

45635

# POPULAR COMMUNICATIONS

JUNE 2007

## Wright-Patterson Air Force Base

### Cutting-Edge Aerospace Monitoring



- **Ham Frequencies In Easy Reach, pg. 18**
- **ICOM'S IC-PCR2500 Triple-Duty Base/Mobile PC Scanner, pg. 46**
- **Bringing The Emergency Alert System Up To Speed, pg. 56**

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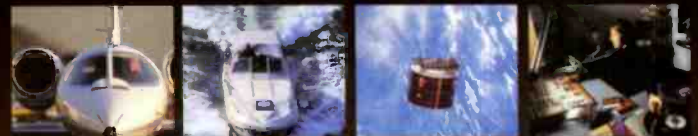
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D.1 ~ 2599.99998MHz\*  
LSB/USB/CW/AM-N/AM/  
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- Ultra-long battery life
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Universal Radio is pleased to continue to offer the Icom R75 receiver. 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: **Synchronous AM Detection**, 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 quick tuning step plus 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! A great value. Order #0175 **Call for price.**

## ICOM® PCR1500 R1500



The Icom PCR1500 wideband computer receiver connects externally to your PC via a USB cable. This provides compatibility with many computer models, even laptops. Incredible coverage is yours with reception from 10 kHz to 3300 MHz (less cellular gaps). Modes of reception include AM, FM-Wide, FM-Narrow, SSB and CW. (CW and SSB up to 1300 MHz only). The PCR1500 comes with an AC adapter, whip antenna, USB cable and Windows™ CD. #1501 **\$479.95**

The Icom R1500 is similar to the above, but also includes a controller head for additional operation independent of a PC. #1500 **\$579.95**

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The Icom PCR2500 wideband computer receiver uses a similar form-factor to the PCR1500, but has several enhancements, including two powerful features: **dual watch** (the radio can receive two signals simultaneously) and **diversity reception** (two antennas can be connected at the same time and employed to provide stable reception). The optional UT-118 Digital Unit provides D-STAR® digital voice reception and the optional UT-121 supports APCO25 digital voice decoding. The R2500 is shown above. #2501 **\$709.95**

The Icom R2500 is similar to the PCR2500, but includes a controller head for additional operation independent of a PC. #2500 **\$879.95**

**FREE**

**ICOM UT-121 APCO 25 Board included!**  
A \$248.00 value Included **FREE** with your R2500 or PCR2500 purchase valid to June 30, 2007.

**Special Note:** Prices shown for the R1500/PCR1500 and R2500/PCR2500 reflect the \$20 Icom mail-in rebate valid to June 30, 2007.

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The R3 tunes 500 kHz to 2450 MHz (less cellular) in AM, FM-W, FM-N and TV via a 2 inch **TFT color TV screen**. You can receive regular TV [NTSC], and you may be able to see certain video feeds and ham radio Fast Scan TV. A second mono LCD display that can be used to conserve battery life. You get: 450 alpha memories, 4-step attenuator, bandscope, video and audio outputs and auto power-off. Comes with Li-ion battery, charger, belt clip and BNC antenna. **Call**

## R20



The Icom R20 covers an incredible 150 kHz to 3304.999 MHz (less cellular) with 1250 alphanumeric memories, bandscope and SSB/CW. It has: two VFOs, dual watch, voice scan control, NB, large two line LCD and CTCSS/DTCS/DTMF. A built-in **IC audio recorder** can record 1, 2 or 4 hours of reception! This radio comes with charger, Li-ion battery, belt clip and wrist strap. More info on website. **Call**

## R5



The R5 covers 150 kHz to 1309.995 MHz (less cellular gaps) in: AM, FM Narrow and FM wide. 1200 memories store: frequency, mode, step size, duplex direction and offset, CTCSS tone, tone squelch and skip settings. Other features include: attenuator, LCD lamp, AM ferrite bar antenna, auto power off, CTCSS decode, weather function and battery save. A great value at under \$200.00. **Call, or visit website for price.**



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# Contents

## POPULAR COMMUNICATIONS

Volume 25, Number 10

June 2007

### Features

#### 10 Wright-Patterson Air Force Base—

Where Aviation's Past, Present, And Future Meet

by Tom Swisher, WA8PYR

#### 14 Army MARS Chief Sets New Course

The Venerable Organization Is Restructuring—  
Where Are We Headed?

by R.B. Sturtevant, AD7IL/AAR80W

#### 18 Talk Back To Your Radio! Experience The Magic Of Ham Radio

New Privileges And New License Rules Mean The Time Is  
NOW To Get—Or Upgrade—Your Ham Radio License

by Rich Moseson, W2VU

#### 22 Field Day—No Better Way To Get On The Air

Whether You're Operating From A Park, A Mountaintop,  
Or The Beach, There's No Thrill Like Field Day.  
And Everyone's Welcome!

by Chip Margelli, K7JA

### Columns

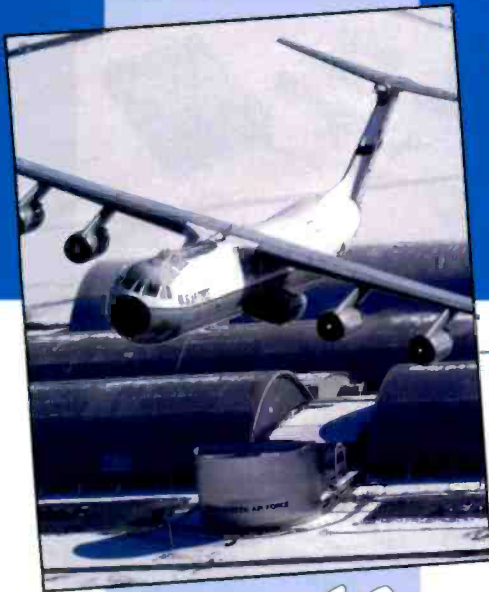
- |    |  |                               |
|----|--|-------------------------------|
| 26 | Scanning Dayton, Ohio  | ScanTech                      |
| 35 | New U.S. Relay Station In Tajikistan, Plus Is HCJB Going Relay?                          | Global Information Guide      |
| 42 | World News, Commentary, Music, Sports And<br>Drama At Your Fingertips                    | World Band Tuning Tips        |
| 46 | ICOM's IC-PCR2500 Triple-Duty Base/Mobile PC Scanner                                     | Technology Showcase           |
| 49 | A World Of New Opportunities On The HF Bands   | The Propagation Corner        |
| 56 | For Your Protection—The Emergency Alert System   | Broadcast Technology          |
| 61 | More Solutions For High Line Voltages  | The Wireless Connection       |
| 64 | "And The Award Goes To..."   | Ham Discoveries               |
| 66 | A Warm-Weather Spruce-Up For Your Antenna, And Other<br>Ways To Stay Prepared            | Homeland Security             |
| 68 | Monitoring The Atlanta Skies—The Nation's Busiest,<br>Plus A Great New Tracking Resource | Plane Sense                   |
| 73 | How AIS Fits Into The Maritime Communications Picture                                    | Utility Communications Digest |
| 81 | Thailand—Emerging From Tragedy   | World View                    |
| 84 | Not Much In Common...  | Loose Connection              |

### Departments

- 4 **Tuning In**—An Editorial
- 6 **Our Readers Speak Out**—Letters
- 7 **InfoCentral**—News, Trends, And Short Takes
- 8 **Washington Beat**—Capitol Hill And FCC Actions Affecting Communications
- 31 **The Pop'Comm Trivia Corner**
- 44 **Power Up**—Radios & High-Tech Gear

### On The Cover

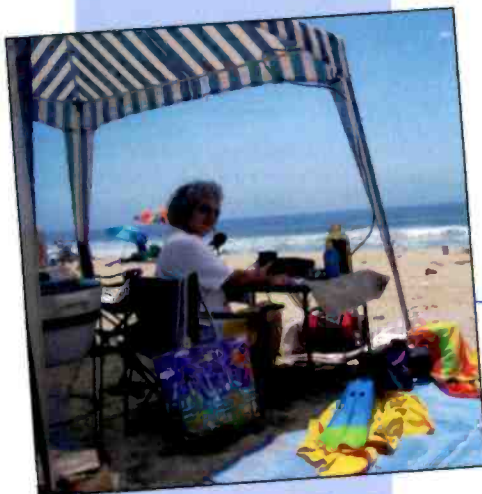
From the premiere facility for conception, development, and testing of weapons systems for military aviation arose a deadly bird of prey. The F/A-22 Raptor, seen here, was developed at Aeronautical Systems Center, Wright-Patterson Air Force Base, Ohio, and is the replacement for the F-15 Eagle air-superiority fighter. See "Military Radio Monitoring," starting on page 10, for how to listen in on WPAFB. (U.S. Air Force photo by Kevin Robertson)



10



18



22

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# Tap into secret Shortwave Signals

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

MFJ-462B  
\$189<sup>95</sup>

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

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You'll read interesting commercial, military, diplomatic, weather, aeronautical, maritime and amateur traffic . . .

## Eavesdrop on the World

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

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

## Super Active Antenna

"World Radio TV Handbook" says MFJ-1024 is a "first-rate easy-to-operate active antenna...quiet...excellent dynamic range...good gain...low noise...broad frequency coverage." Mount it outdoors away from electrical noise for maximum signal, minimum noise. Covers 50 KHz-30 MHz.

Receives strong, clear signals from all over the world. 20 dB attenuator, gain control, ON LED.

Switch two receivers and auxiliary or active antenna. 6x3x5 in. Remote has MFJ-1024 \$149<sup>95</sup> 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...best offering to date...performs very well indeed."

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

## Compact Active Antenna

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 1/4x1 1/4x4 in.



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

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

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

## High Performance Modem

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

## Easy to use, tune and read

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

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

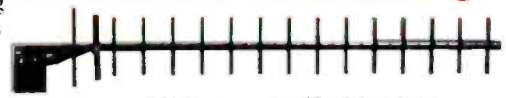
It's easy to read -- front-mounted 2 line 16 character LCD display has contrast adjustment.

Copies most standard shifts and speeds. Has

MFJ AutoTrak™ Morse code speed tracking.

Use 12 VDC or use 110 VAC with MFJ-1312D AC adapter, \$15.95. 5 1/4Wx2 1/4Hx5 1/4D inches.

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



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

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MFJ-5606SR, \$24.95. Cable connects MFJ-1800/WiFi antennas to computer.

Reverse-SMA male to N-male, 6 ft. RG-174.

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

## Eliminate power line noise!



MFJ-1026  
\$189<sup>95</sup>

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

## MFJ Antenna Matcher

Matches your antenna to your receiver so you get maximum signal and minimum loss. MFJ-959C \$109<sup>95</sup>

Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload. Select 2 antennas and 2 receivers. 1.6-30 MHz. 9x2x6 in. Use 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.

## High-Gain Preselector

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

## Dual Tunable Audio Filter

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

## MFJ Shortwave Headphones



MFJ-392B  
\$24<sup>95</sup>

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

## High-Q Passive Preselector

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

## Super Passive Preselector

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

## MFJ Shortwave Speaker

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



MFJ-281  
\$42<sup>95</sup>

## MFJ All Band Doublet

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



MFJ-1777  
\$49<sup>95</sup>  
Ship Code A

## MFJ Antenna Switches

MFJ-1704 \$69<sup>95</sup> MFJ-1702C \$29<sup>95</sup>

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

## Morse Code Reader

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

## MFJ 24/12 Hour Station Clock

MFJ-108B, \$21.95. Dual 24/12 hour clock. Read UTC/local time at-a-glance. High-contrast 5/8" LCD, brushed aluminum frame. Batteries included. 4 1/2Wx1Dx2H inches.



MFJ-461  
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## Changes In Radio... And Popular Communications

**T**he premier issue of *Popular Communications* hit the newsstands in September 1982, three months after I graduated college. Other momentous news from that year included the Falkland Islands War, the defeat of the Equal Rights Amendment, and the Tylenol tampering case. As I leaf through the pages of that first issue, I find that we were telling our readers when to listen for clandestines from Latin America, where to monitor drug interdiction efforts, and how to properly ground antenna towers.

Almost 25 years later, a lot about the communications landscape is the same—there's still plenty of strife to be heard, and that tower still needs grounding—but so much has changed, too. The "Scanner Scene" column explained how to monitor mobile phones (back when they were called that, and back when you could). We also ran a list of 10 codes to help readers decipher law enforcement comms (we won't be needing that anymore, will we?—at least that's what FEMA tells us).

In 1982, I was listening to the BBC on the shortwave receiver in my family's kitchen. And I was fascinated by the barked instructions I heard on my policeman brother's radio every time he stopped by for lunch. But I had never laid eyes on a personal computer, and the Internet simply didn't exist. Streaming audio would have sounded like a mistake made in a recording studio.

That's not very long ago, but in our hobby change seems to come pretty fast. And this is a good thing.

I don't think any of us would opt for changing \$5 crystals every time we wanted to tune another frequency, rather than instantaneously programming action bands into our new digital rigs with computer software. It's

enough just to experience that solitary monitoring "catch"—that rush—that keeps you at the radio until the small hours, no matter how that feeling comes to you. I think you know what I mean.

Some of you may disagree, but I for one am excited about the pace, and even the uncertainty, of it all—it's exhilarating. We don't know how the emerging trends in technology, where everything seems "virtual," will shake out in the end, but there's no denying that we're witnessing a complete paradigm shift in the way we communicate. I can't wait to see what's ahead.

On that note, I guess it's a good time to introduce myself, and to say a fond thank you to Harold Ort, editor of this magazine for over a decade. With this issue of *Popular Communications*, after about five years as the managing editor, I will be taking the helm of these pages from Harold. I'm sure many of you will miss his insightful and humorous analysis of the state of our hobby, just as I will. That said, I hope I'll bring something of my own to this magazine.

I've had the honor of working at CQ Communications, publisher of *Pop'Comm*, for nearly 17 years (gasp!) as managing editor of *CQ VHF, Communications Quarterly*, and the *CQ Amateur Radio Almanac* and as editor of our *Amateur Radio Equipment Buyers' Guides* and *Radio!* magazine (and, frankly, I'm probably forgetting one or two). I've been a ham radio operator since 1994, an avid shortwave listener for much longer, and still listen in on that police scanner. So, don't worry, we'll certainly continue with our excellent coverage (thanks to our excellent writers) of the scanner bands, broadcast history, pirates, clandestines, spy numbers, ham frequencies, and everything else

that makes *Pop'Comm* so valuable and so much fun. But also expect to see a lot more on live monitoring via the Web, podcasting, and radio remote-control—otherwise known as the future. Change is coming: we're going to greet it as a friend. And let me know what else *you* want to see, what excites you about the hobby today. Write a letter, an article. You've just heard from me, now I'd like to hear from you.

And speaking of articles, in this issue *Pop'Comm* gives a special tip of the hat to amateur radio in honor of the recent rule changes, the Dayton Hamvention (officially last month according to cover date, but this issue will also be in attendees' hands), and Field Day. The annual pilgrimage to Dayton, Ohio, is an experience *no one* in the communications hobby should miss—non-hams, too (there's plenty to scan, plenty of bargains, and plenty to learn). Check out the scanner frequencies for Wright-Patterson Air Force Base in "Military Radio Monitoring," the general frequencies for the area in "ScanTech," and our "how-to" ham features by Rich Moseson, W2VU, and Chip Margelli, K7JA.

And if you are in Dayton, stop by the CQ Communications booth and say hi.



Edith Lennon, N2ZRW

*Popular Communications* invites your comments, questions, criticisms, compliments, article submissions—in a word, your thoughts. Write to me at editor@popular-communications.com, or if you prefer, at CQ Communications, 25 Newbridge Rd., Hicksville, NY 11801. Let's hear from you.

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Each month, we select representative reader letters for "Our Readers Speak Out" column. We reserve the right to condense lengthy letters for space reasons and to edit to conform to style. All letters submitted must be signed and show a return mailing address or valid e-mail address. Upon request, we will withhold a sender's name if the letter is used in "Our Readers Speak Out." Address letters to: Edith Lennon, Editor, Popular Communications, 25 Newbridge Road, Hicksville, NY 11801-2909, or send e-mail via the Internet to editor@popular-communications.com.

## Ah, Memories...

### Dear Editor:

Ken Reiss' excellent pictorial series, "The History of Scanning" [April 2007] brought back a flood of memories. Not just of great (and not-so-great) scanners, but also of all the interesting communications and experiences they've provided over the years.

When I saw Ken's photo of RadioShack's breakthrough PRO-2001 scanner, it brought back an especially memorable scanning experience:

Back in the mid-80s I attended a two-way/cellular radio trade show in Washington, D.C. The FCC had one of their covert monitoring/enforcement vans on display on the show floor—with the side door open and an FCC technician there to answer any questions. The van was full of fascinating gear, including (to my surprise) a PRO-2001 scanner!

This FCC tech was a relatively young guy, not your typical aging, overweight FCC enforcement agent. We had a frank discussion about various pirate HF and mediumwave stations—both current ones and those the FCC had tracked down and silenced. Being an active pirate broadcast listener, this was quite interesting to me, as I knew some of the operators!

Surprisingly, the FCC tech was complimentary about the signal and audio quality of some of these stations. Needless to say, I briefed my friends later about the opinions and theories this candid FCC technician was kind enough to share with me. But I digress.

What this FCC tech was *not* pleased about was a very strong wideband noise signal he was receiving right then in the UHF federal band. We monitored the hash noise on the PRO-2001 (a nice receiver both in performance and appearance) and viewed the signal on the FCC's Tektronix spectrum analyzer. Suddenly, I realized what might be the source...

I led the FCC agent over to the Motorola booth, where they were demonstrating a new digitally encrypted DVP [Digital Voice Privacy] handheld

transceiver. The FCC guy asked the Motorola sales rep if he could look at the radio, and observed a label on the back indicating the center frequency of the (unlicensed) wideband transmission he'd just monitored.

Without hesitation, the FCC agent wrote up and handed a violation ticket to the stunned Motorola sales rep, and instructed him to cease and desist! I had to exit the Motorola booth before cracking a smile and blowing *my* cover.

Thanks for publishing such a great magazine. Keep it up.

A. Monitor  
Northeast PA

### Dear A.:

*Thanks for the compliment. But why do I get the feeling that that's not the only time you've mixed things up at a trade show? Or last.*

—Editor

## The Start Of A Series?

### Dear Editor:

Shannon Hunniwell's April article, "Whatever Happened to RadioShack?" was great! Now, she needs one just like it about Heathkit.

Tom Spade  
Hillsboro, Oregon

### Dear Tom:

*An excellent idea. I've passed it along to Shannon. It's something we'd all like to understand.*

—Editor

## About Time

### Dear Editor:

I've been in this hobby longer than I care to remember, and I thought I knew it all. But just when I was sure the FCC didn't have a working brain in the organization, they finally fixed the Morse code issue. Now we'll never again have to hear "I did it, you have to do it!"

Thanks, FCC. Finally.

David Shrum  
Via E-mail

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# News, Trends, And Short Takes

## HCJB Partner Launches Shortwave Station In Central African Republic

Six years of planning and praying culminated on March 1, as Integrated Community Development International (ICDI) in Boali, Central African Republic, officially began broadcasting the gospel via shortwave with help from HCJB Global Voice. The station, broadcasting on 6030 kHz, airs eight hours daily with programming in French and three African languages, Sango, Aka and Fulfuldé.

## HCJB Testing DRM To North America

In other HCJB-related news, the Voice of the Andes is conducting new DRM test transmissions to North America for the next couple of weeks. The tests will begin on 15140 kHz from 1200 to 2400 each day and then move to 9820 kHz from 0000 to 0800 UTC.

## Eleven Former VOA Directors Appeal For Reversal Of Plan For VOA Cuts

Eleven former directors of the Voice of America have issued a joint statement calling on Congress to reverse a Bush administration plan to substantially reduce VOA's English broadcasts as well as those in 15 other languages.

VOA, the largest publicly funded civilian overseas broadcasting network in the United States, may go silent in many areas of the world on radio later this year unless the Congress reverses the action in hearings on the U.S. federal budget for the next fiscal year, starting October 1. Among the planned cuts is the shutdown on radio of VOA's worldwide English service. The former VOA directors joining in the appeal to reverse the cuts have served at various times during the past half a century under both Republican and Democratic administrations.

If the cuts go through, the VOA also would eliminate all broadcasts in Uzbek, Croatian, Georgian, Cantonese, and Thai, and cease radio transmissions while retaining some television in Russian, Ukrainian, Albanian, Serbian, Bosnian, Macedonian, and Hindi (to India.) Schedules would be cut, as well, in Tibetan and Portuguese to Africa.

## Libya Agrees To Liquidate Voice Of The Mediterranean

The Libyan government has agreed to start the process towards the liquidation of the defunct Voice of the Mediterranean (VOM) radio station. In a meeting held in Tripoli last month and attended by Maltese Foreign Minister Michael Frendo, the Libyan government expressed its willingness to accept the Maltese government's invitation to liquidate and sell the remaining assets belonging to the radio station, set up in the late 1970s as a joint project between the two countries.

It is understood that the assets to be liquidated at VOM have an estimated value of at least LM300,000 (Maltese lira;

\$921,000 U.S.) and include furniture and motor vehicles. The monies recovered through the eventual liquidation of VOM are considered crucial for the settlement of long-standing salary arrears to former employees and unpaid bills for services or equipment. Approximately 20 employees lost their jobs when the enterprise went bankrupt under the chairmanship of former PN junior minister Richard Muscat, who has since been appointed Malta's ambassador to Ireland.

The reasons behind the closure of VOM sparked a political controversy, with the opposition requesting and obtaining a full hearing of the case before the Public Accounts Committee. The Voice of the Mediterranean radio station transmitted in seven languages, and was heralded as making a major contribution to the dissemination of Malta's positive image abroad.

## AIR Khampur Testing DRM To Europe On 9950 kHz

All India Radio is continuing its own shortwave DRM tests, from the Khampur (Delhi) transmitter site, as follows:

Frequency: 9950 kHz

UTC: 1945 to 2230

Target: Europe

## Satellite Radio Channels Account For 3.4 Percent Of All Radio Listening In Arbitron Survey

The sum of all listening to XM/Sirius satellite channels mentioned by the half million diary keepers in the Arbitron Fall 2006 survey totaled 3.4 percent of credited quarter hours (rough equivalent of share), according to Arbitron, Inc.

The Fall 2006 survey was the first in which new instructions were provided in the diary, asking respondents to indicate their listening to satellite and Internet radio in addition to AM/FM radio. Respondents mentioned 297 separate satellite radio channels in the survey. Arbitron's recent analysis revealed that the highest share of quarter hours for an individual satellite radio channel was 0.2 percent. The average satellite radio channel had a .009 percent share of quarter hours, which would not be high enough to meet Arbitron's minimum reporting standards.

Approximately 5.6 percent (rough equivalent of reach) of the 468,786 diary keepers who participated in the Fall 2006 Arbitron survey listed a satellite radio channel in their diary.

The analysis also showed that satellite listeners are heavy listeners to radio in general, including AM/FM radio. Satellite listeners spent an average of 33 hours a week with radio compared with the typical listener who listened approximately 19 hours a week to radio. Also, people who listened to satellite spent more time with AM/FM radio (14 hours) than they did with satellite radio (10 hours, 45 minutes) or the Internet (eight hours, 15 minutes).

Estimates of listening for specific satellite radio channels are not yet available while Arbitron refines its processes to credit and report listening for satellite channels.

## Capitol Hill And FCC Actions Affecting Communications

### Lawmakers Consider Antenna Bills In Three States

Arizona, Maryland, and Oklahoma legislators are considering amateur radio antenna bills that would put the essence of the limited federal pre-emption, known as PRB-1, into each state's statutes, the American Radio Relay League has reported.

"The Arizona and Maryland bills go a step beyond most PRB-1 legislation. They not only would require that municipal land-use or zoning regulations 'reasonably accommodate' amateur radio communication per PRB-1, spelled out in the FCC's amateur radio rules in §97.15(b), they would extend the same protections to homeowners in certain private communities where deed covenants, conditions and restrictions (CC&R) apply," the League said.

According to the ARRL, the Arizona amateur antenna bill, House Bill 2595, calls for "reasonable heights and dimensions for accommodation of amateur radio station emergency service communications antennae and structures."

In Maryland, essentially identical bills are under consideration in both legislative chambers; they are House Bill 941 and Senate Bill 68, requiring local zoning authorities to comply with the PRB-1 limited federal pre-emption calling on municipalities to "reasonably accommodate amateur radio communication." The bills "also would apply to homeowners' associations (HOAs) that have not already enacted antenna restrictions by the time the bill becomes law, and HOAs could not impose such restrictions after that date," according to the ARRL.

"Affected HOAs would not be permitted to 'restrict or prohibit the design, placement, screening, height or use of amateur radio equipment on the property of lot owners,'" the League reported. "The measure would exempt HOAs having antenna restrictions in place when the bill goes into effect, however."

In Oklahoma, House Bill 1037 provides that municipal ordinances regulating amateur radio antennas or antenna support structures comply with §97.15(b) "by allowing for the erection of an amateur radio antenna or an amateur radio antenna support structure at a height and dimension sufficient to accommodate amateur radio service communications." It has been scheduled for a vote.

Twenty-three states have adopted PRB-1 legislation. "PRB-1 does not specify a minimum height below which local governments may not regulate but does require reasonable accommodation," the ARRL said. "But four states—Alaska Wyoming, Virginia and Oregon—enacted legislation that specifies heights below which municipalities may not regulate."

### While Admonishing Radio Amateur, FCC Reduces Fine

Daniel Granda, KA6VHC, of Whittier, California, has been directed by the FCC to pay a fine of \$2,500 for intentionally interfering with other radio amateurs. This represents a substantial reduction in the forfeiture amount originally levied by the Commission.

Initially set at \$11,000, the FCC revised its position in a

Memorandum Opinion and Order (MO&O) released March 1. In addition to deliberate interference, Granda is alleged to have failed to respond to FCC correspondence.

Granda petitioned for reconsideration of the \$11,000 fine in 2004. "In his petition, Mr. Granda does not dispute our finding that he caused deliberate interference to amateur radio communications nor does he deny his failure to respond to official Commission correspondence," Assistant FCC Enforcement Bureau Chief George R. Dillon told the American Radio Relay League's *ARRL Letter*. "He does contend, however, that imposition of the full forfeiture amount would impose a financial hardship on him and his spouse."

After reviewing Granda's federal tax returns, the FCC agreed to reduce the fine. "The reduction of the forfeiture amount, however, does not lessen the severity of the violations cited in this proceeding, specifically Mr. Granda's intentional interference to radio communications," Dillon said. "For that reason, we will further admonish Mr. Granda for his violations."

The *ARRL Letter* reported that Granda's license renewal "has been in limbo since 2003, when the FCC's Wireless Telecommunications Bureau (WTB) set aside his renewal application. As the MO&O noted, the Enforcement Bureau had asked the WTB to 'consider this violation in processing Mr. Granda's pending license renewal application for KA6VHC.'" The WTB in March subsequently renewed Granda's license for just one year.

### First Responders Gather In Washington D.C. For Summit

The Public Safety and Homeland Security Bureau of the FCC in April hosted "First Responders Summit: Interoperable and Reliable Public Safety Communications" in Washington D.C.

The daylong session included "expert panel discussions led by representatives from the public safety community, the communications industry and government," according to the FCC.

Topics covered included: "Government agencies and public safety initiatives," "Transition from legacy to future architectures-Integration of current systems into IP-based networks, radio bridging," and "Beyond voice-Broadband applications for first responders."

### Petition Calling For Other-than-English Amateur Radio Exams Denied

The FCC has turned down a petition seeking a rule requiring that question pools be prepared for each examination element in languages other than English, according to the *ARRL Letter*.

Victor Madera, KP4PQ, sought the change to rule §97.523 last year. He filed the petition on behalf of the Puerto Rico Amateur Radio League (PRARL) and is the organization's secretary and ARRL Puerto Rico Section Manager.

"The organization cited a need to administer standardized ham radio license exams in Spanish," the *ARRL Letter* said. "In

(Continued on page 80)



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The handheld BCD396T scanner was designed for National Security/Emergency Preparedness (NS/EP) and homeland security use with new features such as **Fire Tone Out Decoder**. This feature lets you see the BCD396T to alert if your selected two-tone sequential paging tones are received. Ideal for on-call firefighters, emergency response staff and for activating individual scanners used for incident management and population attack warning. **Close Call Radio Frequency Capture** - Bearcat exclusive technology locks onto nearby radio transmissions, even if you haven't programmed anything into your scanner. Useful for intelligence agencies for use at events where you don't have advance notice or knowledge of the radio communications systems and assets you need to intercept. The BCD396T scanner is designed to track Motorola Type I, Type II, Hybrid, SMARTNET, PRIVACY PLUS, LTR and EDACS\* analog trunking systems on any band. Now, follow UHF High Band, UHF 800/900 MHz trunked public safety and public service systems just as if conventional two-way communications were used. **Dynamically Allocated Channel Memory** - The BCD396T scanner's memory is

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Frequency Coverage:

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The handheld BC246T TrunkTracker scanner has so many features, we recommend you visit our web site at [www.usascan.com](http://www.usascan.com) and download the free owner's manual. Popular features include **Close Call Radio Frequency Capture** - Bearcat exclusive technology locks onto nearby radio transmissions, even if you haven't programmed anything into your scanner. **Dynamically Allocated Channel Memory** - Organize channels any way you want, using Uniden's exclusive dynamic memory management system. 1,600 channels are typical but **over 2,500 channels are possible** depending on the scanner features used. You can also easily determine how much memory is used. **Preprogrammed Service Search (10)** - Makes it easy to find interesting frequencies used by public safety, news media TV broadcast audio, Amateur (ham) radio, CB radio, Family Radio Service, special low power, railroad, aircraft, marine, racing and weather frequencies. **Quick Keys** - allow you to select systems and groups by pressing a single key. **Text Tagging** - Name each system, group, channel, talk group



ID, custom search range, and S.A.M.E. group using 16 characters per name. **Memory Backup** - When power is lost or disconnected, your BC246T retains the frequencies that were programmed in memory. **Unique Data Skip** - Allows the BC246T to skip over unwanted data transmissions and birdies. **Attenuator** - You can set the BC246T attenuator to reduce the input strength of strong signals by about 18 dB. **Duplicate Frequency Alert** - Alerts you if you try to enter a duplicate name or frequency already stored in the scanner. **22 Bands** - with aircraft and 800 MHz. The BC246T comes with AC adapter, 2 AA 1,800 mAh nickel metal hydride batteries, belt clip, flexible rubber antenna, wrist strap, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. For more fun, order our optional deluxe racing headset part #HF24RS for \$29.95. Order now at [www.usascan.com](http://www.usascan.com) or call 1-800-USA-SCAN.

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# Wright-Patterson Air Force Base— Where Aviation's Past, Present, And Future Meet

By Tom Swisher, WA8PYR\*



And now, we embark once again on something completely different in our ongoing search for exciting military comms. Continuing with our military facilities profile, and since it's time for the Dayton Hamvention, this month we're going to pay a visit to Wright-Patterson Air Force Base.

Located just northeast of Dayton, Ohio, in the suburb of Fairborn, Wright-Patterson Air Force Base is the premiere facility for conception, development, and testing of weapons systems for military aviation.

The history of Wright-Patterson (or as it's known locally, "Wright-Patt") begins in 1917, when McCook Field was built just north of downtown Dayton. For 10 years, this facility was the home of the U.S. Army Air Service Materiel Division, as well as procurement and research activities. At the same time, Wilbur Wright Field was built on leased land near the villages of Fairfield and Osborn (which later merged to form Fairborn) at the site of today's airfield for the training of pilots, armorers, and gunners. Constructed adjacent to Wilbur Wright Field was the Fairfield Aviation General Supply Depot, a major supply facility.

After World War I, the requirements for Wilbur Wright Field and the depot changed, and the facility transitioned to a maintenance and repair base as well as major supply facility, in addition to continuing the training of armorers. In 1919, Wilbur Wright Field, the Armorer's School, and the Fairfield Depot merged to form the Wilbur Wright Air Service Depot. McCook Field continued to host the Materiel Division as well as much advanced research activity. However, with short runways and obstructed approaches, this facility was too small and too close to downtown Dayton to continue as a safe, effective facility.

## The New And Improved Wright Field

Recognizing the need for a new facility, the Army began looking for a new location; Langley Field in Virginia was frequently mentioned as a new home. However, local Dayton interests, led by

*\*milcom65@yahoo.com*

*A C-141B Starlifter aircraft leaves four plumes of exhaust behind it as it prepares for an airdrop during Operation Deep Freeze.*

*← (U.S. Air Force photo)*





A C-5 Galaxy transport of the 445th Airlift Wing sits on the flight line at Wright-Patterson AFB. (Photo by Senior Airman Martin Moleski, courtesy U.S. Air Force)

## Aviation Frequencies

124.475/269.9	ATIS
121.8/335.8	Ground
126.9/281.45	Tower
118.85/327.1	Approach
126.5/291.0	Departure
349.4	445 Airlift Wing command post "Buckeye Control"
121.5/243.0	Emergency
344.6	Metro (Weather)
122.85/372.2	Pilot-to-Dispatcher
389.8	Radar

Air Force Base; Patterson Field (the former Wilbur Wright Field and Fairfield Aviation General Supply Depot) comprise today's Area C, while Wright Field comprises today's Area B.

## Wright-Patterson Air Force Base Today

Today, as when it started at McCook Field, "Wright-Patt" is where future weapons and technical systems are conceived, developed, and tested by over 10,000 military and civilian personnel. The most diverse and complex base in the Air Force, the missions carried out at Wright-Patterson include research and development, logistics management, training and education, flight operations, and many other activities. Wright-Patterson is headquarters of the Air Force Materiel Command and is the hub of an enormous worldwide logistics system supporting the entire Air Force. It is the premiere aeronautical research and development base in the Air Force. With a total work force of nearly 25,000, Wright-Patt is the fifth largest employer in the state of Ohio and the largest employer at a single site. While some changes are afoot as a result of the Base Realignment process, it will remain the home for over 50 separate units of various Air Force and Department of Defense commands.

Wright-Patt is also home to one major command and an air base wing, as well as numerous associate and support units. The major command, the previously mentioned Air Force Materiel Command, is responsible for all supply and logistics activities worldwide. In addition to Headquarters, Air Force Materiel Command, units at Wright-Patt include the Aeronautical Systems Center, the Air Force Research Laboratory, the Air Force Security Assistance Center, the Air

the Patterson family (founders and owners of National Cash Register), were concerned at the potential loss of the benefits a military facility would bring to the community, and organized the Dayton Air Service Committee to work to keep the Air Corps in Dayton. The committee raised a large sum of money and purchased over 4,500 acres of land around and including Wilbur Wright Field, already leased by the Air Corps, as well as Huffman Prairie, the site of the Wright brothers pioneering experimental flights. This land was donated to the Federal Government with the stipulation that it become the permanent home of the Air Corps' Engineering Division.

Ground was broken in 1926, and by early 1927 the new facility was ready. Combined with Wilbur Wright Field and the Fairfield Air Depot, the new facility was named Wright Field in honor of both Wright brothers. Equipment and facilities were moved over from McCook Field; among the equipment moved to Wright Field was a five-foot wooden wind tunnel based on an Orville Wright design, and which remains in use today. The facility rapidly became the major research and development station for the Air Corps, as well as the headquarters facility for the Materiel Command. Meanwhile, Wilbur Wright Field and the Fairfield Air Depot continued to serve as a major training and supply facility.

While the entire facility was named Wright Field, sentiment was strong in Dayton for a way to recognize the con-

tribution of the Patterson family in keeping the Air Corps in Dayton, and on July 6, 1931, the Wilbur Wright Field/Fairfield Air Depot portion of the facility was renamed Patterson Field, in honor of Lt. Frank Patterson, a member of the family and test pilot who was killed when his aircraft crashed at Wilbur Wright Field in 1918.

## World War II And Beyond

Wright Field grew dramatically before and during World War II, and many technical innovations that came out of the war were products of the research laboratories and testing facilities at Wright Field. Patterson Field and the Fairfield Air Depot grew dramatically as well, being the primary supply facility for a nine-state area of the Midwest, as well as being a primary training facility for aviation service, supply, and repair personnel. After the war, the Fairfield Air Depot served as a major separation center, and was finally deactivated in 1946, with its functions transferred to other units.

During the war, planning and administration for Wright Field and Patterson Field were increasingly handled jointly, and in 1945 the master plans for the two facilities were formally integrated. With the creation of the U.S. Air Force as a separate military service in September 1947, the facility was redesignated as the Air Force Technical Base, Dayton, and in January 1948, Wright and Patterson fields were merged to create Wright-Patterson



The C-141 Starlifter "Hanoi Taxi" (formerly of the 445th Airlift Wing) flies over its new home at the National Museum of the United States Air Force. The "Hanoi Taxi" was the first aircraft to return Vietnam prisoners of war to the United States on February 12, 1973. (Photo by Jeff Fisher, courtesy U.S. Air Force)

### WPAFB Trunked System

(Frequencies must be programmed in order)

The WPAFB trunked system has just been changed to APCO25 digital with new frequencies:

Base: 406.350; Offset: 38; Step: 12.5  
 408.7625\*      409.5625  
 408.9625\*      409.9625  
 409.1625\*      410.1625  
 409.3625

The system still uses a 3600-baud control channel and can be tracked nicely in control-channel only mode using the above settings. Control channels are marked with an asterisk.

- 16    Ground Control
- 112   Civil Engineering, Housing
- 176   Unknown
- 208   HazMat?
- 272   Structure 1 (Fireground)
- 304   Structure 2 (Fireground)
- 336   Structure 3 (Fireground)
- 368   Structure 4 (Fireground)
- 496   Base Operations
- 528   U.S. Air Force Museum
- 592   Fire/Medic 1
- 656   Fireground
- 688   Fireground
- 752   Civil Engineering
- 816   Civil Engineering, Grounds
- 944   Transportation
- 976   Fuel Control
- 1008   88th Air Base Wing Flight Line
- 1040   Security Chat
- 1072   Flight Line

- 1136   Flight Line
- 1200   Munitions
- 1232   Supply
- 1584   Unknown (heard Charlie 3, Cobra 1 on weekend)
- 2352   Medical Net?
- 2448   Readiness Net
- 2480   Bio Net
- 2640   Unknown
- 2704   Unknown
- 3216   445th Airlift Wing Aircraft Maintenance
- 3248   Nightwatch (E-4B system)
- 3280   445th Aeromed ?
- 7696   Unknown
- 8016   Security 1
- 8048   Security 2
- 9904   Commo
- 10064   Unknown
- 10224   Civil Engineering
- 10320   Unknown, testing radios
- 10352   Unknown maintenance
- 10640   Civil Engineering
- 10672   445th Airlift Wing
- 10736   Unknown, testing radios
- 10800   Civil Engineering
- 10928   Civil Engineering
- 10960   Fire
- 11024   Security Chat
- 11056   Security Chat
- 11088   Security Chat
- 11216   Transportation
- 11248   445th Airlift Wing
- 11280   445th Aircraft Maintenance
- 11312   Flight Line Operations

(Radio system information courtesy Mark Meece)

Force Band of Flight, and the Air Force Packaging Technology and Engineering Facility.

