a humble 1 kW on 4755. Initial broadcasts were tests running 24 hours a day on 4755. I suspect once the testing has concluded the active hours on air will shrink as well. The programming is mostly Christian music with English announcements.

Radio TV Malaysia has opened up a new, 100-kW outlet on 9835 and a second frequency, 11665, is also in use. According to well-known Australian DXer Bob Padula, the frequencies carry the domestic Wai FM service from Kuching, Sarawak. The new outlets are believed to be an answer to the opposition Radio Free Sarawak broadcasts that have been active over the past year. It’s always fascinating to observe the moves and counter-moves stations and countries make to gain an advantage.

Watch for The Voice of Guyana to add broadcasts somewhere in the 49-meter band soon. Whether its activity on 3290 will continue, change, or even disappear is unclear at the moment.

Radio Cultural Juan XXIII, San

Help Wanted

We believe the “Global Information Guide” offers more logs than any other monthly SW publication (520* 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 “Global Information Guide,” 213 Forest St., Lake Geneva, WI 53147. Or you can email them to gdx@wi.rr.com. Please note that attachment files do not always go through. See the column text for formatting tips, and please check over your submissions, making sure you’ve included frequency and UTC time.

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

A Guide To “GIG-Speak”

Here’s a partial list of abbreviations used in the “Global Information Guide

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
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<td>(p)</td>
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<td>AFN</td>
<td>Armed Forces Network</td>
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<td>AFRTS</td>
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<td>AIR</td>
<td>All India Radio</td>
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<td>BSKSA</td>
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<td>CBC</td>
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<td>CPBS</td>
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<td>Office de Radiodiffusion et Television du Benin</td>
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<td>ZBC</td>
<td>Zambian Broadcasting Corp.</td>
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Radio Nederland will end service from Bonaire next year. A reliable relay, Bonaire was inaugurated in 1969.

Ignacio del Velasco, in Bolivia—which is World Radio TV Handbook—listed with 2.5 kW on 6054 but never heard in North America—is reported to be planning an increase to 5 kW with an antenna arrangement favoring coverage in North America and an adjustment to the assigned 6055 spot will be something to watch for.

Hamada Radio International is a new opposition broadcaster beaming to Nigeria via Wertachtal on 7350 from 0530-0600 and 9840 from 1900-1930.

Reader Logs

Remember, your shortwave broadcast station logs are always very welcome. But please be sure to double or triple space between the items, list each logging according to home country, and include your last name and state abbreviation after each. Also needed are spare QSLs or good copies you don't need returned, station schedules, brochures, pennants, station photos, and anything else you think would be of interest. And how about sending a photo of you at your listening post? It's your turn to grace these pages!

In Times Past...

Here's your blast from the past for this month...

ANGOLA—Radio Clube Cuanza Sul, Novo Redondo, on 4840 in PP at 2154 on October 17, 1970. (Dexter, WI)
Radio Cultura do Para, 5045 at 0307 with talk. (Brossell, WI)

Radio BraZil Central, Goiana, 4985 heard at 0216 with impassioned talk, mentions of “Cuba.” Also 11815 at 2325 with old US pops. (Parker, PA)

Super Radio Deus e Amor, Sao Paulo, 9593 (p) at 0625 with passionate M speaker and an inspirational song. (Parker, PA) 11765 at 0351 with M and W talk. (Parker, PA) 0626 with preacher and Gospel song. (Sellers, BC)

Radio Inconfidencia, Sao Paulo, 9645 at 0620 with talk show and phone calls. (Parker, PA) 15190 at 2325 with Brazilian music. (Alexander, PA)

Radio Voz Missionaria, Camboria, 9665 at 0202 to 0271* with spirited anmts and upbeat music. (Parker, PA)

Radio Nacional Amazonia, Brasilia, 11780 with talks at 1117. (Brossell, WI) 2145 with talk on *futbol*. (Linos, PA) 2330 with Michael Jackson number. (Parker, PA)

BULGARIA—Radio Bulgaria, 5000-Kostenbrod in RR at *0400. (Parker, PA) 7400 at 0100 sign on. (Linos, PA) 2259 in BB. Suddenly off at 2300. (MacKenzie, CA)

CANADA—Radio Canada Intl, 15180 via Rampisham in AM monitored at 1920. (Brossell, WI) 15365 with *The Link* pgm at 1800. (Linos, PA)

CFX, Toronto, 6070 at 1403 with news, ID and weather. (Sellers, BC)

CKZ, St. John’s (Newfoundland), 6160 at 0515. (Parker, PA) 1045 with music by a local group. (Coady, ON)

CFVP, Calgary, 6030 at 0406 with a traffic report, country songs “Classic Country Music” ID and TC. (Sellers, BC)

Bible Voice Network, 6225 via Kazakh at 1422 with preacher. This is Sat/Sun only. (Sellers, BC)

CHAD—Radio Tchad, N’Djamena, 6165 at *0427 with balafon IS once Radio Nederland leaves the frequency, band anthem, f/by M in FF with ID and anmts. Mixing with presumed ch-anchannel Zambia. (D’Angelo, PA) 0530 in FF with bits of hillike music. (Parker, PA) 2207 in FF. (Yohnicki ON)

CHILE—CVC-La Voz, 9780 at 1131 with promos, many mentions of “CVC.” (Coady, ON) 17680 with Christian music at 2000. (Linos, PA) 2328 with Christian pops. (MacKenzie, CA)

CHINA—China Radio Intl, 7250 in SS at 2317, 9435 in CC at 0050, 9570 via Albania at 0058, 9590 in SS at 0010, 9610 in Hakka at 0015, 9860 in CC at 0020 and 11790 at 0012. Also, 11820 in Cantonese at 0005, 11830 via Petropavlovsk in CC at 2318, 11975 via Mali in CC at 2345 and 13700 via China in SS at 2210. (MacKenzie, CA) 7350 at 0146. (Padazopulos, Greece) 9440-Kunning in CC at 1148, 9540-Beijing in CC at 1150, 11695 via Albania in FF at 1838 and 11935-Shijiazhuang in RR at 1131. (Brossell, WI) 9795-Urumqi at 1404 ending news and into *The Beijing Hour*. (Coady, ON) 13600-Xi’an in RR at 0135 and 15350-Kashi at 0300. (Ng, Malaysia) 13750-Kunning in CC at 0639. (Padazopulos, Greece) 17505 at 0610. (Padazopulos, Greece)

CPBS/CNR: Voice of Pujiang, Shanghai, 3280 in CC at 1540, Xizang PBS, 4820-Tibet in CC at 1527, 6115 (t) Voice of the Strait, Fuzhou with EE/CC lesson at 1521. (Sellers, BC) CNR (t) 6045 at 2237 with M/W in Mandarin to 2300 close. (D’Angelo, PA) CNR-1, 11925-Lingshi at 0400. (Weronka, NC) 17850 in Farsi at 0735. (Yohnicki, ON) (This is rarely active—gld)

EQUATORIAL GUINEA—Radio Africa, Bata, 5010 with EE religious pgms at 1601. (Parker, PA) 1924. (Brossell, WI) 2110. (Linos, PA)

ERITREA—Voice of the Broad Masses, Asmara, 7175 at *0405 with instl music opening, W with ID and anmts in (p) Tigrinya, choral anthem, M and HOA music. (D’Angelo, PA) 0425 with local music and talk. (Parker, PA)

FRANCE—Radio France Intl, 7315 in EE at 0400. (Weronka, NC) 17850 in Farsi at 1455. (Parker, PA)

GABON—Africa Number One, Moyobi, 9580 with FF news hear at 0530. (Yohnicki, ON) 0615 with FF talks and upbeat music. (Parker, PA)

Here’s another view of Radio Verdad’s attractive pennant, courtesy of Rich D’Angelo, Pennsylvania.

www.popular-communications.com
GERMANY—Deutsche Welle, 5905 Portugal Relay with a sports report at 0400. (Coady, ON) 6155 Portugal in EE at 0519. 11605 Rwanda Relay in RR at 1833. 12025 Rwanda in GG at 2350. 17800 Portugal at 1502 and 17860 via Rampisham with a radio drama in Urdu at 1448. (Parker, PA) 7380 Madagascar Relay in Indonesian at 2252. 11605 Sri Lanka Relay in RR at 1907. 12025 Rwanda in GG at 2337 and 12070 Rwanda in EE at 2156. Off at 2200. (MacKenzie, CA) 7235 on terrorism at 0612. (Benson, NC) 1695 Sri Lanka with Newslink at 0315 and 15600 Sri Lanka at 0430 with Art on the Air. (Ng, Malaysia) 11795 via Rampisham on life in Germany to close at 2300. 11885 Sri Lanka in RR at 1925 and 15275 Rwanda in GG at 1926. (Brossell, WI) 12070 Rwanda at 2110 with Newslink and Inside Europe pgms. (D’Angelo, PA) 15640 via Cypress Creek in GG at 2305. (MacKenzie, CA)

GREECE—Voice of Greece, 7475 at 2305 with two M and GG comments. (MacKenzie, CA) 9420 in GG at 2220. (Ng, Malaysia) 11795 via Rampisham on life in Germany to close at 2300. 11885 Sri Lanka in RR at 1925 and 15275 Rwanda in GG at 1926. (Brossell, WI) 12070 Rwanda at 2110 with Newslink and Inside Europe pgms. (D’Angelo, PA) 15640 via Cypress Creek in GG at 2305. (MacKenzie, CA)

GUAM—Adventist World Radio, Agat, 9980 at 1905. 12120 in CC at 2315 and 15320 in EE at 2238. (MacKenzie, CA) 11825 monitored at 1100 with EE ID and into CC and 13755 in Uigur at 1325. (Ng, Malaysia) 14915 with music and主持话 in EE. (Parker, PA)

GUATEMALA—Radio Verde, 4052.5 Chiquimula, at 0305 with M singing and playing guitar. (Parker, PA) 0435 end of EE religious talk, series of vocals. (D’Angelo, PA)

GUAYANA—Voice of Guyana, 3290 with news headlines at 0445. (Brossell, WI) 0705 with M/W and BBC news. (Sellers, BC) 0930 with local anmts and pops. (Wilker, FL) 0949 with M preaching in EE, ID and news at 1001. (D’Angelo, PA)

INDIA—All India Radio, 4840-Mumbai at 1420 with flutes, M in Hindi with presumed news. Into W with EE news at 1430. 4910-Jaipur with EE news at 1533. 4920-Chennai with news in EE at 1532. 5010 Trivuranthapuram with news at 1530 and 9690 with EE commentary at 1434. (Sellers, BC) 5010 Trivuranthapuram at 0119 with long talk in Hindi. (D’Angelo, PA) 6280/7550 with W singing at 2117. (Yohnicki, ON) 9870 at 0200 with W ancr, drums and sitar music. (Barton, AZ) 9870-Bangaluru with Vividh Bharati service at 1409. (Coady, ON) 9870-Bangaluru with Hindi songs at 0110. (Ng, Malaysia) 11885-Bangaluru at 0231 in (p) Kannada with local instls. (Coady, ON)

INDONESIA—Radio Republik Indonesia, 3325-Palangkaraya (Kalimantan). In Il at 1545 with ballad and phone call. (Sellers, BC) 4750-Makassar (Sulawesi), with Koran prayers at 1305. (Barton, AZ) Voice of Indonesia, 9525v at 1050 with local ballads, W talk and ID at 1057, then off at 1059. (Coady, ON) 1317 with news in EE, ID and contact info at 1318. (Brossell, WI) 1340 with English hour. M/W ancers. (Sellers, BC)