The host unit at Wright-Patt is the 88th Air Base Wing, which is responsible for operating the airfield, as well as providing all infrastructure maintenance and services, including security, communications, medical, legal, personnel, contracting, finance, transportation, air traffic control, weather forecasting, public affairs, recreation, and chaplain services. Units of the 88th Air Base Wing include the 88th Communications Group, 88th Medical Group, 88th Mission Support Group, 88th Comptroller Squadron and the 88th Operations Support Squadron.

Wright-Patterson also hosts a variety of associate units. These include the 445th Airlift Wing, National Air and Space Intelligence Center, 54th Airlift Squadron, 554th Electronic Systems Group, and the 46th Test Wing Aerospace Survivability and Safety Flight. Of these, the major flight unit is the 445th Airlift Wing; the 445th is an aeromedical evacuation unit which until recently used C-141 Starlifter aircraft but has recently transitioned to C-5 Galaxy aircraft.

One associate unit that may be familiar to you is the National Museum of the United States Air Force. The Museum, located on the Wright Field side of the base, is the world's largest and oldest military aviation museum, and it has an awesome collection of beautifully maintained aircraft and equipment, as well as highly informative and educational displays. The Museum offers free admission and parking. If you're going to be in the Dayton area, I highly recommend a visit to the Museum, and don't forget to bring your camera!

All flight operations at Wright-Patt are handled at Patterson Field except when a new resident of the Museum arrives, in which case it lands at Wright Field. All base communications are handled on a Motorola UHF trunked system, which can be easily monitored. See the sidebars for radio frequency information.

### Well Worth A Visit

All in all, Wright-Patterson Air Force Base is worth checking out if you're in the Dayton area. While access to the main part of the base is unlikely, the Museum is readily accessible, and there are plenty of public areas surrounding the base from which to monitor the action and photograph aircraft. Check it out the next time you're in the area! ■



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# Army MARS Chief Sets New Course

## *The Venerable Organization Is Restructuring—Where Are We Headed?*

by R.B. Sturtevant, AD7IL/AARØOW

**A**rmy MARS (Military Affiliate Radio System) was begun in 1925 to help supply the Army with enough trained people to satisfy the need for wireless operators in the Regular Army, Army Reserve, and National Guard. Since that time the Army has tasked the MARS organization with many other missions. For instance, MARS was particularly active in passing traffic into and out of Vietnam during that war.

Recently, however, MARS has fallen on hard times and many have wondered if it still had validity. Rumors, in fact, had started that MARS had “gone out of business.” Restructuring and realignment were demanded from many quarters, particularly of Army MARS, which is larger than the Air Force and Navy-Marine Corps MARS organizations.

Under new leadership, MARS is now changing in many ways. At this time the major effort is in restructuring and streamlining the basic structure of MARS and retraining the MARS membership to be more in line with their Army counterparts in the Regular Army, Reserves, and National Guard. An effort is also being made to make the supported agencies and the military more knowledgeable about MARS and its missions. NIMS (National Incident Management System) training is now mandatory for all MARS members to meet the requirements of the Department of Homeland Security (DHS) and the Federal Emergency Management Agency (FEMA). The number of hours required for MARS membership participation has also been increased. MARS members, all volunteers, have been told to look for other changes that may develop as restructuring continues.

This effort is being led by the new Chief of Army MARS, retired Air Force Lt. Colonel Stuart Carter. Carter enlisted in the Air Force in 1971 and was a base-level computer operator. He was selected by the Air Force for a full scholarship at the University of California Berkeley, where he earned a degree in Computer Science, and was then commissioned. While serving, he added a Masters in Aeronautical Science to his resume and distinguished himself in Computer and Communications assignments in the Air Force. He retired from the Air Force in 2001, accepting Civil Service appointments. He was Deputy Director for Current Operations when he was tapped for the top Army MARS job.

Recently, *Pop’Comm* had me interview the new Chief of Army MARS to find out what was happening during the restructuring and ask some questions about where Army MARS was headed. The answers I received were both encouraging and challenging. Here’s what we learned:

**Pop’Comm:** What do you see as the primary mission of Army MARS today?

**Carter:** Our primary mission is what it’s always been—providing help whenever and wherever the Defense Department or other government agencies need assistance from the amateur radio community. The job could be as big as a Hurricane Katrina or as simple as helping train Army radio operators (that’s how the organization began back in 1925). The main thing in Army MARS is to be well trained, well trained and well trained—for whatever challenge presents itself. Further, we provide fully capable, motivated, and ready Army MARS members to assist First Responders by providing that critical linkage between on-scene First Responders and Emergency Operations Centers nearby or afar.

**Pop’Comm:** You’ve made some sweeping changes in Army MARS structure and organization. Where are you trying to take the organization?

**Carter:** There are changes, but not so much in structure and organization as in emphasis. For example, the state has been the basic MARS unit and it still is for most purposes. But if you’re dealing with something the size of an earthquake or hurricane, you have to be ready for operating on a much broader scale. So the new emphasis is building up regional leadership and robust network capability. The 10 regions have been there, but now they’ll become the basic operational unit.

**Pop’Comm:** Is the Army MARS mission, as it was stated when you took over, still valid today?

**Carter:** Yes, but it wasn’t well defined. Intuitively, my members knew we needed to prepare to respond to another 9/11 or Katrina scenario. But my predecessors didn’t place the emphasis I’m placing on being ready. This requires thinking outside the box, throwing off the notion that past expertise is all we need, inserting and using new technologies (like Army MARS developed HF e-mail that we call WinLink 2000), and increasing training to use the new command structure, technologies, and techniques.

**Pop’Comm:** What kind of problems are you having with restructuring?





**Carter:** Well, you could say one problem is that I have to learn a new job. Change always takes an effort. The amateur radio community in particular has had to be resilient. In MARS, for instance, the most rewarding activity for years was handling radiograms and voice connections between troops overseas and the folks at home. Now, most service members have access to e-mail and cell phones, even in Afghanistan and Iraq. Longtime MARS members really miss the pleasure of handling what we call morale and welfare traffic.

The present challenge is gearing up for disaster relief communications. Mostly, that means planning, training, and holding exercises—thank goodness, earthquakes and hurricanes aren't a daily occurrence—but they do and will come. We must be prepared; that is my mission. Such readiness has always been the MARS mission, so there is not any real problem updating the Army MARS Force for this post-9/11, post-Katrina world.

**Pop'Comm:** What kind of problems is the restructuring of Army MARS solving?

**Carter:** Lack of Command and Control of the force and lack of effective communications between Army MARS leadership and the 2,600 members. Additionally, the restructure is allowing us to throw out outdated guidance, streamline our ability to communicate with the force, and will allow us to more efficiently and effectively serve our nation when it counts.

**Pop'Comm:** Army MARS has a proud history of service going back to 1925. Aren't you afraid of making too many changes and losing some of what Army MARS has become over the years?

**Carter:** There haven't been that many changes. Count 'em: One, replacement of Morse code by digital, simply because training operators had become too expensive for government and digital was so much faster. Remember, our focus is on government communications. Two, the drop-off in morale and welfare traffic, which just happened, it wasn't ordered by somebody. Three, the increased focus on emergency backup communications as the federal government assumed increased responsibility for disaster relief. These transitions have been going on for years.

Now there are two more. The gearing up of regional leadership is one. The other, which is just beginning this month (March), is an increased requirement for training and on-air activity by the members. Minimum requirements are nothing

new. It was four hours a month. Now it's eight hours. Typical members devote a great deal more time than that. Those who can't—well, if a member is so short of time, how can we expect he or she would be available—and ready—in an emergency during which we'd need to sustain emergency communications 24/7?

**Pop'Comm:** How has the Army MARS membership reacted to the restructuring so far?

**Carter:** Approximately 107 members left Army MARS since I assumed leadership on December 6, 2006. Those members were for the most part not very involved in emergency response support...and didn't want to or were unable to meet the increased training requirements. Some were more interested in discussing the meaning of life with long-time friends on nets that really were for Army MARS business, training, and preparation for Emergency Response.

**Pop'Comm:** Are we losing many?

**Carter:** Yes, 107 of them. However, on the plus side we have gained new members who want to learn, train, and contribute. We've had more than 160 new members since December 6, 2006. We have had 67 new members since March 1

(in just the first 20 days of March). Again, the new members are motivated to be involved, rather than sit on the sideline as non-contributing members. I'm very pleased with the positive results.

**Pop'Comm:** Army MARS has picked up a new mission involving Airport Security. How is that working out?

**Carter:** Our partnership with TSA [Transportation Security Administration] involves more than Airport Security. Suffice to say, it is a growth area that needs to be supported, and Army MARS is ready. Army MARS is uniquely positioned and resourced to provide HF support. Couple that with WinLink 2000, and we offer a significant capability that is mobile, agile, robust, and responsive to the Army, TSA, and any other federal agency that seeks support. When you consider that in an emergency there will be one Emergency Operations Center led by FEMA and attended by TSA, ARNORTH [United States Army North], DHS and all other federal, state, and local emergency response force leadership, having Army MARS there to support one means that we can support all.

**Pop'Comm:** What other new missions might Army MARS pick up?

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**Carter:** As other federal agencies learn of our capabilities, I'm confident they will contact Army MARS to see how we can leverage each other's capabilities to provide improved emergency support to first responders.

**Pop'Comm:** Part of the old mission was direct service to the Army soldiers and National Guard. I'm talking about MARSgrams sent free between the troops and their families as well as phone patches. Are those services of Army MARS going to continue?

**Carter:** The system is in place, but there's very little demand. E-mail is everywhere.

**Pop'Comm:** How is the recruitment of new Army MARS members going?

**Carter:** Like I said, some people have left, but many, many more are seeking to join. I project that Army MARS will grow to over 3,500 dedicated members before the end of 2007. Check back and see.

**Pop'Comm:** What can the present membership of Army MARS do to help that effort?

**Carter:** I think the chief contribution individual members can make is to become more visible by participating in their hometown emergency response activities. That is, providing MARS connectivity whenever there's a drill or appropriate special event, and participating in FEMA training courses. And being seen doing it! Too many hams have no idea what MARS is really about. At the command level, we need to be more active in the various amateur radio organizations and clubs and hamfests.

**Pop'Comm:** I am personally proud of the fact that many of the Army MARS operators I've met on the air are disabled. Are they fitting into the new restructuring well?

**Carter:** Disability can be a capability. Emergencies happen in the daytime when many amateurs must be at work. One of the strengths of MARS is the round-the-clock availability of retired members, and the same is true for the disabled. The operator handling net control or relaying traffic from his or her home station is just as important to the system as the member deployed to a disaster area.

**Pop'Comm:** Army MARS isn't for everyone. Who do you see benefiting from Army MARS membership?

**Carter:** Everyone who desires to help our nation during a crisis. You get to help save lives without actually being in the military. You get to be part of an organization recognized by our citizenry as an

organization of selfless, dedicated, and capable people. Americans envy those among us who "willingly" sacrifice our time and energies, and in many cases our own money, to help others in need. Certainly that is what makes me proud to be affiliated with Army MARS. It is comprised of true heroes!

**Pop'Comm:** How does Army MARS fit into Homeland Security with organizations like Amateur Radio Emergency Service (ARES) and Radio Amateur Civil Emergency Service (RACES)?

**Carter:** We're partners. In fact, many MARS members double as participants with ARES and RACES, and the American Red Cross and Salvation Army as well. As a general rule, ARES and RACES tend to work close-in operation, at and near the scene—you might say, battleground communications. That's where VHF is important. MARS offers connectivity over longer distances, and with our rapidly developing digital facilities we are geared for bulk traffic, like long lists of needed emergency supplies, for instance, or registration lists from evacuation centers. We just need more practice working with each other.

**Pop'Comm:** Is Army MARS still going to be different from those other Community Service organizations?

**Carter:** It's important to remember that even though the members are volunteers, MARS is a military organization, not a club. We are not a community service organization. We are a Department of Defense sponsored- and Army-led organization of professionals. We provide direct support to civil authorities who are charged to serve and protect our citizenry. Communication with military and other governmental entities requires a very different level of training, adherence to established procedures, and what we call circuit discipline. Also, our missions and how we respond to them are ultimately determined by the Army, to meet the needs of the Army.

**Pop'Comm:** What frequencies are used by MARS operators?

**Carter:** Dozens and dozens of frequencies, actually. Each state is assigned a number of channels, and so is each region. Still others are allocated for communications overseas. There are frequencies for digital and frequencies for phone patching. It takes an awful lot of flexibility—i.e., channels—to make sure that, if needed, the various nets can operate simultaneously at all different times of day and year. Guaranteeing coverage like



this demands a very wide spectrum, from the top to the bottom of HF territory. Needless to say, these are government channels designated for military use in national defense. MARS shares them with the active-duty military. That's why our specific frequency allocations are almost never publicized.

**Pop'Comm:** You've been using the slogan "Voice of the Army." Does this change from our old motto "Proud, Professional, and Ready!" reflect new thinking at Army MARS Headquarters?

**Carter:** No and yes. You quoted only half of the new Army MARS slogan. "Army MARS—Voice of the Army" is the complete slogan. We have always been proud, professional, and ready, and we will always remain so. I assert that there are many organizations that can claim that slogan. However, we provide a unique capability and service—over the airwaves. NETCOM, the parent organization of Army MARS, is responsible for a similar but much broader capability for the whole of the Army, moving and protecting information, voice and data. NETCOM's slogan is "Voice of the Army." To me Army MARS provides the capability for voices to be heard when responding to an emergency.

Army MARS first supports the missions of the Army and, second, supports federal agencies, and state and local entities, too. I'm proud, professional, and ready—we all are. But Army MARS will always be the conduit between first responders and their HHQ [Higher Headquarters]. In every case we provide an HF or VHF capability that carries that message—even when we use WinLink from an emergency response location. In my mind, we, Army MARS, are the Voice of the Army and we support moving the voice of America. So, yes, I'm adapting NETCOM's slogan to Army MARS, because it is correct, it is accurate, and it is uniquely ours. Henceforth our slogan is "Army MARS—Voice of the Army."

**Pop'Comm:** When I talk to people who are currently in the service very few of them know anything about Army MARS. What can be done to change this?

**Carter:** We need to do a better job of getting the mission of Army MARS out into the open. We are doing just that. We've created a vibrant PR program. Soon, in response to exercise support that Army MARS provides and in response to the next disaster, the American public and Army members will learn of the re-invigorated, relevant Army MARS capability.

**Pop'Comm:** Where do you see the Army MARS in five to 10 years?

**Carter:** That's hard to say. If not the center of the universe, certainly we'll be well known as a respected provider of a uniquely positioned C2 force that brings a robust HF capability to the fight supporting to our national security and safety.

**Pop'Comm:** What would you say to someone who is interested in amateur radio or Army MARS?

**Carter:** Take a look at what we do, the opportunities for service to the community and the nation. But—and this needs to be emphasized—joining MARS is a seri-

ous commitment. The training requires dedication and effort, regular participation is required, and there's always the prospect of having to respond to an emergency situation, even if only by manning a net from home for long hours. It's this prospect that makes MARS interesting.

But members must be people you and I can depend upon, including—especially—in a crisis. From what I see, most of today's Army MARS members are selfless and self motivated to provide the best service they can, and they are justly proud of their accomplishments. I am sure proud of each and every Army MARS member. ■

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# Talk Back To Your Radio! Experience The Magic Of Ham Radio

## ***New Privileges And New License Rules Mean The Time Is NOW To Get—Or Upgrade—Your Ham Radio License***

by Rich Moseson, W2VU

**I**n the space of just more than two months, the Federal Communications Commission radically remade ham radio in the United States. On December 15, 2006, the HF Novice Morse code (CW) bands ceased to exist, and all Novices and Technicians with code credit (“Tech-Plus”) were given General class code privileges on 80, 40, 15, and 10 meters. Then, on February 23, 2007, the FCC removed the Morse code requirement for General and Extra class licenses, and at the same time extended “Tech-Plus” HF privileges—including voice and digital modes on a portion of 10 meters—to all Technician class hams.

Net result: As of February 23, all licensed amateurs in the United States have at least some HF operating privileges—a considerable amount for those who choose to learn and use Morse code—and upgrading from Technician to General, which gives you voice, code, and digital privileges on all HF.\* requires only that you pass a 35-question multiple choice written exam. One additional written exam is all that’s needed to upgrade to Extra, earning all operating privileges on all ham bands.

### **Getting “A Round Tuit”**

There are thousands of radio enthusiasts out there who have considered getting their ham licenses, but have never gotten around to actually doing it. Perhaps you’re one of them. Maybe the code test has been holding you back. Maybe you want to talk to the world and you’ve been told the VHF bands don’t let you do that (you’ve been told wrong, by the way). If either of those reasons has been your excuse, then your excuse is gone. Get a license manual; find a club offering classes; find a test session, take your test and get your license. You can even try it out first (see “Field Day—No Better Way To Get On The Air”)! Or if you’re already a Technician, a few hours of study-

\*Two HF bands have mode limits that apply to all hams. Only SSB voice is permitted on the 60-meter band (5 MHz), while operation on 30 meters (10 MHz) is limited to CW and digital modes. The 30-meter band also has a 200-watt power limit, and there are a variety of other restrictions on 60-meter operation.

*Rich Moseson, W2VU, is Pop’Comm’s Editorial Director and Editor of our sister magazine, CQ Amateur Radio.*



*Ham radio operators regularly work with the Red Cross and other agencies to provide emergency communications in the aftermath of disasters. (Photo courtesy CQ magazine)*

ing are all you need to upgrade to General or even Extra. The time is now.

### **Ham Radio Basics**

On the other hand, maybe you’re new to this whole radio thing and don’t really know very much about ham radio. What can you do as a ham that you can’t do with a CB rig, a Family Radio Service handheld, or your cell phone, for that matter?

Here’s what: A ham radio license gives you access to thousands of frequencies across the radio spectrum, giving you the opportunity to talk with friends in your hometown, someone across the country, or someone on the other side of the world. Sure, you can call Kazakhstan on your cell phone, but you need to know someone there first, and I don’t want to be around when the bill arrives. Ham radio has no calling plans, no per-minute charges, no long-distance charges. In fact, once you buy your radio, there are no fees whatsoever to operate it and to talk to whomever you want (provided that person is also a ham), wherever you want (and the ionosphere will let you) for as long as you want (subject to spousal limitations).

Oh, one more thing. When cell phones don’t work—and no matter what the salesmen tell you, there are times they don’t



## About the Code...

Morse code. It's been part of ham radio's identity since the hobby's birth, and it's been controversial as a license requirement for more than 50 years. Soon after ham radio was revived after World War II (the U.S. government had shut it down during the war), there were complaints that the code test requirement was outdated and was keeping technically oriented people out of the hobby.

The FCC responded in 1951 by creating the Technician class license, with only a five word-per-minute (WPM) code speed requirement and full amateur privileges on the "hi-tech" VHF and UHF bands. At the same time, the FCC created the parallel Novice class license, also with a 5-WPM code test, which granted limited code privileges on the high-frequency (HF) bands and, originally, voice privileges on 2 meters (they were later taken away).

That brought many newcomers into the hobby, but by the 1980s, the numbers were starting to flatten out and the old complaints about the code test were heard again. In 1991, 40 years after creating the Novice and Tech licenses, the FCC dropped the code requirement for Technician. The ranks of hams mushroomed. But the code requirement remained in place for higher class licenses, at 13 WPM for General and Advanced, and 20 WPM for Extra, and those higher-class licenses were the only path to the worldwide contact opportunities of the HF bands.

In 2000, the FCC lowered the code speed requirement to 5 WPM for all levels of license above Technician, and stated at that time that it felt a code test requirement no longer served a regulatory purpose, but that international rules required it for ham licenses with HF privileges. Those international rules were changed in 2003, clearing the way for the FCC three years later to drop the code test entirely.

Does this mean the end of Morse code on the ham bands? Far from it. Code is still a very useful mode, getting through when others don't or when only low power is possible. Some stations in rare and exotic locations use only code on the air. Plus, there are lots of people who just plain enjoy it. It is an elegant, almost musical, language, with a rhythm and tempo of its own. It is the only digital code that can routinely be decoded by the human brain (try listening to a digital signal from your computer and translating it by ear). Plus, it is totally egalitarian—there is no way to tell from a code signal a person's age, gender, nationality, etc. It's just two people, two hams, in front of their radios, making contact. And that is what it's all about.

work—ham radio does. The national ham radio association, the ARRL, has a saying, "When all else fails, ham radio..."

### When All Else Fails...

Another very big part of ham radio is public service and emergency communications. Ham radio has gotten a lot more respect in recent years from emergency service agencies and government officials, because it works when nothing else does. When the shuttle *Columbia* crashed in the deep woods of East Texas, search parties refused to go out without a ham in their group. Cell phones didn't work, police radios didn't work, only one thing worked: ham radio. On 9/11, when New York City's ultra-hi-tech Emergency Operating Center was destroyed in the terrorist attacks, ham radio kept officials in touch with each other until a temporary EOC could be set up and put into operation.

Nearly every critique of disaster response points to communications as the most important, yet often the weakest, link in the chain. At a conference last year, a top emergency medical service official from London, England, was making a presentation on the subway bombings there in 2005. "It's not a major incident," he explained, "until you lose your comms."

Hurricanes, tornadoes, you name it. Ham radio works when nothing else does, and hams are there to help. You can be one of them.

Are you competitive? There's plenty of competition available on the ham bands, from on-air contests nearly every weekend to competition for awards that recognize various operating achievements, such as making contacts with other hams in 100 countries, or all 3,077 U.S. counties! There are also hidden transmitter hunts, both on-foot and by car, and the challenge of working your way through

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Radio direction-finding, also known as “foxhunting,” “T-hunting,” or “bunny-hunting,” is a popular ham radio activity. Competitors try to be the first to find a hidden transmitter. (Photo courtesy CQ magazine)

(or around) a “pileup” to contact a station in a rare location. It’s the thrill of the chase, and in many cases, you can compete without ever leaving home.

## Microphones And More

There are other benefits ham radio provides compared to other personal radio services. Communication today is more than just talking, but CB, FRS, and even GMRS (General Mobile Radio Service) only allow you to talk into a microphone. As a ham, you may do that, of course, but you may also “talk” with your fingers, tapping out Morse code on a key or typing on a computer keyboard. Instant messaging was invented by hams, decades before it came to a computer or a cell phone near you. In fact, hams were “texting” each other using radioteletype before there even *were* computers or cell phones.

Do you enjoy exchanging cellphone photos with your friends (except the part about the bill again)? Hams have been exchanging still photos over the air for 50 years, using something called slow-scan TV. And up in the UHF bands where a signal can stretch out more, there’s full-motion ham TV.

How many hobbies can you say this about? Hams have their own space program! The first privately owned satellite ever launched into orbit was OSCAR-1 in 1961 (OSCAR stands for Orbiting Satellite Carrying Amateur Radio). Today, more than 60 OSCARs—all designed and built by hams—have been successfully orbited, and that doesn’t count the dozen or so Russian ham satellites that carried their own “RS” (Radio Sputnik) numbers. Ham satellites let you talk over great distances on bands normally limited to local or “line-of-sight” communications.



NASA astronaut Bill McArthur, KC5ACR, used much of his free time on the International Space Station to make contacts with hams around the world from the ISS ham station. Hams are the only people who can talk with astronauts in orbit without going through NASA’s communications network. (Photo courtesy NASA)



A growing number of hams are launching weather balloons carrying still and video cameras to the “edge of space,” up nearly 100,000 feet, receiving their images via ham radio, and then using “foxhunting” skills to follow a beacon and recover the balloon and payload. (Photo courtesy CQ VHF magazine)



## For More Information...

To learn more about ham radio and what you can do as a ham, we recommend the following sources:

"Ham Radio Horizons" video (VHS), CQ Video Library  
"Getting Started in VHF" video (VHS), CQ Video Library  
CQ Amateur Radio magazine  
CQ HF Operator's Survival Guide

(All available from CQ Communications, Inc., 25 Newbridge Rd., Hicksville, NY 11801; Phone: 516-681-2922; Order Line: 800-853-9797; Web: [www.cq-amateur-radio.com](http://www.cq-amateur-radio.com).)

License manuals are available from:

The W5YI Group, P.O. Box 565101, Dallas, TX 75356; Phone 800-669-9594; Web: [www.w5yi.org](http://www.w5yi.org).

American Radio Relay League, 225 Main St., Newington, CT 06111; Phone: 888-277-5289; Web: <http://www.arrl.org/study>.

To find a radio club and/or licensing class in your area, contact:

American Radio Relay League, 225 Main St., Newington, CT 06111; Phone: 800-32-NEWHAM; Web: <http://www.arrl.org>.

Of course, it *is* a straight line from the earth to the moon...and hams have learned to bounce signals off the moon and communicate halfway around the world via EME (Earth-Moon-Earth) or "moon-bounce." There's little that's more exciting than hearing the echoes of your own signals coming back to you from the moon! Hams also bounce signals off meteor trails and the Aurora Borealis. As my son likes to say, "hams are the only people I know who get to play with meteors!"

Oh, most astronauts today have ham licenses, too. That's because there's a ham station on the International Space Station which crew members use for making school contacts and just for relaxation in their "off" time. Hams are the only "civilians" who can talk directly to astronauts in orbit.

Ham radio can also keep you company on your way to work or while hiking in the woods. There's a growing number of ham-hikers who enjoy something called "HF-packing," in which they backpack to a remote area, set up a lightweight portable HF ham station, and make contacts around the world.

Another ham sub-hobby that's growing in popularity is high-altitude ballooning—to "the edge of space." Weather balloons carrying ham gear and amateur TV cameras are launched and fly up to 80,000 feet or higher, until the balloon bursts, all the while transmitting pictures and other information

back to the surface. From the upper altitudes, you can see the curvature of the Earth and the blackness of space. Then a beacon transmitter on the payload package helps direction-finding hams track down the payload after it's parachuted back to Earth.

## Abra-Cadabra

I'm sure I've left out someone's favorite activities, but I think the message should be pretty clear now—there's really no comparison between what you can do with a CB rig or a cell phone and what you can do with ham radio. And there's one more thing, and it should never be taken lightly. Magic. Ham radio is magic, plain and simple. Look, ma, no wires. No network of 10,000 people supporting every call you make. It's just you, your radio, and the ionosphere. And when it all works together to put you in touch with someone far away, it is truly magical, especially when it happens on a band that supposedly isn't open for long-distance contacts.

There's one last reason to finally get that ham ticket, but perhaps the most important: the people. Once you become a ham, you're automatically a member of a worldwide fraternity whose members are instant friends. You're never alone in a strange place if you've got a ham rig with you. Hams come from all walks of life, all ethnic and religious

groups, all age groups and all (all right, both) genders.

You can meet a limitless number of fascinating people through ham radio—and be on a first-name basis with them from the start—and you'll very likely make lifelong friends. Ham radio is first and foremost a people hobby—people using technology to reach out, meet each other, and become friends, regardless of geography, politics, or any of the other factors that serve to drive people apart. Ham radio brings people together.

## What Are You Waiting For?

If I haven't convinced you by now, I probably never will. An amazing world of fascinating people, exciting adventures, technical achievements, and just plain magic is only a multiple-choice test away. As I said before, get a license manual; find a club offering classes; find a test session, take your test and get your license. It really *is* that easy now. Or if you're already a Technician, a few hours of studying are all you need to upgrade to General or even Extra. Don't wait. The world's most exciting hobby is right around the corner. ■

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# Field Day—No Better Way To Get On The Air

**Whether You're Operating From A Park, A Mountaintop, Or The Beach, There's No Thrill Like Field Day. And Everyone's Welcome!**

by Chip Margelli, K7JA

**T**he fourth weekend of June brings hams throughout the Western Hemisphere together in one of the most popular operating events of the year: the ARRL Field Day. Part competition, part emergency exercise, and part social event, Field Day is the highlight of the operating year in amateur radio. Here's an introduction to this fun and exciting weekend, one that you'll surely want to put on your calendar now!

## What's It All About?

Field Day fundamentally is an exercise that demonstrates amateur radio's unique capability to provide emergency communications in times of need. While a few operators conduct solo operations, the vast majority of Field Day efforts are by radio clubs or groups of hams wanting to have some fun away from the confines of their regular radio shack. For many, it's a first opportunity to experience the thrill of making contacts across the country, and even overseas, using the HF bands.

Most groups operate from portable locations in parks, on mountaintops, or at the beach, so Field Day is a great opportunity to try out new antennas, experiment with portable power sources (such as solar panels), and learn about the teamwork required to put together a successful multi-station operation. Operating with many transmitters in close proximity is a difficult challenge, and Field Day gives us the opportunity to find out what needs to be fixed—before "The Big One" hits!

## What Happens At Field Day?

This year, Field Day runs from 1800 UTC (2 p.m. EDT or 11 a.m. PDT) on Saturday, June 23, and lasts for 24 hours. Setup begins 24 hours earlier, and Friday afternoon finds antennas being built and raised, generators being tested and connected to all the stations, and tents and trailers being positioned for the actual operating event Saturday and Sunday. Although you can get three more hours of operating on Sunday if you start setup at 1800 UTC on Saturday, instead of Friday, almost all groups opt for the full day of setup time in lieu of a few more hours of operation.

The Friday setup period is an exciting time: months of antenna planning are put into action. You'll see bundles of aluminum

*Chip Margelli, K7JA, has been licensed since 1963, and is the Vice President for Sales and Marketing for Heil Sound, Ltd. Chip lives in Garden Grove, California, with his wife Janet, KL7MF. Chip may be reached at [Chip@Heilsound.com](mailto:Chip@Heilsound.com).*

## An Invitation To Non-Hams— Get On The Air!



*Kristin Dankert, K6PEQ, operates her first Field Day from Cuba as T42FD, the GOTA station at COØUS, while Janet Margelli, KL7MF, searches for contacts on 50 MHz. (Photo by Chip Margelli, K7JA)*

To encourage Field Day newcomers to jump in and give station assembly and operating a try, the ARRL has created a "GOTA" (Get On The Air) station concept. Basically, as a part of a larger Field Day operation, a group can also have a GOTA station that is assembled and operated by first-timers to Field Day. Even unlicensed persons can get on the air, so long as a qualified Control Operator is present at the station.

The GOTA station uses a separate callsign from the main group's callsign, and can make contacts anywhere in the world, propagation permitting. Since all the operators at the GOTA station are newcomers, it's a great opportunity for everyone to learn about Field Day operating together. When you approach your local club about its Field Day plans, be sure to ask them what they're doing for a GOTA station. If they haven't yet got any GOTA station plans, speak up and offer to organize one!

And when you come to your local club's Field Day site, bring along your portable receiver or scanner. On VHF, you'll likely hear FM activity between 146.400 and 146.600 MHz, while on HF you'll hear a lot of action on USB between 14.150 and 14.350 MHz during the daytime and early evening, and between 7.150 and 7.300 MHz or 3.800 and 4.000 MHz (LSB) at night. Listening, especially on HF, is a great way to experience the intensity of operating excitement that is Field Day.





*Field Day draws interested onlookers, even in Cuba! Dan Dankert, N6PEQ, Chip Margelli, K7JA, and Bill Scholz, WIHIJ, operate Field Day from COØUS in 2003. (Photo by Janei Margelli, KL7MF)*

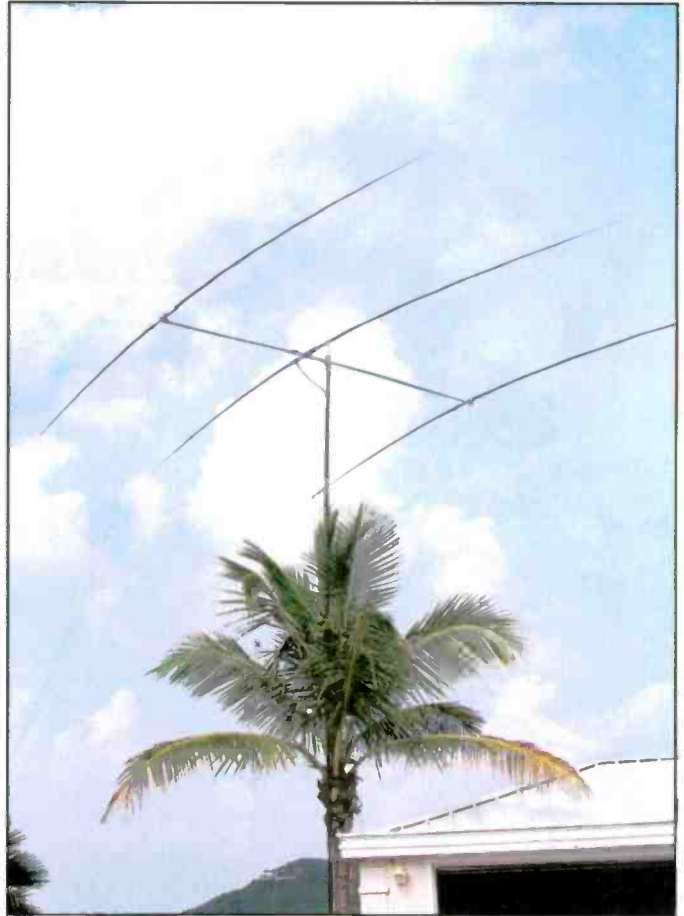
and wire being untangled, masts being laid out, and lots of head-scratching (“Hey Bill, did you bring the nuts and bolts for this thing?”). All those knots you learned in your Scouting days suddenly become valuable as poles are fitted with guy ropes and tilted into position. Some are festooned with shining aluminum Yagi antennas, while others hold pulleys used for pulling up wire antennas.

As the sun goes down Friday, everyone scrambles to get the tents or trailers set up for the night. The cook shack is probably whipping up a tasty barbecue for the hungry setup crew, and Field Day suddenly is looking a lot like an old-fashioned camping trip. In urban locations, many folks head for home to get a good night’s sleep before operations commence on Saturday. Whatever the location, people are tuckered but having a good time...and the *real* fun is yet to come!

Saturday morning brings a flurry of operation as station equipment is assembled, antennas tested, and the generator is fired up for its 24-hour stint as your power source. Then, at 1800 UTC, the chase is on! Operators on voice modes like SSB and



*Good headphones can help reduce operator distraction. Dan Dankert, N6PEQ, shows good concentration despite the best efforts of his wife Kristin, K6PEQ, to interrupt his concentration at COØUS (Cuba, 2003). (Photo by Chip Margelli, K7JA)*



*A palm tree makes a handy support for a 20-meter beam’s mast at KP2AA (U.S. Virgin Islands). (Photo by Chip Margelli, K7JA)*

FM start barking out “CQ Field Day, CQ Field Day...” into crowded bands, while the CW operators’ fingers are flying as dots and dashes flash onto the airwaves. Reports come in from Arizona, Missouri, Vermont, and the Virgin Islands...adrenaline is everywhere, and Field Day is finally under way.



*Bill Scholz, WIHIJ, and Dan Dankert, N6PEQ, put the finishing touches on a three-band HF Yagi at KP2AA (U.S. Virgin Islands). (Photo by Chip Margelli, K7JA)*



*"Sorry, officer...I wasn't aware that talking too fast on Field Day was against the law! Gordon West, WB6NOA, tries to keep the contacts rolling, despite nearby distractions. (Photo by Chip Margelli, K7JA)*



*Janet Margelli, KL7MF, logs contacts on Field Day from KP2AA, U.S. Virgin Islands. (Photo by Chip Margelli, K7JA)*



*Many stations in close proximity call for cooperation, planning, and headphones! Janet Margelli, KL7MF, Bill Scholz, W1HJ, and Dan Dankert, N6PEQ, are a well-oiled team at COØUS (Cuba, 2003). (Photo by Chip Margelli, K7JA)*

Each Field Day contact must be logged, and a set of numbers is exchanged during each valid contact. These numbers consist of two parts: the "Entry Class" and a location designator. For example, a portable group with three transmitters in Missouri would give out "3A Missouri" as their report. The operator then logs the report received from the other station, and then it's off to find another contact. It's as easy as that.

The "competition" aspect of Field Day, important for many groups, entails the accumulation of as many contacts as possible. This is one way of gaining confidence that the portable/emergency antennas and radios are working well. So it's common for operators at better-equipped Field Day stations to sit on one frequency, call CQ, and let a pile of other stations call them. It's not unusual to make over 100 contacts per hour using this technique, and one's skills as an operator get honed very quickly in the heat of battle. Look over the shoulder of an experienced operator, and you'll get the hang of it; pay attention to the techniques used by others, as you may pick up valuable tips that will help you during your own operating stint.

## Want To Try Something New?

Field Day serves as a training exercise for the entire range of amateur radio capabilities. Bonus points are awarded, for

example, for making a successful contact via an amateur radio satellite. If you've never experienced satellite operation, be sure to find out when your club will be trying to make a contact; it's very interesting to hear a dual-band handheld rig suddenly erupt with loud signals from across the continent!

A station operating on a digital mode (like RTTY, PSK31, etc.) may be used independently from those operating on the same band on SSB or CW. If you have an interest in digital operation, or even if you have some experience with it already, Field Day is a great way to explore the possibilities of portable digital work, which could be valuable training for emergency situations.

And Field Day can be a time for trying something *really* off the charts. Some years back, I volunteered to make a "satellite" contact for my club, the Western Amateur Radio Association (N6ME) in Orange County, California. I set about to build a couple of rather large Quagi antennas (24-foot booms!) for 2 meters, and then made a contact with W5UN





*Field Day from the beach...it doesn't get any better than this! Chip Margelli, K7JA, is ready for Field Day contacts from sunny California. (Photo by Bob Heil, K9EID)*



*Jorge Novoa, CO2II, inspects damage to a vertical antenna after a windstorm hit the COØUS operating location in Cuba (2003). (Photo by Chip Margelli, K7JA)*

in Texas by bouncing our signals off the Moon. Hey...the Moon is a satellite of Mother Earth, isn't it?

## What Can Go Wrong?

Everything! The Field Day version of Murphy's Law states that "If anything can go wrong, it will go wrong on Field Day!" The generator can fail, radios can break, masts won't go together, and tents won't assemble. That's why your participation is so important: you bring another set of eyes and a new batch of experience to the Field Day effort, a new perspective that might save the day. Field Day is all about teamwork, and you can never have too many team members!

## How Can You Get Involved?

The best way to get involved in the fun of Field Day is to get on board with your local radio club. If you're not a member of a club, ask around on your local 2-meter repeater about clubs doing Field Day. If you're lucky enough to have an amateur radio dealership in your town, ask the folks there which club or clubs will be going out for Field Day, and then go to their next meeting. When they discuss Field Day and ask for volunteers to

help with set-up and operating, raise your hand! You'll be more than welcome, and you'll be on the way to your first Field Day adventure!

More information about Field Day may be found on the ARRL's website. Full rules may be found at [www.arrl.org/contests/rules/2007/fd.html](http://www.arrl.org/contests/rules/2007/fd.html) while photos and comments from Field Day 2006 may be found at [www.arrl.org/contests/soapbox/?con\\_id=106](http://www.arrl.org/contests/soapbox/?con_id=106) (previous years' stories may also be found here).

## The Magic Of Field Day

For many who have participated in Field Day over the years, this is the most fun they have in the course of their hamming year. There's the thrill of trying out new antennas that you might never be able to put up if you live in an apartment or condo. There's the knowledge you gain about station assembly, operating procedure, and problem resolution. And friendships are forged, through the teamwork developed in the course of Field Day planning and execution, that can last a lifetime.

And, because Field Day is open to participation from anywhere in the Western Hemisphere, it's possible to combine some fun operating with a family vacation. Over the past several years, I've been privileged to operate Field Day from near



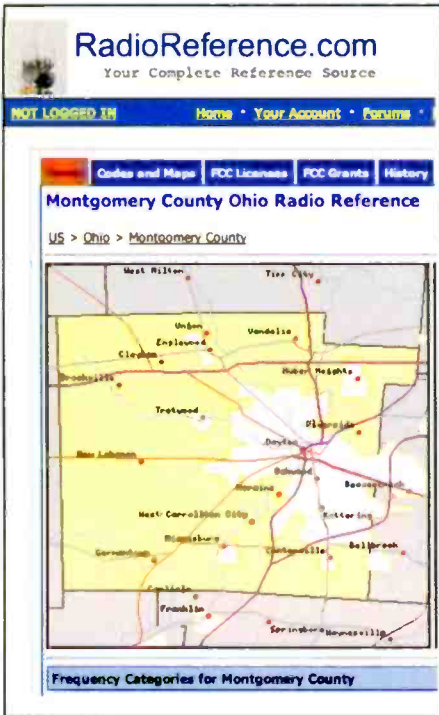
*"This generator worked last week, what happened?" Pedro Rodriguez, CO2RP, and Osmany Mambuco, CM2OY, troubleshoot power problems at COØUS in Cuba, 2003. (Photo by Oscar Morales, Jr., CO2OJ)*

San Juan, Puerto Rico, Havana, Cuba, and St. Croix, U.S. Virgin Islands. Everywhere we've traveled, we've made new friends, discovered new ways of doing things, and enjoyed a great vacation to boot.

And you can trust me on this one: When Sunday afternoon of Field Day rolls around, no matter how your group's score turns out, there will only be four words on your mind: "Wait till next year!" ■



# Scanning Dayton, Ohio

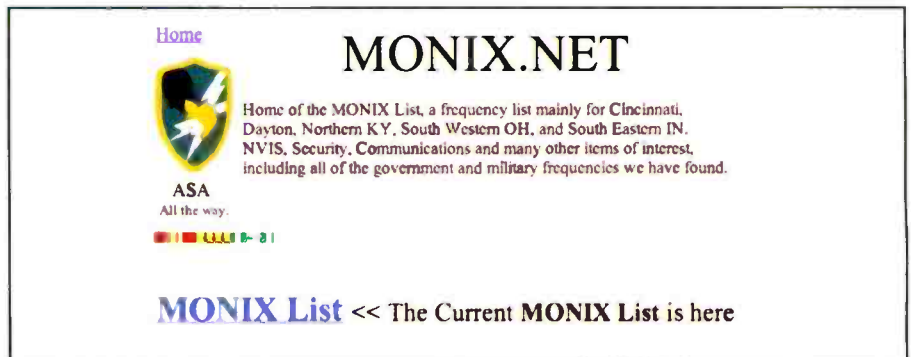


Radio reference kindly provided the frequency data for this article. Its site includes this map of the county, so you can get your bearings. Look for a more complete review of the information available from this site coming up soon in these pages, or visit them yourself at [www.radioreference.com](http://www.radioreference.com).

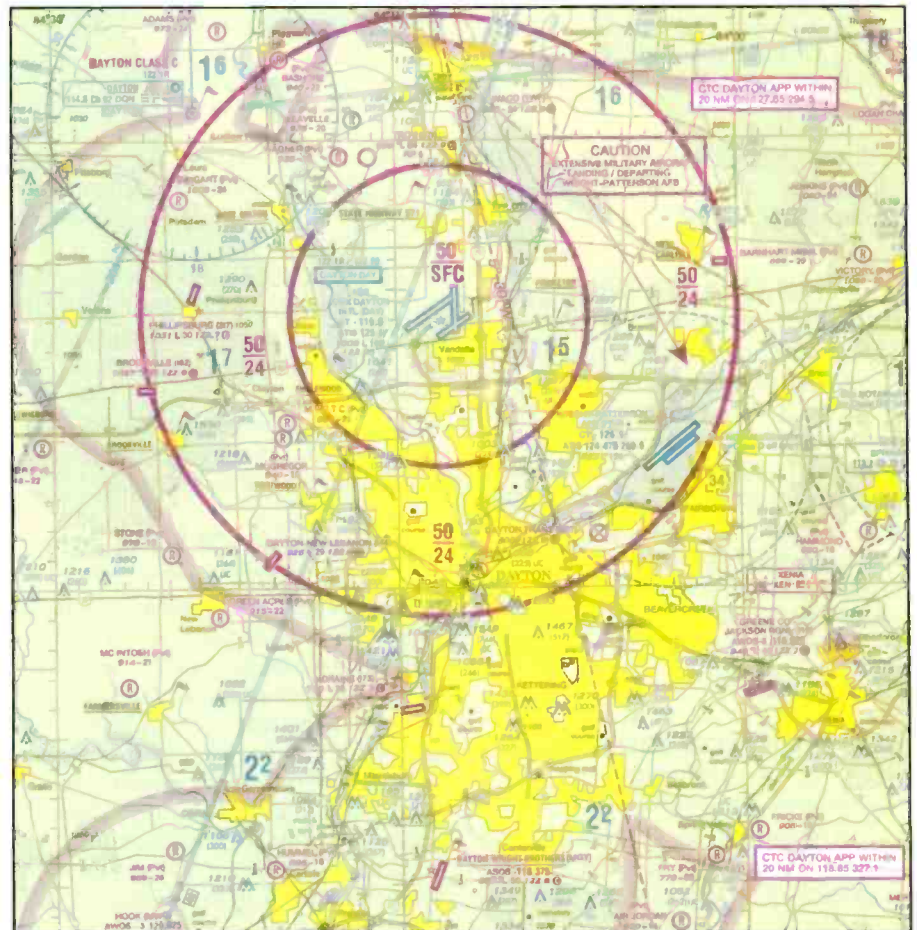
It's time once again for Hamvention in Dayton, Ohio. Sure, it's really a show for ham enthusiasts, but there's an awful lot of scanner and shortwave listening going on there, too. There are new radios, antennas, vendors, and all sorts of forums to sit in on to relax and perhaps pick up a tip or two.

In honor of the event, we thought we'd offer a guide to scanning the Dayton area if you're coming in so equipped. First of all, put 146.94 into your handheld transceiver or your scanner, as that's the info channel for the Hamvention itself. Even if you can't transmit, you'll hear directions to the best parking and other info by listening to that frequency on your way in.

There's just about every type of trunking system imaginable in the area, so it's a great place to check out your trunk-tracker. There's also some simplex VHF and UHF things to listen to, plus a lot of aero, between James M. Cox Dayton



Monix provided the trunked radio system data for Dayton this month. Monix is a group of scanner/communications enthusiasts in the Cincinnati/Dayton area and is affiliated with the All Ohio Scanner Club as well. You can find out more at [www.monix.net](http://www.monix.net).



Special thanks goes out to [www.skyvector.com](http://www.skyvector.com) for this Terminal Chart of the Dayton area. You can see how close the airport and Air Force base are. The white boxes provide frequency information for the Dayton Approach, depending on the direction the plane is coming from. The 50/24 and 50/SFC indicate controlled airspace in tiers. Near the airport everything from the surface to 5,000 feet is controlled by the airport. It's a bit hard to read, but in blue, just west of the airport itself is the frequency block for the airport. The tower is 119.9. ATIS (automated weather) is 125.8 and ground is 122.95. There's also a flight service station available on 122.55.



**Table 1. Trunked Radio Systems Specific To Montgomery County, Ohio**

Montgomery County Motorola Type II Smartnet  
 City of Dayton Motorola Type II Smartnet

*All Trunked Radio Systems in Montgomery County*

System Name	Type	City
City of Dayton	Motorola Type II Smartnet	Dayton
Dayton Power & Light	EDACS Networked Standard	Various
Delphi Automotive Systems (Moraine)	Motorola Type II Smartnet	Moraine
EC Repeaters	LTR Standard	Dayton
Englewood Communications	LTR Standard	Trotwood
General Motors Research (Moraine)	Motorola Type II Smartnet	Moraine
Huber Heights	Motorola Type I	Huber Heights
Montgomery County	Motorola Type II Smartnet	Dayton
P&R Communication Service	LTR Standard	Dayton
P&R Communication Service, Inc.	Motorola Type Ili Hybrid	Dayton
State of Ohio MARCS - Multi-Agency Radio Communications	Motorola Type II SmartZone Omnilink	Statewide
United Airlines (Dayton)	LTR Standard	Vandalia
United Parcel Service (Dayton)	LTR Standard	Dayton
Wallace Communications	LTR Standard	Dayton
Wright State University	Motorola Type II Smartnet	Dayton
Wright-Patterson AFB	Motorola Type II Smartnet	Riverside

*Law Enforcement*

Northmont Police Dispatch dispatches for Clayton, Englewood, and Union Police Departments

Frequency	Input	License	Type	Tone	CH	Description	Mode
155.07000	158.91000	KQE878	RM	107.2PL		Brookville Police	FM
155.92500	153.87500	KQE352	RM	103.5PL	4	German Township Police	FM
155.52000	158.85000	WQR569	RM	114.8 PL	1	Germantown Police	FM
153.51500	153.51500	KNDP282	BM	103.5 PL	2	Germantown Police 2	FM
155.49000	154.83000	KQE335	RM	107.2 PL		Kettering Police	FM
155.67000	155.91000	WPLP325	RM	151.4 PL		Kettering Police Tactical 1	FM
155.62500	155.62500	KQE335	BM	107.2 PL	3	Kettering Police Tactical 3	FM
154.72500	158.97000	WNQW478	RM	103.5 PL	1	Northmont Police Dispatch	FM
154.75500	158.73000	WNSY222	RM	151.4 PL		Montgomery County Jail	FM
154.78500	156.09000	WPKT572	RM	114.8 PL		Clayton Police Car to Car	FM
155.37000	155.37000	varies	BM	CSQ		Statewide Police Mutual Aid Car-to-Car	FM
155.70000	154.65000	WPMM938	BM	103.5 PL		German Township Police (Encrypted)	FM
453.76250	458.76250	KB65104	BM			Dayton Convention Center security	FM
460.15000	465.15000	WPIE976	RM	118.8 PL		University of Dayton Police	FM
464.67500	469.67500	WQDH246	RM	127.3 PL		Sinclair Community College - Police	FM
852.01250	852.01250	WNLN241	RM			Cox International Airport Police	FM
854.98750	809.98750	WNDV920	RM			Vandalia Police MDT	FM
855.46250	810.46250	WNKA290	RM	032 DPL		Centerville Police	FM
855.71250	810.71250	WNWF965	R	CSQ		Montgomery County SO MDTs	FM
855.73750	855.73750	none	M	131 DPL		Dayton PD simplex	FM
866.01250	821.01250	WPXB264	RM	156.7 PL		Montgomery County - National Mutual Aid-1	FM
866.03750	866.03750	none	M	632 DPL		Montgomery Co Sheriff simplex	FM
867.43750	867.43750	none	M	131 DPL		Dayton-Montgomery County SWAT simplex	FM

*Fire Departments*

Frequency	Input	License	Type	Tone	Description	Mode
33.54000	33.54000	KQE686	M		Jefferson Township Fire - Fireground	FM
33.70000	33.70000	KQE686	BM	103.5 PL	Jefferson Twp Fire dispatch	FM
151.22000	151.22000	KQE686	BM	141.3 PL	Jefferson Township Fire (simulcast of 33.7000)	FM
151.29500	153.95000	WNB558	RM	88.5 PL	Vandalia Fire/EMS Dispatch	FM
151.38500	150.80500	KQF357	RM	141.3 PL	Brookville Fire/Rescue Dispatch	FM
153.83000	153.83000	WPHW601	BM	CSQ	Germantown Fireground 1	FM
153.90500	155.98500	KRC852	RM	167.9 PL	Moraine Fire/EMS Paging (simulcast of County 800 MHz system)	FM
154.13000		WPKT962	B		County Dispatch for Clayton, Riverside, Harrison and Jefferson Twps Fire/ EMS (simulcast of MC TRS (g 13232)	FM

154.19000	154.19000	KQG234	BM		Phillipsburg Fire	FM
154.19000	154.19000	KQG235	BM		New Lebanon Fire	FM
154.19000	154.19000	KQG229	BM	CSQ	Farmersville FD	FM
154.23500	154.23500	KQC979	B	107.2 PL	Kettering Fire Dispatch (Simulcast from TRS)	FM
154.28000	154.28000	varies	B	CSQ	Statewide Fire Mutual Aid (Patch from TRS)	FM
154.31000	150.79000	KQE627	RM	123.0 PL	Butler Township Fire/EMS Dispatch	FM
154.32500	151.13000	KQF294	RM	123.0 PL	Washington Township Fire Dispatch (simulcast of 800 MHz)	FM
154.43000	154.43000	KQC889	BM	114.8 PL	Dayton FD station alerting	FM
154.44500	154.17500	KQG938	RM	103.5 PL	Miamisburg Fire/EMS Dispatch (simulcast of county TRS)	FM
155.05500	154.11500	KDQ356	BM	100.0 PL	West Carrollton FD Paging (simulcast on 4464 on County TRS)	FM
155.41500	155.41500	KNFG818	BM	151.4 PL	Montgomery County EMA (Primarily used by Box 21 Rescue)	FM
155.82000	153.93500	KQK357	RM	103.5 PL	Germantown Fire	FM
158.92500		WPTK962	B		Englewood/Union Fire Dispatch (simulcast of MC TRS tg 12368)	FM
465.58750	465.58750	KQE686	B		Jefferson Township Fire Remote UHF Link	FM
866.01250	821.01250	WPXB264	RM	156.7 PL	Montgomery County - National Mutual Aid-1	FM

*EMS Agencies*

Frequency	Input	License	Type	Tone	Description	Mode
154.13000	158.92500	WPKT962	RM	141.3 PL	Northmont Center Fire/EMS Dispatch (Dispatches for Clayton, Union and Butler Township)	FM
155.22000	155.22000	KDA654	BM	141.3 PL	Germantown Rescue	FM
155.28000	155.28000	KMJ808	BM		Miami Valley Hospital - EMS to ER	FM
155.34000	155.34000	WPQA864	BM		Dayton Heart Hospital - BLS 1	FM
155.34000	155.34000	KMJ808	BM		Miami Valley Hospital - BLS 1	FM
155.40000	155.40000	WXQ947	BM	110.9 PL	Kettering Medical Center	FM
159.42000	156.04500	KDA654	RM	141.3 PL	Germantown EMS Dispatch	FM
453.07500	458.07500	WNDL543	B		Good Samaritan Hospital - Paging	FM
453.12500	458.12500	WQH353	B		Children's Medical Center - Paging	FM
453.17500	458.17500	WQH352	B		Miami Valley Hospital - Paging	FM
462.95000	467.95000	KMJ808	RM	146.2 PL	Miami Valley Hospital CareFlight dispatch	FM
463.30000	468.30000	WYE2299	RM	412 DPL	Children's Medical Center - Transport and Security	FM
463.52500	468.52500		RM	103.5 PL	American Ambulance	FM

*Aviation James M. Cox Dayton International Airport (DAY)*

Frequency	License	Type	Description	Mode
118.00000		BA	Approach/Departure	AM
118.85000		BA	Approach/Departure (091 - 180)	AM
119.90000		BA	Tower	AM
121.75000		BA	Clearance Delivery	AM
121.90000		BA	Ground	AM
122.95000		BA	Unicom	AM
125.80000		B	ATIS	AM
126.50000		BA	Approach/Departure	AM
127.65000		BA	Approach/Departure (000 - 090)	AM
131.02500	WOB5	BA	Comair Enroute	AM
131.15000	KXX2	BA	American Eagle Enroute	AM
131.85000	KXO8	BA	Wright Brothers Aero	AM
134.45000		BA	Approach/Departure (181 - 359)	AM
257.80000		BA	Common Military Tower	AM
294.50000		BA	Approach/Departure (000 - 0900)	AM
294.70000		BA	Ground Controlled Approach (Radar)	AM
316.70000		BA	Approach/Departure (181 - 359)	AM
324.50000		BA	Approach/Departure	AM
327.10000		BA	Approach/Departure (091 - 180)	AM
353.70000		BA	Approach/Departure	AM

*Special thanks to Radioreference.com for frequency information! Used with permission.*



**Table 2. Dayton 800-MHz TRS**

City of Dayton Type- Motorola Type Ili Hybrid  
 All City Departments, City of Oakwood, Riverside EMS,  
 Trotwood Fire/EMS, Cox-Dayton Intl' Airport

**Frequencies**

856.2125	858.4625	860.7125
857.2125	859.4625	856.9625
858.2125	860.4625	857.9625
859.2125	856.7125	858.9625
860.2125	857.7125	859.9625
856.4625	858.7125	860.9625
857.4625	859.7125	

**Talkgroup ID**

**Channel Used For**

36848	Fire Dispatch
36880	Fire Ops 50
36912	Fire Ops 2a
36944	Fire Ops 51
36976	Fire Ops 52
37008	Fire Ops 3a
37040	Fire Ops 53
37072	Fire Ops 54
37104	Fire Ops 4a
37136	Fire Ops 55
37168	Fire Special Events
37200	Fire Ops 5a
37232	Fire - Police Common
37264	Fire Ops 56- Trotwood
37296	Fire Ops 6a
37328	Fire Ops 57- Trotwood
37360	Ems Medic 1 (Odd Number Medics)
37392	Ems Medic 2 (Even Number Medics)
37424	Fire Chatter
37456	Fire Support
37488	Fire Prevention
37552	Fire Administration
37584	Fire Arson Investigation
37680	Good Samaritan Hospital
37712	Kettering Medical Center
37744	Miami Valley Hospital
37776	Grandview Hospital
37808	Veterans Adm. Hospital
37840	Wright-Patterson AFB Medical Center
37872	Water
37904	Huber Heights Fire
37968	Street Maintenance
38000	Care Now 1 (Care Flight Medical Helicopter)
38032	Care Now 2
38064	Citywide Help 2 (Emergency Calling Channel)
38096	Childrens Medical Center
38128	Fire Training
38160	Fire Training
38384	Dayton Heart Hospital
38512	Riverside Medic 5
38544	Ems Medic 3
38576	Building Maintenance ?
38640	City Of Dayton Inspections - West
38672	City Of Dayton Inspections - East
38704	City Of Dayton Inspections - Talk 1
38864	City Of Dayton Inspections - Permits -Residential
38896	Riverside Fire/Ems - Administration
40048	Water Department - Distribution
40144	Water Department - Revenue/Customer Service
40336	Water Department - Water Treatment
40496	City Of Oakwood Public Safety

40528	Oakwood Tac 1
40560	Oakwood
40752	Oakwood
40784	Oakwood
41328	Sanitation Department - "A" Channel
41520	Sanitation Department - "B" Channel
41808	Sanitation Department - Supervisors
43504	Local Government ?
43536	Local Government ?
45040	Parks Ground Maintenance ?
45424	Parking Patrol Dispatch
45456	Parking Patrol Towing
45488	Parking Patrol Citations
46352	Pd Communications
46448	Ch. 1 Police Dispatch West (Districts 3 & 5)
46480	Ch. 2 Police Records *
46512	Ch. 3 Police Dispatch East * (Districts 1, 2 & 8)
46544	Ch. 4 Police Car to Car
46576	Ch. 5 Police Tac 1
46608	Ch. 6 Police Tac 2
46640	Ch. 7 Police Task Force (Narcotics)
46672	Ch. 8 Police Special Events
46704	Ch. 9 Police Traffic
46736	Ch. 10 Police Drug Traffic Enforcement
46768	Ch. 11 Police Detectives
46800	Ch. 12 Police Swat Or Command
46832	Ch. 13 Police Hnt Or Command
46864	Ch. 14 Police Empty Or Command
46896	Police Detectives
46928	Court Security
46960	Court Field Enforcement ?
46992	Airport Building/Field Maint.
47024	Airport Fire And Safety
47056	Airport Pd
47088	Airport Maintenance 1
47120	Airport Administration
47184	Airport Maintenance 2
47216	Jail Escorts
47248	Jail Security
47280	Jail Maintenance
47312	Jail Ch. 5
47344	Jail ?
47376	Jail Maintenance 2
47408	Prosecutors Office Eviction Enforcement
47472	Ohio Learn FI Crosspatch (154.935)
47632	Moraine Patch (Fd ? Pd?)
47792	Police Ch. 3 East Multiselect
47824	Police Ch. 1 West Multiselect
47856	Signal Shop Ch. 1
47888	Signal Shop Ch. 2
47920	Signal Shop Ch. 3
47952	Signal Shop Ch. 4 (Also Heard Referred To A "D")
47984	Airport Security Dispatch
48016	Parking Fines Enforcement
48048	Computer Techs ?
48112	Street Department
48144	Street Department
48304	Sanitation Ch. 1
48336	Sanitation Ch. 2
48368	Sanitation Ch. 3
48400	Street Department
48560	City Parks And Recreation ?
48912	Vacant Land Management ?
48944	Airport Shuttle Buses

*Courtesy of Monix.net. Used with permission.*





## Radio Fun And Going Back In Time

**Q.** After World War II the Japanese took over most of the electronics manufacturing in the world, mostly at the expense of American manufacturers. What were their wartime electronics like? Did this give them the springboard to take off in the electronics field?

**A.** No it definitely didn't. Their wartime electronics industry was way behind ours. I checked with some post-war analysis of Japanese Navy electronics, which were ahead of their Army, and looked at what our Naval Intelligence folks had to say about the state of Japanese electronics.

The most advanced area of Japanese electronics was sonar, for which they got a lot of help from the Germans. They never got around to using this advantage by developing attack capabilities using their sonar, however. They had no airborne radar in production at the end of the war and their ground radar didn't show up until 1942. Even then it was a copy of German, British, and American designs. Their radio and radio direction-finding were both fairly backwards.

Their training methods were entirely conventional and uninspired. This was handicapped by the lack of technical background and electronics aptitude of the average Japanese. Their equipment was well below the level of the Allied powers' equipment. When faced with shortening training courses toward the end of the war they had technical staff specialize in just one piece of equipment rather than several. Even their wire was judged substandard, but that was probably a supply problem brought on by their general lack of supplies due to shipping problems.

How did the Japanese gain such predominance after the war? They watched the American GIs with their electronics and learned everything they could. The man who would head Sony Corporation was running a fix-it shop in Tokyo when a GI brought in a tape recorder for repair. The repairman had never seen one but took the job anyway. When he got inside he said "I can build one of these things," and the rest is history. Shows what you can do in a democracy.

**Q.** In the past you've mentioned that there were two types of Morse code, that used in America and Canada and that used on the Continent, or "International" Morse. Which one adapted better to radio?

**A.** Up until about the 1920 the actual term used was "wireless." Our Army and Navy operators used both codes and operators who could send both did so at about the same speed. The problem was that American, or Railroad, Morse, although slightly faster, was much more "ditty." That meant that it was harder to read through heavy static. That may be the main reason that International became first the primary, then later, the only Morse heard on the airwaves.

**Q.** During the Vietnam War our forward bases were often attacked. Did the enemy try to shoot up the antennas on the Comms Bunkers to eliminate contact with friendly forces?

**A.** They certainly did. Victor Charlie knew exactly what those antennas were and what it meant if they could shoot them or otherwise break the wires. Our Special Forces A Detachments kept their GRS-109 sets, their primary long-range rig, in sand-bagged bunkers with some dummy antennas on the roof to make

it harder for the VC to hit the real working antenna. If that failed they would often use antennas buried 18 inches underground inside bamboo pipes. These underground antennas were first used by Army signalmen who were operating near the front lines back in World War I for the same reason. A good idea never goes out of date.

**Q.** You keep telling us a lot about espionage and spies. Isn't their gear so specialized and out of the price range of most amateurs as to be useless to the average ham?

**A.** I'm continually amazed at what I find in the "average ham's" shack that I'm not sure on that. One spy I read about was living in West Berlin working traffic into the Eastern Block. His antenna was a broom handle with 50 to 75 feet of antenna wire wrapped around it. There was also about 10 feet of "tail" from the top end of it. Placed in an apartment window it got traffic through to the other side of the Berlin Wall. Totally portable and with no hardware or permanent fixtures it could be disassembled for complete deniability if needed. That isn't very expensive and could be built and used by any "average ham" who had limited antenna space.

My thanks go out to Perry Crabill, W3HQX, for his comments on the March 2007 "Trivia Corner" about the FCC not allowing the broadcast of music. Perry reminded us that until amateur radio was closed down during World War II, amateurs were allowed to transmit music for short periods to test equipment. Perry said that while he couldn't find the exact regulation, he was first licensed back in 1938! We believe ya, Perry. Besides, everybody knows that hams never tell lies. Anyway, thanks again to W3HQX. Let's hear from you again.—RBS ■

### Looking Back...

#### Five Years Ago In Pop'Comm...

The FCC was busy five years ago, too, proposing a rules amendment to reallocate high-frequency spectrum from the fixed and mobile services to the broadcasting service, with 1540 kHz specifically for international broadcasts. And a secondary peak of Solar Cycle 23 had those shortwave stations roaring in. Sigh.

#### Ten Years Ago In Pop'Comm...

The "Bad Boys" of Pirate Radio graced the front cover in June 1997 for a rare glimpse inside a pirate station in Belfast, New York (if one were to know such things...). Gracing the back was Optoelectronics' Scout, with a promise to Reaction Tune the new ICOM IC-R10.

#### Twenty Years Ago In Pop'Comm...

Honduras was reeling from the spillage of Nicaragua's Sandinista/Contra conflict, and Gerry Dexter told us how to monitor the strife. Alice Brannigan took a break from radio nostalgia to preview two new "luxury" receivers: the Grundig Satellit 400 and Satellit 650. (And that was one great '80's hairdo on the lovely cover model, I must say.)

# Popular Communications June 2007 Survey Questions

**My favorite aspects of Pop'Comm are its coverage of (please circle all that apply)...**

Shortwave broadcasters .....	please circle no. 1
Shortwave station frequency schedules .....	2
Shortwave nostalgia .....	3
Shortwave propagation .....	4
Shortwave utilities .....	5
Shortwave pirates .....	6
Shortwave DXing .....	7
AM/FM pirates .....	8
Shortwave antenna construction/theory .....	9
Shortwave clandestines .....	10
General scanning VHF/UHF .....	11
Scanning public safety .....	12
Scanning federal government .....	13
Scanning military .....	14
Scanning aircraft .....	15
Scanner frequencies .....	16
Satellites .....	17
QSLing, how to info, including addresses .....	18
Construction projects .....	19
Product spotlights/reviews .....	20
Product news .....	21

FCC and industry news .....	22
Personal communications (GMRS, FRS, telephones, beepers) .....	23
General RTTY/digital comms .....	24
Receiver control, software, computers .....	25
AM/FM broadcast DXing .....	26
Ham radio .....	27
Public service .....	28
Citizens' band .....	29
Trivia/humor .....	30
Computer hardware/software .....	31
Other .....	32

**Please tell us about your computer usage:**

I own a personal computer .....	33
I plan to buy one .....	34
I have NO plan to buy one .....	35
I own a laptop .....	36
I use a computer in conjunction with my radio hobby .....	37
I am very comfortable with computers .....	38
I am intimidated by computers .....	39
Other .....	40

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## New U.S. Relay Station In Tajikistan, Plus Is HCJB Going Relay?

“Orzu” is a word we’re going to be seeing a lot in reference to shortwave in another year or two. The United States is going to build a new international relay station there (in the former Soviet Republic of Tajikistan). You can probably expect to hear all of the U.S. international broadcasters via that site at one time or another, including Radio Free Europe, Radio Liberty, Radio Free Asia, Radio Free Afghanistan, and the Voice of America in its various guises. In the process, of course, keeping track of who’s who—and from where—will get even more complicated!

After a look at their most recent schedule it seems HCJB may be edging closer to going the relay route. While most of the broadcasts are still shown as originating from Quito (Pifo), there are a couple shown as Sackville (Canada) and one VT site in England, along with the usual number from Kununurra (HCJB-Australia).

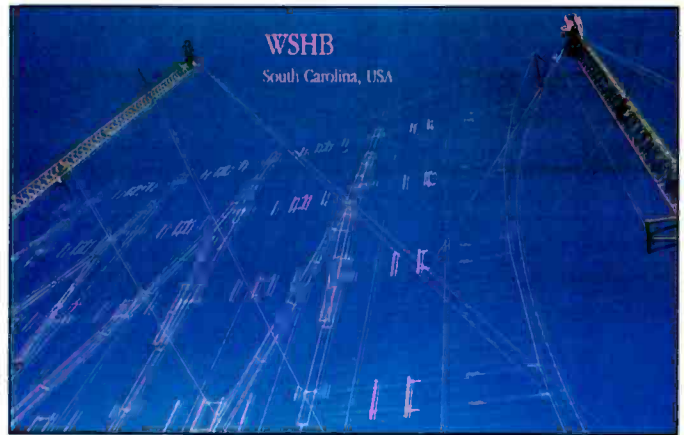
Liberia has never been much of a player on shortwave, but that may change one of these days after word came that the Chinese are going to build an FM and shortwave service for the Liberian Broadcasting System. It’s in the early stage right now so I can’t tell you anything as to how large, powerful, or extensive this operation may be, or what else it may involve. But it wouldn’t be much of a big leap to expect CRI (China Radio International) to also make use of the site. LBC (Liberia Broadcasting Corporation) had a shortwave station years ago but it was more of a regional service, operating down on 90 meters. The only activity from Liberia at present is ELWA-4760 and Radio Veritas-5470, the latter not heard very often due to its schedule, which puts it off the air at 2300.

Among all the governments that say they can’t afford to keep an international service going, there is at least one private shortwave enterprise that seems to be growing like a dandelion in your front yard. CVC (Christian Vision) International is to open up “Radio for Africa from Africa,” based in Cape Town, South Africa. That, of course, may not be where the transmitters are placed. Their news release is unclear as to whether this will be an entirely new operation or just a schedule expansion of what already exists (The Voice-Africa, Zambia on 4965). We’ll see what happens.

The never-ending name game goes on. Now we have to remember to discontinue referring to Italy’s shortwave service as RAI International and learn to adopt RAI Italia instead as that change has been announced by the station. And another one, Radio Polonia, has become Polish Radio External Service. What was wrong with the old Radio Warsaw name?

A month or two ago we mentioned that the Netherlands Antilles, a part of which includes the Radio Nederland’s Relay on Bonaire, was to be dissolved, with a change in status for each of the islands. That’s still going to happen, but it’s been put off until mid-December, at which time Bonaire will officially become a “country” within the Dutch kingdom.

Canada’s national time/frequency station CHU is to continue its use of 7335. For a time there were questions about CHU’s



*This huge curtain array is featured on one of the old WSHB’s QSLs. (Thanks David Weronka)*

future on this frequency because international regulations had changed, meaning CHU’s license description would no longer apply to its operations on that frequency. Now Ottawa has relicensed the station and everything’s cool again.

### Reader Logs

Remember, your shortwave broadcast station logs are always welcome. But please (please!) be sure to double or triple space the items, list them by country and include your last name and state abbreviation after each log. Also much wanted are spare QSLs you don’t need returned (or good color copies), station schedules, brochures, pennants, photos, and anything else you think would be of interest.

And where, oh where, is that photo of you at your listening post? If the wait goes on much longer our agents may take steps to block your reception of Brother Stair—so consider yourself warned!

Here are this month’s logs. All times are in UTC. Double capital letters are language abbreviations (SS = Spanish, RR = Russian, AA = Arabic, etc.). If nothing is indicated the language is assumed to have been English.

**ALBANIA**—Radio Tirana, 7465 at 0345 on Mother Theresa. Also 7530 at 2110 on their parliament. (Maxant, WV)

**ANGOLA**—Radio Nacional, 4950 at 0440 with man in PP talk, continuous music, 2 + 1 time pips at 0500, ID and man with news. (D’Angelo, PA)

**ANTARCTICA**—Radio Nacional Arcangel, 15476 at 2058 very weak and faded at 2104 before sign off. (Strawman, IA)

**ARGENTINA**—RAE, 11710 at 0215 with news item about their president. (Moser, IL) 0220 discussing their relations with the Vatican. (Maxant, WV) 15345 in SS at 1845. (Charlton, ON)

**ASCENSION**—BBC Relay, 7105 with an interview in Hausa at 0547. (MacKenzie, CA) 15400 at 1849. (Charlton, ON)

**AUSTRALIA**—Radio Australia, 6160 at 0915, 9580 at 1315, 9590 at 1715 and 12080 at 0825. (Maxant, WV) 7240 at 1410. (Barton, AZ)

## Help Wanted

The "Global Information Guide" consistently presents more shortwave broadcast loggings than any other monthly SW publication! (A whopping 472 shortwave broadcast loggings were processed this month!\*) Why not join your fellow SWLs, let us know what you're hearing, and also become eligible for our monthly shortwave book prize! Send your logs to Gerry Dexter, "Global Information Guide," 213 Forest St., Lake Geneva, WI 53147. Or e-mail them to [gdex@genevaonline.com](mailto:gdex@genevaonline.com) (please see the column text for basic formatting tips.) Come join the party—we look forward to hearing from you!

*\*Not all logs get used; there are usually a few which are obviously inaccurate, unclear, or lack a time or frequency.*

9710 at 0730 with "Tanya" reporting on rugby. (Adams, FL) 15515-Shepparton at 0439 on Aussie rules football. (Wood, TN) 2115. (Charlton, ON) 17750-Shepparton at 0740. (Patterson, Philippines) 17785 with news at 2203. (Moser, IL) 17785-Shepparton at 2245 and 17795-Shepparton at 2345. (MacKenzie, CA)

Northern Territories Service, VL8K-Katherine, 2485 at 1214 with woman anncr and contemporary music. Soon faded. (Taylor, WI)

CVC International, 17820-Darwin in II at 0750. (Patterson, Philippines)

## A Guide To "GIG-Speak"

Here's a partial list of abbreviations used in the "Global Information Guide."