ISRAEL—Galei Zahal, 6973u at 0200 in HH with US/Euro pops. (Linonis, PA) 0500 in HH. (Parker, PA)

IRAN—IRIB, 5915-Sirjan at *0258 with instl music, IS, M in Armenian with ID, open anmts, prayer, M/W with news and features. (D’Angelo, PA) 6010 in SS at 0150. (Padazopulos, Greece) 7255 in AA at 2140. (MacKenzie, CA) 9865-Kalamabad at 0555–0600* in Turkish. Also, 13620 in Italian at 0631. (Parker, PA) 11685 in (l) Urdu heard at 1315. (Brossell, WI)

JAPAN—Radio Japan, 6155 with commentary in Urdu at 0330. (Padazopulos, Greece) 6185 in RR at 1136. (Brossell, WI) 9835 in JJ at 1852. 11910 in JJ at 2150, 13650 via Bonaire at 2343, 17605 via Bonaire in JJ at 2204 and 17810 in Indonesia at 2334. (MacKenzie, CA) 11665 in JJ at 2320, 11750 via Singapore in Burmese monitored at 1035 and 15205 in EE at 0505. (Ng, Malaysia) 11935 via Bonaire in JJ at 0240 and 13650-Yamata in Burmese at 2355-0000. (Parker, PA) 17605 in JJ at 2345. (Barton, AZ)

KUWAIT—Radio Kuwait, 15540 at 1820 with pops, time pips, M with ID news and more pops. (Coady, ON)

LIBYA—Radio Jamahiriya/Voice of Africa 21695 at 1417 with W hosting music, but with deep fades. (Yohnicki, ON) 1509 with African news in EE. (Parker, PA)

MADAGASCAR—Radio Madagasikara, 5010 at 0301 with talks in (p) Malagasy. (Brossell, WI) 0610 in vernacular with M talk over guitar and W singer. (Parker, PA)

MALAYSIA—RTM, 5030 (Sarawak) at 1522 with US pop song, another in Malay. (Sellers, BC) Trax FM, 7295 at 1630 with US pop/rock. (Barton, AZ) RTV Malaysia, 9835 (p) on this new frequency at 1554 with M/W in Malay. No parallels noted. (Sellers, BC)

MAURITANIA—R Mauritania, 4845 monitored at 2355 with AA talks. (Brossell, WI)

MOLDOVA—Radio Prindestrovie, 6240 at 2230. (Weronka, NC)

MOROCCO—RTV Marocaine, 15345 at 1723 with ME vocals, AA talk. (Coady, ON) 1927 in AA. (Brossell, WI)

NETHERLANDS—Radio Nederland, 6185 in Pashto at 0328 and 9830 in EE at 0616. (Padazopulos, Greece) 11610 via Rwanda with news at 0910. 11625 via South Africa with pop hits in Holland and 11665 Madagascar relay with a pgm on aging at 2355. (Brossell, WI) 11655 with a talk on Facebook at 1810. (Linonis, PA) 1839 on Chinese culture in Africa. (Parker, PA) 11615 via South Africa at 1905. (Yohnicki, ON)

NEW ZEALAND—Radio New Zealand Intl, 6170 at 1201 with news. (Brossell, WI) 9765 at 0708 with news and pops. Also, 11725 at 0623 on NZ shipping industry. (Sellers, BC) 9765 at 1003 with news

Another pirate, Thinking Man’s Radio, also replied to Rich D’Angelo.

Radio Magnetar sent Rich D’Angelo this attractive QSL for its pirate broadcast on 6937.
and weather. (Coady, ON) 9765 with ballads at 0729. (Yohnicki, ON)

religious pgm in Mandarin. (Sellers, BC) 11580 via Northern Marianas

M crooner. (Parker, PA)

with anmts over OA music. (Sellers, BC)

W on phone. (Sellers, BC)

occ. M speaking to the musicians. (Parker, PA)

0541 with long huaynos in what seemed to be a live performance with (Sellers, BC)

OA music. (Wilkner, FL)

heard at 1231 with island vocals and M in Tok Pisin. (Sellers, BC)

(Linonis, PA)

Malaysia)

Somali. (D’Angelo, PA)

with ID, talk in TT. (Ng, Malaysia)

by M/W in KK. (Ng, Malaysia)

W talk, bits of local music. (Parker, PA)

M in KK. (Sellers, BC)

in AA at 0720. (Yohnicki, ON)

9345 at 1210 with talks in KK. (Brossell, WI)

ditional instls, 6400 with male chorus, Win KK at 1619. (Sellers, BC)

(Padazopulos, Greece) 1800 with news. (Linonis, PA) 1802.

(D’Angelo, PA)

NORTH KOREA — PBS Pyongyang, 3320 in KK at 1544 with traditional insills, 6400 with male chorus, W in KK at 1619. (Sellers, BC) 9345 at 1210 with talks in KK. (Brossell, WI)

Voice of Korea, 13650 with news in CC at 0010, 15100 in CC at 0050 and 15180 in SS at 0200. (Ng, Malaysia)

OPPOSITION — Radio Nacional de la RASD (to Morocco), 6927 in AA at 0720. (Yohnicki, ON)

Echo of Hope (to Northern Korea), 6348 at 1633 with instl music and M in KK. (Sellers, BC)

Voice of Democratic Eritrea, (t) 7165 at 0435 in (1) Tigirinya with W talk, bits of local music. (Parker, PA)

Open Radio for North Korea, 7480 with ID monitored at 2100, talk by M/W in KK. (Ng, Malaysia)

Voice of Tibet (to China), 13755 via Germany monitored at 1330 with ID, talk in TT. (Ng, Malaysia)

Radio Danal (to Somalia), 11740 at *1830 with HOA music, M in Somali. (D’Angelo, PA)

Radio Free Sarawak. 15420 at 1000 with M in Iban language. (Ng, Malaysia)

Sudan Radio Service, 17700 via Ascension in AA heard at 1630. (Linnos, PA)

PAPUA NEW GUINEA — Radio Manus (Admiralty Is), 3315 heard at 1231 with island vocals and M in Tok Pisin. (Sellers, BC)

PERU — Ondas del Huallaga, Huanuco, 3329.5 at 1015 with anmts, OA music. (Wilkner, FL)

Radio Huanta, Huanta (t), 4747 heard at 1000 with SS songs. (Sellers, BC)

Radio Vision, Chiclayo, 4790 at 0443 with SS talks. (Brossell, WI) 0541 with long huaynos in what seemed to be a live performance with occ. M speaking to the musicians. (Parker, PA)

La Voz de la Selva (t), 4824.7 in SS at 1128 with fast-paced anmts, W on phone. (Sellers, BC)

Radio Cultural Amauta, Huanta, (t) 4955 at 1057 with medley, W with anmts over OA music. (Sellers, BC)

Pacifico Radio, Lima, 4974.8 heard at 0221 with slow SS ballad, M crooner. (Parker, PA)

PHILIPPINES — Far East Broadcasting Co., 7505 at 1458 with religious pgm in Mandarin. (Sellers, BC) 11580 via Northern Marianas

in CC at 1229. (Brossell, WI) 11990 Northern Marianas in Mongolian at 0950. (Ng, Malaysia)

Radio Filipinas, 11880 with Dateline Malacanang at 0200. (Ng, Malaysia)

Radio Veritas Asia, 9615 with talk in CC at 1020 and 17860 in Urdu at 0105. (Ng, Malaysia) 15280 in Indonesian at 2245. (MacKenzie, CA)

PIRATES— WHYP, 6925 at 0422—0451* with rock and clear IDs at 0431 and 0441. (Zeller, OH) 1843 to past 2200 with long, rambling pgm featuring various funny bits. Address not heard but it’s whypradio@gmail.com. (Hassig, IL)

Captain Morgan Shortwave, 6924. At 2020 and 2220 with rap, Twilight Zone theme and holiday tunes. (Hassig, IL) 0325 rock numbers to 0332 close. (Johnson, IA)

Radio Free Euphoria/WBNY Relay, 6250.5 various spoofs, rock at 2030. Also 6874.7 at 2245 with a number of tasteless items. Address as PO Box 1, Belfast, NY 14711. (Hassig, IL)

CHIP Radio, 6925u at 2108—2215* with Chipmunk songs and ID with chipmunk voices. Email: chipradio@gmail.com. (Zeller, OH)

Lunar Eclipse Radio, 6925u heard at 2318—2319* with an assortment of weird sounds. ID at 2319. lunareclipsradio@gmail.com. (D’Angelo, PA)

Radio Free Speech, 6799.7 at 2328 with religious spoofs, song with lyrics tailored to drivers of 18-wheelers. Address as Box 452, Wellsville, NY 14895. (Hassig, IL) 6375/6950.7 at 2216—2222 repeat of old pgm discussing broadcasting during the federal government shutdown. Only the 6375 signal was on after 2222. Gave the old Wellsville address, which is now Belfast. (Zeller, OH)

WTCR, 3433u at 0307—0345* with pgm mixing blues, jazz and rock seldom heard. Three IDs including one at close. wtcr@nysm.net. (D’Angelo, PA)

Random Radio, 6925u at *2310—2327* with pgm of Christmas songs, Ragtime piano IS at open. Said reports go to FRN. (Zeller, OH) WRRI, 6925u at *2210—2220 with rock and M anct. (Zeller, OH) Wolverine Radio, 6950u at 0237—0335 various songs including the word “smile.” Good pgm but no address given. (Hassig, IL)

Channel Z Radio, 11428.3 at 1835 said was a special DX xmsn. Address as channelzradio@gmail.com. (Hassig, IL)

Liquid Radio, 6925 at 2225 with dance music similar to WMPR. QRM from a pirate airing rap. (Hassig, IL)

Radio Garbanzo, 6925u at 2252—2305 with parody ads, some rock and conversation. (D’Angelo, PA)

Bust A Nut Radio, 6940 at 0407 with a Dean Martin song. (Parker, PA)

“WMLK,” 6924.4 at *1701—1727* with King’s “I Have a Dream” speech with occasional catcalls and insulting remarks mixed in. (Zeller, OH)

Northwoods Radio, 6925u at *1431—1459* with loon call IS and various guitar bits. northwoodsradio@gmail.com. (Zeller, OH)
Radio Ronin, 6928.2 heard at 1529–1624* with rock. Said was “coming from the planetary atmosphere.” radioronin@shortwave@gmail.com. At the time there was a jumble of stations causing QRN to all. (Zeller, OH)

WHOF, 6375/6800.2, at 2145–2237, ID mentions Hall of Fame Radio, relay by WBONY. (Zeller, OH)

WBLK, 6925 heard at 1847–1915 discussing ACE and John Arthur, then into soul and rap, numerous IDs and phony phone calls. No address given. (Zeller, OH)

POLAND—Polish Radio, 9460 with an interview at 1415. (Padazopulos, Greece) 9650 via UAE at 1823 with press review f/about light music. (D’Angelo, PA) 15480 via radioroninshortwave@gmail.com. At the time there was a jumble of stations causing QRN to all. (Zeller, OH) 2011 World Radio TV Handbook, your guide to everything that’s on the air: frequencies, addresses, transmitter locations, powers, relays, times—everything but the manager’s favorite soup! Get your copy at any radio hobby supplier, on-line bookstore, or walk-in hobby store. Don’t DX without it!

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PA) 15220 Tinian in Tibetan at 0100 and 21540 Tinian at 0630 in Tibetan. (Ng, Malaysia) 15550 NM in (p) CC at 2330. (Linonis, PA)

Radio Free Europe/Radio Liberty, 6105 via Werczahl in Belorussian at 0439 and 12015 Thailand in Turkmen at 0302. Also, 12025 Udon Thani in (1) Uzbek at 0258. (Parker, PA)

Radio Farda, 5860 Kuwait Relay in Farsi at 0525. (Parker, PA)

Radio Marti-Greenville, 7405 in SS at 2308. (MacKenzie, CA)

Family Radio, 5835 via Almaty “camping” here at 1432, also 7560 in (1) Burmese at 1358 and 7730-Okeechobee in (1) Romanian at 0640. (Sellers, BC) 7560 via Kazakhstan in (1) Burmese at 1327, 9280 via Taiwan in CC at 1135, 9450 via Irkutsk with hymns at 1150 and 11840 via Germany in FF at 1925. (Brossell, WI) 11570 via Taiwan in Burmese at 1332. (Coady, ON)

AFN/AFRTS, 12133.5u Saddlebunch Keys, at 0250 with PSAs. (Parker, PA)

Adventist World Radio, 11730 via Germany in AA at 1920. (Brossell, WI)

TWR, 6115 via Samara in Urdu with Pakistani vocals at 1505. (Sellers, BC)

WTWW, Tennessee, 5755 with Pete Peters at 0543. (Parker, PA)

WRNO Louisiana, 7505 with New Orleans jazz at 0406. (Parker, PA)

WBCQ, Maine, 9405 with pop/rock at 0525. (Barton, AZ)

VATICAN—Vatican Radio, 7390 with ID in CC to sign off at 2240. (Ng, Malaysia)

ZAMBIA—One Africa, 4965 with Christian rock at 0241. (Parker, PA) 6162 (nom. 6165—gld) at 2150-2208 with Afropops, talk, instl anthem at 2205. (Alexander, PA) 9430.1 at 0403 with Christian pops, brief talk and more pops. (Coady, ON) 0555 with pops. (Barton, AZ) 9505 at 2111 with PSAs. (Yohnicki, ON) 13590 at 1602 with website annm and Christian pops. (Sellers, BC)

And, once again, order is restored! Endless thanks to the following who checked in this month: Rich Parker, Pennsburg, PA; Peter Ng, Johor Bharu, Malaysia; Stewart MacKenzie, Huntington Beach, CA; George Zeller, Cleveland, OH; Rick Barton, El Mirage, AZ; Harold Sellers, Vernon, BC; Rich D’Angelo, Wyomissing, PA; William Hassig, Mt. Pleasant, IL; Mark Coady, Peterborough, ON; Jack Linonis, Hermitage, PA; David Weronka, Benson, NC; Ben Johnson, Mt. Union, IA; Robert Brossell, Pewaukee, WI; Fotios Padazopoulos, Zahoro, Greece; Brian Alexander, Mechanicsburg, PA; Michael Yohnicki, London, ON; and Robert Wilkner, Pampano Beach, FL.

Thanks to each of you and, until next month, good listening!

For 45 years our volunteers have endured long hours and tough working conditions for no pay.

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In the Belly Of The Beast—
Biological Antennas

by Kent Britain, WA5VJB
wa5vjb@cq-amateur-radio.com

And now for something completely different, to
borrow a phrase. Over the years I’ve worked on
several biological antennas, both human and
beast. The longest running of these projects
involves putting UHF transmitters in the second
stomachs of cows.

Yep, cows.

In the summer of 2000, I was working with
Irving, Texas, research company K&C Technol-
yogy, which was tasked by CowTek, a company
that offers database management for the livestock
industry, to develop a telemetry transmitter to be
swallowed by a cow. How long was the transmit-
ter to stay in the digestive track? Its entire life.

Cows (I’m employing the informal usage of
the term here to refer to both genders of cattle)
have four stomachs, and if a transmitter is slight-
ly weighted, it will stay in the bottom of the sec-
ond stomach for the life of the animal, providing
many years of valuable data. Such research sub-
jects are used in a variety of studies, testing things
like different feeds and how well the food was
being processed by the digestive system.

Talk About Direct Access

Meet Buster (Photo A), a research animal with
openings into his first and second stomachs. For
the study in which my transmitter was involved,
it was convenient to be able to retrieve my proto-
type. After testing, an animal handler would put
on a long plastic glove that came all the way up
to his neck, and then reach into Buster’s stomach
to retrieve the transmitter. I was always amazed
that Buster was completely unconcerned about
someone feeling around inside his stomach, but
of course, people had been doing it since he was
a calf.

In Photo B, you see my unusual research facil-
ity, a feedlot near Ranger, Texas. The photo was
taken at the point where I lost the telemetry sig-
nal. Typically we got about 100 yards with a
usable signal.

In Photo C we show the transmitter board and
the final sealed configuration with a ballast weight
to make it sink to the bottom of the second stom-
ach. Photo D is a close up of the loop antenna,
which was tuned to nearly 2000 MHz. (2000 MHz
for a UHF antenna? More on that in a bit.)

Receive Antenna

The marketing wizards involved in the project
looked at the frequency requirements of the dif-
ferent beef-producing nations and decided on
three frequency requirements for the transmitters.

For instance, starting with 418 MHz in the
United States, security and alarm systems are
allowed to use 418 MHz with about five times
the power they can use on 434 MHz. The transmit-
ters must be part of an alarm system and have to
use very short transmissions (thus in the U.S., the units became the Sick Cow Alarm System versus the Animal Health Telemetry System). More familiar to most of you, that 434 MHz is the same frequency used by many wireless devices around your home, such as the remote temperature sensor for your fancy weather station or possibly your keyless entry system.

In still other countries, frequencies in the 450- to 470-MHz band would be needed. To cover this broad frequency range, I developed the log periodic antenna shown in Photo E. To minimize coax loss between the antenna and the receivers, I added pads (Photo F) for an optional antenna-mounted MMIC (Monolithic Microwave Integrated Circuit) amplifier.

**Bovine Antenna Tales**

Other versions of these transmitters also look at the pH of the animals’ stomachs. When just eating grass, cattle usually don’t have many digestive problems, but on high protein feed in feedlots, they tend to develop acid-indigestion and need a lot of antacids added to their feed.

Another model was for dairy herds. Some versions of the data transmitter contained a loop tuned to 125 kHz. A strong signal on 125 kHz woke up the transmitter, which reported the animal’s temperature. The 125-kHz loops and the log periodic receive antenna were placed at the entrance of the milking barn, and if one of the cows was running a fever, her milk was not used. (She’d still have to be milked—you just didn’t want that milk to be used as human food.)

The third transmitter design was for a very specific application. It reported the temperature of the cow every 15 minutes (the transmitter’s battery didn’t last very long!), and the temperature plot showed when the cow was in estrous, meaning she was fertile. This enabled the rancher to inseminate her at just the right time from that expensive vial of sperm from the grand champion bull at last year’s fair.

**Gut Measurements**

This design presented some new challenges for me, I have to admit. Antennas, of course, are affected by their surroundings. Light travels slower when it moves though a dielectric, which is why thick plastic or water can bend light. They also bend radio waves.

An antenna is shortened by the square root of the dielectric constant (Er) of the material it is in. Air, as one would expect, is pretty close to an Er of 1, and the square root of 1 is 1. The Er of plastics is usually around 4, giving a square root of 2, so an antenna completely embedded in plastic would be 1/2 as long as it would be in air (see Figure). The Er of water is near 80, so a resonate antenna is about 1/9 as long in water as it is in air. Bear with me here. Well, I discovered that the Er of a mixture of water, hydrochloric acid, grain, and grass is about 55.

I must say that was one of the hardest measurements I ever had to make in my life. I don’t mean in terms of accuracy, just making dielectric measurements on well-brewed cow stomach contents! The antenna is not exactly in direct contact with stomach contents, but an antenna tuned to 2000 MHz comes pretty close to an ideal 418-MHz antenna when in the stomach of a cow. And, for the record, about 500 pounds of hamburger on the hoof has 17 dB attenuation at 418 MHz.
(On a side note, at first it might seem like sticking an antenna in plastic, or even water, is a great way to make a big antenna much smaller. You’re welcome to experiment, I know I have quite a bit, but the shortened antenna will behave like most short antennas: not much bandwidth, difficult to tune, and all the other usual problems with small antennas.)

We did have some “issues” when it came to FCC testing. For some reason, local test laboratory Professional Testing in Round Rock, Texas, was not all that happy with the idea of having a steer out on their 10-meter EMI range. But the FCC allowed the use of a five-gallon plastic bucket filled with saline solution to be used as a substitute for Buster. The transmitter was simply suspended in the middle of the saline solution and field strength, duty cycle, modulation bandwidth, and harmonic levels could all be taken in an environment resembling the one in which the transmitter would be used.

I would like to thank CowTek for letting me publish some of this data.

Drop Us A Line

We always enjoy hearing from our readers. In fact, some of my best ideas for columns come from you. For antenna questions or suggestions for future columns, just drop me a line at wa5vjb@cq-amateur-radio.com. Spring is in the air—now’s a great time to get some more antenna up!

---

**REFLECTIONS III**

*by Walter Maxwell, W2DU*

Here’s a sampling of what you’ll find inside this fully revised and updated third edition!

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Photo D. Close up of the loop antenna.

Photo E. Log periodic antenna for 418 MHz, 434 MHz, or 450-470 MHz use.

Photo F. Close up of the pads for the antenna-mounted preamp MMIC (see text).
Having Fun With Digital Voice (D-Star)

by Dan Srebnick, K2DLS
k2dls.rfbits at gmail.com

"But what if, I thought, I could have a local D-Star-capable repeater that only had to provide reliable HT coverage in and around my house."

A VHF or UHF handheld portable is useful not only out in the field, but at home as well. I live about 25 miles south of Manhattan in the urban sprawl of New Jersey. My location is elevated enough that I have HT coverage into many of the New York City amateur repeaters and a good selection of local ones. The HT gives me the freedom to enjoy the patio or just lounge on the couch in the den, listen to whatever might be going on, and join conversations of interest without being restricted to the shack upstairs on the second floor. To enhance my coverage, I replaced the rubber duck on my analog Yaesu HTs with one of the Diamond SR-320H antennas with higher gain.

I also like to play around with D-Star and have both an ICOM IC-2820H mobile, which I use as a base rig, and an IC-91AD analog/digital HT. The two best D-Star repeaters at my location are K2DIG in the Empire State Building and NJ2DG in Martinsville, New Jersey. I have no problem reaching these and other digital machines when using the 2820H on the chimney-mounted antenna, but I noticed that HT coverage from the first floor is spotty. Spotty coverage on D-Star results in a choppy robotic effect, often called "R2D2" by D-Star users.