<p>* — (before or after a time) time the station came on or left the air</p> <p>(l) — (after a frequency) lower sideband</p> <p>(p) — presumed</p> <p>(t) — tentative</p> <p>(u) — (after a frequency) upper sideband</p> <p>v — variable time or frequency</p> <p>// — in parallel</p> <p>AA — Arabic</p> <p>ABC — Australian Broadcasting Corporation</p> <p>AFN — Armed Forces Network</p> <p>AFRTS — Armed Forces Radio TV Service</p> <p>AIR — All India Radio</p> <p>Alt — alternate</p> <p>AM — amplitude modulation, AM band</p> <p>Anmt(s) — announcement(s)</p> <p>Anncr — announcer</p> <p>AWR — Adventist World RadioBC broadcast(er)</p> <p>BSKSA — Broadcasting Service of Kingdom of Saudi Arabia</p> <p>CA — Central America</p> <p>CC — Chinese</p> <p>Co-chan — co-channel (same frequency)</p> <p>comm1(s) — commercial(s)</p> <p>CP — Bolivia, Bolivian</p> <p>CRI — China Radio International</p> <p>DD — Dutch</p> <p>DJ — disc jockey</p> <p>DS — domestic service</p> <p>DW — Deutsche Welle/Voice of Germany</p> <p>EE — English</p> <p>ECNA — East Coast of North America</p> <p>f/by — followed by</p> <p>FEBA — Far East Broadcasting Association</p> <p>FEBC — Far East Broadcasting Company</p> <p>FF — French</p> <p>freq. — frequency</p> <p>GBC — Ghana Broadcasting Corp</p> <p>GG — German</p> <p>GMT — Greenwich Mean Time (UTC)</p> <p>HH — Hebrew, Hungarian, Hindi</p> <p>HOA — Horn of Africa</p> <p>ID — station identification</p> <p>II — Italian, Indonesian</p> <p>Int/Intl — international</p> <p>Irr. — irregular use</p> <p>IRRS — Italian Radio Relay Service</p> <p>IS — interval signal</p> <p>JJ — Japanese</p> <p>KK — Korean</p>	<p>LSB — lower sideband</p> <p>LV — La Voz, La Voix (the voice)</p> <p>MW — mediumwave (AM band)</p> <p>NBC — National Broadcasting Corporation (Papua New Guinea)</p> <p>OA — Peru/ Peruvian</p> <p>OC or O/C — open carrier</p> <p>PBS — People's Broadcasting Station</p> <p>PP — Portuguese</p> <p>PSA — public service announcement</p> <p>QQ — Quechua</p> <p>QRM — man-made interference</p> <p>QRN — noise (static)</p> <p>QSL — verification</p> <p>RCI — Radio Canada International</p> <p>Rdf. — Radiodifusora, Radiodiffusion</p> <p>REE — Radio Exterior de Espana</p> <p>RFA — Radio Free Asia</p> <p>RFE/RL — Radio Free Europe/Radio liberty</p> <p>RNZI — Radio New Zealand International</p> <p>RR — Russian</p> <p>RRI — Radio Republik Indonesia</p> <p>RTBF — RTV Belge de la Communate Françoise</p> <p>Relay — transmitter site owned/operated by the broadcaster or privately operated for that broadcaster</p> <p>relay — transmitter site rented or time exchanged.</p> <p>SA — South America</p> <p>SEA — Southeast Asia</p> <p>SCI — Song of the Coconut Islands (transition melody used by Indonesian stations)</p> <p>s/off — sign off</p> <p>s/on — sign on</p> <p>SIBC — Solomon Is. Broadcasting corp.</p> <p>sked — schedule</p> <p>SLBC — Sri Lanka Broadcasting Corporation</p> <p>SS — Spanish</p> <p>SSB — single sideband</p> <p>SWL — shortwave listener</p> <p>TC — time check</p> <p>TOH — top of the hour</p> <p>TT — Turkish</p> <p>TWR — Trans World Radio</p> <p>Unid — unidentified</p> <p>USB — upper sideband</p> <p>UTC — Coordinated Universal Time (as GMT)</p> <p>UTE, ute — utility station</p> <p>Vern — vernacular (local) language</p> <p>via — same as "relay"</p> <p>VOA — Voice of America</p> <p>VOIRI — Voice of Islamic Republic of Iran</p> <p>WCNA — West Coast of North America</p> <p>ZBC — Zimbabwe Broadcasting Corporation</p>
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*This QSL from Radio Veritas Asia shows its studio/transmitter building. (Thanks David Weronka)*

**AUSTRIA**—Radio Austria Int., 5945 in GG at 2010. (Brossell, WI) 7325 at 0040, 9870 at 2335 and 13675 at 1650. (Maxant, WV) 13675 via Canada in GG at 1644. (Charlton, ON)

**BOLIVIA**—Radio San Gabriel, La Paz, 6079.8 at 1020 with CP, SS anmts. ID at 1028. QRM from an unid signing on at 1030. (Alexander, PA)

**BOTSWANA**—Voice of America Relay, Moepeng Hill, 4930 under heavy QRN at 0310, 12080 in FF at 1920 and 17580 in an African dialect at 1654. (Brossell, WI) 4930 at 1920. (Patterson, Philippines) 0415. (Taylor, WI) 0424. (D'Angelo, PA) 17895 heard at 1832. (Charlton, ON)

**BONAIRE**—Radio Nederland Relay, 6165 at 0000. (Adams, FL) 9895 with interviews at 1915 and 11655 at 2010 on horse farmers in Poland. (Maxant, WV) In DD at 2258. Also 15315 in EE at 1937. (Charlton, ON) 2156 closing at 2200. (Moser, IL)

**BRAZIL**—(All in PP) Radio Clube do Para, Belem, 4885 at 0505. (Wood, TN; MacKenzie, CA)

Radio Guarujá Paulista, Guarujá, 5940.2 at 0205 with local pops. //3385 and 5045 both weak. (Alexander, PA)

Radio Cancao Nova, Cachoeira Paulista, 4825 heard at 0400, //9675. (D'Angelo, PA) 4825 at 0550. (Brossell, WI) 9675 at 0135 with PP religious music and talk, commls, promos. (Alexander, PA)

Radio Difusora Londrina (p) with sports play-by-play at 0228 and // with 4885-Acreana and 4925-Taubate (p) all from the Difusora Network and all poor to fair. (Taylor, WI)

Radio Marumby, Florinapolis, 9665 at 0150 with talk, music bridge. ID. (Taylor, WI) 0410 similar and //11750 very weak. (Alexander, PA)

Radio Aparecida, Aparecida, 11855 at 2135. (Charlton, ON)



*Radio Pyongyang sent this card to Rich D'Angelo, who says that replies from this difficult verifier have been coming through more easily of late.*

Radio Bandeirantes, Sao Paulo, 9645 at 0044. (Taylor, WI) 11925 at 0124. (MacKenzie, CA)

Radio Nacional Anhanguera, Goiania, 4915 at 0311 with Brazilian pops, ID, more pops. (Taylor, WI)

Radio Nacional Amazonia, 11780 at 2345 hurt by Cuban carrier coming on which included a mention of "Radio Union" and then into RNV pgmng. (Taylor, WI) 1945 with PP songs. (Brossell, WI) 2132. (Charlton, ON) 2352. (MacKenzie, CA)

**BULGARIA**—Radio Bulgaria, 7400 with international news at 1830, //9700. (Fraser, ME) 2227. (Patterson, Philippines) 9400 in BB at 2014 and 15700 in BB at 1350. (Brossell, WI) 9700 in BB at 1950. (Charlton, ON) 9700 at 0010 and 11500 in SS heard at 0148. (MacKenzie, CA)

**BURKINA FASO**—Radio Burkina, 5030 at 0617 in FF but QRM from Rebelde-5025 made reception very poor. University Network was off. (Taylor, WI)

**CANADA**—CKZN, St. John's, 6160 at 0840. (Maxant, WV)

CBC Northern service, 9625 at 2310. (Maxant, WV)

CHU, Ottawa, 7335 with time anmts at 1815. (Maxant, WV) 14670 heard at 2337 with time anmts in FF/EE. (MacKenzie, CA)

**CHILE**—La Voz, 11745 in PP at 0328. (Brossell, WI) 17680 in SS at 2114. (Charlton, ON) 2330. (MacKenzie, CA)

**CHINA**—CRI, 5960 via Albania at 2000, 7620 in CC at 1213, 9665 via Brazil in SS at 0319 and 13670 via Mali in an African language at 1805. (Brossell, WI) 6115 at 0615. (Adams, FL) 7220-Xi'an in VV at 2350 and 9795-Urumqi very weak at 1402. (Strawman, IA) 9440-Shijiazhuang in RR at 1440. (Taylor, WI) (Charlton, ON) 9660 in Amoy at 0108. (MacKenzie, CA) 11640 via Mali at 2003 and 13740 via Cuba at 1430. (Charlton, ON) 15230 at 1415. (Adams, FL)

CPBS/CNR, 9810 in CC at 1325. (Brossell, WI) 11670 in CC at 0145 and 11915 in CC at 0130. (MacKenzie, CA) (*Let's include the sites, guys!—gld*)

Firedrake music jammer, 13625 covering RFA via Northern Marianas at 1802. (Brossell, WI) 13745 at 2330 against RFA. (MacKenzie, CA)

**COLOMBIA**—Marfil Estereo, 5910 with SS ballads at 0309. (Strawman, IA)

**CUBA**—RHC, 9550 at 2325. (Patterson, Philippines) 9600 in SS at 0559. (Wood, TN) 11760 in SS at 2130. (Charlton, ON) 2105 with mailbag. //9505. (Fraser, ME)

Radio Rebelde 5025 in SS at 0620. (Maxant, WV) 15570 in SS at 1715. (Brossell, WI)

**CZECH REPUBLIC**—Radio Prague, 6200 with news at 0200. (Moser, IL) 11600 interviewing a composer at 1423. (Charlton, ON) 13580 at 1400. (Yohnicki, ON)

**DJIBOUTI**—RT Djibouti, 4780 at 0300 sign on with NA, AA talk, Koran. (Alexander, PA) 0306 with Koran. (Brossell, WI) 0356 with highlife. ID, news at 0400. (D'Angelo, PA)

**DOMINICAN REPUBLIC**—5009.8 at 1100 with SS talk, ID. Very good but quickly overcome by local noise. (Alexander, PA)

**ECUADOR**—HCJB, 6050 in SS at 1915. (Patterson, Philippines) 9740 in DD at 0640. (Wood, TN) 9745 with sermon at 0355. (Maxant, WV) 11920 in PP at 2333 and 12040 in GG at 2328. (MacKenzie, CA)

Radio Quito, 4919 at 0335 with news in SS. (Strawman, IA) 0412 with two men in SS. (D'Angelo, PA) 0409 and quick SS ID. (Taylor, WI) 1033. (Alexander, PA)

HD210A time station, 3810 with SS time anmts at 0506. No tone shift at the minute marks. (Wood, TN)

**EGYPT**—Radio Cairo/Egyptian Radio, 7270 at 0201 on meaning of the Koran. (Moser, IL) 0205 with DJ and Western music into audio problems. Also 9990 with Egyptian music at 1830. (Maxant, WV) 9990 in GG at 1942. Also 15810 in unid lang at 1350. (Brossell, WI) 12050 in AA at 1635. (Charlton, ON)

**ENGLAND**—BBC, 3255 via South Africa at 0409. (Taylor, WI) 6190 via South Africa at 2039, also 6195-Rampisham (Patterson, Philippines) 9410 at 0630. //9440. Also 17830 at 1915 with "Focus on Africa." (Adams, FL) 9410 Cyprus Relay at 0618. (Wood, TN) 1939. And 9630 Seychelles Relay at 1931. Also 17885 Meyerton Relay in an African dialect at 1657. (Brossell, WI) 9630 at 1720. (Maxant, WV)



Listening is only half the fun...

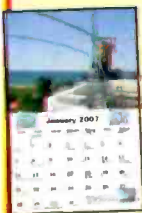
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Rich D'Angelo got this nice reply from the hard-to-hear Radio Virgen de Remedios (4545) in Tupiza, Bolivia.

9630 Seychelles Relay at 1949. (Charlton, ON) 9680 at 0241, 11675 at 2115 and 17830 on soccer at 1653. (Moser, IL)

Sudan Radio Service, 17660 in unid language at 1638. (Charlton, ON)

Radio Solh, 9875-Rampisham in Pashto to Afghanistan at 1644

FEBA Radio, 5885 via Seychelles at 0145. (Maxant, WV) 7110 via Novosibirsk in Hindi at 0058. (Strawman, IA) 9550 via Rwanda in AA at 1937. (Brossell, WI)

**EQUATORIAL GUINEA**—Radio Nacional, Bata, 5005 in SS with Afropops at 0556. (Wood, TN)

Radio Africa, Bata, 15190 with EE religious programming at 1020. Mixing with stronger CRI. (Alexander, PA)

**ETHIOPIA**—Radio Ethiopia, 9704.2 at 1951 with HoA instrumentals, woman anncr in Amharic, ID, closing anmts by man and choral anthem. (D'Angelo, PA)

**FRANCE**—RFI, 11615 at 1610 on Iraq. (Fraser, ME) 11705-Issoudun in SS at 2130, 15160 via South Africa at 1631 and 17630 French Guiana Relay at 2104. (Charlton, ON)

**GABON**—Africa No. One, 9580 in FF at 0605. (Wood, TN) 1947. Also 15475 in FF at 1835. (Charlton, ON) 9580 at 2137. (Yohnick, ON) 17620 with mostly FF talk at 1442, ID and news at ToH. (Taylor, WI)

RTV Gabonaise, 4777 in FF at 0507. (Wood, TN) 0533. (Taylor, WI) 0550. (Brossell, WI)

**GERMANY**—DW, 7240 at 0610 and 11690 at 1915. (Maxant, WV) 7225 Portugal Relay with EE news at 0404. (Strawman, IA) 9655 Rwanda Relay in GG at 0155, 9850 Sri

Lanka Relay in Hindi at 0120 and 11830 via Russia in CC at 2342. (MacKenzie, CA) 9720 Rwanda Relay in Indonesian at 2250. (Strawman, IA) 9735-Nauen at 1910. (Patterson, Philippines) 11690 with feature at 2140. (Moser, IL) 11690 Rwanda Relay at 2128 and 11725 Rwanda Relay in GG at 1931. (Charlton, ON) 11865 Rwanda Relay at 2101 and 13790 Portugal Relay in AA at 1805. (Brossell, WI)

Deutschlandradio Kultur, 6005 in GG at 2335 with orchestral music and occasional GG talk. Slop from both sides. (Strawman, IA)

Gospel For Asia, 7210-Wertachtal (?) at 0042 in unid language to 0100 when changed to another unid language. (Taylor, WI)

**GREECE**—(All in Greek) Voice of Greece (p), 5835 via Olympia Radio utility station at Pyrgos at 0003. (Strawman, IA) 7475 at 0110 and 15630 at 1855. (Maxant, WV) 9420 at 0616. (Wood, TN) 1943. (Charlton, ON)

**GUATEMALA**—Radio Buenas Nuevas, San Sebastian, 4800 with SS talks at 1249. (Brossell, WI)

Radio Cultural Coatan, San Sebastian, 4780 in SS at 1213. (Brossell, WI)

**GUAM**—KSDA, 11965 opening at 2200 and into Indonesian. (Barton, AZ)

**GUINEA**—Radio Conakry, 7125 at 2210 in apparent reactivation with continuous high-life music and infrequent FF anmts. (Strawman, IA)

**HUNGARY**—Radio Budapest, 3975-Jaszbereny at 2003. (Patterson, Philippines) 7150 in SS at 2240. (Brossell, WI)

**INDIA**—All India Radio, 5010-Thiruvananthapuram, flutes and Hindi anmts at 1350. (Strawman, IA) 7410 at 2114 with carrier only; also 9445/9950. (Maxant, WV) 9425-Bangaluru at 1430 in EE/Hindi. (Taylor, WI) 11620-Bangaluru in RR at 1638. (Brossell, WI) 2132. (Moser, IL) 15235-Bangaluru at 1035. (Patterson, Philippines)

**INDONESIA**—Voice of Indonesia, 9525-Cimmangis (Java) in EE at 0805. (Patterson, Philippines)

Radio Republik Indonesia, 4750-Makassar with chants, flutes at 1341. (Strawman, IA) 4790-Fak Fak in II at 1355 with talk, time pips, CODAR QRM. (Strawman, IA)

**IRAN**—VOIRI, 6250 via Sitkuani, Lithuania in SS to end of program at 2125. (D'Angelo, PA) 7160 at 0210 and 9855 at 1950. (Maxant, WV) 9790 in listed Urdu at 1405. (Strawman, IA)

**ISRAEL**—Voice of Israel, 6180 at 0330, 6280 at 0435, 9345 at 1840, 7545 in FF at 0455 and 15640 at 2005. (Maxant, WV) 6280 in FF at 0547 and 7545 in HH at 0054. (Taylor, WI) 9390 unlisted with IS and into HH at 1630. (Brossell, WI)

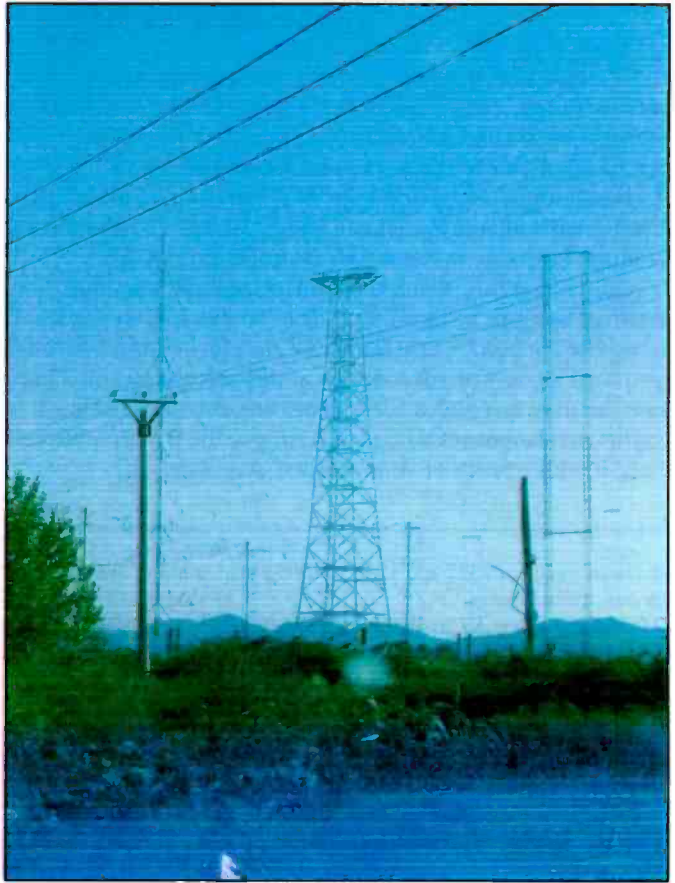
**ITALY**—RAI Italia, 9840 in II at 0129. Also 11765 via Ascension in II at 0240. (MacKenzie, CA) 11830 in II at 1830. (Fraser, ME) 1831. (Charlton, ON)

**JAPAN**—Radio Japan/NHK World, 6110 in JJ at 9549. (Moser, IL) 6120 via Canada at





*Pirate WDDR sent this QSL to Rich D'Angelo.*



*Antennas at Radio Tirana, Albania. (Thanks Charles Maxant)*

1020, 7230 with top tunes in Japan at 0630, 9535 in FF at 1820, 9660 via French Guiana in FF at 0400 and 15355 on African tribes at 1725. (Maxant, WV) 9750 in JJ at 1738 and 17870 via Ascension in FF at 1240. (Brossell, WI) 11855 via Ascension in SS at 2114 and 15355 via Gabon in JJ at 1848. (Charlton, ON) 13650 in Thai at 2320, 17605 in JJ at 2354, 17810 in VV at 2335 and 17825 in JJ at 2240. (MacKenzie, CA) 17860-Yamata in JJ at 0758. (Patterson, Philippines)

Radio Nikkei, 3925 in JJ at 1355. (Strawman, IA)

**JORDAN**—Radio Jordan, 9830 in AA at 1840 and 11690 in EE at 1633. (Charlton, ON) 11690 with news at 1505. (Maxant, WV) 1707 with EE news to 1715, then techno-pop-dance to sudden close at 1729. (Alexander, PA)

**KUWAIT**—Radio Kuwait, 9855 in AA at 1838. (Charlton, ON) 1920. (Maxant, WV)

**LATVIA**—Latvian Radio, 9290 via Ulbroka with *Latvia Today* at 1347 to 1400 close. (Alexander, PA)

KWRN/Radio Marabu, 9290 via Ulbroka with KWRN pgmng at 0930 and into Radio Marabu pgm at 1000, both airing Euro-pop. (Alexander, PA)

Radio Six International, 9290 via Ulbroka at 0720 with pops, IDs. (Alexander, PA)

**LITHUANIA**—Radio Vilnius, 7325 heard at 2250 with repeated EE IDs. (Brossell, WI)

**MADAGASCAR**—Radio Madagasikara, 5010 at 0323 with M/W in presumed Malagasy. (Strawman, IA)

**MALI**—RTV Malienne, 4835 in FF at 2350. (Brossell, WI) 5995 with male vocals, apparent news at 2300. (Strawman, IA)

**MEXICO**—Radio UNAM, Mexico City, 9599v at 0250 with classical music until ToH. (Taylor, WI) 1350 with music. ID at 1358 and into a new program. (D'Angelo, PA) 2210 with light classical fare, "Radio Unam" ID with emphasis on "nam." (Strawman, IA) 2300 with SS talk, ID at 2303, more talk with short breaks of classical music. Wiped out by Vatican sign on at 2311. (Alexander, PA)

**MOROCCO**—RTV Marocaine, 15345 good with music at 1700. (Moser, IL) 1855 in AA. (Maxant, WV)

**NETHERLANDS**—Radio Nederland, 9895 Madagascar Relay in SS at 0104. (MacKenzie, CA)

KBC Radio, 6255 via Sitkunai, from 2200 sign on with tones and anmts, old U.S. pops, many canned IDs. (Alexander, PA) 2214 with rock and requests for reports. Closed at 2259. (D'Angelo, PA) 11655 at 1842. (Charlton, ON)

**NEW ZEALAND**—RNZI, 5950 with pop/rock at 1315. (Brossell, WI) 5950 at 1325, 9765 at 0815 and 11725 at 1815. Also 15720 at 2350. (Maxant, WV) 9765 at 0705. (Adams, FL) 15720 at 0225 and 17675 at 2015. (Barton, AZ) 17675 at 2249, //15720. (MacKenzie, CA)

**NIGER**—La Voix du Sahel, 9705 at 2155 with anmts, possible ID, 3 time pips at ToH and into pops. (Strawman, IA)

**NIGERIA**—Radio Nigeria, Kaduna, 4770 with drum IS at 0429, choral anthem, man with opening ID. Drums again at 0459, time check and news. (D'Angelo, PA)

Voice of Nigeria, 15120 with news heard at 1709. Poor modulation. (Brossell, WI) 1730. (Maxant, WV) 1912. (Charlton, ON)

**NORTH KOREA**—Voice of Korea, 6285 at 1040. (Maxant, WV) 9355 at 1355 closing with ID. (Barton, AZ)

**NORTHERN MARIANAS**—KFBS, Saipan, 9920 in an Asian language at 1312. (Brossell, WI)

**OMAN**—Radio Sultanate of Oman, 15140 heard at 1400 sign on with EU and Euro-pop, promo for a local concert. News at 1430. (Alexander, PA)

**OPPOSITION**—Radio Marti, 5980-Delano at 0830. (Adams, FL) 13820-Delano at 2333. (MacKenzie, CA)

Radio Liberty, 13745 via Lampertheim in RR heard at 1145. (Patterson, PA)

Radio Okapi, 11890 via South Africa at 1640 with talks and songs in FF. (Brossell, WI)

Voice of Biafra Int., via South Africa, 7380 heard at 2131 with EE news analysis, ID and segment in local Ibo language. Off at 2159. (D'Angelo, PA)

Radio Free Afghanistan, 9990 via Kuwait at 1328 in listed Pushtu. (Brossell, WI) 17535 via Kuwait at 0727. (Patterson, Philippines)

Sudan Radio Service, 11705 via Wooferton in FF monitored at 1740. (Maxant, WV)

Radio Republica, 6155 via England at 2340. Cuban bubble jamming. (MacKenzie, CA)

Radio Nacional de la RASD, 6300-Rabuni, Algeria, at 0825 in AA, closing at 1000. Also noted 2300 to 0000 close in SS. (Alexander, PA) 2240 in AA. (D'Angelo, PA)

Radio Free Asia, 11785 via Saipan at 2211. (Strawman, IA) 12075 in unid Asian language at 2105. (Brossell, WI) 13800 via Northern

## This Month's Winner

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

Our winner this month is **Ciro DeGennaro** who must surely eat his meals at his receiver he since he manages to hear so much every month. **Ciro** will soon receive a copy of the 2007 *World Radio TV Handbook* from Watson Guptil Publications. If you want a one-word description of this volume go with "indispensable." How anyone can have any real success in hearing countries, stations, frequencies, sites, programs, and languages without referring to the *WRTH* is beyond comprehension. You need it within reach of your receiver. Absolutely.

Marianas in CC at 2332 and 15565 at 0010 in Laorian. (MacKenzie, CA)

Sound of Hope, 9450-Paochung, Taiwan, in CC heard at 1504. (Taylor, WI)

Radio Farda, 17675 via Sri Lanka in Farsi at 0710. (Patterson, Philippines)

**PAPUA NEW GUINEA**—Radio East New Britain, 3385 at 1157 with island vocals. ID, anmts in Pidgin. (D'Angelo, PA)

**PERU**—Radio Cusco, Cusco, 6193.4 at 1040 with SS anmts, huaynos, ID. (Alexander, PA)

Radio Atlantida, Iquitos, 4790 at 0533 with LA music and man anncr. CODAR QRM. (Wood, TN)

La Voz de la Selva, Iquitos, 4824.5 at 1105 with M/W, remote feed. ID, flutes. (D'Angelo, PA)

Radio Luz y Sonido, Huanuco, 3234.8 at 0143 with religious talk, male OA vocal, anmts. (D'Angelo, PA)

Radio Vision, Chiclayo, 4790.1 at 0335 with long SS sermon, ID, anmts, then another pgm at 0402. (D'Angelo, PA) 1034 with energetic SS preaching. (Taylor, WI)

**PHILIPPINES**—FEBC Radio Int. 12065 in CC at 2325. (MacKenzie, CA)

Radio Veritas Asia, 9595 with Indonesian service heard at 2320. (Strawman, IA)

**PIRATE**—WBNY, 6925 at 0025 with X-rated comedy, funny tunes. "WBNY Sex Show." (Hassig, IL)

Mystery Radio (Euro) 6220 at 2206 with various selections. Other logs occurred at 0056, 0145, 0139, 0201, 0400, 2242, 2252 and 2302, (Balint, OH) 2240 poorly, with rock. (Zeller, OH) 2202 just above noise level with apparent pops. (Strawman, IA)

WTCR-20th Century Radio, 6925u at 2109 with frequent mentions of Tire Pressure Radio. "You are leaving the tire pressure zone" at 2115 and off. (D'Angelo, PA) 0123 sign on with trumpet fanfare, drum roll and into oldies rock. (Zeller, OH) 0108 with rock/pop. (Hassig, IL) 0212 and lost by 0225. (Balint, OH)

Cracker Radio, 6925u at 2117 with odd new age, male anncr with high-pitched voice

making difficult copy. Also at 1559 using the slogan of "Voice of Confusion Radio," "Experts" on various current subjects in the news, some rock. No address. (Zeller, OH)

Sunshine Radio, 6925u at 1645 sign on with rock, female anncr. Most songs had female vocalists. grasscutterrado@yahoo.com for reports. Also heard opening at 1812. (Zeller, OH)

Grasscutter Radio, 6925u opening heard at 1740 with rock and male anncr. Said hello to FRN and some other pirates. (Zeller, OH)

Random Radio, 6925u opening at 0013 with country and very old pop. Also IDs in German, some other languages and EE "This is the English language service of Random Radio." Reports to the Grapevine section of the FRN web site. (Zeller, OH)

"KI," 6925u at 1830 sign on. Bizarre production of man singing over instl rock guitar, repeated, and dealing with "Radio Land" and "Radio Plan" Only ID was "KI" sent in CW at sign on. (Zeller, OH)

T-Rex, 3275u at 0219 weak but eventually into laughing, unrecognizable music, chimp sounds, and monkey talk. (Balint, OH)

Radio Ice Cream, 6925 at 2230 with ID, Belfast address, mix of rock and blues. (Strawman, IA)

WPER, 6925 at 1718 and 2041 with remarks by several U.S. presidents and slogan "all presidents all the time." (Zeller, OH)

The Crystal Ship, 3275.7 at 0355 with past pops, ID. (Alexander, PA)

MAC Radio, 3275 at 0625 with old pops, off with U.S. NA and VOA's "Yankee Doodle" IS. (Alexander, PA)

WTCR, 6925u at 0122 with 20th Century Fox fanfare several times, ID and several pop/rock things. (Hassig, IL)

WPMR-Wasabi Pea Man Radio/WTPR-Tire Pressure Radio, 6950 at 2201 mentioning several pirate radio personalities. "Let's get the party started." Apparent sign off at 2226. (Balint, OH)

**POLAND**—Polish Radio External Service, 9525 via Nauen at 1304 with EE features and "Insight Central Europe." (D'Angelo, PA)

**PORTUGAL**—RDP Int., 15540 in PP monitored at 1921 and 17825 in PP at 1816. (Charlton, ON) 17825 with PP soccer to sudden close just before 1900. (Moser, IL)

**ROMANIA**—Radio Romania International, 7180 at 0630 with woman anncr frequencies to Europe, USA and Pacific, then news. (Adams, FL) 0650. (Maxant, WV)

**RUSSIA**—Russian International Radio, 7125-Armivar in RR at 0003. (Strawman, IA) Voice of Russia, 7170-Samara in SS at 0110 and 9800-Irkutsk in RR at 1410. (Strawman, IA) 7260-Vladivostok in RR at 1415. (Barton, AZ) 11980-Armavir in FF at 1915. (Brossell, WI) 15465-Moscow in FF at 1804. (Charlton, ON) 17665-Komsomolsk at 0713. (Patterson, Philippines)

Kamchatka Radio, 6075 in RR at 0538. (MacKenzie, CA)

**RWANDA**—Radio Rwanda, 6055 at 2025 audible after Turkey signs off. FF talk, FF and Afro-pop. Off at 2101. (Alexander, PA)

**SAOTOME**—VOA Relay, 4960 at 0419, //4930-Botswana. (Taylor, WI) 0555 in an African dialect. (Brossell, WI) 6080 at 0615. (Wood, TN) 9780 in FF monitored at 2120. (Strawman, IA)

**SAUDI ARABIA**—BSKSA, 9555 in AA at 1924. (Brossell, WI)

**SLOVAKIA**—Radio Slovakia Int., 7230 in EE heard at 0007. (Strawman, IA) 0105. (Brossell, WI) 7345 with mailbag pgm at 1940. (Moser, IL) 7345 at 1945 and 9440 at 0115. (Maxant, WV)

**SOUTH AFRICA**—Channel Africa, 3345 at 0400 with ID, headlines. (Strawman, IA) 0302 with news, ID, features about various African countries. (D'Angelo, PA) 9865 at 0512 with news. (Wood, TN) 15235 at 1735. (Maxant, WV) 17770 at 1504. (Charlton, ON) 1515 with features on various conflicts in Africa. (Taylor, WI)

**SOUTH KOREA**—KBS World Radio, 3955 via Skelton in SS at 2009. (Patterson, Philippines)

**SPAIN**—REE, 6040 Costa Rica Relay in SS at 0526, 9765 Costa Rica Relay in SS at 0142 and 17850 Costa Rica Relay in SS at 2005. (MacKenzie, CA) 6055 in SS at 0543. (Moser, IL) 6055 Costa Rica Relay in SS at 0230, 9680 in EE at 2039. (Patterson, Philippines) 6055-Nobeljas in EE at 0115.

## In Times Past...

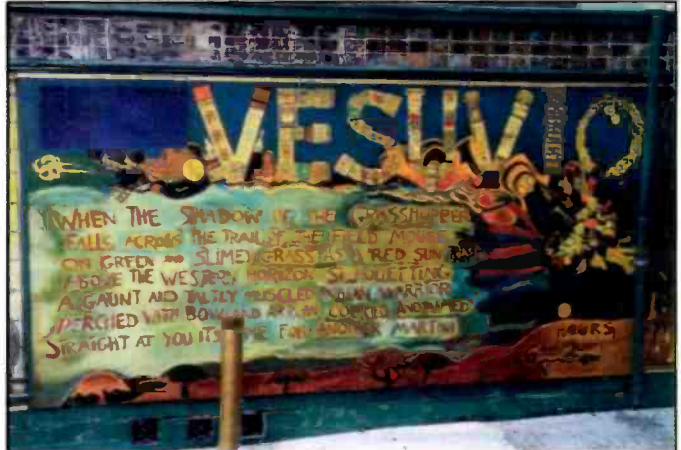
Here's our regular blast from the from the *Pop'Comm* shortwave history book:

**PERU**—Radio El Sol de los Andes, Cuatunumi, Cajamarca, 4254.5 in SS at 0404 on April 9, 1984. (Dexter-WI)





The computerized control console at WEWN, Vandiver, Tennessee. (Thanks Charles Maxant)



Pirates Grasshopper Radio (top) and Undercover Radio sent these cards to Mike Adams of Florida.

(Adams, FL) 9675 Costa Rica Relay at 0532. (Wood, TN) 11765 in PP at 1845, sudden close at 1855. (Barton, AZ) 11815 Costa Rica Relay in SS at 2133 and 17850 Costa Rica Relay in SS at 1500. (Charlton, ON) 17850 in SS at 2115. (Barton, AZ)

**SUDAN**—Republic of Sudan Radio, 7200 with local music at 0435 to fade at 0445. (Strawman, IA)

**SURINAME**—Radio Apinte, 4990 with oldies vocals heard at 0435. (D'Angelo, PA)

**SYRIA**—Radio Damascus 12085 with AA music and lousy audio at 2030. (Maxant, WV)

**SWEDEN**—Radio Sweden Int., 7420-Horby in EE at 2045. (Patterson, Philippines)

**SWAZILAND**—Trans World Radio, 4775 at 0350 in listed Lomwe. (Taylor, WI; Brossell, WI) 0402 in GG. (D'Angelo, PA) 0430 in GG. (Wood, TN)

**TAIWAN**—RTI, 7135 via Issoudun in FF at 2135. Also 11875-Tinian in EE at 0110. (Patterson, Philippines) 7185 in CC at 1300. (Brossell, WI)

**TANZANIA**—Radio Tanzania-Zanzibar, 11735-Dole in Swahili at 2052. (Charlton, ON) 2058 with sign off anmt. (Strawman, IA)

**TUNISIA**—RT Tunisiennne, 7190 in AA at 2121. (Brossell, WI)

**TURKEY**—Voice of Turkey, 5960 at 2315 on restaurant hours there. (Maxant, WV) 6055 heard at 1945 with press review. (Moser, IL) 1954 mailbag pgm (Brossell, WI)

**UGANDA**—Radio Uganda, 4976 at 0420 with woman in EE, local vocal, ID at 0429 and more talk. (D'Angelo, PA)

**UKRAINE**—Radio Ukraine Int., 7440 in UU heard at 0659. (Maxant, WV)

**UNITED STATES**—Voice of America, 7200 Morocco Relay EE to ME at 0115, 7295 via Novosibirsk in presumed Mandarin at 1325, 9705 via Saipan, No. Marianas in Cantonese at 1340 and 9760 Philippines Relay at 1345. (Strawman, IA) 7195 via Ascension in Swahili at 0427, 11655 Thailand Relay at 2348, 11725 Philippines Relay at 2356, 11805 Philippines Relay at 2349, 11840 Morocco Relay in Burmese at 2340, 15290 Philippines Relay at 2303 and 21450-Delano at 2226. (MacKenzie, CA) 9885 Morocco Relay at 0527. (Wood, TN) 17895 Morocco Relay at 1934. (Charlton, ON)

Adventist World Radio, 11750 in African dialect at 1947. (Brossell, WI) 15140 via South Africa in Urdu at 1915. (Charlton, ON)

AFN/AFRTS, 5446u-Key West with sports at 0605. (Wood, TN) 5765u Guam at 0816 and 6350-Hawaii at 0810. (Patterson, Philippines) 12133.5u-Key West at 2107. (Brossell, WI)

WYFR, 7240 via Rampisham at 1835 and 12150 via Almaty, Kazakhstan in Mandarin at 1152. (Patterson, Philippines) 11985 via Ascension at 2105; 2125. (Brossell, WI; Maxant, WV)

Trans World Radio, 9720 via South Africa at 1933. (Brossell, WI) WINB, Red Lion, 13570 at 2252. (MacKenzie, CA)

**VATICAN**—Vatican Radio, 5885, //7250 at 2100. (Fraser, ME) 7305 at 0230 sign on. Moser, IL) 5885 at 2100, 5815 with rosary at

0140, 7250 at 2105, 7335 in PP at 0105, 7360 at 0645 and 11625 at 1745. (Maxant, WV) 13765 with rosary at 1557. (Charlton, ON)

**VENEZUELA**—Radio Nacional, 11875 in SS at 1825 and 17705 in SS at 2054, both via Cuba. (Charlton, ON) 13680 in SS at 2324 and 15250 in SS at 2310, both via Cuba. (MacKenzie, CA)

**YEMEN**—Republic of Yemen Radio, 6135 in AA heard at 0537. (Moser, IL)

**ZAMBIA**—The Voice-Africa, 4965 with tribal singing at 0442, possible ID at 0430. (Taylor, WI)

Radio Zambia, 5915 with fish eagle IS and sign on at 0242. Anthem, local vocals and vernacular. (Alexander, PA)

**ZIMBABWE**—Radio Zimbabwe, 3396 at 0135 with Afro-pops, high-life, talk in EE and vernacular. (Alexander, PA) 0357 with anthem and into local pops. (Strawman, IA)

And, once again, order is restored! Thanks to all who took the time to check in. And welcome to new reporters Mike Adams and T.C. Patterson. Also, best wishes to stalwart reporter Ciro DeGennaro who has been dealing with some problems.