A lot of D-Star activity takes place over Internet-based links. These links, called reflectors, allow connection of repeater gateways, DV (digital voice) Hotspots, and other DV devices, such as the DV Dongle. I have a decent-quality Internet connection from Optimum Online. But what if, I thought, I could have a local D-Star-capable repeater that only had to provide reliable HT coverage in and around my house. It could leverage that Internet connection to connect my HT back to one of the busy reflectors, such as IC (the D-Star Megarepeater) or 20A (the mid-Atlantic reflector used by my local repeaters).

Some folks have set up their own D-Star Hotspots. A D-Star hotspot uses an analog FM transceiver and a GMSK (Gaussian Minimum Shift Keying) modem. The GMSK modem in turn communicates with the Internet to connect the Hotspot to the D-Star network. Setting up a D-Star Hotspot is a bit of a construction project. If you're interested in going this route, you can Google "D-Star Hotspot" and find a wealth of information. But there's also another path to having something resembling your own personal D-Star repeater.

My Own Repeater?

That's almost what Internet Labs has created with its DV Access Point (DVAP) Dongle (Figures 1 and 2). But unlike the other DV Dongle, this device connects via a USB port to your computer, but is not meant to be used from your computer. It contains a lower-power (10 mW) 2-meter transceiver and a GMSK modem. This low-power transceiver and the provided stubby antenna are enough to provide excellent local D-Star coverage around the house. It does function as a repeater, but unlike an RF-only repeater, it listens on the radio and repeats to the Internet connection, and listens to the Internet connection and repeats the audio back over the radio.

The DVAP is simple to set up and use. It supports Windows, Mac, and Linux. I plugged the device into a free USB port on a machine running Fedora Core 13 and installed the Linux version of the DVAP Tool that I downloaded from http://dvapdongle.com/DV_Access_Point_Dongle/Downloads.html. You have to set up the software to use an available 2-meter frequency that is not going to interfere with other users. While it's not likely that the DVAP will interfere with much else, remember that the low-power mode on your HT may only go as low as 0.5 watt, enough to possibly interfere with other local comms if you're in a congested area. Choose wisely. I use 145.67

Figure 1. Internet Labs' DV Access Point (DVAP) Dongle. It's smaller than a cigarette pack and has a full 10 mW of RF power!
MHZ, which DVAP and Hotspot users alike seem to be increasingly adopting.

Many streaming applications require some “port forwarding” magic on your broadband router. The DVAP is no different and requires that you forward UDP (User Datagram Protocol) ports 2001 through 2005 to the IP address of the computer that will host the DVAP.

Figure 3 shows the DVAP Tool screen. I am running the DVAP on my Fedora Linux computer, version FC13. The software can run as a regular user (root not required) as long as that user has access to the required USB port. The DVAP Tool allows the user to record an audio transcript of all communications on the frequency and attached reflector. The “lock callsign” checkoff prevents RF connections from any device not using the configured callsign.

Remote Control

The DVAP is controlled from the remote HT, which allows linking and control commands to be saved into the various available memories. Important commands include,

- REF###aL Link
- bbbbbbbU Unlink
- DVAPbbbE Echo test
- DVAPbbbl Identify
- CQCQCQ Normal QSO mode

b = blank space, # = numeric digit, a = {A,B,C}

To connect my IC-91AD to reflector 20A, a popular meeting spot for locations in the Mid-Atlantic States, I would use the RS-91 software to program a memory on the HT as follows:

- Mode: DV
- Name: 20A
- Your call: REF020AL (the L is the Link command)
- RPT1 and RPT2 should be left blank.

Take a look at Figure 4 and you’ll see the memory screen of the RS-91 software. I have preprogrammed the various memory locations with commands to link to different reflector channels and to transmit the other commands as well. Transmit the link command and the DVAP will respond with an audio and a text message indicating that you are connected. Change the “Your call” to “CQCQCQ” or just switch to a memory channel already programmed with “CQCQCQ,” and you can chat away.

So What Next?

You could transmit your callsign and add something like, “looking for a contact on reflector 20A.” Just say what you want and someone is likely to come back to you. Of course with D-Star, that someone could well be in Japan, England, or just about anywhere. You’ll hear him or her in communications-quality digital, with good clarity and no QRM through the combination of RF and the Internet.

There are nets on D-Star. Lots of nets. Some are check-in nets, some are emergency communication nets, there are nets in Dutch and Italian, and there is a Sunday night scanner net that is growing in popularity. For a comprehensive listing of nets on D-Star, check the following URL: www.dstarinfo.com/Nets/Nets.aspx.

IC-2820H Crossbanding

Sometimes I use the crossband feature on the ICOM IC-2820H, the mobile D-Star rig I use as my base radio. Typically, FM crossband operation will allow you to come in on either a VHF or UHF frequency and be repeated via the band on which you are not transmitting. You could use an HT to transmit on low power via UHF and crossband via the antenna mounted high on the roof or a tower and speak to your friends on 2-meter simplex. At least, that’s how I use it.

Enabling the crossband feature on the ICOM IC-2820 is relatively simple. Hold down both the left and right side tuning knobs while pressing the “F” button. The lock icon will appear, signifying that you are now operating a crossband repeater.

When I first discovered the crossband feature on the IC-2820H, I wondered whether I could repeat an FM signal into the D-Star network. No such luck, as this is frowned upon by the operators of the D-
Star Trust Servers. D-Star is meant to be a purely digital network and I have heard that anyone caught trying to gateway from FM to DV will be banned on the Trust Servers, at least temporarily.

However, I recently discovered that the FM crossband feature on the IC-2820H can be used to create a simulation of a D-Star Hotspot. The idea is to set up the Main band of the IC-2820H to transmit on the D-Star frequency of your choosing, perhaps a repeater that you would not normally reach via your HT.

With your HT in DV mode, pick a simple frequency on which the HT will transmit, and the non-Main side of the IC-2820H will listen (remember that it must be in the “opposite” band that the Main band is using). Turn on the duplex or “+/shift” function on the HT and set the frequency shift to 0. I haven’t determined why duplex must be on for this to work, but I have verified that this is the case.

Set up your HT just as if you were going to access the repeater that’s set up on the Main band of the IC-2820H. This might mean that you have set the RPT1 value to “NJ2DGbbG” and the RPT2 value to “NJ2DGbbG,” but your frequency might be set to some vacant 2-meter frequency.

With your HT in DV mode, pick a simplex frequency on which the HT will receive by the IC-2820H. This might be in the “opposite” band that the Main band is using. Your signal will be received by the IC-2820H is a DV stream and it’s mirrored on the output. Strange though it sounds, you effectively have a D-Star repeater. However, missing is the ability for the IC-2820H to automatically identify as required every 10 minutes, so be sure that you treat this feature as an experiment and don’t leave it running unattended.

The main reason you might want to try this is if you own both an IC-2820H as well as a D-Star-capable HT and have problems reaching a particular repeater on the HT. Using the IC-2820H connected to a better antenna and running higher power than the HT might allow you to connect.

**Done Digital? Tell Us About It**

Have you tried any digital modes of communication lately? Drop us a line using the old digital “store and forward” protocol—email—at k2dls.rbits at gmail.com.

Until next time, 73 de K2DLS
The Propagation Corner

Sunspot Cycle 24 Makes Progress

by Tomas Hood, NW7US, nw7us@arrl.net

Last month, we explored the explosive release of solar energy known as an X-ray flare. How timely! As this month's column goes to press in March 2011, the sun is making history in the new Sunspot Cycle 24.

Faithful readers of the “Propagation Corner” know that this cycle is not following the typical quickly rising path expected by solar scientists who thought it would fit into the usual 11-year statistical curve. Impatient observers think it highly unusual that this cycle has taken its time to gain any significant level of energy. Case in point: Between February 2010 and February 2011, the 10.7-cm radio flux daily observed index never rose above 96. On February 12, 2010, the 10.7-cm radio flux measured 96. For exactly 12 months, the radio flux fluctuated from the low 70s to just shy of 96, until February 12, 2011! What are the odds? On February 12, 2011, the radio flux index was again 96! This time around, however, the solar energy continued to rise.

Two new records have been set so far in the new sunspot cycle, both this past February: the highest daily observed sunspot count of 103 (Figure 1), and the highest daily observed 10.7-cm radio flux index of 125. The resulting ionospheric changes were noticed around the world as communicators enjoyed exciting openings on even the highest shortwave frequencies (in the 10-meter band). Most noticeable was how the weakest of signals on the middle shortwave bands (chiefly, 31 to 19 meters) were well-propagated without excessive fading or noise. The lack of noise is a seasonal blessing for those in the Northern Hemisphere, as there are few atmospheric disturbances (read: electrical storms) to generate that interference. With such an improvement in solar energy, the improvement on ionospheric propagation for shortwave radio signals was dramatic in February.

Another historical moment in February 2011 for Sunspot Cycle 24 is the magnitude X2.8 X-ray flare that erupted on February 15 (Figures 2 and 3). This was a huge event, which released a coronal mass ejection that caused some geomagnetic disturbances on Earth a few days later. As you'll remember from last month’s column, an X-ray flare can cause a sudden ionospheric disturbance (SID), and this huge flare certainly wiped out most of the shortwave bands for a good half hour.

Soon after these events, things grew quiet for about a week, but as proved by the STEREO Behind and Ahead spacecraft, which now allows us to see the entire sun (http://stereo.gsfc.nasa.gov), there was significant sunspot activity rotating back into Earth’s view.

HF Propagation

As we begin to move closer to summer, DX signals on the higher bands become weaker and openings more sparse. Long-distance East/West F-layer propagation on 10 through 15 meters will suffer due to the lower maximum usable frequencies (MUF) caused by an only moderately

Figure 1. A very welcome sight: a daily observed (smoothed) sunspot count over 100! These spots are not only numerous, but also complex and energetic (see last month’s column regarding X-ray flares). This image is the “intensitygram,” taken on February 17, 2011, at 0229 UTC by the Solar Dynamics Observatory’s Helioseismic and Magnetic Imager (HMI) instruments. (Source: SDO/HMI)
active sun. However, there will be some improvement on North/South path propagation on these bands. Optimum frequencies for DX propagation are lower during most of the daylight hours, but higher during the late afternoon, early evening, and nighttime hours, than were the optimum frequencies during the winter months.

Thankfully, during May, occasional sporadic-E($E_s$) propagation may be possible on the highest HF bands and even on 6 meters. Seasonal static is increasing during May, but perhaps not enough to yet overly degrade the lowest HF bands.

On the lower shortwave bands, expect solid performance. The 31-meter band will often play a major role in DX propagation, with somewhat better nighttime propagation than on lower bands. Expect good daytime propagation into many areas of the world. On bands lower than 31 meters, fewer DX openings are expected because of the shorter hours of darkness and the higher level of static. But fairly good openings should still be possible to several areas of the world from shortly before sunset, through the hours of darkness, until shortly after sunrise. Good daytime short-skip openings can be expected over distances of between approximately 150 and 750 miles, with nighttime openings extending up to the one-hop limit of 2,300 miles.

**VHF Conditions**

May should see an increase in $E_s$, with some continued trans-equatorial (TE) propagation. Solar activity is not expected to be high enough to support $F$-layer DX on the low VHF frequencies.

$E_s$ ionization is expected to increase moderately during May, so look for short-skip openings, likely to occur over distances of approximately 1,000 to 1,400 miles. Although $E_s$ openings can take place at just about any time, the best time to check is between 10 a.m. and 2 p.m. and again between 6 and 10 p.m. local daylight time.