Here are today's good guys: Stewart MacKenzie, Huntington Beach, CA; George Zeller, Cleveland, OH; Charles Maxant, Hinton, WV; Dave Balint, Wooster, OH; Jerry Strawman, Des Moines, IA; Joe Wood, Greenback, TN; Bob Brossell, Pewaukee, WI; Bob Fraser, Belfast, ME; Mike Adams, Lynn Haven, FL; Robert Charlton, Windsor, ON; William Hassig, Mt. Prospect, IL; Rich D'Angelo, Wyomissing, PA; Howard Moser, Lincolnshire, IL; Rick Barton, Phoenix, AZ; Michael Yohnicki, London, ON; Mark Taylor, Madison, WI; Brian Alexander, Mechanicsburg, PA; and T.C. Patterson, Cebu, Philippines. Thanks to each one of you and good listening! ■

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

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

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

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	15565	Radio Free Asia, USA	Lao	0300	7390	Channel Africa, South Africa	
0000	7230	Radio Slovakia International		0330	11745	Christian Voice, Chile	PP
0000	11655	RDP International, Portugal	PP	0330	4919	Radio Quito, Ecuador	SS
0000	4319	AFRTS, Diego Garcia		0330	4775	Trans World Radio, Swaziland	GG, vern
0000	5865	Voice of Greece	Greek	0330	4876	Radio Uganda	
0030	7210	Gospel For Asia, USA, via Germany	unid	0330	4965	The Voice-Africa, Zambia	
0030	7545	Kol Israel	Hebrew	0330	3200	Trans World Radio, Swaziland	vern
0100	9625	CBC Northern Service, Canada		0400	5025	Radio Rebelde, Cuba	SS
0100	7475	Voice of Greece	Greek	0400	9745	HCJB, Ecuador	
0100	9895	Radio Nederland Madagascar Relay	SS	0400	3255	BBC, via South Africa	
0100	7170	Voice of Russia	SS	0400	7225	Deutsche Welle, Germany, Portugal Relay	GG
0100	9445	Radio Slovakia International		0400	6280	Kol Israel	FF
0100	7200	Voice of America Morocco Relay		0400	4960	Voice of America Relay, Sao Tome	
0100	7285	Voice of Croatia, via Germany	various	0400	3345	Channel Africa, South Africa	
0100	4052.5	Radio Verdad, Guatemala	SS	0400	7200	Republic of Sudan Radio	AA
0130	9840	RAI Italia, Italy	II	0400	7275	RT Tunisienne, Tunisia	AA
0130	5815	Vatican Radio		0400	5100	Radio Bana, Eritrea	vern
0200	7210	VOIRI, Iran		0400	3280	La Voz del Napo, Ecuador	SS
0200	6200	Radio Prague, Czech Republic		0400	4750	Radio Peace, Sudan	
0200	7270	Radio Cairo, Egypt		0400	7260	Voice of Russia	RR
0200	4800	Radio Buenas Nuevas, Guatemala	SS	0430	7545	Kol Israel	FF
0200	7210	Voice of Islamic Republic of Iran		0500	9600	Radio Havana Cuba	SS
0200	6973	Galei Zahal, Israel	HH	0500	3810	HD2IOA time station, Ecuador	SS
0200	9600	Radio UNAM, Mexico	SS	0500	5005	Radio Nacional, Equatorial Guinea	SS
0200	4824.5	La Voz de la Selva, Peru	SS	0500	4770	Radio Nigeria	
0200	4810	Radio Transcontinental, Mexico	SS	0500	6040	Radio Exterior de Espana, Spain, C. Rica Relay	SS
0200	3340	Radio Misiones Int., Honduras	SS	0500	6055	Radio Exterior de Espana, Spain	SS
0200	4815	Radio Buen Pastor, Ecuador	SS	0500	4990	Radio Apinte, Suriname	DD
0230	11765	RAI Italia, Italy, via Ascension	II	0500	9470	Voice of Croatia, via Germany	various
0230	7305	Vatican Radio		0530	7105	BBC, Ascension Is. Relay	Hausa
0230	3396	Radio Zimbabwe	EE, vern.	0530	6110	Radio Japan/NHK	JJ
0230	9680	BBC		0600	7125	Radio Conakry, Guinea	FF
0300	9665	China Radio International, via Brazil	SS	0600	4835	RTV Malienne, Mali	FF
0300	5910	Marfil Estereo, Colombia	SS	0600	11605	Kol Israel	HH
0300	4780	RT Djibouti	FF	0600	6185	Radio Educacion, Mexico	SS
0300	9704	Radio Ethiopia	Amharic	0630	7180	Radio Romania International	
0300	5010	Radio Madagasikara, Madagascar	Malagassy	0700	9765	Radio New Zealand International	
0300	4790	Radio Vision, Peru	SS	0700	7440	Radio Ukraine International	
0300	9780	Republic of Yemen Radio	AA	0700	5765	AFRTS, via Guam	
0300	5915	Radio Zambia		0700	6160	CKZN, Canada	
0300	3230	Radio Sondergrense, South Africa	Afrikaans	0800	6350	AFRTS via Hawaii	
0300	6010	La Voz de su Concencia, Colombia	SS	0900	6150	KNLS, Alaska	RR
0300	7110	Radio Ethiopia	Amharic	1000	6100	Kyzyl Radio, Russia	RR



UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
1030	5015	Radio Altura, Peru	SS	1800	17825	RDP International, Portugal	PP
1100	6280	Voice of Korea, North Korea		1800	11875	Radio Nacional, Venezuela, via Cuba	SS
1100	5009	Radio Pueblo, Dominican Republic	SS	1820	11655	Radio Nederland	
1100	4750	Radio Republik Indonesia, Makassar	II	1830	11830	RAI Italia, Italy	II
1100	3925	Radio Nikkei, Japan	JJ	1830	15355	Radio Japan/NHK via Gabon	JJ
1130	2485	VL8T, Tennant Creek, Australia		1830	9830	Radio Jordan	AA
1130	4780	Radio Cultural Coatan, Guatemala	SS	1900	15120	Voice of Nigeria	various
1130	3385	Radio East New Britain, Papua New Guinea		1900	9630	BBC via Seychelles	
1130	13745	Radio Liberty, USA, via Germany	RR	1900	11690	Deutsche Welle, Germany	
1130	7285	Polish Radio External Svce., via Germany	Polish	1900	15540	RDP International, Portugal	PP
1200	4790	Radio Republic Indonesia, FakFak	II	1900	9555	BSKSA, Saudi Arabia	AA
1200	5020	Solomon Is. Broadcasting Corp.		1900	17830	BBC	
1200	7375	FEBA Radio, Philippines	various	1900	9550	FEBA Radio, England, via Rwanda	AA
1300	5995	Radio Australia		1900	9670	Radio Canada International, via Germany	FF
1300	5950	Radio New Zealand International		1900	9890	Christian Science Monitor, via Germany	RR
1300	9920	Adventist World Radio, Northern Marianas	unid	1930	6193	Radio Cusco, Peru	SS
1300	9900	Radio Free Afghanistan, USA via Kuwait	Pashto	1930	9910	Radio Cairo, Egypt	GG
1300	9525	Polish Radio Ext. Service, via Germany		1930	9720	Trans World Radio, via South Africa	
1300	7185	Radio Taiwan International	CC	1930	9410	BBC Cyprus Relay	
1300	9810	CPBS, China	CC	1930	11750	Adventist World Radio, via South Africa	vern
1300	9705	Voice of America, Saipan Relay	CC	2000	15630	Kol Israel	
1300	5050	Voice of the Strait, China	CC	2000	9580	Africa Number One, Gabon	FF
1330	9390	Latvian Radio		2030	12085	Radio Damascus, Syria	
1330	9355	Voice of Korea, North Korea		2030	15476	Radio Nacional Arcangel, Antarctica	SS
1330	9760	Voice of America Philippines Relay		2030	12085	Radio Damascus, Syria	various
1330	9930	KWHR, Hawaii		2030	7420	Radio Sweden International	
1400	9790	VOIRI, Iran	Urdu	2030	11735	Radio Tanzania, Zanzibar	Swahili
1400	15230	China Radio International		2100	11760	Radio Havana Cuba	
1400	9525	Voice of Indonesia	various	2100	17630	Radio France International French Guiana Relay	
1400	13580	Radio Prague, Czech Republic		2100	17850	Radio Exterior de Espana, Spain, C. Rica Relay	SS
1400	9440	All India Radio		2130	7380	Voice of Biafra, via South Africa	
1400	9790	Voice of Islamic Republic of Iran	Urdu	2130	9705	La Voix du Zahel, Niger	FF
1400	15140	Radio Sultanate of Oman		2130	7190	RT Tunisienne, Tunisia	AA
1400	11590	Denge Mesopotamia	Kurdish	2200	8445	All India Radio	
1400	11675	Polish Radio External Service	Russian	2200	11965	Adventist World Radio, Guam	Indonesian
1430	13740	China Radio International, via Cuba		2200	11785	Radio Free Asia, USA via Saipan	unid
1500	9525	Voice of Indonesia	various	2200	7450	Radio Makedonias, Greece	Greek
1500	9450	Sound of Hope, Taiwan	CC	2230	6300	Radio Nacional de la RASD, Algeria	SS/AA
1500	17700	Channel Africa, South Africa		2230	13650	Radio Japan/NHK	CC
1500	11870	Radio Canada International, via Germany		2230	7150	Radio Budapest, Hungary	SS
1600	11620	All India Radio		2230	7325	Radio Vilnius, Lithuania	
1600	12050	Radio Cairo, Egypt	AA	2300	5935	Radioi Prague, Czech Republic	FF
1600	17660	Sudan Radio Service, England		2300	14670	CHU time station, Canada	EE/FF
1600	11615	Radio France International		2300	9595	Radio Veritas Asia, Philippines	II
1600	11690	Radio Jordan		2300	5960	Voice of Turkey	
1600	11895	Radio Okapi, Congo, via South Africa		2300	5980	Bible Voice Radio, England, via Germany	Thursdays
1600	17885	BBC South Africa Relay	vern	2300	4845	Radio Mauritanie, Mauritania	AA
1630	13675	Radio Austria International, via Canada	GG	2330	13745	Radio Free Asia via Saipan, No. Marianas	unid
1630	11620	All India Radio	RR	2330	6030	Radio Marti, USA	SS
1700	17680	Christian Voice, Chile	SS	2330	6140	Radio Republica, USA	SS
1700	15355	Radio Japan/NHK		2330	15720	Radio New Zealand International	
1700	15345	RT Marocaine, Morocco	AA	2330	13820	Radio Marti, USA	SS
1700	15120	Voice of Nigeria		2330	12065	FEBC Radio, Philippines	CC
1730	11705	Sudan Radio Service, USA, via England		2330	9870	Radio Austria International	
1730	11625	Vatican Radio		2330	5955	Democratic Voice of Burma, via Germany	Burmese
1800	15475	Africa Number One, Gabon	FF				
1800	9535	Radio Japan/NHK	FF				
1800	9855	Radio Kuwait	AA				

## New, Interesting, And Useful Communications Products

### Service Hawk v2.2 Adds Peace of Mind To Service Monitoring

Wingenuity, Inc., announced the release and immediate availability of version 2.2 of Service Hawk, a Windows Services monitoring application for Windows 2000/XP/2003 that helps Internet Service Providers (ISPs) and other users thwart bugs and hacking attempts against their servers. Service Hawk monitors Windows Services and other third-party services and automatically restarts them the moment they fail. Notification of service interruption is then sent through e-mail, on-screen notification, or sound alert and logged to a log file.

Service Hawk is known for its ability to monitor and automatically restart Windows Services when they fail, but it now has the added benefit of being able to restart services even if they are supposedly still running. In addition, many services can benefit from a periodic restart to refresh the memory every so often due to their memory intensive nature, and the new version gives users the option to determine a restart schedule according to a daily, weekly, or custom schedule, whatever works best for them. With this release Service Hawk also has the ability to run as a service itself, so users can feel secure knowing that Service Hawk will continue to run and monitor services, even if they log off of their computer.

Service Hawk v2.2 costs \$179.00 for a single-server license. Site licenses are also available. To order Service Hawk online, visit the product website at [www.servicehawk.com](http://www.servicehawk.com) or write to Wingenuity, Inc., 69947 S. River Rd, White Pigeon, MI 49099.

### FlexRadio Systems' New 5000 Product Line

FRS introduces the FLEX-5000 line of software-defined radios (SDRs). The F5K is the successor to the popular SDR-1000 radio, but unlike the SDR1K, the F5K has a self-contained A/D converter and only a single cable connection to a user-provided computer. A separate sound card is not required. There are two additional versions of the F5K, the C and D models.

The F5KC has a built-in processor and comes with Windows XP operating system and wireless keyboard and mouse, whereas the F5KD adds a 9-inch LCD display with touch screen and large tuning knob.

Key features of the new FLEX-5000 include PowerSDR, an open source DSP software; 192-kHz real-time, high-resolution spectrum display/panadapter; brick wall filters that are fully adjustable and mode specific; highest audio quality available with full control of transmitted bandwidth, graphical EQ, balanced mic input and digital compression; point and click tuning instantaneously puts you on frequency; spectrum display averaging for lifting extremely weak signals out of the noise; no external sound cards required; >105 dB two-tone third order dynamic range at 2 kHz spacing.

The Flex-5000 has an MSRP of \$2499. For more information or to purchase a Flex-5000 visit [www.flex-radio.com](http://www.flex-radio.com) or call (512) 535-5266.

### New Local Panel Surge Protector

MCG Surge Protection recently introduced the UL-listed Surge Free 40 local service panel surge protector. This rugged unit, with an Ipeak of 40 kA, installs in shunt with the incoming power line to protect sensitive equipment. Ham radios, repeaters, scanners, transceivers (HF, VHF/UHF) etc., are vulnerable to damage and corruption from lightning and utility-generated surges on the AC power line. The exceptionally capable surge suppressor is designed to fill the need when a plug-in isn't enough and a larger device is too much.



*MCG Electronics' Surge Free 40 local service panel surge protector guards ham radios, scanners, and other valuable communications gear from damage and corruption from lightning and utility-generated surges.*

The Surge Free 40, using brute force 32-mm MOVs, works by offering a more attractive path to ground whenever current exceeds the clamp voltage. The unit installs, in shunt, in less than 30 minutes and requires no special tools. A filter attenuates conducted EMI. In addition, in the unlikely event that the unit's protection capability is decreased, the Surge Free 40 has a green LED per phase that will extinguish, alerting the user that repair is needed.

The protector is available for 120–277 VAC, 1-3ph, Wye, Delta and high-leg Delta. Enclosed in a NEMA 1 enclosure, it measures 4.25 x 7.25 x 2.75 (HWD) inches and weighs 3 lbs. Price is \$300 and delivery is from stock. For more information, contact MCG Electronics at 800-851-1508, send an e-mail to [sueb@mcgsurge.com](mailto:sueb@mcgsurge.com), or visit their website at [www.mcgsurge.com](http://www.mcgsurge.com).

### Ham Radio's Technical Culture, New Book By Kristen Hering

Focusing on radio technology and the amateur culture that accompanies it, *Ham Radio's Technical Culture* by Kristen Hering is one in a series of books called "Inside Technology" under the MIT Press. Hering uses personal accounts found in radio magazines and newsletters and from technical manuals, trade journals, and government documents, to describe how ham radio affected hobbyists' lives, explaining why hi-tech employ-



## Ham Radio's Technical Culture



Kristen Hering

Ham Radio's Technical Culture is a new book by Kristen Hering. Hering shows how the hobby enriched the general technical culture by posing a vital counterpoint.

ers recruited hams and why electronics manufacturers catered to these specialty customers, for instance.

According to MIT's website, "[Hering] discusses hams' position within the military and civil defense during World War II and the Cold War as well as the effect of the hobby on family dynamics. By considering ham radio in the context of other technical hobbies—model building, photography, high-fidelity audio, and similar leisure pursuits—Hering highlights the shared experiences of technical hobbyists. She shows that tinkerers influenced attitudes toward technology beyond hobby communities, enriching the general technical culture by posing a vital counterpoint."

Ham Radio's Technical Culture by Kristen Hering is 218 pages and sells for \$27.95. Visit the MIT Press website at <http://mitpress.mit.edu/catalog> for more information.

## Bird Technologies

Bird Technologies Group, a manufacturer of RF measurement and management equipment, released a new series of high-power loads and attenuators that use the Bird 4200 Series "Quick Change" (QC) solderless connectors for hundreds of possible connector combinations. The new series of products allows users to quickly change the connectors for different applications while avoiding the need

for special adapters, cables, or additional units with custom connectors.

Power capabilities for the loads and attenuators with the QC option range from 150 watts to 1.5 kW and 3 to 40 dB for fixed attenuators in a DC-to-2.5-GHz bandwidth. The new series can be purchased directly from Bird either separately or with loads and attenuators featuring standard QC N connectors. Other standard QC connector types include BNC, SMA, TNC, LC, 7/16 DIN, Terminal Lug (for DC applications), UHF, Mini UHF, HN, C, LT, SC, 7/8 EIA, and 1 5/8 EIA for both fixed and swivel mount.

For more information, contact Bird Technologies Group at 29100 Aurora Rd. Suite # 400, Solon, Ohio 44139; Phone: (440) 248-1200; Fax: (440) 248-3790; Web: [www.birdtechnologies.com](http://www.birdtechnologies.com).

## J-B Weld Mini Clear Epoxy Syringe

J-B Weld's has introduced the Mini Clear Epoxy Syringe for cold welding. It hardens fast to nearly any surface, including wood, metal, tile, ceramics, jewelry, glass, china and plastics in just five minutes. J-B Mini's nozzle is designed for one-time use only. The no-fuss, dispense-and-mix formula comes in small packaging and measures just 0.2 fluid ounces, so it's applicable for every epoxy user.

The MSRP for J-B Mini is \$2.99. For more information, contact J-B Weld, 1130 Como St., Sulphur Springs, Texas; Phone: 903-885-7696; Web: [www.JBWeld.com](http://www.JBWeld.com).

J-B Weld's has introduced the Mini Clear Epoxy Syringe for cold welding. It hardens fast to nearly any surface, including wood, metal, tile, ceramics, jewelry, glass, china and plastics in just five minutes.



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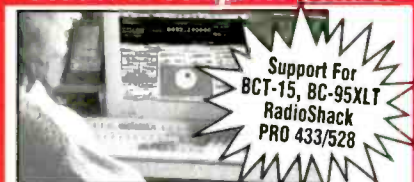
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# ICOM's IC-PCR2500 Triple-Duty Base/Mobile PC Scanner

**W**hat, me confused about a scanner? Not usually, but I have to admit that when I started to open the ICOM IC-PCR2500 scanner system, I found more than I had anticipated. Specifically,

- PCR2500-25 advanced PC-controlled scanner body
- PC hardware and software accessories, including USB cable
- R2500-05 twin readout mobile/base remote head (I didn't know it came with one)
- DC adapter for remote head mobile use
- AC adapter for base and home PC use
- Instruction manuals for the IC-R2500 and IC-PCR2500!

What a deal from ICOM America for just under \$999; a full-blown PC-controlled black box receiver covering 100 kHz to 3300 MHz, IN ALL MODES, ready for Microsoft Windows XP driver installation with the included CD. But to get started, because my computer was tied up with boat race communication



*ICOM's IC-PCR2500 is a full-blown PC-controlled black box receiver that will accept a P-25 Public Safety digital board for unencrypted APCO-25 transmissions.*

## IC-PCR2500 Coverage

100-kHz LORAN C signal reception  
 400-kHz aeronautical radio navigation beacons  
 AM broadcast band reception  
 Lower and upper sidebands 3–30 MHz  
 11-MHz AM shortwave broadcasts  
 27-MHz CB reception  
 29.6-MHz FM ham simplex  
 FM low band reception 30–50 MHz  
 TV audio at 54–76 MHz  
 FM music at 88–108 MHz wideband FM  
 Aeronautical AM 108–137 MHz  
 FM land and marine channels at 155 MHz  
 Weather at 162 MHz  
 TV audio at 174–216 MHz  
 Ham 222 USB and FM reception  
 406-MHz EPIRB  
 432-MHz USB weak signal ham  
 T-Band Public Safety at 470 MHz  
 300–400 MHz Military, multimode  
 Airmav and GPS near 1.2 GHz  
 Satellites at 1600 MHz  
 WiFi at 2.5 GHz

logging, I began my test of the rig with the included head, which simply plugs in to put the equipment on the air. Just add 12 volts to the black box, or power it with the supplied 110-VAC major-sized transformer, and the scanner crackles with life, driving the remote-controlled display.

The head looked familiar. My 2-meter/440-MHz dual-band ham set is the ICOM IC-2720H, and this scanner head is absolutely identical in size, shape, and function. But my 2720 ham set couldn't begin to go where the PCR2500 would take me (see "IC-PCR2500 Coverage"). For starters, the receiver is sensitive down to a microvolt, relatively selective on narrow band FM frequencies, and multi-mode to let the mobile head listen to one frequency in one mode and another channel on a completely different band in a completely alternate mode. I didn't realize there was so much up there beyond 1500 MHz!

The black box to drive either the remote head or your PC readout will accept a plug-in DSP board, a DTMF decoder board, and most impressively, a P-25 Public Safety digital board for unencrypted APCO-25 transmissions—very handy for our Los Angeles Police Department and others around the country.

With the remote head, you can turn the attenuator on and off if you have a local frequency swamping the receiver. There's a noise blanker function as well as automatic gain control (AGC) when the receiver is in SSB, CW, or AM mode. During my tests, I found the slow AGC action easy on the ears. For FM, automatic frequency control keeps a wandering signal locked on, and the receiver has two plus four passband width IF filters for different modes, so the receiver may be optimized with as many filters as are available for the best reception. With AM reception, for instance, you'll need less filtering than with SSB or CW, where more IF filters may be desirable. In the FM mode, I could tighten up selectivity by going to the 6-kHz filter.

This all-mode scanner is also a full-function all-frequency shortwave receiver that offers ICOM's legendary IF shift function. This was extremely useful when tuning in the crowd on 20 meters upper sideband.

Most interesting, though, are the twin antenna ports to allow diversity reception from 50 MHz to 1300 MHz. Diversity reception refers to the ICOM receiver's ability to split reception on each of two bands, on each of two different antenna





*I've never seen such exquisite radio screens. Tell me this isn't the essence of clarity.*

systems. It works like this: as the signal fades on the left band from one polarization to another, the right band receiver, on a different antenna, may begin to pull in the station better. In diversity mode, the AGC toggles out, and the two well-separated antenna systems plugged into the two antenna ports will amaze you with their reception. I tried this on the 6-meter band when sporadic-E skywaves were present, and it was incredible to hear simultaneous diversity reception on a vertical and horizontal antenna system.

Incidentally, the squelch circuit on single sideband is exceptional with the PCR2500. Instead of signals going "pop" as they come in and out of the squelch circuit, a slow AGC can keep the squelch open between slight signal fades.

### From Mobile To Computer

Out of the car and into the ham shack we go. The twin read-out head remains behind, and your PC can take over! Here's what you need:

- Microsoft Windows with XP-2000/ME/SE installed
- USB 2.0 or 1.1
- Intel Pentium III 450 MHz or faster
- 128 MB of memory or higher
- 50 MB hard disk space
- 1024 x 768 pixel resolution color

You'll also need a CD ROM or DVD drive for the software installation, and you'll want a mouse for easy maneuvering. If you plan to do a lot of recording of sound bites or storing scope data, go with plenty of additional memory in your computer.

The black box PCR2500 runs on a supplied AC wall wart, and a single USB cable manages the entire connection. Add your antenna and follow the straightforward instructions for the driver installation with the supplied CD. The instruction book offers multiple pages of screen shots to show you what's next during the driver installation process. There should be no surprises.

I started with the PCR2500 application screen, giving me a quick view of everywhere I could go within the receiver. Button #17 brought up the most exquisite radio screen I have ever seen, along with all 50 adjustments! I could go with a simple screen, a keyboard screen, or customize the computer screen readout exactly the way I wanted it to play receive radio!

The equipment came up on a 2-meter ham frequency, and it was easy to tune up and down the band in just about any step

and any mode of choice. Volume, squelch, mode, IF filter selection—every single function was screen-ready for adjustment. I chose single band operation to begin learning all the features and checked out some of the memory channels previously stored by ICOM personnel during the recent Seattle SeaFair. Plenty of Blue Angel frequencies!

I went down to the 14-MHz ham band, and could dial up and down just like I was sitting in front of my personal ICOM 7000.



*Great receiver sensitivity is seen on the S-meter.*



*The "business end" of the PCR2500 receiver, hooked into the computer with the pink USB cable.*

Sensitivity and selectivity were fully adjustable, and this receiver is just as sensitive and selective as my regular ICOM ham set.

Next, I went into the band scope mode. Although the set would silence on 20 meters SSB and CW, the search was quick and thorough, giving me a bird's eye view of 20-meter SSB activity. In the wide-band scope mode, band scope sweep range expands to 5 MHz above and below where my receiver was tuned. This spectral display will surely be a showstopper at Field Day as well as at our upcoming County Fair.

A recording option allows me to save those ham radio transmissions so I can use them later for my ham instruction class. But keep in mind that the recording of public safety communications is generally *prohibited*, even though this equipment can also take an APCO-25 board and faithfully decode non-encrypted digital communications. APCO-25 requires the optional UT-122 board, and digital voice (DV) requires the optional UT-118 board. Both boards simply plug in to the main unit on the inside, without any soldering required. The same goes for the UT-106 digital signal processing receive unit in the AF stage.



Sample control screens of the IC-PCR2500

## CQ HF Operator's Survival Guide

A practical, hands-on getting-started guide for newcomers to high-frequency (shortwave) Amateur Radio. Among other topics, this book discusses the characteristics of each HF ham band and explains which is best and when, basic HF operating practices, choosing your first HF transceiver, antenna basics and various HF modes and operating activities. There's also an HF band chart!



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## The Proof's In The Ears

Finally, I had a lot of radio friends interested in checking out the PCR2500 along with me, and we were all amazed at the receiver sensitivity from 100 kHz to 3300 MHz. Any frequency in any mode in this range may be dialed up in the main band. The sub-band covers 50 MHz to 1300 MHz, also with excellent sensitivity below 1300 MHz. Above 1300 MHz, sensitivity is typically from 5 microvolts to 15 microvolts, plenty for UHF and microwave reception.

ICOM advises anyone contemplating using the equipment both at home and mobile to order it as the PCR2500-05, which includes the remote head. For \$150 less, you could order the PCR2500-25 without the remote head, but getting it separately later requires a special order from the Japanese home company, and will run many hundreds of dollars.

For more information about the IC-PCR2500, log onto the ICOM America webpage at [www.icomamerica.com](http://www.icomamerica.com). ■



If you order the receiver with the remote head, you will need to bring in the USB cable and PC CD program.

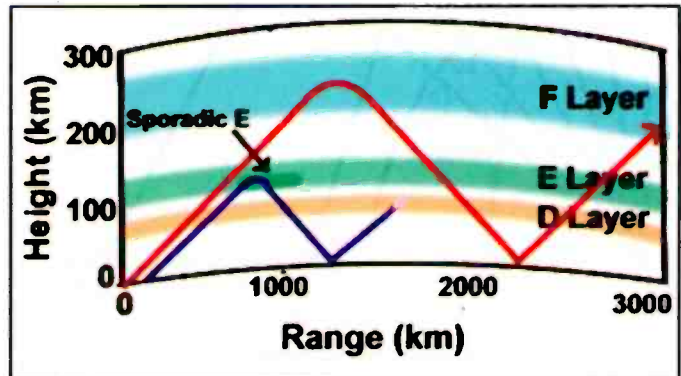


# A World Of New Opportunities On The HF Bands

Last month, we began taking a tour of the new opportunities afforded to Technician class amateur radio operators by the FCC. Because of the ruling, effective on February 23, 2007, to eliminate Morse code testing for all levels of amateur radio licenses, and extending limited HF operating privileges to all Technicians, the shortwave spectrum is now open for many new radio hobbyists.

It's an opportunity like never before. Not only can a hobbyist interested in radio communications join the amateur radio community on VHF and higher frequencies by taking the entry-level written exam, but a hobbyist can now enjoy operating on the shortwave allocations that have become available to all license-class holders.

The Technician class license has limitations on shortwave (let's call shortwave HF, for high-frequency spectrum). True, in addition to all amateur radio operating privileges above 50 MHz, Technicians who never passed a Morse code test now have Morse code (CW) privileges on certain sub-bands of the 80-, 40-, and 15-meter amateur bands. Additionally, they have CW,



A ray diagram of sporadic-E (Es) event. HF radio transmissions above the normal E-region maximum usable frequency (red) pass through the E layer. During a Es event, signals (blue) will either be refracted or partially refracted in the E region, resulting in decreased long-distance propagation, but better reception within the normal first skip zone. (Source: US Navy)

## The Ap Index And Understanding Propagation Terminology

The Ap index, or Planetary A index, is a 24-hour averaging of the Planetary K index. The Planetary K index is an averaging of worldwide readings of Earth's geomagnetic field. High indices ( $K_p > 5$  or  $A_p > 20$ ) mean stormy conditions with an active geomagnetic field. The more active, the more unstable propagation is, with possible periods of total propagation fade-out. Especially around the higher latitudes and especially at the Polar Regions, where the geomagnetic field is weak, propagation may disappear completely. Extreme high indices may result in aurora propagation, with strongly degraded long distance propagation at all latitudes. Low indices result in relatively good propagation, especially noticeable around the higher latitudes, when trans-polar paths may open up. Maximum K-index is 9, and the A-index can exceed well over 100 during very severe storm conditions, with no maximum.

Classification of A-indices is as follows:

A0–A7 = quiet	A30–A49 = minor storm
A8–A15 = unsettled	A50–A99 = major storm
A16–A29 = active	A100–A400 = severe storm

**Solar Flux (SFI):** This flux number is obtained from the amount of radiation on the 10.7-cm band (2800 MHz). It is closely related to the amount of ultraviolet radiation, which is needed to create the ionosphere. Solar Flux readings are more descriptive of daily conditions than the Sunspot Number. The higher the Solar Flux (and, therefore, the higher the Sunspot Number), the stronger the ionosphere becomes, supporting refraction of higher frequencies.

**Ionosphere:** A collection of ionized particles and electrons in the uppermost portion of the Earth's atmosphere, which is formed by the interaction of the solar wind with the very thin air particles that have escaped Earth's gravity. These ions are responsible for the reflection or bending of radio waves occurring between certain critical frequencies, with these critical frequencies varying with the degree of

ionization. As a result, radio waves having frequencies higher than the Lowest Usable Frequency (LUF) but lower than the Maximum Usable Frequency (MUF) are propagated over large distances.

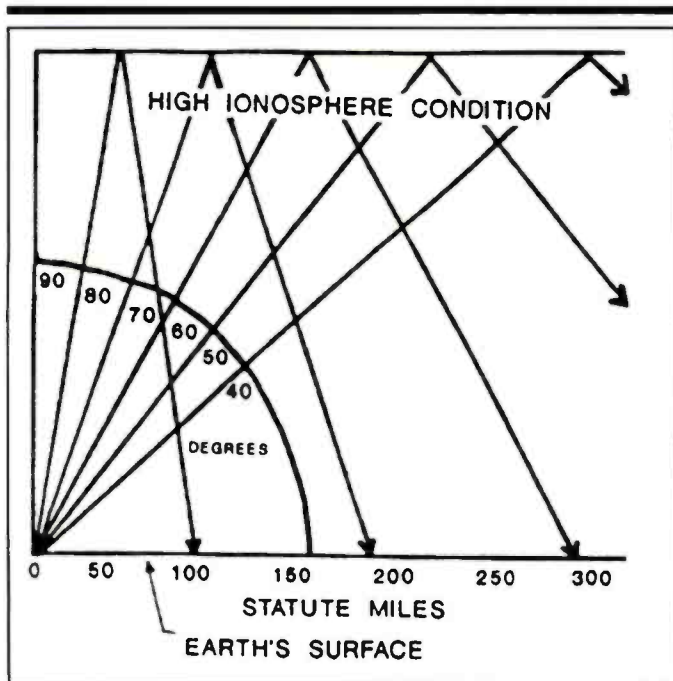
**Smoothed Sunspot Number (SSN):** Sunspots are magnetic regions on the Sun with magnetic field strengths thousands of times stronger than the Earth's magnetic field. Sunspots appear as dark spots on the surface of the Sun. Temperatures in the dark centers of sunspots drop to about 3700° K (compared to 5700° K for the surrounding photosphere). This difference in temperatures makes the spots appear darker than elsewhere. Sunspots typically last for several days, although very large ones may last for several weeks. They are seen to rotate around the sun, since they are on the surface, and the sun rotates fully every 27.5 days.

Sunspots usually occur in a group, with two sets of spots. One set will have positive or north magnetic field while the other set will have negative or south magnetic field. The field is strongest in the darker parts of the sunspots (called the "umbra"). The field is weaker and more horizontal in the lighter part (the "penumbra").

Galileo made the first European observations of sunspots in 1610. The Chinese and many other early civilizations have records of sunspots. Daily observations were started at the Zurich Observatory in 1749; continuous observations were begun in 1849.

The sunspot number is calculated by first counting the number of sunspot groups and then the number of individual sunspots. The "sunspot number" is then given by the sum of the number of individual sunspots and 10 times the number of groups. Since most sunspot groups have, on average, about 10 spots, this formula for counting sunspots gives reliable numbers even when the observing conditions are less than ideal and small spots are hard to see. Monthly averages (updated monthly) of the sunspot numbers show that the number of sunspots visible on the sun waxes and wanes with an approximate 11-year cycle.

For more information, see <http://prop.hfradio.org>.



Take-off angle vis-à-vis relative distance. This illustration shows distances at which high-angle signals return to Earth. Note there are no gaps in coverage as the signal returns. For simplicity, the ionosphere and Earth curvature aren't shown. (Source: U.S. Army, Fort Gordon, Georgia)

radio teletype (RTTY), digital, and single-side band (SSB) privileges (but no FM mode privileges) on certain sub-bands of 10 meters. But, that's it. The HF privileges all Technicians now have are equivalent to those that Novice licensees enjoy. This also means the 200-watt maximum power limit still applies, regardless of where you operate in the HF bands.

Because there's no need to learn to send and receive Morse code in order to pass any of the amateur radio license exams, you don't have to settle for the limits of the Technician class license privileges. After you take the Technician exam, you may take the General class exam, and then finally the Extra class exam. As you pass each exam, you will qualify for additional spectrum and modes on the various amateur HF bands. When you reach the level of Amateur Extra, you'll have the entire amateur radio HF spectrum that's available. And, with those additional privileges, Generals and Extras may use the full legal limit of over a 1000 watts of power on nearly all HF frequencies. Now, that is an opportunity!

Now that you have all of this opportunity, what are you going to do with it? What can you do on the HF frequencies of your license class? Last month we took an introductory look at propagation at various frequencies during this part of the solar cycle. And, we looked at what those same frequencies might look like during the peak years of the next solar cycle. This month, let's look at conditions right now.

## Burning Up The Nimbus With NVIS

As I explained last month, the ionosphere is an essential player in propagating an HF radio signal beyond line-of-sight distances between a radio transmitter and a radio receiver. Radio signals in the HF spectrum are "bent" by the ionosphere, allowing a signal to "bounce" or "skip" from one location to another.

When the ionosphere is highly energized by solar activity, higher HF frequencies are refracted. But, when solar activity is low, as it is right now because we're at the end of Solar Cycle 23, the ionosphere is weakly energized. Only the mid-HF frequencies and lower are being efficiently refracted. This means that 10 meters is nearly useless for world-wide communications. The Technician operator who wants to talk to the world using SSB on HF is cut off from the world. The operator must move down to lower bands, and use CW only, to try and work stations globally.

However, that does not mean that 10 meters is useless for other distances. Ten meters is very useful for shorter distances because of several common types of propagation. These include, for instance, NVIS propagation and sporadic-E (Es) propagation.

NVIS is pronounced as "niv-iss." Another loving descriptive name for NVIS propagation is "cloud burning" (hence "burning up the 'nimbus' with NVIS"). NVIS, which stands for Near Vertical Incident Skywave, is a radio propagation mode that involves using antennas that radiate most of the radio energy at very high radiation angles, approaching or reaching 90 degrees (straight up), at a frequency below the critical frequency of the ionosphere (that frequency that is just lower than what would punch through the ionosphere rather than be refracted back toward the origin of the radio wave). Using NVIS, it is possible to establish reliable communications over a radius of out to about 200 miles or so, give or take 100 miles.

If you're already an amateur radio operator with General or Extra license privileges, and have spent time on 160 or 80 meters at night, talking with others within a 300-mile area, you might have thought you were working them with ground wave propagation, where the radio signal hugs the ground as it spreads out away from your antenna. But, often, the case is quite different.

In the part of the country where I live, Washington State, there are very tall mountains within two miles, nearly all around me. Yet, using NVIS, I am able to establish communications with stations between 50 to 300 miles away as if they are line-of-sight from my antenna. Ground wave is not possible (I've tried to contact them on frequencies above the critical frequency, like on 20, 15, or 10 meters, with no success), yet on frequencies below the critical cutoff, we are able to communicate with reliable signals.

One way of picturing how NVIS works is to imagine taking a flashlight and aiming its light beam toward a white, reflective wall (or mirror). If you were to shine it straight at the wall at a 90-degree angle, you would see the light reflected back at you. This is much how we discover the ionosphere's ever-changing ability to reflect a radio wave at any given frequency. Ionospheric sounding is done by sending pulses of radio waves straight up at the ionosphere and measuring at what frequency the reflections cease. The highest frequency that is reflected is the critical frequency at that location.

Now, slowly re-aim the flashlight so that you are angled about 10 degrees to the left. What happens to the reflected light? The beam's azimuth changes and the light beam illuminates an area just to your left. The more of an angle used, the farther away from you the reflected light radiates. Let's call that distance "the skip zone."

In radio, the same thing happens with a radio wave that is refracted. The angle at which the radio energy arrives at the reflective ionospheric layer dictates how far away the reflection will end up. The greater the angle of incidence of the radiation,



Optimum Working Frequencies (MHz) - For June 2007 - Flux = 75, Created by NW7US

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

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the farther the distance the radio signal can be propagated.

One can then see that NVIS is all about reducing the angle of incidence, so that the reflected radio energy returns at locations much closer to the originating antenna than would be possible if we were trying to shoot the radio wave far out to the low horizon to work very distant DX.

How do you make an antenna so that it radiates most of its energy toward the overhead sky, rather than out to the low horizon? Part of the answer is in how high above the ground you deploy your antenna. Most NVIS antennas are horizontal in polarization, and kept much lower than the height typically sought when attempting DXing. The closer to the ground that you locate an antenna, the higher the angle is of the signal's main radiation. For this reason, it is common to see a dipole cut for 5 MHz only up at the eight-foot level.

A great introduction to NVIS is found at WB5UDE's page [www.qsl.net/wb5ude/nvis/](http://www.qsl.net/wb5ude/nvis/). Additional resources include KV5R's page, [www.athensarc.org/nvis.htm](http://www.athensarc.org/nvis.htm), and an interesting collection of information at [www.tactical-link.com/nvis\\_discussion\\_page.htm](http://www.tactical-link.com/nvis_discussion_page.htm).

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## Sporadic-E Propagation

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Last month, we took a very quick look at the ionosphere. One of the layers in the ionosphere is the *E* layer, or *E* region. The *E* region of the ionosphere is located about 90 to 160 kilometers above the Earth. The region's height varies, as does the density of electrons caused by ionization. All of this depends on solar zenith angle and solar activity. During daylight hours, the *E* region is more energized than during nighttime hours, because the supply of x-rays from the Sun is the main source of the region's ionization. These ionization densities are expected under normal conditions, absent of *Es*.

Within the *E* layer, very thin regions of extremely dense ionization can form. These thin regions become dense enough to refract higher frequencies and are known to become so densely ionized that they can refract VHF frequencies, allowing VHF signal reception over greatly extended distances beyond line of sight. An example of a VHF "opening" is when *Es* allows you to hear an FM station from several states away, or to see a TV station on one of the VHF channels although the TV station is located hundreds of miles distant.

According to the Space Environmental Services Center, "sporadic E ( $E_s$ ) is transient, localized patches of relatively high electron density in the *E* region of the ionosphere which significantly affect radio wave propagation. Sporadic E can occur during daytime or nighttime, and it varies markedly with latitude.  $E_s$  can be associated with thunderstorms, meteor showers, solar activity, and geomagnetic activity."

While this is the best "official" definition of *Es*, we do not yet fully understand its causes. Scientists are still pursuing the cause, or more likely the multiple causes, of *Es*. As far back as 1959, 10 distinct types of *Es* and at least nine different theories of causation were offered. The classification of distinct types has been retained, but since the 1960s, the wind shear theory has become one of the most accepted formulations.

Wind shear occurs when the wind blows at different directions and speeds as you increase with height. Simply put, the wind shear theory holds that gaseous ions in the *E* layer are accumulated and concentrated into small, thin, patchy sheets by the combined actions of high-altitude winds and the Earth's magnetic field. The resulting clouds may attain the required ion

density to serve as a reflecting medium for higher HF as well as VHF radio waves. Although most research has confirmed a close association between wind shear and *Es* propagation, not all aspects of the *Es* phenomenon can be explained, including its diurnal and seasonal variations.

*Es* is mostly a summertime phenomenon, though there is normally some *Es* activity during late December and early January. It's well documented, however, that *Es* occurs most often in the summer, with a secondary peak in the winter. These peaks are centered very close to the solstices. The winter peak can be characterized as being five to eight times less than the summer *Es* peak.

There are other modes of propagation that occur from time to time on 10 meters. We'll look at some of those in the up-coming issues.

But what does this mean to the Technician class amateur radio operator? It means that during the summer *Es* season, it's possible to "work" (establish a two-way radio circuit, or "QSO") distances beyond the reach of NVIS mode propagation. While you might not work a station on the other side of the world on 10 meters, you may well be able to work stations many states away from you.

While you're studying for your General class and Extra class exams, you can enjoy the world of HF communications this month, because this is the start of the summer *Es* season. And, if you use NVIS as well, you have great opportunity to experience the new privileges granted to Technicians.

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## Knowing When To Look For *Es*

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How can you know when an *Es* opening is occurring? Several e-mail reflectors have been created to provide an alerting service using e-mail messages. One of these is found at [www.gooddx.net/](http://www.gooddx.net/) and another at [www.vhfdx.net/sendspots/](http://www.vhfdx.net/sendspots/). These *Es* alerting services rely on live reports of current activity on VHF. However, if there's an opening on VHF, it's very likely that you'll be able to take advantage of the *Es* opening on 10 meters, too.

When you begin hearing an opening, you send out details so that everyone on the distribution will be alerted that something is happening. They, in turn, join in on the opening, making for a high level of participation. Of course, the greater number of operators on the air, the more we learn the extent and intensity of the opening. The bottom-line is that you cannot work *Es* if you're not on the air when it occurs.

Michael Hawk has written an informative overview of *Es*. You may read it online at [www.amfmdx.net/propagation/Es.html](http://www.amfmdx.net/propagation/Es.html).

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## HF Propagation For June

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June is a month of typical summertime radio propagation on the HF bands. Solar absorption is expected to be at seasonally high levels, resulting in generally weaker signals during the hours of daylight compared to reception during the winter and spring months. Nighttime usable frequencies to most parts of the world are higher than at any other time of the year, while the daytime usable frequencies are generally lower than those during winter.

However, we are officially at the end of Sunspot Cycle 23, and are at the lowest level of solar activity since the cycle started just over 11 years ago. This is known as the Solar Cycle



Minimum, the period of months when the Sun has very little, if any, sunspot activity. Without the energy typical of the Sun during the peak activity period of the sunspot cycle, the ionosphere is weak and generally cannot support refracting and reflecting radio signals at the higher end of the HF spectrum. This means that the 2007 summer listening season will be less active on the higher HF frequencies than during the peak years of the cycle.

North and south paths may open up on some higher HF bands, especially around sunrise and sunset. Nineteen and 16 meters will likely be the most reliable daytime DX bands, while 19 and 22 may offer weak nighttime openings.

Twenty-five and 31 meters will be fair in the evenings and mornings. At night, those paths that remain open will be marginal. The most reliable band for both daytime and nighttime should be a toss-up between these two bands.

Forty-one and 49 meters should offer good DX conditions during the night, despite higher static. Look for Europe and Africa as early as sunset. After midnight, start looking south and west for the Pacific, South America, and Asia. Short-skip should be possible out to about 750 miles during the daytime.

Expect some openings on 75 and 90, similar to how 40 meters will behave. Fairly frequent short-skip openings up to 1,000 miles are possible during darkness, but expect very few daytime openings with all the static and absorption. Mediumwave and 120-meter propagation is rough in the summer due to the high static and higher overall absorption caused by the short nights and higher *D*-layer ionization.

Thunderstorm noise increases considerably during June and the summer months. This can degrade the signal-to-noise ratio (SNR), masking exotic DX signals. This can make catching weak DX signals a true challenge.

## VHF Conditions

As noted above, the summertime *Es* season for the Northern Hemisphere begins in force in May, with June seeing strong and frequent *Es* openings. Through June, you can expect to see 20 to 24 days with some *Es* activity. Usually these openings are single-hop events with paths up to 1,000 miles, but double-hop is possible during June. Look for *Es* on lower VHF frequencies throughout the day but especially in the afternoon. And, as mentioned above, look for stronger

openings on 10 meters when there are openings on VHF.

A seasonal decline in trans-equatorial (TE) propagation occurs by June, though an occasional opening may still be possible on the low VHF bands toward South America from the southern tier states and the Caribbean area. The best time to check for TE openings is between 9 and 11 p.m. local time. These TE openings will be north-south paths that cross the geomagnetic equator at an approximate right angle.

It might be possible to catch a tropospheric ducting event (we'll explore tropo-ducting in an up-coming issue). Watch for high-pressure weather systems, where ducting is most likely to develop. If the weather forecast maps show mean-sea-level atmospheric pressure in millibars, look for tropospheric possibilities when a stalled high-pressure cell in your area reaches 1025 millibars over the path you're interested in. Of course, it's most likely to occur when this high-pressure cell develops over moist air. This is why the path between Hawaii and the West Coast has made possible communications on VHF with as little as 5 watts, over a path of 2,500 miles.

Advanced visual and infrared weather maps can be a real aid in detecting the undisturbed low clouds between the West Coast and Hawaii or farther during periods of intense subsidence-inversion band openings. This condition occurs also over the Atlantic.

If you know that conditions are favorable for tropospheric ducting in your area, try tuning around the 162-MHz weather channels to see if you can hear stations way beyond your normal line-of-sight reception. It's possible to hear stations over 800 miles away. Amateur radio repeaters are another source of DX that you might hear from the other end of the duct. These openings can last for several days, and signals will remain stable and strong for long periods during the opening. The duct may, however, move slowly, causing you to hear one signal well for a few hours, to then have it fade out and another station take its place, from another area altogether.

## Current Cycle 23 Progress

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-centimeter observed monthly mean solar flux of 77.8 for February 2007, down from January's 83.5. The 12-month smoothed 10.7-cen-

timeter flux centered on August 2006 is 80.3, the same as for July. The predicted smoothed 10.7-centimeter solar flux for June 2007 is 75, give or take about 15 points.

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for February 2007 is 10.6, down quite a bit from January's 16.9. The lowest daily sunspot value recorded was zero (0) on February 11 through February 16. The highest daily sunspot count was 22 on February 1 and February 2. The 12-month running smoothed sunspot number centered on August 2006 is 15.6. A smoothed sunspot count of 11, give or take 11 points lower to 12 points higher, is expected for June 2007.

Since we're right at the end of a solar cycle, space weather and solar scientists are frequently adjusting their predictions for the solar minimum. Currently they predict a solar minimum for March and April 2007. Some disagree and put it at May 2007, while the Australian government has the solar minimum centered on September 2007. (See [www.ips.gov.au/pipermail/ips-ssn-predictions/2007-March/000080.html](http://www.ips.gov.au/pipermail/ips-ssn-predictions/2007-March/000080.html); you can also see a representation of all the 20th Century sunspot cycles at <http://wm7d.net/hamradio/solar/historical.shtml>.)

The observed monthly mean planetary A-Index (Ap) for February 2007 is 6. January's Ap was adjusted up from 5 to 6. The 12-month smoothed Ap index centered on August 2006 is 8.7. Expect the overall geomagnetic activity to vary greatly between quiet to disturbed during most days in June.

## I'd Like To Hear From You

You can join in with others in discussing space weather, propagation, and shortwave or VHF listening at <http://hfradio.org/forums/>. Be sure to check out the latest conditions, as well as the educational resources about propagation, which I have put together for you at <http://prop.hfradio.org/>. I also provide a WAP/WML resource for wireless devices. If you want the latest propagation information like the solar flux, Ap reading, and so forth using a cell phone or other WAP device, check out <http://wap.hfradio.org/>, the wireless version of my propagation site.

Please don't hesitate to write and let me know about any interesting propagation you have noticed. Do you have questions about propagation? I look forward to hearing from you. Till next time, happy signal hunting! ■

# For Your Protection— The Emergency Alert System

“This is a test. This is a test of the Emergency Alert System. This is only a test.” Such test messages broadcast on TV and radio should be familiar to most people, as should severe weather warnings and Amber Alerts, yet technological advances have far outpaced the system. Last year President Bush issued an executive order to overhaul the Emergency Alert System, placing the Secretary of Homeland Security in charge. But just what is the Emergency Alert System, how does it work, and what needs to be done to get the system up to speed with current technology?

## History In Brief

The Emergency Broadcast System (EBS) was established by the FCC in 1963 as a means through which the President could communicate with the public via radio and television in the event of a national emergency. It replaced the obsolete Control of Electromagnetic Radiation (CONELRAD) system that required all AM radio stations to broadcast only on 640 or 1240 kHz during an enemy attack so transmissions couldn't be used for missile guidance. Furthermore, 47 C.F.R. Part 11 Section 706 of the Communications Act of 1934 granted through the EBS, “specific communications-related powers to the President in time of war or national emergency...to enable the President to exercise these powers quickly and efficiently.” The system also became a vital tool for local authorities and the National Weather Service (NWS) to warn individual communities of a specific threat to public safety.

The first major overhaul of the system was announced in 1994, and phased in through 1998 under a new name, the Emergency Alert System (EAS). The FCC cited aging analog equipment, non-compatibility with cable TV, a lack of automation for unattended broadcast operations, and an overall need to modernize the system to relay critical information when “seconds may mean the difference between life and death during sudden emergencies such as tornadoes, flash floods, hazardous chemical spills, and nuclear accidents.”

Though EAS participation was mandatory for AM/FM radio, local over-the-air TV and cable TV, it excluded emerging broadcast technologies, such as satellite radio/TV, mobile communications, and other multi-channel audio/video distribution services, including cellular and wired telephone, which were only encouraged to participate voluntarily. Furthermore, cable TV compliance was mandatory only at a national level, while coordination with state and local authorities remained voluntary or as required by local jurisdiction. It's interesting to note here that the name change from “Broadcast” to “Alert” was intended to reflect the broader scope of the new system, despite initial voluntary participation outside of standard radio and television.

## Where We Are Today

Fast-forward to 2005 when EAS regulations were revised to include digital radio and television services, specifically



*The Midland WR-300 digital All Hazards Alert monitor.*

addressing concerns regarding multi-channel streams. The FCC mandated that all streams of an over-the-air digital radio or TV station comply with EAS requirements. This included secondary subscription TV channels, as well as HD radio secondary channels in addition to primary analog and digital streams. Furthermore, both Sirius and XM satellite radio (as of December 31, 2006) and subscription satellite TV services (as of May 31, 2007) now must meet EAS requirements at a national level on all channels.

However, in the same 2005 Report and Order, the FCC recognized further deficiencies in the system that needed to be addressed. The September 11 terrorist attacks and Hurricane Katrina have given pause for thought about whether or not Presidential activation powers should be extended to governors at a statewide level. Moreover, EAS implementation still lags far behind technological advances like reverse 911, broadband fiber optic and cellular telephone services, along with burgeoning Internet radio and on-demand video. All this has led to the more recent executive order for yet another overhaul to ensure that the President can reach as many citizens as possible.

## EAS Activation Protocol

In a national emergency, the President activates the EAS through the White House Communications Agency. The Federal Emergency Management Agency (FEMA) relays an Emergency Action Notice to 34 designated Primary Entry Point (PEP) or National Primary (NP) broadcast stations (30 continental, four territorial): “This is an Emergency Action Notification requested by the White House...” The PEP stations, which are now under federal government control, are located in generator-powered nuclear-hardened facilities for immunity from an electromagnetic pulse event such as a nuclear attack.

After initial notification, the PEP stations then relay EAS activation to monitoring local area primary (LP1) and secondary



(LP2) outlets: "This is a national emergency. Important instructions will follow." NOAA weather radio stations, now named "All Hazards Radio," will also broadcast the EAS message, which some local area stations may monitor for EAS activation. Within moments of activation, the President or representative is on the air communicating with the nation.

Similarly, each state has its own emergency management plan in which government officials and the NWS may activate the EAS at a local level for an Amber Alert, natural disaster, a hazardous materials accident, etc. It's worth noting that although state activation is a relatively common practice, especially for severe weather events such as tornadoes and flash floods, the EAS has never been evoked at a national level by the President. However, FEMA does conduct weekly closed-circuit tests with the 34 PEP stations (see box).

## NOAA All Hazards Radio Frequencies

NOAA All Hazards Radio broadcasts local weather reports 24/7 from over 900 stations nationwide. These stations augment many state emergency management plans as a source of EAS statements digitally enhanced with Specific Alert Message Encoding (SAME). Seven frequencies are reserved for All Hazards Radio: 162.400 MHz, 162.425 MHz, 162.450 MHz, 162.475 MHz, 162.500 MHz, 162.525 MHz, and 162.550 MHz.

## EAS Receivers

Your best bet in the event of EAS activation is a battery-powered radio receiver with SAME and an automatic alert. EAS messages are digitally encoded to identify location, alert level, and category. SAME allows you to specify exactly which alerts you wish to receive or ignore, thus minimizing false alarms. Automatic alert is important, especially when you're sleeping or otherwise not listening to radio or watching TV. Upon receiving the SAME alert message, the radio will be turned on automatically so you'll hear the alert. Of course, battery power is equally important in case of power failure.

Keep in mind that not all so-called weather radios offer essential features like SAME control and battery backup. The National Weather Service recommends receivers that meet Public Alert Standards developed by the Consumer

Electronics Association. Here are five Public Alert Standards-approved EAS receivers worth considering.

**WR-300, Midland Radio** ([www.midlandradio.com](http://www.midlandradio.com)): The WR-300 Digital All-Hazards Alert Monitor handles up to 23 programmable county codes, offers SAME encoding with the ability to add, edit, or remove unwanted alert codes, auto-switches from AM/FM to All Hazards, and is powered by battery or wall adapter.

**WR108, Oregon Scientific** ([www2.oregonscientific.com](http://www2.oregonscientific.com)): The WR108 handheld portable features SAME programming for up to nine locations with three warning levels, display in English, French, or Spanish, and internal rechargeable Ni-MH battery power with a charging dock. An optional docking station displays current weather conditions.

**Model 12-262, RadioShack** ([www.radioshack.com](http://www.radioshack.com)): The model 12-262 Desktop Clock Radio has SAME encoding with the ability to enter local/city codes into memory, weather alert status LED indicators, external antenna jack, and battery or external wall-wart power.

**R-1630, Reecom Electronics** ([www.reecominc.com](http://www.reecominc.com)): The R-1630 All Hazards/Weather Alert Radio includes



The Oregon Scientific WR108 handheld weather radio.



RadioShack's 12-262 desktop clock/weather radio.



Reecom Electronics' R-1630 All Hazards Weather Alert radio.

## PEP Radio Stations

550	KFYR Bismarck, ND
580	WKAQ San Juan, PR
650	WSM Nashville, TN
670	KBOI Boise, ID
700	WLW Cincinnati, OH
700	KALL Salt Lake City, UT
710	KIRO Seattle, WA
740	KCBS San Francisco, CA
740	WQTM Orlando, FL
740	KTRH Houston, TX
750	KFQD Anchorage, AK
750	KERR Polson, MT
770	KKOB Albuquerque, NM
770	WABC New York, NY
780	KKOH Reno, NV
810	WHB Kansas City, MO
820	WBAP Ft. Worth, TX
830	KFLT Tucson, AZ
830	WCCO Minneapolis, MN
850	KOA Denver, CO
870	WWL New Orleans, LA
890	WLS Chicago, IL
940	WMAC Macon, GA
980	KFNB Los Angeles, CA
1030	WBZ Boston, MA
1030	KTWO Casper, WY
1090	WBAL Baltimore, MD
1100	WTAM Cleveland, OH
1180	WHAM Rochester, NY
1340	WSTA Charlotte Amalie, VI
94.7	WQDR Raleigh, NC
97.5	WCOS-FM Columbia, SC
102.1	WRXL Richmond, VA

Source: FEMA Operations Manual 1550.2

## FCC Callsign Changes

New Call	Location	Freq	Old Call	New Call	Location	Freq	Old Call
				WELG	Ellenville, NY	1370	WRWD
				WRVP	Mt. Kisco, NY	1310	WVIP
				WEEV	Rensselaer, NY	1300	WTMM
<b>Pending</b>				WDYT	Kings Mountain, NC	1220	WKMT
KEVT	Sahuarita, AZ	1210	KQTL	WWGK	Cleveland, OH	1540	WBKC
WJNL	Kingsley, MI	1210	WLDR	WYTS	Columbus, OH	1230	WTPG
WJTI	Racine, WI	1460	WBIX	KTRP	Mount Angel, OR	1130	New
KAIA	Blytheville, AR	91.5	KOUX	KKSN	Salem, OR	1390	KSLM
KLRM	Melbourne, AR	90.3	KAEN	KPJC	Salem, OR	1220	KBDY
WVKV	Nashville, GA	95.3	WJYF	WFNN	Erie, PA	1330	WFGO
WQAI	Thomson, GA	89.9	WTHM	WBSG	Lajas, PR	1510	WSQD
WVAI	Valdosta, GA	88.5	WVDA	CHOU	Montreal, QC	1450	New
WKMV	Muncie, IN	88.3	WWMU	CJRS	Montreal, QC	1650	New
WIKV	Plymouth, IN	89.3	WRXH	CJOL	Montreal, QC	1690	New
WQKV	Rochester, IN	88.5	WHNI	WKFD	Charlestown, RI	1370	New
KRLE	Oberlin, KS	91.3	KOEN	WTQS	Cameron, SC	1490	New
WGTX	Truro, MA	102.3	WCDJ	WYNF	North Augusta, SC	1380	WPCH
KRLP	Windom, MN	88.1	KQRW	WXSM	Blountville, TN	640	WGOC
KYUS-FM	Miles City, MT	92.3	KKRY	WLLI	Humboldt, TN	1190	WHMT
KYOY	Kimball, NE	100.1	KBFZ	WGOC	Kingsport, TN	1320	WKIN
KVLP	Tucumcari, NM	91.7	KTUR	WSMB	Memphis, TN	680	WWTQ
WKGV	Topsail Beach, NC	103.9	WWTB	KRDH	Canton, TX	1510	KVCI
WOAR	South Vienna, OH	88.3	WVSO	KATH	Frisco, TX	910	KXEB
WPKV	Nanty Glo, PA	90.7	WLGY	KYTY	Somerset, TX	810	KSJL
KOAR	Spearsfish, SD	90.9	KSPF	KSTK	Texarkana, TX	1400	KEWL
WZKV	Dyersburg, TN	90.7	WKNQ	KGRG	Enumclaw, WA	1330	KENU
KRLH	Hereford, TX	90.9	KHRE	KTRO	Vancouver, WA	910	KKSN
KAIX	Cheyenne, WY	88.1	KWYH	WCKF	Ashland, AL	100.7	New
KLOF	Gillette, WY	88.9	KDMN	WCKS	Fruithurst, AL	102.7	WCKS-FM
KVLZ	Sheridan, WY	89.9	KSHW	WJOX	Northport, AL	100.5	WRAX
<b>Changes</b>				WDLG	Thomasville, AL	90.1	New
WTOF	Bay Minette, AL	1110	WBCA	KTDD	College, AK	103.9	KUWL
WSPZ	Birmingham, AL	690	WJOX	KRNN	Juneau, AK	102.7	KSRJ
WDPT	Decatur, AL	1490	WJAF	KXLL	Juneau, AK	100.7	KFMG
WEEL	Dothan, AL	700	WGZS	KMVA	Dewey-Humboldt, AZ	97.5	KRZS
WRLM	Irondale, AL	1480	WLPH	KCAI	Kingman, AZ	91.9	New
WCKA	Jacksonville, AL	810	WCKS	KRPB	Yarnell, AZ	99.5	New
KYNN	Cameron, AZ	1450	New	KJMT	Calico Rock, AR	97.1	KEZG
KCEE	Cortaro, AZ	1030	KEVT	KEGI	Jonesboro, AR	100.5	KDEZ
KMZT	Beverly Hills, CA	1260	KKGO	KFXV	Kensett, AR	105.7	KKSY
KION	Salinas, CA	1460	KABL	KSMZ	Viola, AR	94.3	New
KFUT	Thousand Palms, CA	1270	KNWT	KEJY	Blue Lake, CA	106.3	New
KNWH	Twenty Nine Palms, CA	1250	KDGR	KBQB	Chico, CA	92.7	KLRS
KEPN	Lakewood, CO	1600	KCKK	KRVC	Hornbrook, CA	98.9	New
KCKK	Littleton, CO	1510	KYOL	KLRS	Lodi, CA	89.7	KLRM
WHDD	Sharon, CT	1020	WKZE	KKGO	Los Angeles, CA	105.1	KMZT-FM
WCCC	West Hartford, CT	1290	WTMI	KRBV	Los Angeles, CA	100.3	KKBT
WKND	Windsor, CT	1480	WNEZ	KBQF	McFarland, CA	104.3	New
WAMS	Dover, DE	1600	WRJE	KCCL	Placerville, CA	92.1	KXCL
WNWK	Newark, DE	1260	WAMS	KTHM	Red Bluff, CA	90.7	New
WBOB	Jacksonville, FL	1320	WJGR	KJAR	Susanville, CA	88.1	KFLL
WDWR	Pensacola, FL	1230	WZNO	KPCR	Burlington, CO	99.3	New
WSRQ	Sarasota, FL	1220	WIBQ	KZBR	La Jara, CO	97.1	KABD
WRFV	Valdosta, GA	910	WFVR	KJQY	La Veta, CO	103.3	New
KIXC	Hilo, HI	1590	New	KEZZ	Walden, CO	94.1	New
KXTR	Kansas City, KS	1660	WDAF	WUSV	Estero, FL	92.5	WRQC
WOFK	Murray, KY	1130	WJGY	WGLJ-LP	Gainesville, FL	94.7	New
WWWL	New Orleans, LA	1350	WSMB	WNEW	Jupiter, FL	106.3	WJBW-FM
WEZR	Lewiston, ME	1240	WCNM	WWHV	Lynn Haven, FL	104.3	New
WRBS	Baltimore, MD	1230	WITH	WHYZ	Palm Bay, FL	88.5	WWIA
WXBR	Brockton, MA	1460	WBZB	WDEO-FM	San Carlos Park, FL	98.5	WUSV
WLCO	Lapeer, MI	1530	WLSP	WJFH	Sebring, FL	91.5	New
KTNP	Tonopah, NV	1400	New	WUBL	Atlanta, GA	94.9	WLTM
WRTN	Berlin, NH	1490	New	WCGN	Calhoun, GA	91.3	WPAW
WWTR	Bridgewater, NJ	1170	WJIZ	WLEL	Ellaville, GA	94.3	New
KBCQ	Roswell, NM	1230	KPSA	WPCH	Gray, GA	96.5	WYNF
				WZGA	Helen, GA	105.1	WHEL



New Call	Location	Freq	Old Call	New Call	Location	Freq	Old Call
WLTM	Peachtree City, GA	96.7	WVWA	WWNF	Goldsboro, NC	102.3	WKIX
KQPI	Aberdeen, ID	99.5	New	WKIX	Kinston, NC	97.7	WWNF
KMPA	Hazelton, ID	94.3	KTPD	WBNE	Shallotte, NC	103.7	WBNU
KLCZ	Lewiston, ID	88.9	KLHS-FM	WZRL	Wade, NC	90.7	New
KVRG	Victor, ID	103.7	KXMP	WPAW	Winston-Salem, NC	93.1	WMQX-FM
WKYX-FM	Golconda, IL	94.3	WLIE-FM	WNTB	Wrightsville Beach, NC	93.7	WBNE
WLCE	Petersburg, IL	97.7	WYVR	KRWK	Fargo, ND	101.9	KKBX
WFJL-LP	Springfield, IL	95.9	New	KMXW	Hope, ND	104.7	KDAM
WGBJ	Auburn, IN	102.3	WXTW	KFNL	Kindred, ND	92.7	KFAB-FM
WWFT	Fishers, IN	93.9	WISG	WNKK	Circleville, OH	107.1	WAZU
WPHZ	Mitchell, IN	102.5	WQRJ	WHOF	Dover, OH	101.7	WJER-FM
KFMG-LP	Des Moines, IA	99.1	New	WSWD	Fairfield, OH	94.9	WYGY
KGGG	Hutchinson, KS	97.1	KSKU	WSWO-LP	Huber Heights, OH	97.7	WOXR-LP
KWHK	Hutchinson, KS	95.9	KJKC	WFTK	Lebanon, OH	96.5	WPRV
KGLV	Manhattan, KS	88.9	KYFA	WHIO-FM	Piqua, OH	95.7	WDPT
KFTI-FM	Newton, KS	92.3	KMXW	KOSG	Pawhuska, OK	103.9	KBVL
KSKU	Sterling, KS	94.7	KGGG	KQAC	Gleneden Beach, OR	88.5	New
WYGY	Ft. Thomas, KY	97.3	WAQZ	KAVE	Oakridge, OR	88.5	KMKR
WEZG	Morganfield, KY	95.3	WMSK-FM	KMKR	Oakridge, OR	92.1	KAVE
WMSK-FM	Sturgis, KY	101.3	WEZG	KRXF	Sunriver, OR	92.7	KKCU
KPKL	Bunkie, LA	89.5	KAHJ	WXBB	Erie, PA	94.7	WFGO
KNBB	Dubach, LA	97.7	KPCH	WMBZ	Halifax, PA	88.5	WWWH
KYRK	Houma, LA	104.1	KHEV	WSRU	Slippery Rock, PA	88.1	WSRK
WNKV	Norco, LA	91.1	WPDD	WLKA	Tafton, PA	88.3	WPGP
KPCH	Ruston, LA	99.3	KNBB	WJZG	Culebra, PR	98.7	WXZX
KRLR	Sulphur, LA	89.1	KHBQ	WYAS	Las Piedras, PR	98.3	WTTP
WFMX	Skowhegan, ME	107.9	WHQO	WGUS-FM	New Ellenton, SC	102.7	WGOR
WTGB-FM	Bethesda, MD	94.7	WARW	WWJN	Ridgeland, SC	104.9	WWVV
WVMD	Midland, MD	99.5	New	KABD	Ipswich, SD	107.7	KZBR
WCRB	Lowell, MA	99.5	WKLK-FM	WRRR	Brownsville, TN	88.3	WQNN
WKLK-FM	Waltham, MA	102.5	WCRB	WSNA	Germantown, TN	94.1	WMBZ
WLKB	Bay City, MI	89.1	WTRK	WPRH	Paris, TN	90.9	New
WSLI	Belding, MI	90.9	New	WLSQ	Rockwood, TN	105.7	WWSR
WTRK	Freeland, MI	90.9	WLKB	WXXV	Selmer, TN	90.5	WSMM
WCTP	Gagetown, MI	88.5	WPEE	WTMT	Tazewell, TN	105.9	WCTU
WRBJ-FM	Brandon, MS	97.7	WRJH	KAGT	Abilene, TX	90.5	KAGT-FM
WZHL	New Augusta, MS	101.7	New	KMLU	Brownfield, TX	90.7	KCWV
KZUS	Belt, MT	101.7	New	KLGM-LP	La Joya, TX	97.7	New
KRPM	Billings, MT	107.5	KZRV	KCYP-LP	Mission, TX	97.7	New
KEAU	Choteau, MT	102.3	New	KDCP	Port O'Connor, TX	91.9	New
KUUS	Fairfield, MT	103.7	New	KDRX	Rocksprings, TX	106.9	New
KCCH-LP	Helena, MT	97.7	New	KHES	Rocksprings, TX	92.5	New
KYPR	Miles City, MT	90.7	KECC	KBWT	Santa Anna, TX	105.5	New
KENR	Superior, MT	107.5	KLTC-FM	KAJK	White Oak, TX	99.3	KVEE
KMOR	Bridgeport, NE	101.3	KOLT-FM	KZLH-LP	Zapata, TX	95.7	New
KOPW	Plattsmouth, NE	106.9	KCTY-FM	WTNN	Bristol, VT	97.5	New
KNIF-LP	Scottsbluff, NE	107.9	New	WTHK	Wilmington, VT	100.7	WVAY
KOLT-FM	Scottsbluff, NE	92.9	KMOR	WXTG	Virginia Beach, VA	102.1	WWHV
KCTY	Wayne, NE	104.9	KTCH-FM	WRRW-LP	Williamsburg, VA	100.9	WYOU-LP
KMOA	Caliente, NV	94.5	New	KGRG-FM	Auburn, WA	89.9	KGRG
WXBN	Groveton, NH	93.7	New	KGTC-LP	Oroville, WA	93.1	New
WXRG	Whitefield, NH	99.1	New	KCSY	Twisp, WA	106.3	KVLR
WJJZ	Burlington, NJ	97.5	WJJZ-FM	WZNN	Allouez, WI	106.7	WJLW
WKVP	Cherry Hill, NJ	89.5	WSJI	WWHG	Evansville, WI	105.9	WKPO
WCAA	Newark, NJ	105.9	WQBU-FM	WJQM	Mount Horeb, WI	106.7	WWHV
KKRG	Albuquerque, NM	101.3	KJFA	KBEN-FM	Basin, WY	103.3	New
KSIL	Hurley, NM	105.5	KWNM	KDMN	Gillette, WY	88.9	KYPR
KBCQ-FM	Roswell, NM	97.1	KBCQ	KXMP	Hanna, WY	102.1	New
KJFA	Santa Fe, NM	105.1	KKRG	KTUG	Hudson, WY	105.1	New
WRWC	Ellenville, NY	99.3	WFKP	KQWY	Lusk, WY	96.3	New
WQBU-FM	Garden City, NY	92.7	WZAA	KOUZ	Manville, WY	98.9	New
WTMM-FM	Mechanicville, NY	104.5	WABT	KRUG	Upton, WY	104.5	New
WVIP	New Rochelle, NY	93.5	WRTN	KRAN	Wamsutter, WY	94.7	New
WWFS	New York, NY	102.7	WNEW	KYPT	Wamsutter, WY	104.3	New
WQRW	Wellsville, NY	93.5	New	KWOG	Springdale, AR	57	KSBN-TV
WBZB	Westhampton, NY	98.5	WBON-FM	WXCW	Naples, FL	46	WTVK
WKSL	Burlington, NC	93.9	WRSN	KUNP	La Grande, OR	16	KPOU
				KUNS-TV	Bellevue, WA	51	KWOG

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## Final Comment

If there was ever a reason for preservation of nationwide clear channel AM radio, this is it. Most of the PEP stations are on the AM broadcast band, and although there have been proposals to increase the number of PEP stations, right now some states don't have their own PEP sites and thus depend upon out-of-state sources. Oklahoma must rely on 820 WBAP Ft. Worth, Texas. The nearest PEP sites for Vermont are 1030 WBZ Boston, Massachusetts, 770 WABC New York City, and 1180 WHAM Rochester, New York. Some state emergency management plans allow for National Public Radio (NPR) to serve as an alternative national Emergency Activation Notice source through a voluntary prototype digital satellite delivery system that ties NPR into the national notification system.

Although the next generation digital system is currently under development, it appears that legacy analog AM radio will remain critical for years to come, especially in the event of a national nuclear emergency. To learn more about the EAS, visit the FCC website at [www.fcc.gov/eb/eas](http://www.fcc.gov/eb/eas) and the NOAA Weather Radio All Hazards home page at [www.weather.gov/nwr](http://www.weather.gov/nwr) for links to alert codes and a directory of local weather stations.

Until next time, 73 and Good DX! ■

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## More Solutions For High Line Voltages

**O**ur January 2007 column highlighted the use of power resistors to reduce modern AC line voltages to levels suited for use with vintage receivers. We showed how a small wire-wound power resistor in series with the AC primary winding could dramatically lower operating temperature of a small Zenith power transformer. Other benefits included lowering filament voltages, which were found to be operating near maximum operating ratings at typical 125-VAC line voltages. I've tried similar modifications on a few other sets in the interim, and the results in all instances have been gratifying!

The dropping resistor approach has its advantage: it's cheap enough to be included under chassis when the need arises. There are a few shortcomings, however. First, a power resistor will dissipate heat, and that adds to the problem we're trying to correct. The second problem is that the resistor doesn't provide regulation; the voltage drop will be proportional to the current drawn (the set's wattage).

I mentioned that most early radios drew fairly constant currents, and that the resistor provided some degree of turn-on surge reduction—a good thing! However, the power resistor is a poor choice for renovating larger vintage communications receivers or ham transmitters! The current is too great and the regulation is too poor. A better, but more involved and costly, approach is to use a small 6- or 12-VAC filament transformer to “buck” (lower) the AC voltage to a safer level.

### Voltage Bucking Techniques

I mentioned using a “bucking” transformer to lower the line voltage in passing, and reader Ted Cohen, N4XX, responded with these comments via email:

Superb column! I always enjoy your work. I've been a licensed radio amateur for 54 years and collect and restore Catalin radios, among others. In 1991, I restored a Crosley 555 tombstone radio. Running on a 130-VAC line voltage the transformer was so hot you couldn't touch it! It was clear that the radio wouldn't last long under those conditions, so I took the autotransformer route you men-



*Photo A. Here's a front view of Ted's voltage reducing accessory. Alas, I suspect most of the components used were once readily available at RadioShack outlets. Note that Ted installed a pilot lamp and power switch on the front panel.*

tioned, using an old filament transformer I had lying around. What a difference it made. I highly recommend that you introduce it to your readers as a weekend project.

I had a few minutes this morning, so I took some photos of my unit. I built it in the early 1990s, and regrettably, I can't locate the circuit diagram right now. But I can tell you that I used an LEI 60 LEI B-002 transformer with 120-VAC 60-Hz primary and a secondary rated at 2 A, 9-0-9 V. The front panel is labeled for 130 VAC because I measured the line voltage that high, at times, at our old home in Alexandria, VA (though most of the time it was around 125 VAC...enough to fry those old transformers that were made to run on 110 VAC or slightly less).

In any event, only one half of the secondary is wired in reverse phase with the pri-

mary, which dropped the voltage used for my old radios into the respectable range. The radio being played plugs into a socket mounted on a cord at the back of the box; this was more a matter of what I had available in my junk box at the time than anything else. Obviously, there is any number of ways to build these devices. This one may appear to be the “deluxe model,” but regardless of how one assembles his or her unit, a fuse is a *must*!

I'm sure you can come up with the circuit and the words to go with it. But I thought you might like to see what we used on this end. Feel free to use any or all of these photos.

Thanks to Ted's contributions I'll show how to build a simple—or as complex as you wish to make it—transformer-based



*Photo B. Here's a view of the rear apron. The power cords and fuse holder are visible. The AC socket could be mounted on the project box if a female-socket-type power cable assembly isn't readily available.*



*Photo C. Peeking inside shows that Ted's workmanship is clean and uncluttered. Good deal! Terminal strips are provided to support the internal leads and wiring, and the power cords are securely held as they pass through the walls using snap-mount grommets. These are the finishing touches that are the hallmark of a first-rate job.*

voltage-reducing accessory for your vintage sets sooner than I had anticipated.

### How It Works

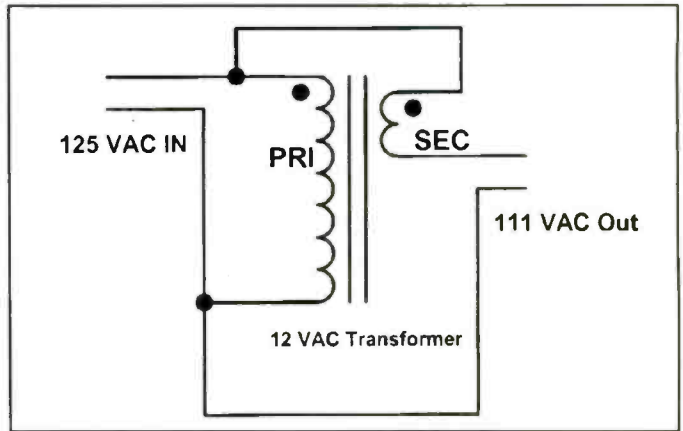
Let's start by looking at Ted's photos. **Photo A** is a front view of Ted's completed project. **Photo B** shows the back of the box, while a good interior construction shot is given in **Photo C**. While Ted wasn't able to locate the schematic for his project, the one shown in **Figure 1** is an accurate generic representation of how it works.

There are two ways to wire up the filament transformer to reduce the line voltage. **Figure 1A** shows the preferred method. In this application, the 12-volt transformer secondary winding is used to "buck" the AC line voltage; that is, the winding is wired out-of-phase in series with the AC line to lower the line voltage by the voltage produced across the secondary winding. **Figure 1B** shows how the transformer can be wired as an autotransformer to accomplish the same task. In practice, either scheme will work about the same, but there's a slight increase in transformer primary current using this method.

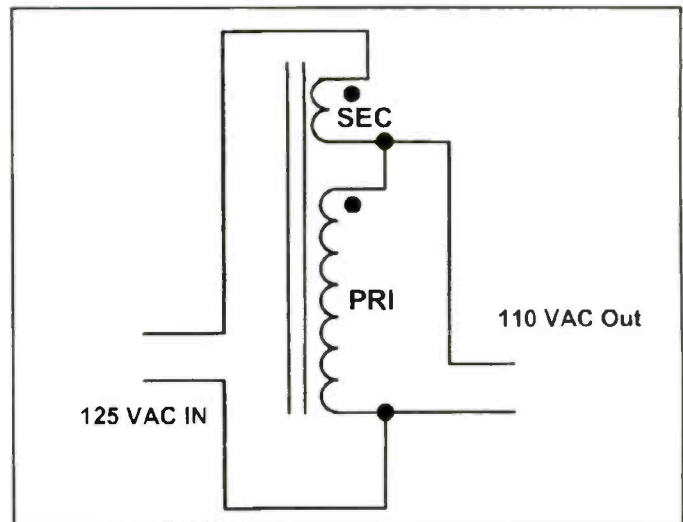
The little dots shown next to leads on the primary and secondary windings indicate the winding *phase*, the start and end of the windings wound in the same direction on the transformer core. Reversing the phase will cause the voltage to increase by 12 volts for **Figure 1A**! It's easy to determine the proper hookup by first doing a quick mockup to determine the proper lead phasing. Off course, if extremely low line voltages are a problem you might consider building a *booster* version of the project!

### Inside Ted's Box

The schematic in **Figure 2** is probably close to how Ted's unit is wired up. We've added a power switch, fuse, and pilot light to the basic drawing shown in **Figure 1A** to show how the completed project might be wired up. Note that the fuse and switch are located on the L1 (hot side) of the AC line! I suggest using a grounded UL-approved AC plug and receptacle and carrying the ground lead through if possible. Safety first!



*Figure 1A. This schematic shows how a small filament or low-voltage transformer can be used to reduce the AC line voltage by the amount of the secondary winding voltage. The "dots" denote the winding phase; the secondary winding is out of phase with the AC line voltage, so its voltage will "buck" the AC line voltage, reducing it by that amount.*



*Figure 1B. The transformer can also be wired in autotransformer fashion, as shown in here, to achieve nearly the same results. In this application, the primary winding current is increased slightly, making it a tad less desirable an approach for purists.*

If you'd like bit more versatility, take a look at what can be done using a low voltage transformer with a center-tapped secondary winding, as shown in **Figure 3**. A 12-volt secondary winding with a center tap will allow selecting either a 6- or 12-volt voltage reduction.

### What Transformer To Use?

The transformer needed is determined by the maximum wattage of the radio. And by how much the voltage should be reduced. Obviously, if you need a 6-volt line voltage reduction, you'd chose a transformer with a 6-volt secondary winding, or one with a center-tapped 12-volt winding for added versatility. What is most important is to choose one with ample current handling ability!

*In this application the secondary winding current rating determines how much current can be supplied to the vintage appliance. If you know the wattage, you can determine the min-*



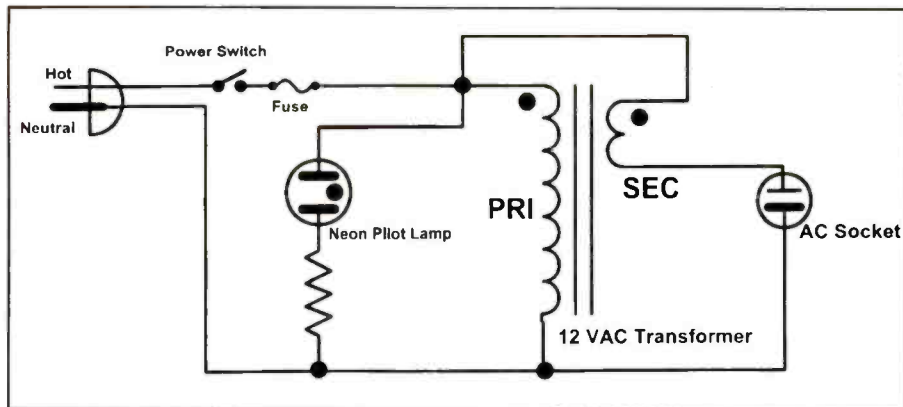


Figure 2. Ted couldn't locate the schematic he followed to build the unit shown in the photos. However, the design is fairly generic and this drawing is a good example of how it can be wired. Note the use of a power switch, pilot lamp, and fuse; these items are discussed in the text.

imum current needed by using the formula  $I = W/E$ . For example, let's see what would be needed for a console that is rated at 120 watts with a 115-VAC line voltage. Using  $I = W/E$  (Amperes is equal to Wattage divided by Voltage), or  $I = 120/115$ , shows that  $I$  is conservatively equal to about 1.1 amperes. But, it isn't advisable to run the transformer anywhere near it's rated capacity.

I'd suggest using a transformer with a minimum 2X rating, meaning at least a 2-amp secondary rating, or better yet, 3 amps. If the device will be used with large communications receivers, such as the Hallicrafters SX-28, SX-42 or similar, consider using a 4- or 5-amp transformer.

### Finding The Parts

Alas, Ted's photos bring back memories of days of recent past when a trip to the local RadioShack outlet would have

yielded many of the components shown in his project. If you have Internet access, many components are still offered via RadioShack's online store. Other venues include Hosfelt Electronics, All Electronics, Fair Radio, and through many other Internet-based vendors that are too numerous to list here (a resource list is given at the end). Transformers are cheap, and a suitable candidate shouldn't cost much more than several dollars.