During periods of intense and widespread $E_s$ ionization, two-hop openings considerably beyond 1,400 miles should be possible on 6 meters. Short-skip openings between about 1,200 and 1,400 miles may also be possible on 2 meters.

A seasonal decline in TE propagation is expected during May. An occasional opening may still be possible on 6 meters toward South America from the southern tier states and the Caribbean area. The best time to check for 6-meter TE openings is between 9 and 11 p.m. local daylight time. These TE openings will be North-South paths that cross the geomagnetic equator at an approximate right angle.

**Current Sunspot Cycle 24 Progress**

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 83.7 for January 2011, about the same as for December 2010. The 12-month smoothed 10.7-cm flux centered on July 2010 is 80.1. The predicted smoothed 10.7-cm solar flux for May 2011 is 103, give or take about 9 points. If we do see this high of a flux in May, expect some openings on 10 and 12 meters primarily on paths between the Northern and Southern Hemispheres; expect even more activity on 15 and 17 meters.

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for January 2011 is 19.0, up from December’s 14.5. The lowest daily sunspot value of zero (0) was recorded on January 14. The highest daily
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sunspot count was 37 on January 1. The 12-month running smoothed sunspot number centered on July 2010 is 16.8. A smoothed sunspot count of 50, give or take about 9 points is expected for May 2011.

The observed monthly mean planetary A-Index ($A_p$) for January 2011 is 4 (as was December's), still very quiet. The 12-month smoothed $A_p$ index centered on July 2010 is 6.0, about the same as for June. Expect the overall geomagnetic activity to be varying greatly between quiet to minor storm level during May; expect more geomagnetic activity as we continue into the new sunspot cycle. Refer to the Last Minute Forecast, online at http://hfradio.org/lastminute_propagation.html for an up-to-the-minute propagation condition forecast that incorporates the geomagnetic conditions expected based on the 27-day rotation of the sun.

Connections...

Do you have a question that you'd like me to tackle in this column? Drop me an email 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’re on Facebook, check out www.facebook.com/spacewx.hfradio and www.facebook.com/NW7US. Speaking of Facebook, check out the Popular Communications magazine fan page at www.facebook.com/PopComm. I also 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, 73 de NW7US, Tomas Hood

nw7us@NW7US.us
Twitter: @NW7US and @hfradiospacewx
P.O. Box 1980, Hamilton, MT 59840

www.popular-communications.com
Printed QSL Cards Still Necessary? You Bet!

by Kirk Kleinschmidt, NTOZ

With an iPhone in every pocket, ubiquitous computing, global data networks, and even amateur radio's inevitable transition to software-defined radios, our hobby and our society have been overtaken by technology. Printed publications are transitioning to digital, and tablet PCs and digital e-book readers (such as Amazon.com's Kindle) may soon make notebook PCs and hardcover books antiques.

For hams, electronic QSO confirmation systems and electronic QSLs have been making inroads for sure, but it's still refreshing to know that real QSL cards, the kind that are printed on card stock and sent through the mail (for as long as the postal system remains viable, anyway!), are still useful and appreciated by most ops.

According to the ARRL, the increased sunspot counts in 2010 (and still climbing) that mark the start of Solar Cycle 24, feeble though they may be, mean that hams are working more DX, which means the League's Incoming and Outgoing QSL Bureaus have been working harder to handle the increased volume. Yay!

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### QSL Card Designs

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### DIY QSL Cards

When online business printer Vista Print (www.vistaprint.com) periodically puts its DIY postcards on sale you can get 100 super-high-quality glossy QSL cards of your own design for about $8, shipping included. I wanted to recreate my favorite QSL card from back in the day. The original is on top, the new card is on the bottom. Even with my limited Photoshop skills and color-matching abilities, I was very happy with the result. Vista Print saves my design, so when postcards go on sale again I can simply reorder at the "nice price," without recreating the card from scratch. See text for more info.
VHF Propagation
by Neubeck, WB2AMU & West WB6NOA
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Call: 1-800-853-9797 • Fax: 516-681-2926 • website: www.cq-amateur-radio.com
Through December 14, 2010, the ARRL Outgoing QSL Bureau processed 709,800 cards destined for foreign QSL bureaus from ARRL members in the U.S. That’s a 16-percent increase over 2009, when the ARRL shipped more than two tons of QSL cards to foreign QSL bureaus.

You can be as digital as you want to be, but old-fashion printed QSL cards are still used by most hams and are still considered to be “the final courtesy of a QSO,” as they have been since Day One. Feel free to use any and all of the electronic QSL card services, especially when DXing and contesting, but remember that, in your Golden Years, a sterile “electronic” QSL card will not spur the fond memories that a physical, printed QSL card will.

Whenever I look through my QSL card collection I’m amazed at how, with a single glance at almost any particular card, I’m transported back to the moment that QSO, complete with fleeting details. An electronic QSL card or a digital logbook entry will probably never do that. One of my biggest regrets is that I didn’t QSL as consistently in my “middle ham years” as I did during the first 10. That makes for a lot of “missing memories.”

Until the postal service is replaced by high-resolution “mail printers” in every household (or whatever Pitney Bowes comes up with), make sure you have some QSL cards on hand and that you know how to correctly fill them out.

Easy To Obtain

Many QSL card printers advertise in CQ and QST. The larger companies have display ads, but their smaller counterparts do business in the classifieds. QSL printers also have quite a presence on the Internet. Most have online catalogs and many have automated online ordering.

Spend a buck or two and send away for information kits and samples, or check out the online samples from the many companies that offer them. Window shopping is fun and educational, but it can make the process of choosing a design more difficult, so be prepared.

In addition to completely custom cards, most commercial printers produce a line of “stock” cards, where the only customized parts are your name, callsign, and the usual personal information. Stock designs may be used by hundreds, or even thousands, of other hams! Most beginning hams start this way. Stock cards are inexpensive, and you’re sure to end up with a QSL card that contains all the necessary information. To reduce costs, limit your cards to plain white stock and black ink. Starting out with a plain vanilla QSL card is perfectly acceptable.

Whether you choose a standard card, a photographic card, or a one-of-a-kind masterpiece, make sure you don’t buy too many right off the bat. If you upgrade, change callsigns, or move to a new QTH, staring at a huge pile of outdated QSL cards is disturbing. Choose your quantities with your likely future needs in mind.

For a list of links to online QSL card printers and commercial QSL print shops, point your Web browser to http://act6v.com/qslcards.htm. Some of my favorites include www.quirkcards.biz, www.w4mpy.com (for quantities of 250 and up), and www.cheapqs1s.com. Nowadays, there are plenty of overseas QSL card printers doing business via the Internet. And if you want to see how other hams rate many of the larger print shops, check out the reviews at www.eham.net/reviews/products/23.

Make Your Own

If you’re a do-it-yourselfer, it’s easy to make our own cards. You can print them from a suitable inkjet or laser printer, or print master copies and have your QSL cards printed a local “quick printer.” Several QSL card design programs are available for downloading from the Web. For an interesting list, check out ac6v’s link, above, and scroll down to the section entitled “make your own QSL cards.” You can also use standard desktop publishing programs such as Microsoft Publisher and Adobe PhotoShop.
This QSL card from 9G1MB in Ghana is a torturous lesson about why you should fill out each QSL card carefully—especially if you’re the rare DX! As the snippet of the reverse side shows, the operator accidentally wrote my callsign as WDOBAA instead of WDOBDA (my first callsign), making this card useless for awards such as DXCC. One of these days I’m going to have to work another 9G station, as I was never able to get a corrected card.

You can purchase card stock that’s designed just for printing your own QSL cards at www.hamstuff.com/QsIKitPage/qslkit.html. W7NN’s “QSL Kit” is just what the doctor ordered, and at $14 for 400 cards, it won’t break your piggy bank, either. If you don’t mind trimming your cards to size, Wal-Mart sells a 500-count package of brilliant white card stock for about $6. That’s enough for more than 1,000 QSL cards (and plenty of trimming!).

Another online source for QSL cards, eyeball cards, and other printed stuff is Vista Print (www.vistaprint.com). Known mostly for free business cards, Vista Print frequently puts its design-them-yourself postcards in its freebie section. If your timing is right, you can snap 100 custom-designed QSL cards for less than $8 (includes shipping and a small fee to process your custom design). The kicker is, Vista Print’s postcards are 4.25 x 5.5 inches instead of the standard QSL dimensions of 3.5 x 5.5 inches. You can use them as is or design your cards with the intention of trimming the bottom edge, as I did (see photo).

I’m a big fan of placing all QSO information on the front side of your QSL card. The easier you make the QSLing process, the greater your chance of getting a card in return.

**Critical Information**

Regardless of your final design, make sure your card includes your callsign, name, mailing address, and your country. You may also want to include your county to please the county hunters you’ll encounter on the air. And you may want to include your grid square designation if you’re active on VHF, UHF, or increasingly, QRP.

The fields for QSO information should be large enough to easily write in the other op’s callsign, date, year, time (in UTC), band, mode, and signal report. Most hams also include a “PSE QSL TNX” line; circle either PSE or TNX to indicate whether you’re requesting a card or responding to a received card.

Feel free to include other personal data, but don’t get too carried away. Clean, uncluttered designs work best. Be sensible about the artwork and forget about stuff that may be offensive or humorous. Something that’s funny in one region may not be funny in another. Think twice about graphic themes that are overly political, religious, or “visually stimulating.”

I’m a big fan of placing all QSO information on the front side of your QSL card. The easier you make the QSLing process, the greater your chance of getting a card in return.

There are only two ways to fill out a QSL card: perfect and wrong. Be careful, be accurate, and be neat. If you make a mistake, toss the card into the trash and start over. Marked-over or altered cards, even if corrected in good faith, do not count for awards programs. Think about it: What if you’re that op’s only North Dakota contact?

Hams in rare states (and other rare places) are often inundated with QSL card requests, so if you want to increase your chances of getting a reply card, make sure yours is sent with a self-addressed, stamped envelope. Being patient also helps.

**Keep The Courtesies Coming, And Going**

Don’t be caught flat-footed when you receive another op’s QSL card in your mailbox. Send ‘em something in return! It’s what we do!

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Basic Necessities For Air Scanning

The weather is warming up, and that means it’s time to hit the road in search of elusive and interesting aircraft. You’re gearing up and rarin’ to go, but exactly what should you bring along on your little excursion into the world of plane spotting? As long as you plan to be properly equipped, the answer is plenty.

Rig Choice

First and foremost, don’t forget the scanner! It’s awfully difficult to keep track of who is flying where if you can’t hear them talking, so a scanner is absolutely essential. Of course, the type of scanner you bring along will be dependent upon what type of aircraft you plan to watch. Civilian or military monitoring require different model scanners due to the varied frequency bands in use. Civilian aircraft are found in the VHF aviation band between 118 and 136 MHz, while military aircraft also use the UHF spectrum between 225 and 380 MHz.

If you’re only planning on civilian aircraft monitoring, a fairly simple radio will do the trick, and it doesn’t even have to have many channels. In fact, most inexpensive scanners cover the VHF aviation frequencies. However, if military aircraft call the skies around you home, or if you’re planning on a jaunt into areas with a lot of military activity, you’re better off with a scanner that will cover both VHF and UHF. This means a slightly more expensive scanner, and when the cost goes up it’s not too practical to buy more than one radio. So, if you have to limit yourself to one scanner it really should be one capable of both VHF and UHF.