### Safety First!

This project involves AC voltages and should only be undertaken by experienced builders. Ensure that the unit is wired correctly, with all exposed leads insulated and secured. *The unit should be fused near the maximum current required, which must be at an amperage rating conservatively lower than the secondary winding rating!*

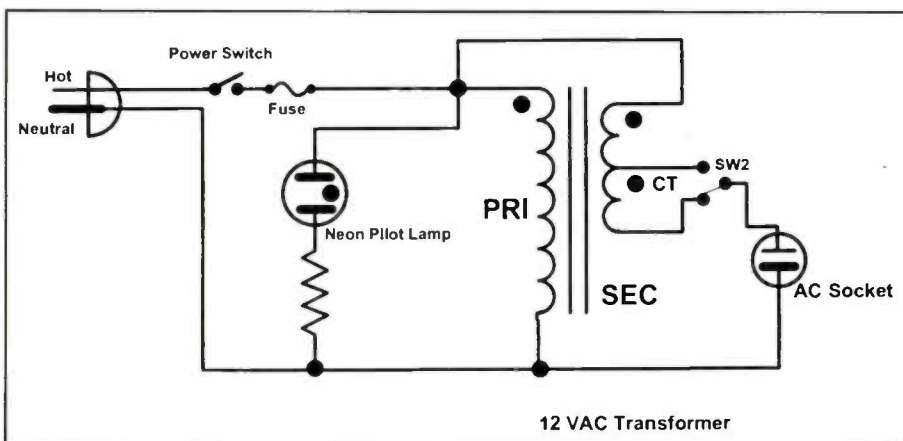


Figure 3. Adding a transformer with a center-tapped low-voltage secondary winding and a switch will allow two voltage reduction settings. For example, using a transformer with a 12-volt center-tapped secondary will give a switch-selectable choice of either 119 or 113 volts for a line voltage of 125 volts. Although not shown, an ICL can be added between the fuse and power switch for inrush current protection if desired.

Don't skimp by not including the pilot light or power switch. Using the power switch to kill power to the radio will save its on/off control and ensure that power is removed from the device when it's not in use. The pilot lamp will help remind you to turn it off when not in use. A neon bulb is shown; the resistor is needed for current limiting. The current limiting resistor is internal to some neon lamp types, or may be included in the socket. Otherwise, one must be externally provided; 220K-ohms at 1/2 watt is a typical value.

If your radios don't include ICL (inrush current limiters) devices as discussed in an earlier column, consider including an ICL wired between the fuse and switch. I prefer a metal box for safety reasons, but a metal box should also include a three-wire plug that takes advantage of the ground lead for shock protection. Many newer bathroom appliances include AC power cords with integral GFI protection—salvaging one from a defunct hairdryer (provided the GFI is still good!) for use in this project would be a good idea.

If you're really clever, a double-pole double-throw switch can be wired in to permit boosting or bucking the voltage as needed. But, be careful: it's easy to inadvertently over voltage a set if you're not.

### Something For You Scanner And CB Fans, Too

Hopefully this little project will prove useful to you. I should add that many modern devices, such as scanners and other receivers that use linear (not switching) power supplies, might benefit from being operated just above the minimum voltage recommended by the manufacturer. Try it on your old Bearcat scanner or vintage CB and see if it doesn't run a lot cooler and run longer between failures!

Until next time, keep your soldering irons warm and those old tubes glowing!

### Resources

RadioShack; Web: [www.radioshack.com](http://www.radioshack.com); Phone: (800) 843-7422

All Electronics Corp., 1428 Oxnard Street, Van Nuys, CA 91411-2610; Web: [www.allelectronics.com](http://www.allelectronics.com); Phone: (818) 997-1806; Fax: (818) 781-2653

Hosfelt Electronics, PO Box 4369, Steubinsville, OH 43952-1158; Phone: (888) 264-6464, (740) 264-5538; Web: [www.hosfelt.com](http://www.hosfelt.com); E-mail: [help@hosfelt.com](mailto:help@hosfelt.com)

Fair Radio, 2395 St. Johns Rd., Lima, Ohio 45804; Phone: (419) 223-2196; Fax: (419) 227-1313; Web: [www.fairradio.com](http://www.fairradio.com) ■

## “And The Award Goes To...”

**M**ost employers, no matter how lowly, offer employee recognition awards and incentives of some sort. If you're really lucky, by exceeding your sales quota you'll receive free use of a shiny new company car (yes, a Ford Taurus "is" a car—and so is a pink Mary Kay Mobile!). If you land a new account you might receive an all-expenses-paid cruise to some exotic DXpedition location. And if you merely show up consistently, you're bound to win "employee of the month" at least once before you die!

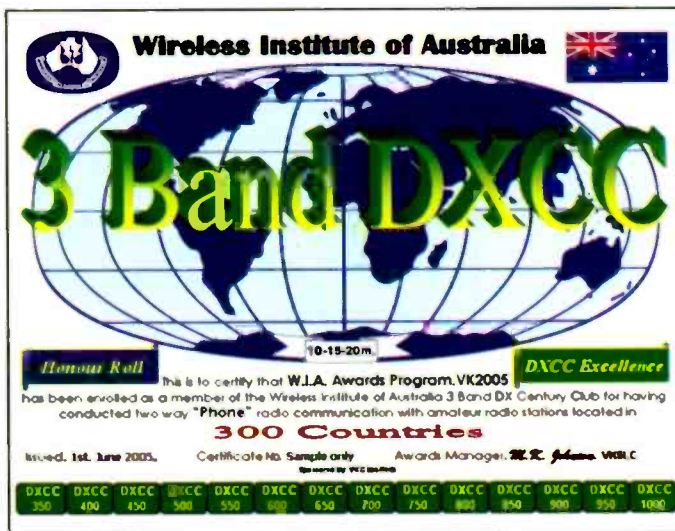
Although it's not an employer per se, ham radio has plenty of recognition and achievement awards of its own. You have to do a little more than simply show up, but if you set your mind to systematically meeting the required benchmarks, ham radio's plethora of awards and achievement certificates will amply reward your hard work and determination.

Better yet, you'll undoubtedly learn something in qualifying for each new certificate, and you'll open up new perspectives on our wonderfully diverse hobby. Don't know a thing about working PSK31? After planning for and executing your strategy to work a ham in each state via that nifty digital mode, you'll be a veritable expert—and you'll have an achievement award on your shack's wall to prove it! When you've mastered PSK, move on to 6 meters, or whatever strikes your fancy.

Described by Old Timers as "chasing paper" or "the great wallpaper chase," the quest for ham radio operating awards and



Thai club station HS0AC demonstrates how achievement awards tend to accumulate over time! (That's why it's really called wallpaper.) HS0AC is the club station of RAST, The Radio Amateur Society of Thailand.



Whether you're talking Wallabys or working a hundred countries, the hams at the Wireless Institute of Australia, that country's national ham radio organization, seem to do things in their own, unique way. Here in the States you can receive an award for working 100 countries or 500 countries, but not much in between. Down Under, however, the WIA offers the Three Band DXCC Award! And you don't have to be an Aussie citizen to qualify. Go figure! Check out that and other WIA offerings at <http://vk6.net/WIA-Awards/HTML/10-wia-3bdxcc-award.html>.

certificates (to pin on your shack walls, of course) captures the attention and efforts of almost every ham at one time or another. Some make it a lifelong journey. So, whether you're after one specific award, or you're aiming to cover every inch of wall space, the sheer number of awards available will keep you tuning the bands for quite some time.

Because the solar cycle is pretty much bottomed out for another couple of years or so, some awards will be more difficult (or even impossible) to achieve, while others will be a bit easier. Just be sure to choose awards that *can* be achieved under the present conditions. That is, if HF propagation stinks at your QTH, move to the Caribbean, get on 6 meters and work grid squares, set up a satellite station, etc.

In addition to providing a creative outlet for that pile of QSL cards you've been amassing, chasing awards can motivate you to improve your station and your operating skills. A lot of ham activity is sparked by the desire for one award or another.

You can spend as much time as you like in the chase because you're really competing only with yourself. There are thousands of awards and certificates to work toward, some easy, some almost impossible. Set your sights on one or two that make sense and go for the gusto.

### Worked All States

The Worked All States award is just what it says: Work and confirm contacts with hams in all 50 states. It's a hugely pop-



ular award among beginning hams. Aside from the basic certificate for any combination of bands/modes, specialty certificates are issued for a variety of different bands and modes, such as satellite, 160 meters, SSTV, RTTY, and each VHF band. Available endorsements include SSB, CW, Novice, QRP, Packet, EME, and any single band except 30 meters. Your QSL cards are checked locally by a volunteer ARRL HF Awards Manager affiliated with an ARRL Special Service Club (although QSL cards can be checked at HQ, absent an awards manager). For a complete list of WAS rules, point your Web browser to [www.arrl.org/awards/was/](http://www.arrl.org/awards/was/).

## Worked All Continents

WAC is a beginning DXer's first achievement award. It's given by the International Amateur Radio Union for confirming contact with hams in the six continental regions of the world: Africa, North America, South America, Asia, Europe, and Oceania (the South Pacific, including Australia, New Zealand, and Hawaii). Endorsements are available for different bands and modes. Beginners can easily win this award, but you'll need HF privileges to do it (unless you wait a few years for the next solar peak, when it may be possible on 6 meters). Once the basic award is under your belt you can start working toward the many band and mode endorsements. For complete rules and an application form, point your Web browser to [www.iaru.org/wac/](http://www.iaru.org/wac/). ARRL membership is required for U.S. hams

## The DX Century Club

This sought-after award is the DXer's benchmark worldwide. DXCC is awarded to hams who confirm contacts with fellow hams in 100 or more "DXCC entities." Although countries such as France and Sweden are definitely DXCC entities, other areas like Hawaii and Alaska are also considered DXCC entities, which makes your job a little easier, if a bit more confusing!

There are presently more than 300 entities on the official "ARRL DXCC Countries List," which is available from the ARRL website at [www.arrl.org/awards/dxcc/dxcclist.txt](http://www.arrl.org/awards/dxcc/dxcclist.txt). There you'll also find a complete list of rules and DXCC award endorsements. ARRL membership is required for U.S. hams.

Perhaps the easiest way to rack up contacts toward DXCC is by participating in one or more weekend DX contests that pop up throughout the year. Even with an uncooperative solar situation, many DX contest competitors work DXCC in one day! Even if that's beyond your capacity as a beginner, after a few contests you'll be well on your way.

## An Endless Variety Of Awards

As I mentioned earlier, there are hundreds of other ham radio awards to work toward. They're sponsored by ham radio magazines, national societies, and local/regional clubs and associations. The biggies include the ARRL and the Radio Society of Great Britain (RSGB). You can earn awards for working all 10 callsign areas in Japan, for working 100 or more Russian oblasts (similar to U.S. states), or for working 100 or more "islands of the world" (IOTA, short for Islands On The Air).

Another popular awards program is managed by *Pop'Comm* sister publication *CQ* magazine. For more information, point your Web browser to [www.cq-amateur-radio.com/awards.html](http://www.cq-amateur-radio.com/awards.html). In recent years, *CQ* has introduced several innovative—and even controversial—operating awards especially suited for beginners, including one that uses the Internet and doesn't even require a radio or antenna! Check out the iDX Award here: [www.cq-amateur-radio.com/IDX%20Award%20June.pdf](http://www.cq-amateur-radio.com/IDX%20Award%20June.pdf).

For a huge list of awards worldwide (and related Web links), look up AC6V's ham radio awards page at [www.ac6v.com/hamawards.htm](http://www.ac6v.com/hamawards.htm). Not to be outdone, Ted Melinosky, K1BV, has published *The K1BV DX Awards Directory* since 1987 (the gigantic 2006 version lists info on 3,311 awards!). Dig through the electronic version at [www.dxawards.com/book.html](http://www.dxawards.com/book.html).

## Transmitters Not Required

One thing I sometimes forget to point out to newbies is the very handy fact that most ham radio awards, regardless of the source, can be earned by SWLs and non-transmitting hams! Instead of working hams in 100 countries, you can listen to and confirm via QSL cards (if necessary) on-air conversations held by hams in 100 countries, and so on.

I'm not sure if it's still in effect today, but many countries used to require that their beginner-class hams collect a certain number of QSL cards by listening to other hams on the air before they could upgrade to higher-class licenses. I have many of these "SWL cards" in my collection. The cards would note that the ham or SWL who sent me the card had heard my on-air conversation with station XYZ at a specified date and time. If that matched my log data I'd send the SWL a suitable QSL card via airmail or the QSL bureau. Most awards still allow this today. It's not ideal for most hams who want to confirm two-way QSOs. But if your station is "receive only" for any reason, it's a way to get in the game.

## Only One Lifetime

Once you understand the sheer number of ham radio awards you *might* qualify for, you'll soon realize that it would take several lifetimes to even make a dent. The only real approach is to get started—now!

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# A Warm-Weather Spruce-Up For Your Antenna, And Other Ways To Stay Prepared

**I**t's rapidly becoming "antenna time" on the East Coast of the United States, where I live. But no matter where you may live, it's still a good time to go out and find out what kind of damage winter storms did to your antenna farm. It's also a good time to assess your antennas and possibly consider erecting new ones or rearranging existing antennas to improve reception and transmission.

In the fall of 2006 I took down my old dependable 40-meter Extended Double Zepp (EDZ) that had been up for over 10 years. In its place I erected a Radio Works Carolina Windom. In the past I'd used these off-center-fed dipoles with outstanding results. This time it was no different. The 40-meter Carolina Windom performed very well. Not as well as my 40-meter EDZ, but the performance was good, nonetheless. Unfortunately, a couple of the neighbor's kids decided that the length of Kevlar rope didn't belong in that particular section of the tree, and cut it down. Needless to say the Carolina Windom no longer performed well, and it was time I took a close look at a multi-band HF antenna that would fit into the city lot on my property.

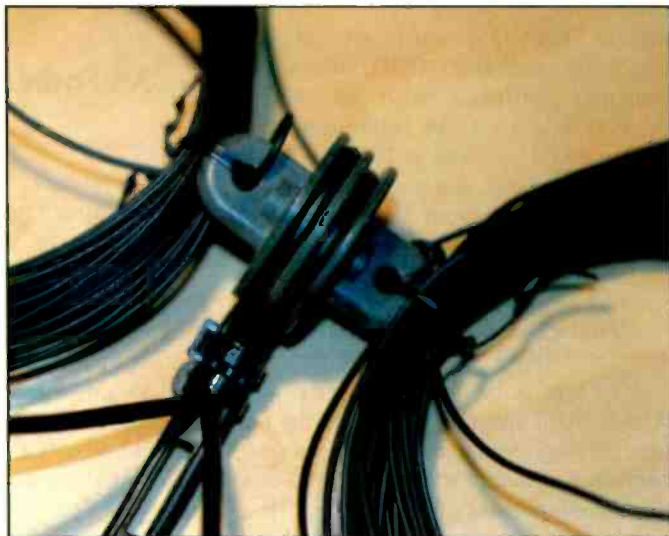
## Easy As EDZ

Okay, let's return to the EDZ concept. The 40-meter EDZ was roughly 90 feet per leg for a total length of about 180 feet. In order to fit it into my lot I had to bend the last 15 or so feet of each dipole leg back upon itself. This didn't tremendously alter the performance of the 40-meter EDZ and it kept things inside my property lines.

If a 40-meter EDZ would get me on 160 through 10 meters why wouldn't a 20-meter EDZ allow me to operate on 80 to 10 meters? I quickly applied the proper formulas and ended up with a dipole antenna that was 45 feet per leg, fed with 300-ohm twinlead via a balanced line tuner. (Lacking a true balanced line tuner one could use a standard coaxial tuner with a 4:1 current balun to match the 50-ohm unbalanced output of the tuner to the 300-ohm twinlead.)

So I made the decision to fabricate a 20-meter EDZ. Now for the hard part: I wanted to design and fabricate an antenna that would be at home at the shack or in the bush on portable outings. I got some PolyStealth #26, a variation of stranded copper-weld antenna wire covered with a black polyvinyl jacket that's not only extremely robust but darned near impossible to see from a distance of more than 15 feet!

The 300-ohm ladderline balanced feedline came from The Wire Man (<http://thewireman.com/antennap.html>). I used an old Delrin end-insulator from a previous dipole antenna as the center feedpoint for the 20-meter EDZ. The ladderline was wrapped around the center insulator and secured with tie wraps. The PolyStealth dipole legs were threaded through the holes in the center insulator, tied off with some extra slack to allow some flexibility in rough weather.



*My newly constructed 20-meter EDZ (Extended Double Zepp) antenna for 80- to 10-meter HF operation. The wire is PolyStealth #25 and the feedline is a 300-ohm ladderline, available from The Radio Works or other antenna suppliers. The center insulator is a recycled end-insulator from a previous dipole antenna. This antenna is very stealthy and can withstand some tremendously high winds and bad weather.*

I hoisted the entire affair up on the halyard attached at the 45-foot level of my tower and fed the 300-ohm ladderline into the second floor window and tied it into an MFJ Model 974H balanced line tuner. Using my MFJ Model 260 antenna analyzer I adjusted the balanced line tuner for the CW and phone portions of 20 to 10 meters. Then, I checked out the tuner/antenna combo on 40 and 80 meters. The antenna performs acceptably on both of these low bands, but the bandwidth on 80 meters is limited to about 15 kHz before I have to retune the antenna tuner. This is in line with the results I obtained on the older 40-meter EDZ when tuning it to 160 meters.

The new 20-meter EDZ works great, is entirely on my property with no folding back of the dipole ends (like the 40-meter EDZ), and allows me access to all of the low bands except 160 meters. Not a bad trade off in size versus bandwidth.

## I Don't Like Snakes!

Really, I don't. Not that snakes have ever done anything bad to me, I just don't like them. So what am I doing with this Cobra in a box, you ask? Well for one thing, I am waiting for some warm weather at which time this "snake" is going up on the side of the tower for a check out. I suppose by now you've surmised that this "Cobra" isn't a real snake. Actually, this Cobra is a type of HF antenna that offers wideband performance in a rather small package. In essence it's a dipole, approximately 36.5 feet per leg (73 feet end-to-end) fed with either 300 or 450 ladderline at the center point.



Now if you apply the standard dipole formulas here you'll get some rather interesting numbers for resonant frequency—ostensibly right in the middle of nowhere, certainly not close to any amateur radio band. The G5RV is a similar antenna, being around 51 feet per leg fed with either a length of ladderline or coaxial cable into a tuning stub made up of 300-ohm twinlead. The G5RV is a gain antenna for 20 meters but will require a tuner in any case, since it's rare to be able to build this antenna for 20-meter operation and obtain a less than 2:1 SWR. Ergo, a tuner is needed even for the very well-documented and often imitated G5RV to allow even single band operation.

But back to our Cobra. This antenna uses a "linear loading" of sorts in that each 36.5-foot dipole leg is actually one continuous run of wire, folded back on itself several times. The close proximity of the wires running in parallel with each other combined with the total length—and the fact it is fed with ladderline—combine to form a linear loading system that allows true multi-band operation, but you still have to use a tuner! For more detailed information, point your browser to [www.k1jek.com/index.html](http://www.k1jek.com/index.html).

This Cobra antenna design has been around quite a few years but has enjoyed a recent upsurge in popularity thanks to Afghanistan, of all things! It seems that Coalition Special Forces operatives are using these Cobra antennas for NVIS (Near Vertical Incidence Skywave) work while hunting the bad guys in the mountains of Afghanistan and Iraq. The majority of the sales of these antennas (there are two versions) are to the military. The Cobra is a very compact package and is relatively lightweight, making it ideal for special ops clandestine work where working DX is not the ultimate goal.

The Cobra antenna erected low to the ground (10 to 15 feet high) as a dipole antenna is an ideal NVIS antenna for reliable HF comms out to about 400 miles. My test version covers the 80- through 10-meter bands.

Don't worry, in an upcoming "Homeland Security" column I'll report back on my findings regarding this Cobra antenna. In the meantime, I'm continuing to use my 20-meter EDZ with good results, proving that a tried and true design can offer certain advantages to the antenna challenged/condo dweller. There's no doubt that I can transplant this 20-meter EDZ from its present position to our new home in Georgia and not tip

off the neighbors to the fact that a ham radio operator (or two counting my wife, Patricia, KB3MCT) is now in their midst.

## Computer-Controlled Radios

E-bay, "that auction place," is often maligned as the place *NOT* to get things. However, it's been my experience that every once in a while there appears a "deal" that's just too good to be true. Such was the case about a month ago when I was clued into the fact that someone was selling a quantity of ICOM PCR100 computer-controlled radios for \$65/each! Well, that got my juices flowing, I gotta tell ya!

I went on the site, did a "buy it now" for \$65, and in about six days I had the little gray box in my hands. Believe me when I say that these computer-controlled radios are nothing special to look at. The PCR100 is a small gray plastic cabinet about 1.25 x 5 x 6 inches (HWD) with connectors on one end. Power needed is 12 volts (13.8 VDC, actually) via a coaxial power jack (center pin positive), a RS-232 DB9 connector to interface the radio with the computer and its associated software, speaker/audio output, and a BNC antenna port. If anything it's really "plain Jane" in appearance.

The really cool thing about these PCR100s (aside from the price) is the flexibility they offer to someone who needs a DC-to-Daylight receiver. The total coverage is advertised as 10 kHz to 1.3 GHz. Now that's a lot of spectrum. In addition, modes supported are AM/NBFM/WBFM. Notice that I didn't mention CW/SSB modes; that's because these are *not* supported in the PCR100.

If the PCR100 were a true SDR (software-defined radio) all one would have to do is go into the radio's onboard firmware, tweak a few toggles, and enable CW and SSB operational modes. Unfortunately, the PCR100 is *NOT* an SDR; it is instead a computer-controlled radio (CCR). The difference is subtle but important. A true SDR is a digital radio that hooks to the computer and can be reconfigured on the fly to alter the overall performance of the radio. The CCR, in contrast, is an analog radio in a small box with a computer cable running to a laptop or desktop which has radio-controlling software installed. If the basic analog CCR does not have the ability to process CW and/or SSB, it cannot be added at the computer end of the system.

However, all is not lost. Many of the folks on the lists I haunt have successfully added SSB/CW reception by taking the IF signal from the PCR100 and feeding it into a small \$10 SDR receiver kit to allow demodulation of SSB and CW modes. Now, this sounds complicated, but in reality, it is not. There is a pick-off point inside the PCR100 where you can obtain the IF signal, then, using small coaxial cable (RG-174), run this into the input of a SoftRock160 SDR receiver (see [www.geocities.jp/qrper72/soft-rockv6\\_0.html](http://www.geocities.jp/qrper72/soft-rockv6_0.html) for more information) to demodulate the SSB and CW signals. In this instance we're using the SoftRock 160 SDR as the last IF and demodulator/audio section of the PCR100.

Okay. I'll do the mod, with pictures and get back to you in a future column. However, in the meantime, go hunting for one of these ICOM PCR100s. While the rate on the first 80 or 90 of these units was in the \$65 range, I've since seen them for sale on eBay for under \$100, which is still a good deal.

## One Question Left To Answer

Why would anyone want a wideband receiver that didn't have CW or SSB capabilities? For one thing, you have access to many frequencies that are not found on today's crop of scanners. In particular, you have a window to the world of Military Aviation frequencies (200 to 400 MHz), which use AM! Seldom will you find a scanner that will offer that particular frequency range. In addition, you can also listen in on the general aviation bands (108 to 136 MHz) and the low-band military tactical frequencies of 35 to 75 MHz, which use narrow band FM. So, even when you factor in the lack of SSB/CW reception, the PCR100 is still a good buy for \$100 or under.

## Till Next Time

That's it for this month. So how about a spring/summer project? Pick up a PCR100 or similar CCR and have some fun. If you use a laptop, the overall footprint of your portable monitoring post will be quite small. This is a perfect station to take on trips, because it doesn't look like a radio at all! Thereby reducing the chances of it getting ripped off in your hotel/motel room or out of your car. After all, there's more than one way to stay safe!

Remember our mantra: Preparedness is not optional. ■

## Monitoring The Atlanta Skies— The Nation's Busiest, Plus A Great New Tracking Resource

**T**here have been debates around the country as to the busiest airports, towers, flight service stations, etc. I've been to numerous airports over the years from Bangor, Maine, to Key West, Florida, from Los Angeles International, to Seattle, Washington, from Chicago's O'Hare to Denver International and Anchorage and Fairbanks Internationals in Alaska. I've even been to some smaller airports, like Albany, Georgia, Grand Island, Nebraska, and Toccoa, Georgia. I won't even go into the airports in Europe I've been through.

Having said that, here's a story I heard from DJ Charlie Tuna over the Armed Forces Radio and Television Service in the 1970s while in West Berlin: A man was flying out of Montgomery, Alabama, and wanted to go direct to Denver. The lady at the Southern Airlines counter said he'd have to fly through Atlanta. The passenger said that was unacceptable. He then asked what would happen if he wanted to fly to New York. The Southern Airlines employee said he'd have to fly through Atlanta. What about Chicago? Through Atlanta. Denver? Through Atlanta. The passenger was getting irate. Washington? Atlanta. Phoenix? Atlanta!

The passenger finally yelled out, "What if I want to fly to hell?" The lady behind the counter calmly said, "I'm sorry, sir, but that's a Delta flight." (My apologies to Delta. I have numerous friends working for Delta, but that was the punch line of the joke at the time. Again, it was quoted by Charlie Tuna. Please no lawsuits.)

This brings me to the first part of my June article: Atlanta. A short time ago Hartsfield-Jackson Atlanta International Airport (ATL) was simply named Atlanta Hartsfield Airport. Today ATL is the busiest in the United States, and one of the busiest on the planet. Atlanta has four parallel runways and pretty much is *the* airport of the southeastern United States. I'll probably get letters from Miami (MIA) and Orlando (MCO) FL on this, however. Try these frequencies if you're in the area: 127.9, 118.35, 126.9, and 127.25.

Atlanta Hartsfield runs the approach control for more than just Hartsfield; see "Additional Airports" box. The paired frequencies given are low/high sectors, with the dividing point normally being 7,000 feet mean sea level (MSL). At some of the airports Atlanta Hartsfield doesn't run the approach control 24 hours



*If you're in the Atlanta area, monitoring Hartsfield-Jackson Atlanta International Airport will keep you plenty busy, day or night. (All images courtesy Hartsfield-Jackson Atlanta International Airport)*



a day, and Atlanta ARTCC works those fields when Atlanta Approach doesn't.

### New Resource— Flightaware.com

Few if any of the readers of this magazine (and I assure you that includes us columnists) can afford a radar system (DRADIS for those acquainted with *Battlestar Galactica*). So what are we to do? Just a couple days ago while Web surfing I stumbled on a site I'd never noticed before. While it's not radar, it's pretty darn close.

At <http://flightaware.com>, one of the most fantastic sources I've found comes

to life for me. The main screen shows a map of the majority of North America with numerous red dots on it. Each dot represents an IFR (see "Glossary") aircraft flying. Double-clicking on it gives some recent maps showing trends of IFR aircraft in the airspace system. But the real beauty is using one of the active buttons on the left of the screen.

For example, say I hear the callsign N111SS while monitoring flights near St Petersburg Florida (PIE). I put that callsign in the Flight/Tail # block and hit enter. On the day I'm writing this, I find that that aircraft is abeam Sarasota Florida (SRQ) heading south to Fort Myers, Page, Florida (FMY). At this

### Additional Airports Controlled By Hartsfield-Jackson Atlanta International Airport

Americus Souther Field (ACJ)	125.5/126.55
Athens-Benn Epps (AHN)	132.475/127.5
Atlanta-Cobb County-McCollum Field (RYY)	121.0
Atlanta-DeKalb Peachtree (PDK)	126.975
Atlanta-Fulton County-Brown Field (FTY)	121.0
Atlanta-Peachtree City-Falcon Field (FFC)	119.8
Canton-Cherokee County (47A)	121.0
Carrollton-West Georgia Regional (CTJ)	121.0
Cartersville (VPC)	121.0
Cochran (48A)	119.6/124.2
Columbus Metropolitan (CSG)	125.5/126.55
Covington Municipal (9A1)	126.975
Dublin-W. H. "Bud" Barron (DBN)	124.2/119.6
Eastman-Heart of Georgia Regional (EZM)	124.2/119.6
Elberton-Elbert County-Patz Field (27A)	127.5
Gainesville-Lee Gilmer Memorial (GVL)	132.475
Greensboro-Greene County Regional (3J7)	127.5
Griffin-Spalding County (6A2)	119.8
Hampton-Clayton County-Tara Field (4A7)	119.8
Jefferson-Jackson County (19A)	132.475/126.5
LaGrange-Callaway (LGC)	125.5/126.55
Lawrenceville-Gwinnett County-Briscoe Field (LZU)	126.975
Lawson AAF (Fort Benning) (LSF)	125.5/126.55 323.1/353/75
Macon Downtown (MAC)	124.2/119.6
Macon-Middle Georgia Regional (MCN)	124.2/119.6
Madison Municipal (52A)	127.5
Milledgeville-Baldwin County (MLJ)	124.2/119.6
Monroe-Walton County (D73)	126.975
Montezuma-Dr. CP Savage Sr. (53A)	124.2/119.6
Newnan-Coweta County (CCO)	119.8
Perry-Houston County (PXE)	124.2/119.6
Pine Mountain-Callaway Gardens-Harris County (PIM)	125.5/126.55
Plains-Peterson Field (7A9)	125.5/126.55
Robins AFB (WRB)	124.2/119.6 279.6/388.2
Sandersville-Kaolin Field (OKZ)	124.2/119.6
Thomaston-Upson County (OPN)	124.2/119.6
Washington-Wilkes County (I1Y)	127.5
Winder-Barrow (WDR)	132.475/127.5

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moment this Beech King Air 300 is descending out of FL 201 (20100 feet MSL) flying at 324 knots. He's 2 hours, 39 minutes out of Monroe County Indiana (BMG) with just 26 minutes and 73 miles left to fly to Fort Myers.

You can also see his route, both graphically, as on radar, and written, as on an ATC flight progress strip. Pressing the en route button in the status block on the right side gives this aircraft's position/speed/altitude on a minute-by-minute basis since departure. Quite amazing.

Looking back toward the left side you find a Track Commercial Flight button. Putting the company name in the upper block and the flight number in the lower block gives info on commercial airlines. It's usually easier, in my opinion, to use the Flight/Tail # block above it, though. You can put the callsign there, like UPS387. The commercial block would require the name; say, United Parcel Service Company, with 387 in the number block. It accomplishes the same thing, it's just a little more time consuming. But if you don't know or have the three-letter ID for the airline, it may be of use here.

The next lower block is for the airport code, say MCO for Orlando International or JFK for Kennedy International. You get

## Glossary Of Terms And Acronyms

**ARTCC (Air Route Traffic Control Center)**—A facility established to provide air traffic control service to aircraft operating on IFR flight plans within controlled airspace, principally during the en route phase of flight.

**ATC (Air Traffic Control)**—Means what it sounds like.

**FSS (Flight Service Station)**—Air traffic facilities that provide pilot briefing, en route communications and VFR search and rescue services. They also assist lost aircraft and aircraft in emergency situations and relay ATC clearances. Similar is **AFSS (Automated Flight Service Station)**.

**ICAO (International Civil Aviation Organization)**—Headquartered in Montreal, Canada, this agency of the UN develops the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth.

**IFR (Instrument Flight Rules)**—A set of rules governing the conduct of flight under instrument meteorological conditions.

**ILS (Instrument Landing System) Approach Plate**—Diagram published by the FAA and privately that depicts the procedure pilots need to follow to execute an ILS approach.

**NAVAID (Navigational Aid)**—Transmitter that helps pilots navigate from one point to another.

**NOTAM (Notices To Airmen)**—A notice of information that contains timely data concerning the establishment, condition, or change in any component (facility, service, or procedure of, or hazard in the National Airspace System) which is essential to personnel concerned with flight operations.

**UNICOM**—An aeronautical advisory station primarily for private aircraft.

**VFR (Visual Flight Rule)**—A set of regulations that a pilot may operate under when weather conditions meet certain minimum requirements. They are to be followed when there is sufficient visibility for aircraft to be seen and avoided.

**VORTAC**—The VOR system is the backbone of air navigation in the US and most other countries. It is composed of usually round buildings, about 30-feet in diameter, with a cone sticking out of the top. Many are painted in a red and white checkerboard pattern. VOR is an acronym for Very high frequency Omni Range. VORTAC is the same with TAC, standing for TACAN, a military designation for its distance information on a VOR signal.

**WSI (Weather Services International)**—Headquartered in Andover, Massachusetts with offices in Birmingham, England, WSI provides weather-related products and information to professionals in the energy, aviation, and media markets, as well as multiple federal and state government agencies.





the idea. Currently it appears that any approved airport identified in the United States is usable, plus most of the Caribbean, Canada, Mexico, Central America, Alaska, and Hawaii. Putting a three- or four-letter ID in the block gives a simulated radar for the airport area. Aircraft into or out of the airport will show up in blue; others in the area are in green.

The ID used for the lower 48 can be with or without the K in front. MCO or KMCO are both acceptable for Orlando International. Smaller airports with numbers are also included, such as 7FL6 for Spruce Creek Airport near Daytona Beach. Airports in Alaska and Hawaii must use the PAXx and PHxx formats. For example, PAOR for Northway Alaska is acceptable; ORT or KORT is not. Canadian, Mexican, Central American, Bahamian, Puerto Rican, and Caribbean airports must use the full four-letter ICAO airport ID.

I haven't fully investigated the site yet, but I'm certainly enjoying what I see. As of this writing VFR aircraft and all military aircraft are currently *not* represented here. I'm not aware if the VFR blockage includes VFR ICAO flight plans and DVFR (Defense Visual Flight





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Rules) flight plans. This requires further investigation.

But in addition to all this, you may notice that many things found on the sight are in a blue-gray color and underlined. Clicking your cursor on these items opens new pages of information. Clicking on a callsign gives graphic and written information on that particular flight, including aircraft type, origin and destination of the flight, route (not necessarily as the pilot or dispatch filed but as ATC gave him/her), duration of the flight, progress and status of the flight,

proposed/assigned and actual/estimated departure and arrival times, speeds and altitudes.

Even here you can click on underlined areas for more information. Clicking on the type aircraft, for instance, shows *all* current active and scheduled flights for that particular type of aircraft anywhere in the Flightaware system.

But to be fully appreciated, the treasure trove requires just a little more digging. Click on an airport ID and you get a listing of all aircraft flying into and out of the airport. The "radar" graphically shows you

what's in that area (remember green and blue airplanes here). Clicking the Airport Information, Diagrams, Procedures spot in related links at the bottom gives you more information on that airport than you can normally buy at a flight shop.

Graphics are located here, giving airport diagrams and approach plates, but you can also find, by clicking on appropriate spots, frequencies for ATC, weather, and fixed base operators. If I don't please the new editor, and my job becomes jeopardized, you wouldn't need to contact me—just start pointing and clicking.

As of this writing everything is free. You just register on the title page (follow the prompts at the top) and enjoy. Tell me what you think about this.

### Till Next Time

I'll try to read your e-mails this month as, when this issue comes out, I'll be in Washington, D.C. for six or seven weeks working with the new FS21 equipment for Flight Service. I hope to have a good report on that soon.

Enjoy. ■

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# How AIS Fits Into The Maritime Communications Picture

In last month's issue of *Pop'Comm* (you *did* read last month's issue, didn't you?), this column discussed maritime HF communications, including a considerable amount of information on the GMDSS (Global Maritime Distress Safety System) and how the various systems that are part of GMDSS interact.

However, that article did not tell the entire story on maritime communications. There are also the VHF-FM Marine Radiotelephone channels, which I did not discuss, primarily because these frequencies are not part of the HF bands. Furthermore, there's the AIS (Automatic Identification System), and a couple of other systems used to assist in maritime navigation, namely the GPS/DGPS (Global Positioning System/Differential Global Positioning System) and LORAN C.

The problem with trying to deal strictly with HF communications in a column like this one is that, like it or not, there are facets of maritime communications that fall outside the boundaries of the HF bands, and if you discuss maritime communications—as we did last month—you can expect to field questions regarding those systems you left out, even though they may not pertain to utility monitoring. I learned that this past month when reader Bob Schweikert, N4NMK, of Harrington, Delaware, sent us an e-mail inquiring about the AIS. Bob noted that he has been hearing the Delaware River and Bay Pilots Association telling merchant vessels, especially when entering port, that “we have you on both radar and the AIS.” Bob wanted more information on the AIS and asked if an article on it was feasible.

My initial response was that since the AIS operates on VHF, it was beyond the scope of this column. As you may have guessed by now, I've reconsidered; we started out talking about maritime communications, and I feel that, if you're going to tell a story, you may as well tell the whole story, not just the parts you want to talk about. The AIS is, after all, backwards compatible with the very same GMDSS we talked about extensively last month. Beyond that, we know for a fact that many of our regular readers are not only dedicated HF utility listeners, but also at least dabble in other areas of the radio arts, including ham radio, and scanning the VHF/UHF bands for aircraft, military, public safety, and other communications in those frequency ranges.

Besides that, if Bob took the time to write and ask about AIS, there are probably others wondering about it, too—and our primary job here is keeping our readers well informed. With that in mind, let's look at the AIS and see what it entails, and how it fits into the “big picture” of maritime communications.

## What Is The AIS?

The AIS is basically a shipboard broadcast system that operates in the VHF band and acts somewhat like a transponder. According to the United States Coast Guard, AIS uses a nifty technology known as SOTDMA (the acronym stands for Self-Organizing Time Division Multiple Access) to handle more than 4,500 reports a minute, and it updates itself as often as every two seconds.

If you picture in your mind the radar display on board a vessel, you probably know that there will be a “blip” on the radar screen for every vessel within radar range. If, in watching the radar screen, it becomes apparent that radio communications with another vessel are necessary for reasons of navigational safety, the people responsible for the safety of each vessel can get on the radio and contact one another, often before they have even established visual contact. This becomes even more important when entering port, since vessels tend to be in much closer proximity then.

Before AIS, a frequent response to this situation was to come up on the appropriate VHF-FM calling channel and “hail” the other vessel with something like, “Vessel off my starboard bow, this is...” and hope for a quick response. The problem with this approach is that, especially in port, almost *everybody* could have someone off their starboard (or port) bow (or stern). So, without knowing the name of the specific vessel you're trying to call (or who is calling you), there's a question left as to exactly who is calling whom.

One of the primary benefits of AIS, then, is to eliminate this ambiguity by overlaying electronic chart data onto the shipboard display. The data includes a mark for every significant vessel within radio range, which reflects the actual size of the vessel, and its position to GPS, or even DGPS, accuracy. Click on the mark for that vessel, and you can then learn its name, course and speed, classification, callsign, registration number, its MMSI (Maritime Mobile Service Identity, a unique nine-digit numeric ID code whose assignment is overseen by the International Telecommunications Union), and other pertinent information about the vessel producing that “blip” on your radar.

Not only can you now hail the ship by name, you can also contact it directly using the GMDSS equipment we talked about last month. You could even send it—or receive from it—short safety-related “e-mail” messages.

At one time, quick access to such information was only possible at an onshore VTS (Vessel Traffic System) operations center using the PAWSS (Ports And Waterways Safety System) tracking systems, and then only in areas where such systems had already been deployed. AIS has now become a vital component of the PAWSS project, relying on GPS/DGPS, navigation sensors, and digital communications systems to allow vessels to exchange navigation information with other vessels, as well as shore-side VTS centers, without the need for voice communications.