If your wallet can handle it, however, two scanners are better; you can use one to monitor the VHF air channels, and the other to monitor the military frequencies. You could also dedicate the military scanner to monitoring both the VHF and UHF frequencies, and use the other solely for the civilian side. How you go in this respect is entirely up to your own personal preference.

If you’re in a stationary location close to an airport where you can see and hear the action (like the lucky folks who live nearby), you can also use your computer to run control and logging software for your computer-capable scanner. This will allow you to better see active frequencies as well as control the radio and log what the scanner catches; some programs even record the audio from transmissions and key the audio files to a log file.

Ferreting Out The Frequencies

So now that you’ve determined what scanner or scanners to use, the next step—and it’s a vital one—is to find the frequency lists for where you plan to check out the action.

The most accurate place to find these frequencies is, of course, in charts and documents from the FAA, in what are known as sectional charts. Updated regularly, these show a portion of the United States (or Canada) and list frequencies for various facilities and airways. Alternatively, you can check websites like AirNav.com, which lists facility information and frequencies for nearly every airport in North America, and for many overseas as well. It’s important to note, however, that while it’s accurate, AirNav information may not be as up-to-date as information from the FAA or the airports themselves.
A selection of batteries, and a Portable Power Station, which contains a 7aH gel-cell battery which will power a typical handheld scanner for at least 24 hours.

Once you've determined the facilities you want to visit and the frequencies to be monitored, make a cheat sheet of frequencies for quick reference. This is not particularly vital if the scanner you use is capable of alphanumeric tags to identify frequencies, but if your scanner is pretty basic, a cheat sheet will be invaluable so you can check out who and what you're hearing. And, of course, always program your scanner before setting out on your little jaunt; trying to program your scanner while driving is difficult at best, and could get you hurt.

Bring Plenty Of Power

Of course you use rechargeable batteries, right? Don't we all? They're incredibly useful, since they save money and can be used over and over again. That being said, however, don't forget to take along extra batteries. If you run dry, there probably won't be any place (or time) to charge a set of batteries. You can always stop by a convenience store and pick up a four-pack of AA cells, but they'll be quite pricey, so it's best to bring along extra batteries.

Another useful addition along these lines is a larger-capacity battery pack, and many stores sell these for short-term emergency power. If you're handy with a soldering iron, however, you can make your own by installing C cell (or even D cell) battery holders in a project box, adding a red/black pair of banana jacks to the outside of the project box, and connecting it to the scanner with an appropriate connector. The added capacity of the C or D cells will run your scanner far longer than the AA batteries, and allow you to save the AA batteries for when you need to be really portable. But if you plan to be portable most or all of the time, the DIY battery pack would get kind of heavy, so a few spare sets of AA batteries in your go-kit will be perfectly sensible.

Easy On The Ears

Another must-have is a set of good quality earphones; the best are comfort-able ear bud-type phones used with the Apple iPod and other similar music play-
ers. Alternatively, you can use a set of ear-muff-style headphones. Either way, you're looking for a type that will block outside noise so you can hear the aviation action. Most consumer stores like Best Buy and Circuit City carry these earphones, which cost around $20. It's kind of pricey, but you need something that's comfortable yet will allow you to hear what's going on.

Capture The Moment

Whatever you do, don't forget the still or video camera; you'll want photos of the action, so take along your camera and a selection of lenses if you have any. Something else to consider is audio recording equipment; the sounds of an airport are pretty impressive, and if you would like to put together an interesting multi-media presentation of what you've seen some good quality audio recordings are worth having.

Sundries

There are always other odds and ends you should bring along on your little jaunt, too.

First and foremost is a good map or two. Don't rely on your smartphone for this; Internet mapping is usually reasonably accurate, but if you're out of range or your smartphone battery dies, you'll be stuck trying to figure out how to get back to the main road from that little holler you drove into unless you have a good map. Along those lines, another useful addition is a portable GPS unit; not only can it help you get "un-lost," but it's handy for making
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Finally, you'll need to take along some items for your personal comfort. While we're not talking here about a lengthy emergency communications deployment requiring days worth of clothing, food, water, medications, and other necessities, it's always a good idea to carry a few of these things with you. At a bare minimum, carry some bottled water and snack items, along with gloves and a hat, a poncho or raincoat, and something to carry everything in.

And always remember that this is an outdoor activity and you're going to be spending a lot of time outdoors in either the bright sunshine or cold wind. Be sure to dress comfortably (or warmly as the case may be), and don't forget the sunscreen in the summer.

Of course, what you've read here can also be used for outdoor ferroequinology (study of the iron horse), but I won't tap into someone else's subject matter here...

Enjoy

So there you have it, the basic necessities for a more successful and comfortable jaunt into the hinterlands chasing planes (or trains). And with that, its time for me to fold my tent by the side of the runway and silently steal away into the night. Thanks for reading along.
Judging A Station By Its Cover

by Shannon Huniwell
melodyfm@yahoo.com

The grimy, bearded bum, clutching a broken-down radio, stumbled into my church just when the Sunday service was getting started. Nearly losing his balance as he staggered down the aisle, this sad case barely managed to maintain his grip on the boombox’s duct-taped handle. Blaring from its speakers was Pink Floyd’s Another Brick in the Wall, followed by the local FM rock station’s DJ.

Dust kicked up from all four tires as my father’s Rambler maneuvered through the open gate leading to the studio facility. ‘I bruised my hand for this place?!...’”

making some remark that certainly wasn’t meant for a religious audience. Fortunately, the guy thought to fade the audio before getting within close range of the front of the sanctuary, but the boisterous belch he issued elicited whispers from many in the congregation.

I’ll have to admit, I was rather disgusted when that man with long, matted hair ascended the steps to the pulpit and braced himself at the lectern, knocking its big Bible to the floor. And I was shocked when he bent down to retrieve the Good Book...and his wig fell off. Regaining his stance, the fellow peeled off his fake beard and shed his stinky coat. Unveiled and standing there for all to see, was our minister, who had just preached a powerful sermon about the dangers of being judgmental—without having said a single word.

No, the radio connection is not the boombox and Pink Floyd, but rather that pegging a radio station’s worth to the community by simply looking at its studio setup is not dissimilar. “In fact,” my quirky radio hobbyist Dad likes to point out, “many of America’s most fascinating stations derive their unique personalities from being housed in facilities only a true broadcasting buff could love.” The particular case in point for his hypothesis is a humble Arizona AM.

I hope you won’t mind if I indulge Dad by starting with a brief story within this my larger theme about happily atypical radio headquarters, like the one that used to be home to KDJI in Holbrook, Arizona.

My Folks (Before They Were “My Folks”) On America’s “Mother Road”

On a Friday evening in October 1960, my father, then a 21-year-old college freshman straight out of the US Army Signal Corps, was studying in the library and overheard some big-men-on-campus preppy guys talking about a girl they’d just seen who looked just like a young Katharine Hepburn. After one of the fellows, apparently sent as a scout,
returned to the group to report that she was even "hotter than Hepburn," Dad decided to pack up his books and search out this beauty for himself.

Within minutes he spotted a woman more than matching that superlative description. That's when he caught a glimpse of himself in the big gold-framed mirror that hung over the study lounge's fireplace and figured someone who looked like her wouldn't be interested in this lanky sort who's only look-alike claim might be homey character from a Norman Rockwell illustration. Anyway, he managed to muster sufficient courage to take a seat within earshot of whatever she might say to several nearby coeds. It didn't take long for one of the girls to break up the study session by suggesting that the entourage head over to a party at her boyfriend's fraternity.

Much to my future father's delight, they all immediately left...except for Kate Hepburn. She excused herself, explaining that she had homework and then wanted to relax by watching a little TV. Dad knew the college's only likely venue for the latter activity, so he sprinted over to the Student Union and took up a conspicuous position in an erstwhile second-floor office recently reconfigured with wall-to-wall carpeting, a small overstuffed sofa, several upholstered chairs, and a 21-inch Emerson television.

Sure enough, she eventually showed up. My Dad looked up from a magazine he'd quickly grabbed—which, he laughs, might have been Good Housekeeping or Women’s Day and was probably upside down—as he heard someone coming up the stairs. He gave his most sophisticated, "Hello." She smiled, gracefully set her books in the chair furthest from him, and said with "K" and wondered if she'd enjoy coming along. Much to his surprise, she accepted without hesitation, even before he offered to cover the cost of proper, separate hotel rooms. They began their trek along the Mother Road a few days after classes ended in mid-May 1961.

While the Route 66 television characters had an expensive new Corvette, my Dad used nearly half his "vacation money" to but a very basic used Rambler station wagon. Modest though it was, the car—complete with an AM radio bordered by big plastic knobs—offered much less trouble than the show's fancy Chevy. During that trip, the humble auto's only problem was that its radio occasionally had to be pounded just under the slide rule when a tube pin apparently lost contact with the socket. Mom remembers Dad having her slap the thing silly for nearly 25 miles east of Holbrook, Arizona, so he could hear their next destination, KDJI.

When the radio finally cooperated, it conveyed an eclectic mix of country and pop music, along with what sounded like promotional announcements in a Native American tongue. Dust kicked up from all four tires as my father's Rambler maneuvered through the open gate leading to the studio facility. "I bruised my hand for this place?!" my mother asked, in a voice louder than Dad had ever heard her use before.

"Let's just knock on the door and see what there is to see," he said calmly.

"It's nothing but a tin trailer! And, look, they've got a tree stump for a front step! Plus, the place is held up with a few cement blocks! What if the wheels go flat and the stupid thing tips over?" Mom tearfully protested. The intervening years would show that she rarely got that way, but even then Dad recognized her 50,000-watt version of tired and cranky. He passed her a tissue while she calmed down, then they both ven-
When Lowry passed by KDJI again, this time in 1998, he clicked another pix of the old metal transmitter shack. Not seen is the station’s new 5000-watt RF generator inside—though clearly visible is a brown water mark from flooding that had drowned the station five years earlier.

...tured toward what, admittedly, looked like a very lowly broadcast establishment.

**People Make The Station**

Once inside, however, they quickly felt much better. First off, KDJI had air conditioning, albeit a tad noisy. And Sam, the station’s General Manager, happily took a break from doing some bookwork so he could hear Dad’s accounts of what was going on in radio “back East,” especially regarding stations in New York, Boston, Buffalo, and Hartford converting to rock ‘n’ roll music formats.

After Mom freshened up, she and my father were ushered into KDJI’s studio, where they were interviewed between a couple of instrumentals by a star-struck disc jockey impressed that folks from New England would agree to be guests on his program. Dad vividly recalls the guy introducing Mom to KDJI listeners as “a dead ringer for Katharine Hepburn.” He seemed to almost believe her dual identity when my future parents told the DJ that they were on their way to Los Angeles (it didn’t seem to register that, in 1961, the real Kate Hepburn was much older than my Mom!) Thirty seconds after the interview concluded, the proprietor of one of Holbrook’s hotels phoned the station to invite my mother and father to dine in his restaurant and stay overnight—both on the house!

Besides later walking hand-in-hand at sunset on Malibu beach a few days later, that serendipitous Holbrook excursion became the highlight of their Route 66 trip. In fact, whenever they recounted the radio interview story, their only regret was not having taken a picture while at KDJI. So you can imagine their surprise and delight when I presented them with a candid color photo our broadcast historian friend, Jan Lowry, snapped about a year prior to my parents’ visit there. Once more, KDJI caused tears to well in my mother’s eyes. “Oh look!” she exclaimed—nostalgically this time—“there’s the tree stump front step!”

**Jan Lowry’s Record Of The Arizona Station**

Along with some great pictures, Jan Lowry provided a KDJI history from his bulging files. He notes that the precursor to KDJI was an FCC Standard Broadcast Station application that the Commission turned into a construction permit in late July 1955. Being granted this OK to build a new 1000-watt daytime AM on 1270 kHz in Holbrook were tourist curio shop owner Donald Edward Jacobs Sr., with a 75-percent share, and housewife Irene Tabor, who held a 25-percent share of what was soon dubbed K-D-J-I, presumably for Donald Jacobs and Irene.

In today’s dollars, their estimated $25,378 to put the station on the air doesn’t seem like much, but coupled with predicted first-year operating expenses of $31,200, it was easily the price of several nice houses and a new car. The duo, under the banner of Northeastern Arizona Broadcasters, figured on recouping much of their investment with an initial annual ad revenue of $42,530, a number my Dad speculates they found difficult to eke out.

The new station took shape throughout the summer and fall of 1955. Most notably, a guyed tower was erected in a low marshy area called Leroux Wash, west of Holbrook’s business district. Almost touching the stick’s concrete base, a corrugated steel shed served as the transmitter shack in the truest sense of the word. Studio and office facilities were established in a more civilized locale, however, at 1014 West Hopi Drive. With everything hooked-up, KDJI debuted in mid-November. A relative of Mrs. Tabor’s got the job of General Manager, but held the post for only a few months before relinquishing the position to Donald Jacobs. Irene Tabor’s interest in KDJI ended quickly, too, as she sold her shares to Jacobs in early 1957 for about $3,000.

As sole proprietor of the station, but not a broadcaster by trade, Jacobs sought out an experienced radioman to helm KDJI. He found help for his day-timer in a young broadcast pro, who’d later become famous for being America’s first overnight network radio personality, Herb Jepko (and who we met in March’s column). The future host of KSL Salt Lake City’s and Mutual’s Nitecap Radio Show helmed the little Holbrook AM until early 1960, about 10 months after Donald Jacobs sold KDJI to Harold Arnoldus for approximately $33,000.

**Cost Cutting On A Trailer Hitch**

The new owner of Holbrook’s sole station must have studied the outlet’s ledger long enough to recognize that being the only show in town wasn’t any guarantee of profitability. In order to implement his plan to reduce accounts payable, Arnoldus vacated KDJI’s downtown (Hopi Drive) headquarters and refitted the station’s possessions into a mobile home towed into place just a short roll of a tumbleweed from KDJI’s wavy metal transmitter shack. Jan Lowry mentions that, dur-
ing a 1998 trip, he sidetracked through Holbrook and peered into KDJI's long vacant original Hopi Drive studio/office. Though it had also been home to a machine shop, the interior window to the 1955 studio was still in place, allowing Jan to note that the former studio's walls were still "lined with faded acoustic tiles."

Jan's files indicated that a Sam Taylor Jr. took over the GM position when Jepko left for greener pastures in early 1960. This must have been the Sam who my folks recalled from their May 1961 tour. He was only there for a short stint himself and his replacement was named around Thanksgiving '61. KDJI's format during this period was described as "disc jockey music programs" with the exception of "2.5 hours of Navajo language weekly."

A pair of networks was added to the schedule in 1963: ABC Radio from New York and the Arizona Broadcasting System out of KOY in Phoenix. These affiliations were severed three years later, after the new owner—Navajo Broadcasting Company, Inc.—paid $90,000 for KDJI (in 1965) and began recasting it as a strictly local independent. That company focused much of its modifications on an application to boost power to 5 kW (6 a.m. to sunset), something the Commission granted in 1967.

In the FCC paperwork, KDJI officials dubbed the trailer studio/transmitter site "North Broadcast Lane," a fancy handle for a patch of desert "in Leroux wash, adjacent to the new interstate highway [Route 40] which passed on the southern edge of the property." By 1968, Navajo Broadcasting was reorganized when a minority partner was bought out.

**Shifting Sands Of Sound And Flood Waters**

Several format changes were in store for KDJI as the 1970s arrived. Ties were reestablished with the Arizona Network and ABC's relatively new Information Network. Along with this out-of-town fare, 15 hours per week of Navajo language was offered. Much of the daytimer's schedule, though, became the province of what KDJI announcers called "Town & Country" radio, a tag that typically means mostly songs from Billboard magazine's country music chart laced with some prominent middle-of-the-road pop and country/top-40 rock crossovers. This lasted until a 1978 switch to pure Top-40 hits. KDJI stopped airing Arizona Network feeds in 1987 and also nixed Top-40 fare in favor of Adult-Contemporary music.

The next format shift arrived a year later when the Top-40 label was reaffixed to its main programming listing. Those favoring such hit music—and living within a few miles of the tower—could get it on KDJI after sunset, when, starting in 1989, the FCC OK'd a post-sunset (non-directional) power of 130 watts. Management used this decent grant (some daytime stations only received the go-ahead for as few as a couple of watts at night!) to keep KDJI active until 12 a.m. Satellite Music Network's (SMN) Good Times-Great Oldies got pulled, ready-to-run direct from the bird for local personnel cost savings in 1990. This coincided with replacing ABC Information with news and brief features from the Mutual Broadcasting System, also received off a satellite 22,000 miles above the Equator.

KDJI officials would have settled for having their facility being 22 feet off the ground when waters from the Leroux Wash flooded the transmitter shack and studio trailer. The January 8, 1993, deluge was serious enough to register a three-foot high water mark, knock the AM off the air for nearly two weeks, and rack up $85,000 in property damage. When KDJI returned to the ether, it did so in a replacement "mobile studio set on pillars on higher ground," with a borrowed LPB-brand 100-watt transmitter. The weak voice it offered was better than no signal at all, and the station marked time until a newly ordered 5-kW box could be installed in the recently scrubbed-out transmitter hut. When listeners could receive the Holbrook AM at full power, the savviest among them probably noticed SMN's oldies fare had been replaced by similar music from the Jones Satellite Network. By the mid 1990s, the Holbrook area audience could hear KDJI 24 hours a day. And by 1999, they could visit station staff in the AM's new studio/office headquarters at 222 Navajo Boulevard in downtown Holbrook.

Developments for KDJI in the new millennium included a summer 2000 switch from oldies to ESPN sports, the license changing hands in 2001 and 2002 (in the latter instance for $650,000 with a companion Holbrook FM property), a 2004...
Here's a broadcast facility only an owner could love. On the silver screen it served as the mythical home to nearly defunct Ultra High Frequency TV, station U-62, and it had to scream, “No viewers, no ratings, no budget!” Weird Al Yankovic dreamed up the video underdog for his 1988 cult movie, UHF. Actually, the studio/transmitter building had no real video connection at all, but once housed a Tulsa, Oklahoma, daytime AM outlet on 1050 kHz, a Standard Broadcast property that began in 1946 as KFMJ under the ownership of Ford car dealers, Fred & Mary Jones. It has worn other calls, too, like KRAV and KGTO. By the time Weird Al’s film crew scouted the site as a perfect place to represent a rundown TV station, the beat-up building contained no working studio. All that remained inside and on its unkempt grounds was the 1050 AM’s 1-kW transmitter and associated classic four-legged self-supporting tower. Still, the movie maker had his crew modified the facade to make the ramshackle place look even worse! Today, that brick and mortar (and particle board) structure is gone, replaced by a tower-side shed to house the transmitter.

Motorists traveling the Arizona stretch of America’s first paved interstate “super highway” were apprised of where they were via signs like this. Opened in late 1926, Route 66 spanned some 2,450 miles, from Chicago to Los Angeles, and was traversed by millions of motorists, from wealthy vacationers to the fictional Joad family down on their luck in John Steinbeck’s Grapes of Wrath. Steinbeck dubbed the thoroughfare, the Mother Road. Route 66 was decommissioned in the mid-1980s when wider, faster Interstate 40 replaced it, though portions of the old ribbon have been deemed “historic” and serve as fun stretches for nostalgic cruise drives.

Very Nice On-Air Studio, But No Thanks

I would have doubted that there’s such a thing as reverse bias when it comes to sizing up an AM or FM station, but the reaction of one of my father’s radio buddies to a job interview seems to indicate otherwise. Armed with an unusually soothing, friendly radio voice, plus three years experience at several Providence, Rhode Island, area stations, and after sending out a barrage of air-check tapes to prospective program director employers, this fellow got a call from the PD at CBS-owned WEEI-FM 103.3 in Boston within a week of his 1975 college graduation.

A true radio junkie, the 20-something loved even the scent of shopworn studios and equipment that occasionally required a strategically placed pound of the fist to coax back into cooperation. Also key to this radio culture were the colorful folks who either worked at such stations or drifted in for a visit. But this cherished milieu seemed a world away from the one he experienced while riding the elevator to the high-rise headquarters of soft rock WEEI-FM. Once inside the well-appointed, musically automated venue, he easily passed the interview and was told he possessed the proper sound. During the time he spent in that CBS space near the top of the landmark Prudential Center, however, he saw no record albums nor blue jean-clad DJs enthusiastically flipping through a short stack of 45-rpm singles. My Dad reports that his friend did not take the job at WEEI-FM.

“It was too sterile-looking to be any kind of radio station I could be comfortable in,” the diehard radio guy explained. “Maybe I’m prejudiced, but some of the best broadcasting I ever heard—or participated in—came out of some pretty scruffy-looking stations. It’s like the kind of medical creativity that comes out of a M.A.S.H. tent, as opposed to some one-procedure specialist’s office. That’s what creating good theater of the mind from a broken down studio was all about.”

And so ends another day of broadcast history on Pop’Comm...

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The Zenith 8G005 Trans-Oceanic Restoration Challenge—Part IV
The Final Chapter

by Peter J. Bertini
radioconnection@juno.com

It's been a long road, but we've reached the end of our Zenith Trans-Oceanic restoration journey. This month we'll spend some time getting the cabinet back into acceptable condition and conclude the restoration at the point where the radio is both displayable and useable.

Unfortunately, my cabinet had not fared well over the years, and decades of improper storage and physical neglect had taken its toll. It suffered abundant evidence of past damage: the fabric edges were becoming unglued in many areas, and there were a few areas where tears, gouges, and rips were patched and repaired some time earlier. A full restoration would have included a complete repair of the cabinet. This would have involved reupholstering the cabinet, and perhaps buffing or re-plating the brass-trim pieces. Some restorers would settle for nothing less, but I opted to be a bit more pragmatic.

Decisions

As mentioned, there were some issues with the original Zenith stag covering. Some areas were loose and some others were worn to the point of being thin and gauze-like. I had two options.

“A full restoration would have included a complete repair of the cabinet...Some restorers would settle for nothing less, but I opted to be a bit more pragmatic.”

Photo A. The Zenith Trans-Oceanic cabinet has been disassembled into five sections. The largest is the main cabinet. At left, going from top to bottom, is the top front lid, top plate, and the small door for the instruction booklet located in the lower front section of the radio. The rear cover is just below the main cabinet box.
Photo B. White mold is commonly seen on the stag covered Trans-Oceanic radios. The glues and materials provide a fertile growing medium for the mold. Luckily, it's easily removed with a damp rag and soap.

First, I could replace all the fabric covering with new black Tolex material. (Tolex is the brand name for the vinyl covering used on Fender amplifiers and other types of equipment housings and is available from restoration supply houses that cater to the music equipment trade.) While not an exact match for the original Zenith stag material, the results are impressive if you are willing to go to the expense and have the time to carry the restoration to that level. If the radio had been a valued family heirloom, I might have considered this avenue.

The second approach, and the route I followed, was to simply do the best I could to make the radio look presentable, while displaying some vestiges of its past. This radio will be used on a three-season screened porch, not the best environment for an expensive shelf queen!

Photo C. Years of storage and changing seasons can cause the old glues to dry out and weaken, resulting in loose sections of stag material, especially at the edges and seams. Note the wire leads that are attached to the hinge arms. These wires connect the WaveMagnet antenna to the radio. The wires and hinge pivot points are hidden beneath the top plate section when the radio is assembled.

There are many surviving examples of Trans-Oceanics left in the world. If you’re in the market, I’d suggest looking for the nicest example available; paying a few extra dollars for a nicer specimen upfront is often far more cost effective than endless searches for replacements for missing or damaged parts, or getting involved in labor- and cost-intensive cabinet restorations. Personally, I find more satisfaction in doing the electronics versus cosmetic cabinetwork.

The cabinet is comprised of five individual sections, all of which are held together with small wood screws. The disassembled cabinet is shown in Photo A. Zenith wood Trans-Oceanic radios all suffer from a common malady: white mold! The materials and adhesives are a fertile breeding ground for mold growth, and Photo B shows the whitish residue. Even though this radio was cleaned and stored in a climate-controlled room, the mold eventually returned. Fortunately, it is easily removed using a gentle soap and a wipe down with a damp rag.

The largest section is the main cabinet. The front lid and rear lids are the two next largest components, followed by the top cover (which hides the WaveMagnet wiring), and finally the small lid for the instruction booklet compartment at the bottom front of the radio.

**Loose Stag**

Many of the glue seams along the edges of the stag material had failed, resulting in loose fabric edges, as shown in Photo C. Fortunately, this is an easy fix.

First, I cleaned all cabinet surfaces using a damp rag and soap; this step also removed all traces of mold. I used damp Q-Tips to clean out any loose material (dust, dried glue, etc.) that

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had lodged between the material and plywood base. If the stag has curled, you can wet it with a spray of water to soften the material. Clamp it flat until it is fully dry, and then proceed with the glue repairs. I found that Pliobond adhesive, available at local hardware stores, worked well to repair the loose edges. The adhesive, while quickly becoming tacky, has a good working time and is easy to use. Once the seams were filled with adhesive, I pressed the material back down and removed with an alcohol-dampened rag any excess adhesive that squeezed out.

As seen in Photo D, several wood clamps, with narrow strips of wood, ensured that the seams were held tight while the adhesive set and cured. This approach keeps an even amount of pressure along the full length of the newly re-glued seam. A layer of waxed paper between the wood and cabinet prevents any residual glue from attaching the oak strip to the cabinet.

More Decisions: Shoe Dye Or Paint

The next step is to restore the original black stag finish. Many Trans-Oceanics will do fine with an application of black shoe polish; I had to go a few steps fur-
ther on my radio, however. Black sl- oe dye is an excellent choice to “refinish” original black stag material that’s in good condition, but that was not my case. I’d read that some res- orers had had good results using black spray paint, so I decided to give that approach a try.

One reason I chose the paint over the dye was because of those worn stag areas, where the material looked more like gauze than a full-bodied fabric. The paint helped to “fill in” those areas, making for a more uniform surface. Since it’s hard to remove everything that isn’t going to be painted or dyed, I carefully covered those areas using masking tape, as shown in Photo E. I used a black semi-gloss, being careful to only apply very light coats of spray paint as heavy coats can mask the original grain of the Zenith stag material.

The painted cabinet now looked a bit too shiny for my liking, so I wet-sanded

Photo F. Here’s the before photo of the Zenith 8G005 Trans-Oceanic.

Photo G. And here’s the finished radio! The differences are a bit more dramatic than the photos show.
the cabinet using a fine grit sanding sponge, which knocked down the sheen to an acceptable level. I allowed the paint to fully cure for a few weeks, and then applied a few coats of hand-rubbed bowling wax. You'll often find that "restored" Trans-Oceanics have been waxed and polished until they glisten, but this is not the correct look for these radios. At most they should only show a very slight sheen.

Tah-Dah—Restoration Fini!

Photo F shows the original, untouched radio; the completed restoration is shown in Photos G and H. The differences are a bit more dramatic when seen in person—it's hard to photograph a black radio!

It would be fun to reupholster the cabinet with Tolex, just to gain the experience. Time permitting, I may do so in a future column.

Until then, keep those soldering irons warm and those old tubes glowing!

References

1. Antique Electronic Supply, 6221 S. Maple Avenue, Tempe, AZ 85283; Phone: 480-820-5411, 800 706-6789

Lew McCoy on Antennas
by Lew McCoy, W1ICP
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Reach this dynamic audience with your advertising message, contact Chip Margelli at 405-ADS-COCO (405-237-2727), FAX 714-895-3714, or e-mail: advertising@popular-communications.com.
It's been a quiet month in Cowfield County. The long-suffering Mrs. N3AVY has been monitoring some of my expenditures and asks ever-so politely what a 30mm scope-lapping tool is, and also how anyone could spend over $400 a year on airgun pellets. I respond with a discussion of how I get by with two pair of pants and one pair of shoes, and we call it a draw long before the inventory count gets near socks and underwear—or radios.

I now have one of those great little Grundig general coverage receivers (thanks, DG), which follows me around the house and even performs well within a foot or so of my computer. Since I see the receiver advertised on the pages of Pop'Comm, it's safe for me to say that it's a real performer and does far better on the AM broadcast band than my Super Radio II. It's better on FM as well.

Just this morning, I gave a once top-of-the-line scanner to the local Boy Scout Council, along with some ham radio books. The thought of teaching some code to our young khaki friends has even crossed my mind, just as long as they don't make me wear a uniform or carve my own neckerchief slide. Actually, I'd probably walk a mile to meet kids interested in learning CW. I miss CW. Since I've been carrying the little Grundig around the house, I've been listening to W1AW's CW broadcasts and copying in my head. I even got a pencil and paper one evening, but it's easier to just listen. What I really need is one of the (several dozen) old manual typewriters I used to collect (believe me—they won't fit in a scrapbook—especially the wide-carriage Underwood). Since I got rid of every last one of them, I'm wondering if I can sneak one into the house without "She Who Must Be Obeyed" thinking I'm having a relapse into my old ways.

And as much as today's Dollar-Store earphones are quite adequate, I also miss those lousy cans we used to wear in the radio shack on the Coast Guard ships. You know, those lovely germ-laden Bakelite earpieces with the two steel bands across the head—the ones that looked as if they had a little antenna sticking up over each ear. Frayed fabric-covered cord with a stereo phone plug for split-phone watches. Imagine having two Collins R-390s at your command. Now imagine also having two permanent grooves across the top of your head. It's OK, though—they were a part of history. I'm sure some had earwax dating back from before World War II.

Soon I'll find a pair of those extremely comfortable old cans for listening to CW, but that only covers the inbound CW. I have never in my whole life owned a keyer. I've used a few, and found them kind of interesting, but I never actually owned one. That's about to change.

I recently found a nice guy with a 9 in his call-sign who's selling an old Heath keyer, and I decided that I should have one—and the two-tone green Heath keyer is just about as modern as I want to get. Now I'm not saying I'm going to connect it to a transmitter, or connect the transmitter to an antenna. So far the plan is just to sit around and improve my withering fist, and like most CW ops, see if I can send twice as fast as I can receive.

And I'm really tempted to put an amplifier in the car, with a little speaker under the hood. Don't bother to tell me that's not quite legal, I know—it just seems so much more polite to send a "HI" to another ham with a nice oscillator tone than with your horn.

Besides, I already learned (the hard way) that a bug will burn out a horn relay in short order. That was then; this is now. My '66 Plymouth probably had a weak horn-relay to begin with.

Norm and Beezer are holding their breath in the hopes that I'll actually put up an antenna and get on the air. I think Chief Bob and David in Mass will be waiting, too. No promises, but I'm thinking about it. I wonder if the FCC is issuing unlisted callsigns.

Bill doesn't know it, but his spark-gap transmitter from the Coast Guard Cutter Bear is not type accepted (or even close) for use on the ham bands—or any bands, for that matter, but we continue to humor him.—ed.
AR5001D Wide Coverage Professional Grade Communications Receiver

The Legend Lives On!

The AR5001D delivers amazing performance in terms of accuracy, sensitivity and speed.

Available in both professional and consumer versions, the AR5001D features wide frequency coverage from 40 KHz to 3.15 GHz*, with no interruptions. Developed to meet the monitoring needs of security professionals and government agencies, the AR5001D can be controlled through a PC running Windows XP or higher. Up to three channels can be monitored simultaneously. Fast Fourier Transform algorithms provide a very fast and high level of signal processing, allowing the receiver to scan through large frequency segments quickly and accurately. AR5001D standard features include storage of up to 2000 frequencies, 45 MHz IF digital signal processing, direct digital sampling, a high performance analog RF front-end, a DDS local oscillator and advanced signal detection capabilities which can detect hidden transmitters. With its popular analog signal meter and large easy-to-read digital spectrum display, the AR5001D is destined to become the choice of federal, state and local law enforcement agencies, the military, emergency managers, diplomatic service, news-gathering operations, and home monitoring enthusiasts.

Discover the next generation in AOR's legendary line of professional grade desktop communications receivers.

- Multimode receives AM, wide and narrow FM, upper and lower sideband and CW
- Up to 2000 alphanumeric memories (50 channels X 40 banks) can be stored
- Analog S-meter
- Fast Fourier Transform algorithms
- Operated by a Windows XP or higher computer through a USB interface using a provided software package that controls all of the receiver's functions
- An SD memory card port can be used to store recorded audio
- Analog composite video output connector
- CTCSS and DCS squelch operation
- Two selectable Type N antenna input ports
- Adjustable analog 45 MHz IF output with 15 MHz bandwidth
- Triple-conversion receiver exhibits excellent sensitivity
- Powered by 12 volts DC (AC Adapter included), it can be operated as a base or mobile unit
- Professional (government) version is equipped with a standard voice-inversion monitoring feature

Add to the capabilities of the AR5001D with options:

- Optional APCO-25 decoder
- Optional LAN interface unit enables control via the internet
- Optional I/Q output port allows capture of up to 1 MHz onto a computer hard drive or external storage device
- Optional AR-I/Q Windows software facilitates the easy storage and playback of transmissions captured within the selected spectrum in conventional modes, or, signals can be subjected to further analysis
- Optional GPS board can be used for an accurate time base and for time stamping digital I/Q data

*Cellular blocked for US consumer version. Unblocked version available to qualified purchasers with documentation. Specifications subject to change without notice or obligation
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.

- HF-50MHz 100W
- Digital IF Filters
- Built-in Antenna Tuner
- Advanced DSP from the IF stage forward
- Heavy duty TX section
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- 2 Color LCD