## So How Does It Work?

An AIS system consists of one VHF transmitter and three VHF receivers—two VHF TDMA (Time Division Multiple Access) receivers, and one VHF DSC (Digital Selective Calling) receiver—along with standardized marine electronic links to shipboard sensors and displays. There's also a GPS receiver to obtain position and timing data, as well as a DGPS receiver for more precise positioning data when navigating on inland waterways or in coastal areas.

The transponders operate continuously, transmitting a 9.6-kilobyte GMSK (Gaussian Minimum Shift Keying) FM-modulated signal over either 25-kHz or 12.5-kHz channels. The protocol used for these transmissions is HDLC (High-Level Data Link Control), which is simply a bit-oriented data link layer protocol used to encapsulate and transmit data packets, or frames, in this case over point-to-point digital links in full duplex.

Each AIS station determines its own transmission schedule by analyzing the history of recently received data link traffic and its expectations of future actions by other stations. A received position report is slotted into one of 2,250 time slots, each of which represents 26.6 milliseconds, and which are established every 60 seconds. The AIS stations all continuously synchronize themselves so that these time-slot transmissions don't overlap and confuse the system.

Each time slot selection is also randomized within a defined time interval and tagged with a random "timeout" between zero and eight frames. If a station decides to change its slot assignment, it will broadcast its intention and supply its new slot location and the "timeout" for that location. In addition to keeping all stations in sync with all other stations, this feature also ensures that new stations that have just come into radio range of other vessels will always be received by those vessels.

The coverage range of the AIS system is pretty much the same as for any other VHF system—roughly about 20 nautical miles, depending mainly on the height of the antennas of the sending and receiving stations—although the use of repeater stations could extend coverage for both ships and shore stations considerably. It's also worth noting that the range of AIS is a bit better than the range of shipboard radar systems, owing to the longer wavelength of the AIS signal; so AIS can to some degree "see" around bends or islands as long as the intervening land masses aren't so high as to block the signals entirely.

As previously mentioned, AIS is also backwards-compatible with GMDSS (or to be more precise, with the DSC system that's one of the components of GMDSS), so that onshore GMDSS systems can "handshake" with AIS-equipped vessels to agree upon AIS operating channels, and thus be able to track AIS-equipped vessels.

Because I stated in the above discussion that AIS acts somewhat like a transponder, I want to be careful that readers do not confuse AIS with the so-called RACON (for Radar beacon) radar transponder beacons that are used to identify landmarks or buoys on a ship's radar display. Although they are used as navigation aids (and, in fact, the use of a RACON for any other purpose is prohibited!), they are a different animal entirely, operating in the marine radar frequency range of 9300 to 9500 MHz and, optionally, in the 2900- to 3100-MHz marine radar "S-Band" as well.

In fact, the AIS may eventually replace RACONs entirely, and is actually intended to move entirely to DSC-based transponder systems. As time goes on, AIS may also be able to relay navigational data from other sources, such as NOAA's PORTS (Physical Oceanographic Real Time System). In any event, it represents a significant upgrade to navigational safety. It's also expected to improve the security of our nation's ports—an important consideration these days—by increasing the Coast Guard's awareness of vessels approaching U.S. ports.

According to the Coast Guard, approved AIS systems range in cost between \$1,500 and \$5,000 dollars, not counting the cost of installation (which is directly related to the level of integration with existing shipboard systems such as radar, GPS, and

other gear). Those prices are likely to come down once companies producing this equipment have had a chance to recoup their R&D costs through sufficient sales. And, in any case, an "approved system" wouldn't be necessary at all for strictly hobby purposes.

Since HDLC conforms to a publicly available published standard (namely, ISO 13239), there would appear to be no violation of current communications law in attempting to "decode" these transmissions for hobby purposes. This would be no different from having an APCO-25-compatible scanner, or using software to decode any other digital mode that conforms to a publicly available standard. Perhaps some enterprising programmer will soon give us software that will allow those of us who live within VHF range to receive and decode these transmissions using our existing VHF receivers and a computer!

## More From The Reader Mailbag

Since I've basically started this month's column by digging into the mail received from our readers, let's continue with some comments from Gary Hickerson, whom regular readers will recognize as having previously commented about the December 2006 column concerning the closure of NAS Keflavik, Iceland. Gary, you'll recall, mentioned that he had spent some time aboard C-121 AWACS aircraft while serving in the U.S. Air Force, and that during part of that time, he had been stationed at Keflavik.

After reading my March column in which his comments appeared, Gary wrote again to advise that he'd inadvertently included a typo in his original letter, and that the version of the C-121 that he had served on was the C-121D, rather than the C-121R model originally reported. Gary adds that the C-121R was top secret equipment, used to track activity along the Ho Chi Minh train in Vietnam. Gary says that sensors were dropped into the jungle along the trail, and the aircraft would fly over and monitor what was moving by analyzing heat signatures.

Gary advises that the "hump" on the top of the C-121D aircraft was a vertical radar dish. The large bulge on the bottom was a giant rotating dish antenna. The C-121R, however, was camo-colored and had no humps. It was primarily an ECM (electronic countermeasures) aircraft. He says there was also a C-121G model for passengers only, and a C-121T model that was an updated version of the C-121D.

He also included a scan of a photo of the C-121D from the cover of another magazine, which I cannot include with the column this month due to copyright considerations. However, if you have or can get your hands on a copy of *Wings* magazine's October 2004 issue, you'll find a good picture of the C-121D right on the front cover! Gary notes that the corresponding article in that magazine did not mention the Air Force or its 552nd Air Control Wing based at Tinker AFB in Oklahoma, and only made mention of the Navy's use of the aircraft.

This particular column also drew some comments from fireman John Mackay, KB2WDO, USCG (Ret.) who wrote to tell us that when he started his career in the Navy back in 1962, he was a crewman on the EC-121K "Super Connie" for two years, and notes that the aircraft shown in the photo that accompanied the March column should rightfully be called an EC-121. John added about the craft,

It had two radar systems, the APS-20 search radar and the APS-145 height-finding radar. The APS-20, with a range of 200 miles, would



find the target, and the APS-145 would determine its altitude. The APS-145 had a very limited sweep, so the "Connie" had to be pretty much nose-on to the target. The "Connie" didn't have a roto-dome, that didn't come out until much later—although a prototype roto-dome was installed on a Navy "Connie" for testing.

John also recalls that, "When a target was identified, the Russian radio operator would send a FLASH message to NORAD! The only thing they couldn't do was send the authentication code. They were good, and knew our procedures very well. Anyhow, hope you enjoy this, and I enjoy your digest—first thing I read!"

John, rest assured I did in fact greatly enjoy reading your comments, especially your recollection about the actions of the Russian radio operators upon learning that they had been discovered and identified. Needless to say, I'd also like to send my thanks and a tip of the "Utility Communications Digest" hat to John for pointing out the correct nomenclature for the EC-121. Indeed, he is correct: the electronic warfare version of an aircraft should have the "E" designator added, as with the EC-135 aircraft that eventually replaced the EC-121, at least in the Air Force inventory.

Digging deeper into the mailbag, we come up with a letter from reader Jared Steele, who writes:

As a new SWL, I am most impressed with your magazine. As I sit here skimming through your magazine, ever so patiently waiting for the man in brown to deliver my new toy—an EI, a much needed upgrade of the S350 I have been lugging around for two years only to hear the powerhouses and static—I thought I would pass the time by writing a simple thank you and to say congratulations for producing a magazine that is very well written and full of great advice for a newbie like myself.

John Kasupski's article on logging [in the March 2007 issue—J.K.] really drove home the importance of logging contacts. Kent Britain's article on connecting TV hardware to radio devices was a superb example of how-to documentation.

My only apprehension to my renewed interest in SW and other bands is reading paragraph after paragraph about the decline of SW broadcasts. Having worked my entire adult life in the IT industry, I know that time and technology march on way too fast. One can hope that there never comes a day where I am more likely to turn on the SW out of necessity, then for the joy of it.

By the way, I couldn't find B-Log at the printed URL mentioned but I did find it here: [www.mindspring.com/~tom2000/rx320/B-Log.html](http://www.mindspring.com/~tom2000/rx320/B-Log.html)

Keep it up! And I'll keep reading.

Well, Jared, first of all, thanks for the kind words concerning *Pop'Comm*... we're certainly happy that we're appreciated. And on behalf of myself and Kent Britain, thank you for singling us out as having been especially helpful to you!

Regarding the decline of shortwave broadcasts: While this may sound self-serving coming from the utility column, the use of HF for communications (as opposed to broadcasting) purposes is actually growing at the moment. HF is still the only means of achieving worldwide coverage without resorting to expensive infrastructure on Earth and in space. When fail-safe means of communication in the high latitudes—especially involving moving objects such as airplanes—or fast and reliable information transfer under difficult conditions is necessary, HF remains the only way to go. Digital HF radio communications, in particular, is becoming more widely used than ever.

It's also the "least common denominator" in the sense that you touched on when talking about having to turn on a shortwave receiver out of necessity rather than for enjoyment. That works for us here in the middle of the technology explosion, but in many remote areas, HF/SSB remains the only form of communications possible. And we never know when some sort of disaster may rob us of the benefits of modern technology and send us scurrying for our HF transceivers!

I checked the B-Log page on [qsl.net](http://qsl.net) and found it still in operation. It's worth noting that the entire [qsl.net](http://qsl.net) domain, as well as the somewhat related [qth.net](http://qth.net), are operated as a public service to the radio community by Al Waller, KT3K, a fellow ham operator from Maryland who funds these services out of his own pocket and the pockets of users who contribute to the cause. I've found that either or both of these domains can experience occasional downtime, probably when Al is working on something else, or perhaps occasionally due to technical difficulties (to borrow a term from the broadcasting industry).

The above address on [mindspring.com](http://mindspring.com) appears to duplicate the B-Log webpage as it appears on [qsl.net](http://qsl.net), and thus seems to provide a second way to obtain this program if you can't access [qsl.net](http://qsl.net) for some reason. Since I was completely unaware of the site on [mindspring.com](http://mindspring.com), Jared, you've just given the rest of us something helpful and useful back in return, and I thank you for it!

Finally, I received a nice e-mail from a *Pop'Comm* subscriber from distant shores, namely David Hopcroft from Sutton on Sea, on the east coast of Lincolnshire in England. Longtime readers may remember David from back in the days when my *Pop'Comm* colleague, Joe Cooper, was writing this column. David was the last manager of the BT Coastal Station Humber Radio (callsign GKZ), just south of the town of Mablethorpe, before the station closed down at the end of June 2000. His career began as a radio officer in the UK Merchant Marine, and later he "came ashore" to work at GKZ. David writes:

I managed to salvage a Lowe HF-235 receiver when GKZ closed down, and often listen on the frequencies of your logs. At GKZ we took part in the initial trials of DCS in the North Sea area (we used a Marconi H1000 1-KW wideband transmitter). They went well as far as we could tell, but we were not involved in the final service—it went to the UK Coastguard Service. I keep meaning to put something together to decode DSC and NAV-TEX, but to date the RX doesn't "talk" to my computer yet!

David mentioned that he still has a few QSL cards from GKZ if anyone is interested, so if you logged GKZ and just never got around to getting the QSL before it closed down, you may want to contact David before they're all gone! Just send me an e-mail at the address which appears at the beginning of this column and ask, and I'll be happy to send David's e-mail address along to you.

## Meanwhile, Out On The "Space Coast"...

To finally return to utility monitoring, those of you who enjoy listening to NASA and related communications during spacecraft launches will want to earmark a couple of dates this month. Although I've previously alluded to at least one of the two upcoming NASA rocket mission launches I am about to discuss, I'd be remiss if I failed to remind you that there are two NASA launches scheduled for this month. Now, before I give you the dates, I must preface the information with the usual caveats.

First of all, there's a three-month lead-time on this column. What you are reading now, I am writing in early March. That means there's a full three months for NASA to change its mind about launch dates—something it does quite frequently for a variety of reasons.

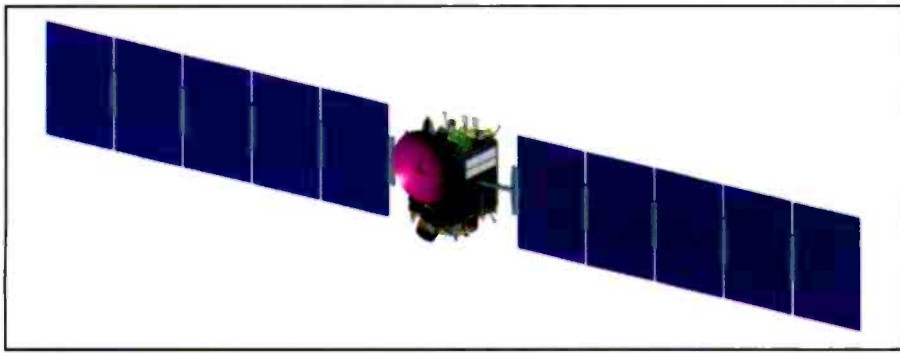


Photo A. A diagram of the Dawn mission spacecraft, courtesy of the Space Physics Center at the UCLA Institute of Geophysics and Planetary Physics.

Beyond that, any sort of problem with the launch vehicle, its payload, the launch pad itself, or the weather can result in a rescheduled launch time. This is just a normal part of space exploration, and we monitors have to learn to live with it. Therefore, the following is subject to change, but the schedule I am using was updated just this morning and is the latest available as of this writing.

Currently, the launch for The Dawn Mission is scheduled for June 20, and the launch of the Space Shuttle *Endeavour* for the STS-118 mission is targeted for June 28, both from Cape Canaveral Air Force Station (CCAFS) near the Kennedy Space Center in Florida.

The Dawn Mission, which will launch aboard a Delta-II rocket, was originally supposed to launch in May, but was rescheduled (remember: normal part of space exploration...learn to live with it). Dawn is part of NASA's Discovery Program and is a scientific mission to study Ceres and Vesta, two minor planets that are located in the asteroid belt between Mars and Jupiter.

This mission will mark the first time that a single spacecraft (see **Photo A**) will orbit two planetary bodies on a single voyage. These two bodies evolved under vastly different circumstances in different parts of the solar system more than 4.6 billion years ago. Water may have kept Ceres cool as it evolved, and it is thought that there may still be frost or vapor on its surface, and possibly, water-bearing minerals. Vesta's origins, on the other hand, were hot and violent. Its interior is molten and its surface dry. By observing both objects with the same set of instruments, it is hoped that Dawn will provide science with new insight into the formation and evolution of the solar system.

The mission is expected to study Vesta beginning in July 2010, and Ceres beginning in August 2014. The project is man-

aged by NASA's Jet Propulsion Laboratory in Pasadena, California.

As for the STS-118 mission, *Endeavour* will make the 22nd shuttle flight to the International Space Station and will be delivering a starboard truss segment for the ongoing construction of the ISS. U.S. Navy Commander Scott J. Kelly will command the six-person crew of STS-118, and U.S. Marine Corps Lt. Col. Charles O. Hobaugh will be the pilot. Expedition 15 Flight Engineer Sunita L. Williams will return to Earth from the space station aboard shuttle mission STS-118, which will deliver Expedition 15 Flight Engineer Clayton C. Anderson to the station. Anderson is slated to return to Earth aboard the *Atlantis* on mission STS-120, which is currently targeted for an August 26 launch date.

### CHU Apparently Saved

Revisiting yet another story from an earlier issue of *Pop'Comm*, back in February we reported on the addition of Canadian time station CHU to shortwave radio's "endangered species list" as the result of changes in International Telecommunications Union (ITU) regulations. The ITU changed the status of the 7.335-MHz frequency, one of three used by CHU, from "fixed service" to "broadcast." This had a cascade effect that placed the future of the station in jeopardy.

However, shortly after my copy of the February issue found its way to my desk, I tuned to the 7335.0-kHz frequency, listened, and had the signal fade out on me just as it began an announcement I hadn't heard before. I quickly tuned to the 3330.0 parallel frequency, and after listening for a few minutes, clearly heard the following announcement, which the station continues to repeat periodically as this column is being written: "CHU has been licensed to continue broadcasting on

seven point three three five megahertz."

Although the Canadian government website associated with CHU has not been updated and continues to display the information forecasting the possible demise of CHU, it would appear that a solution has been found and that CHU will be staying put. This will come as welcome news to many east-coast SWLs who sometimes cannot hear WWV due to unfavorable band conditions, and instead turn to CHU to confirm the correct time, for calibrating various commercial decoding packages, or simply for using the station's signal to assist in determining the state of propagation conditions on/near the frequencies where CHU transmits (which, for the record, are 3330.0, 7335.0, and 14670.0 kHz).

In fact, less than 10 minutes after I posted this information to an e-mail reflector I'm subscribed to that deals with utility communications, I received a comment from an SWL in Germany who had heard the same announcement on the 14670.0 frequency. This makes it quite clear that it isn't only those of us in North America who find CHU's transmissions useful. Thus, I am happy to be able to report an apparent happy ending with respect to the issues at CHU!

### Now, Back To A Reader For A Final Comment

Until recently, I'd been planning an article on the practice of obtaining a "QSL" for stations heard by an SWL (or "worked" by a ham station), and had received a nice reader submission that would have gone nicely along with that article. Steven Jones, of Lexington, Kentucky, a regular contributor of logs to the column, had some time ago sent along scans of the QSL card he received from the *Voyager* non-stop flight back in 1986.

I remember this historic flight very well. *Voyager's* flight was the first-ever non-stop, unrefueled flight around the world. It took just over nine days, and established absolute world distance records that flight remained unchallenged today. The flight covered 26,366 statute miles, more than doubling the previous record set, which had been set by a B-52 bomber back in 1962. There were two crew members on board, Dick Rutan and Jeana Yeager, and both of them signed Steven's QSL.

As it turned out, though, our own Kirk Kleinschmidt just featured QSL cards and other shack "wallpaper" in his column in





Photo B. This nice picture of the aircraft Voyager graced the front of the QSL received by reader Steven Jones back in 1986.

February. Since the topic has just been covered in the magazine, rather than do another article on the same subject, I'm just going to share Steven's Voyager QSL this month, before they sit around for too long and I forget about them!

Photo B shows the front of the QSL that Steven received, which features Voyager at left, in formation with a more conventional small aircraft at right that was probably an escort aircraft. Photo C shows the back of the card, which is signed by both crew members, and indicates that the photo on the front of the card was taken on December 23, 1986, which was the last day of Voyager's historic flight. Steven says that although he tried to get a color scan of the back side of the card, it went to black-and-white every time he tried it, but that at least the front side came out fine.

Steven recalls his reception of Voyager, including an unexpected lesson in why we value our more modern receivers equipped with AGC (automatic gain control), in the following comments he sent along with the scans of the QSL:

I tracked the Voyager flight heading west from about the time they were 1,000 miles or so off the northeast coast of Brazil. The signal was very weak, and my radio was an old Lafayette HA-230 tube receiver I'd had since I was a kid. I recorded the transmission and was listening intently for their signal to come up out of the mush, every ounce of gain I could muster. Then there was this ominous "click" and the next thing I knew, I thought my speaker was going to blow. Cape Radio down in Florida hit them with 50 kW of USB and I was getting it in upstate New York off the back of the antenna. Almost blew out my eardrums before I could get the volume down!

An AGC circuit set to a fast response would have helped with that last part, Steven, but congratulations on what was obviously a nice, memorable catch, and thanks for sending in the scans of the resulting QSL. That's definitely not one you see every day!

## On With The Logs

This brings the current installment of the column to a close for this month, but before we get to the logs, I'd like to once again thank Steven, along with Bob, Gary, John, Jared, and David for their invaluable input in this month's "Utility Communications Digest." Your contributions are deeply appreciated!

With that, a note of thanks also goes out to those who contributed this month's batch of logs, namely, Glenn Valenta, Lakewood, Colorado (GV/CO); Steven Jones, Lexington, Kentucky (SJ/KY); Mark Cleary, Charleston, South Carolina

(MC/SC); Chris Gay, Whereabouts Unknown (CG), and your columnist, here in Tonawanda, New York (JK/NY). Gentlemen, thanks loads!

**2463.0:** IDR. Italian Navy, Rome, Italy w/ITA2 marker, 75/850 RTTY at 0235Z. (SJ/KY)

**2680.0:** 4XZ. Israeli Navy, Haifa, Israel w/CW marker (VVV DE 4XZ 4XZ) at 0335Z. (SJ/KY)

**2789.0:** FUE. French Navy, Brest, France w/modified ITA2 marker: ZCZCABC001. ALL DE FUE (x3) TESTING (x3) RYRY string, TOUTES COMPOSANTES DE NOUVEAU OPERATIONNELLES (x3). SGSG string, 0-1 and 0-9 counts, INT ZBZ (x4), 75/850 RTTY at 0350Z. (SJ/KY)

**3016.0:** NY Radio working N128AB in USB at 0419Z. (JK/NY)

**3016.0:** Santa Maria OAC working various aircraft, in USB at 0722Z. (GV/CO)

**3128.0:** Two males in casual simplex QSO in fluent accented English, mentioned "my license is my life," "coming from Belize," probably out of band fishermen, USB at 0315Z. (SJ/KY)

**3485.0:** New York Radio (VOLMET) with aviation wx in USB at 2220Z. (CG)

**4007.0:** US Navy MARS Net, NNN0AEV, NNN0AJJ, NNN0AMY, NNN0APJ and NNN0AWH in casual QSO, USB at 0005Z. (SJ/KY)

**4015.0:** US Navy MARS Net, NNN0AFW, NNN0FWM, NNN0TBS, NNN0WKH in casual QSO, USB at 0014Z. (SJ/KY)

**4045.0:** "Bellamy," station in the Caribbean Safety and Security Net w/live wx forecasts for the region, also responding to questions from individual vessels SEA OTTER, BLIND DATE, TOBOGGAN, USB at 1150Z-1215Z. Same net heard previously on 8104.0 kHz. (SJ/KY)

**4078.0:** OY pirate beacon in CW at 0635Z. (GV/CO)

**4174.0:** Cuban ENIGMA V2a, female w/5N groups in Spanish, seems to be suppressed carrier double sideband, carrier barely noticeable, in USB at 0340Z. (SJ/KY)

**4271.0:** CFH. Canadian Forces, Halifax, Nova Scotia w/transmitter malfunction or tuning, rising and falling tones at 0020Z. (SJ/KY)

**4316.0:** NMN, USCG CAMSLANT, Chesapeake, VA w/computer-generated voice maritime wx and full ID, USB at 0425. (SJ/KY)

**4342.2:** Station in unid. mode, similar to very narrow shift (40 Hz) RTTY at 100 baud heard at 0030Z, parallel frequency 6444.2 kHz also noted. (SJ/KY)

**4372.0:** X0B with radio check in USB at 2327Z. (MC/SC)

**4414.0:** ECHO FOXTROT, DELTA, ECHO, HOTEL, JULIET, KILO, MIKE, and NOVEMBER in USS Enterprise CSG Link-11/16 coordination net, in USB at 0321. (MC/SC)

**4446.5:** T2Z3 (2-3rd AVN) calling R00082 (CH-47D # 87-0082) in ALE USB at 2018Z. (MC/SC)

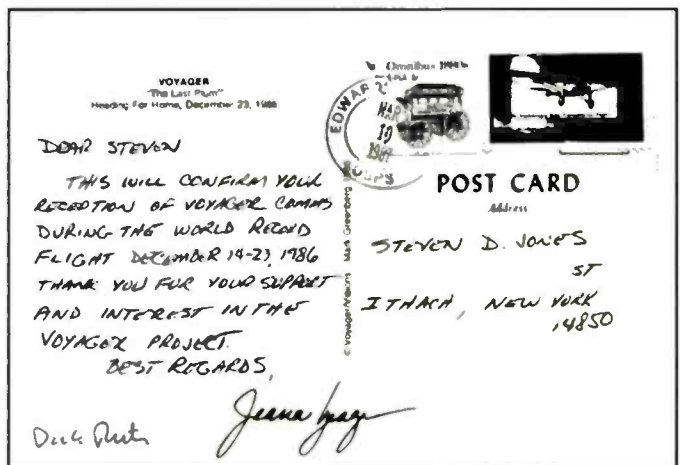


Photo C. The reverse side of Steven's Voyager QSL, signed by crew members Dick Rutan and Jeana Yeager.

**4480.0:** Stations VEX, CIP, and one UNID discussing apparent technical issues with digital transmission, 2 OM, 1 YL, mention of VG and RTT, heard using USB, speech inverted USB, and digital, monitored monitored at 0325Z (JK/NY)

**4675.0:** Shanwick MWARA working various aircraft, in USB at 0537Z. (JK/NY)

**4769.0:** Link-11 data transmission at 2211Z. (MC/SC)

**4772.0:** Link-11 data transmission at 2150Z. (MC/SC)

**4790.0:** R26329 (UH-60L # 91-26329) calling B1Z171 (1-171st AVN) in ALE USB at 2308Z. (MC/SC)

**5078.5:** ECHO WHISKEY, ECHO, and JULIET in *USS Enterprise* CSG air defense net, in USB at 1204Z. (MC/SC)

**5171.0:** Link-11 data transmission at 1454Z. (MC/SC)

**5450.0:** RAF VOLMET, synthesized YL/EE reading aviation weather in USB at 0144Z. (JK/NY)

**5505.0:** Shannon VOLMET, weak but readable, in USB heard at 0748Z. (GV/CO)

**5517.0:** Unid USN air tracking net, in USB at 1222Z. (MC/SC)

**5574.0:** San Francisco ARINC working Hawaiian 44, good levels, in USB at 0421Z. (GV/CO)

**5732.0:** PANTHER (DEA/US Customs, Bahamas) calling SHARK 13 (USCGC MOHAWK WMEC 913) in USB monitored at 1757Z. (MC/SC)

**5778.5:** R26329 (UH-60L # 91-26329) calling B1Z171 (1-171st AVN) in ALE USB at 2017Z. (MC/SC)

**5833.5:** G23552 (UH-60A # 81-23552) calling STPOPS (AASF, St. Paul) in ALE USB at 2334Z. (MC/SC)

**5851.5:** G23288 (UH-60A # 79-23288) calling STPOPS (AASF, St. Paul) in ALE USB at 2235Z. (MC/SC)

**6247.0:** Link-11 data transmission at 1313Z. (MC/SC)

**6265.5:** P3GK9, UBC SINGAPORE, 31,769-ton Cyprus-registered bulk carrier attempting to contact WLO, Mobile R., AL w/SELCAL XVSV (1090), MMSI and abbreviated ID "SING," in SITOR-A monitored at 0325Z. (SJ/KY)

**6513.0:** UnIDed fishermen talking about scales and called it a night, referenced Brownsville; in USB at 0727Z. (GV/CO)

**6519.0:** WLO with high seas forecast in USB at 0604Z. (GV/CO)

**6535.0:** DAKAR OAC wrkg various A/C with position reports, very good levels, in USB at 0402Z. (GV/CO)

**6649.0:** DAKAR OAC w/Atlantica 5275

## Glossary Of Utility Terms And Acronyms

**AFB**—Air Force Base

**ALE**—Automatic Link Establishment, a link control system that includes automatic scanning, selective calling, sounding, and channel selection, without human intervention using processor control.

**AM**—Amplitude Modulation

**ANDVT**—Advanced Narrowband Digital Voice Terminal, a secure voice mode used by the military.

**ATC**—Air Traffic Control

**CAMSLANT**—Communications Area Master Station Atlantic, the U.S. Coast Guard's primary HF radio station for the Atlantic region, located at Portsmouth, Virginia.

**CAMSPAC**—Communications Area Master Station Pacific, the U.S. Coast Guard's primary HF radio station for the Pacific region, located at Pt. Reyes, California.

**COMMSTA**—Communications Station, for example: COMMSTA Kodiak, a communications station of the U.S. Coast Guard, located at Kodiak, Alaska.

**CGAS**—Coast Guard Air Station

**Cut Numbers**—The use of letters in place of numbers when sending a long string of numbers, for brevity's sake. This is often done by "numbers" stations, such as sending one long dash instead of five normal dashes to indicate a zero, or the letter N instead of the number nine, etc.

**CW**—Continuous Wave (Morse code)

**DE**—The Morse code operating prosign DE, meaning "from," as in DE NMN, meaning from station NMN

**D-Layer Absorption**—A phenomenon where the sun's rays ionize the D layer of the atmosphere causing it to absorb, rather than propagate (reflect/bounce), radio signals at certain frequencies.

**Duplex**—A means of radio communication where a station can both transmit and receive at the same time.

**EAM**—Emergency Action Message, coded instructions commonly sent by U.S. military stations. Despite the name, they usually aren't emergency traffic at all.

**EHF**—Extremely High Frequency (30-300 GHz)

**FAX**—Facsimile, a transmission mode used to send maps, charts, and other non-textual material.

**FEMA**—Federal Emergency Management Agency, a part of the Department of Homeland Security.

**FM**—Frequency Modulation

**Ham Station**—A licensed station operating in the Amateur Radio Service under the control of an operator who is licensed to operate the station.

**HF**—High Frequency (3-30 MHz)

**LINK-11**—Also called TADIL-A for TActical DIgital Link, a secure digital data mode used by the military. Utilizes a 16-tone data modem to allow assets to share digital information, such as radar data.

**M/V**—Merchant Vessel

**NAS**—Naval Air Station

**Propagation**—The means by which radio signals get from one place to another; some forms are quite simple (such as line of sight) while others are much more complex (such as EME, or earth-moon-earth).

**QRM**—Man-made interference to radio signals

**QRN**—Natural interference to radio signals, such as the static crashes often heard due to thunderstorms

**QSO**—A contact between two or more stations

**QSY**—Change frequency.

**QTH**—Location

**RTTY**—Radio Teletype

**SELCAL**—SElective CALling, a method for activating a radio or data terminal at one station without disturbing other stations that are monitoring the same frequency.

**Simplex**—A means of radio communication where a station may transmit or receive at any given time, but not do both at the same time.

**SITOR**—Simplex Teletype Over Radio, a transmission mode used to transmit text messages over radio. There are two SITOR modes: SITOR-A (also called AMTOR) uses Automatic Repeat Request (ARQ); SITOR-B uses Forward Error Correction (FEC).

**SWL**—Shortwave Listener, a person who enjoys listening to shortwave radio stations.

**UHF**—Ultra-High Frequency (300-3000 MHz)

**USAF**—United States Air Force

**USB**—Upper Sideband

**USCG**—United States Coast Guard

**USMC**—United States Marine Corps

**USN**—United States Navy

**UTC**—Coordinated Universal Time, formerly known as Greenwich Mean Time, and also commonly referred to as ZULU time and abbreviated as in 1200Z.

**UTE**—Utility Station

**Utility Station**—Stations transmitting material that is not intended for reception by the general public and is not originating from an amateur (ham) station.

**VHF**—Very High Frequency (30-300 MHz)

**VOLMET**—Station that transmits aeronautical weather information. Comes from a French term that literally means, "flying weather."



w/position reports. Spanish maritime chitchat heard also. In USB at 0337Z. (GV/CO)

**6679.0:** ZKAK (Auckland, NZ VOL-MET), good levels in USB at 0724Z. (GV/CO)

**6721.0:** R26141 (UH-60A # 89-26141) calling T12 (12th Aviation Bn) here as well as on 5708.0 kHz in ALE USB at 1212Z. (MC/SC)

**6790.0:** Link-11 data transmission at 2143Z. (MC/SC)

**6802.0:** UnIDed gulf fishermen taking about meeting, EE/heavy southern U.S. accent, in USB at 0412Z. (GV/CO)

**6826.0:** M8a numbers station, MCW on AM carrier, monitored at 0626Z. (GV/CO)

**7527.0:** JULIET 41 (MH-60J. CGAS Elizabeth City) on final to Wilmington secures guard with CAMSLANT at 1545Z. (MC/SC)

**7760.0:** Unid YL/EE with 5-letter groups then "end of transmission" in USB at 01234Z. (CG)

**7771.7:** Possible L2F, Argentine Coast Guard, Buenos Aires w/wx forecast in Spanish, coordinates of region covered were near Argentina but the forecast seemed more aviation than maritime-oriented, mostly rain, clouds and visibility, very little on winds and nothing on waves; in SITOR-B heard at 0150Z. (SJ/KY)

**7887.0:** Unid YL/SS with 5-figure groups in AM at 2008Z (CG).

**8009.0:** Cuban ENIGMA M8a w/ machine-sent CW 5N cut numbers, bad audio

hum at 2300Z, in CW, off abruptly heard at 2305Z. (SJ/KY)

**8097.0:** Unid with 5-figure groups of cut numbers, in MCW on an AM carrier heard at 1820Z. (CG)

**8121.7:** Unid. station w/weak, probably Egyptian Ministry of Foreign Affairs or an embassy, in SITOR-A at 0015Z. (SJ/KY)

**8171.5:** R24632 (UH-60A # 87-24632) calling KMUING (Muir AAF) in ALE USB at 1444Z. (MC/SC)

**8264.0:** Unid. vessel in duplex QSO w/coast station on Maritime Mobile SSB Ch. 824, other side on 8788.0kHz, in Arabic, USB at 0023Z. (SJ/KY)

**8294.0:** WBN6510 SENTINEL (199 ton tug) checking in with JACKSONVILLE. Position 27N 077W. Heading 106 at 8.8 knots on both engines. Visibility 8 miles. In USB at 1813Z; and WJK MIAMI wkg vessel regarding Port Everglades berth request, in USB at 1932Z. (MC/SC)

**8379.0:** WCY8947, HOSBRIGADOON, 1,828-ton US-registered offshore supply ship w/MMSI and abbreviated ID "BRIG" in SITOR-A at 1540Z; V7DI7, TYCO DECISIVE, 7,800-ton Marshall Islands-registered cable-layer w/MMSI and abbreviated ID "DEC1," SITOR-A monitored at 1955Z. (SJ/KY)

**8381.0:** 3FUQ7, RUBY CREST, 73,330-ton Panama-registered bulk carrier w/AMVER/PR 55 mi E of Key West, FL sailing WSW, in SITOR-A at 1745Z; VRBR8, SAGA

DISCOVERY, 46,618-ton Hong Kong-registered general cargo ship attempting to send a Direct Telex to company office in Hong Kong, w/MMSI and abbreviated ID "SADI" in SITOR-A at 1845Z; VRWZ6, HAI CHANG, 37,710-ton Hong Kong-registered bulk carrier w/MMSI and abbreviated ID "HAIC" in SITOR-A at 2040Z; 3ESN4, JOSE STREAM, 24,090-ton Panama-registered chemical/oil products tanker w/MMSI, abbreviated ID "EESU" and AMVER/SP for departure from the SW Pass Pilot Station, LA in SITOR-A at 2148Z. (SJ/KY)

**8389.5:** JMMU, KAIWO MARU, 2,556-ton Japan-registered 4-masted sail training ship operated by Japan's National Institute for Sea Training w/AMVER/PR 1,500 miles W of Honolulu and sailing due west at 11.8 knots, in SITOR-A at 0940Z. (SJ/KY)

**8413.23:** UnIDed (pirate?) broadcasting the Abbott/Costello "Who's On First" skit before fading out, in USB at 0340Z. (GV/CO)

**8463.0:** CKN, Canadian Forces, Esquimalt, B.C., Canada w/modified marker (NAWS DE CKN ZKR F1 2386 4170 6248 8318 12395 16558 22185 AR) in 75/850 reverse RTTY at 0200Z. (SJ/KY)

**8502.0:** NMN, USCG Chesapeake VA. YL/EE (NOT synthesized) with weather info in USB at 1730Z. (CG)

**8790.5:** Unid. station w/extremely fast machine-sent CW full numbers monitored at 0012Z. (SJ/KY)

**8843.0:** San Francisco Radio working



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United-935 with freq handoff, in USB at 0356Z. (GV/CO)

**8867.0:** Auckland Radio, NZ wkg various A/C in USB at 0704Z. (GV/CO)

**8971.0:** CARDFILE 711 (USN O-3 aircraft) in QSO with FIDDLE (US Navy TSCC, Jacksonville, FL) in USB at 1619Z. (CG)

**8971.0:** USN active with 802 answering call, very short message of "0055 this is 802 out," in USB at 0056Z. (GV/CO)

**8983.0:** CG 2112 (HU-25) departing Guantanamo Bay en route Borinquen requests guard from CAMSLANT at 1831Z. (MC/SC)

**8992.0:** Aircraft PEACH 33 to Sigonella AFB, Sicily, Italy req DSN phone patch to Robins AFB, GA for landing wx forecast. USB heard at 2145Z after QSY from 11175.0 kHz. (SJ/KY)

**9025.0:** SENTRY 40 (E-3 AWACS). ALE initiated call via Diego Garcia HF-GCS to RAYMOND 24 (552nd ACW, Tinker AFB, OK) at 2159Z; and JULIET 23 (HH-60J) ALE initiated call to District 7 Miami Ops at 2159Z. (MC/SC)

**9115.1:** XNet Yachting Association email service w/idle frequency marker of short

PACTOR-like "doodle" and occasional CW ID at 2245Z. (SJ/KY)

**9145.5:** Unid. station w/machine-sent CW at 0030Z, VVV x3, then NR 15, into 5L groups. (SJ/KY)

**9295.0:** R24632 (UH-60A # 87-24632) calling EAATS (Eastern Army Aviation Training Site) in ALE USB at 1857Z. (MC/SC)

**10051.0:** Gander VOLMET, good signal levels, in USB at 2224Z. (JK/NY)

**10100.8:** DDK9, Hamburg Meteo, Germany w/RYRY marker and callsigns DDK2, DDH7 and DDK9 for frequencies 4583.0, 7646.0 and this one, ITA2, in 50/425 RTTY at 2145Z. (SJ/KY)

**10385.1:** XNet Yachting Association email service w/idle frequency marker of short PACTOR-like "doodle" and occasional CW ID at 2130Z, also heard previously on 13977.1 kHz. (SJ/KY)

**10588.0:** WGY901 (FEMA Region 1, Maynard, MA) and WGY908 (FEMA Region 8, Denver, CO) in weekly comms check, in USB at 1403Z. (MC/SC)

**10780.0:** KING 55 (HC-130) radio check with CAPE RADIO at 2118Z. (MC/SC)

**11175.0:** AFS, Offutt AFB, NE w/phonetic EAM read by male, also heard both weaker signals on parallel frequencies 8992.0 and 13200.0. in USB at 2251Z. (SJ/KY)

**11175.0:** REACH 194 p/p via Puerto Rico HF-GCS to report at waypoint MINOW. Followed by p/p to Shaw AFB Meteo for wx at Tegucigalpa, Honduras and La Ceiba Airport, Honduras. In USB at 1720Z. (MC/SC)

**11205.0:** SHARK 47 (C-130) wkg SMASHER (US SOUTHAFL flight monitoring, Key West, FL) to report diverting to Homestead for fuel, in USB heard at 1643Z. (MC/SC)

**11232.0:** PEACH 66 (E-8 JSTARS) p/p via TRENTON MILITARY to PEACHTREE with line code report and request for wx at Robins. In USB at 1910Z. (MC/SC)

**11336.0:** Gander R. ATC, Newfoundland, Canada wkg AIR FRANCE 006 in USB at 1555Z. (SJ/KY)

**11387.0:** Sydney Australia VOLMET, weak but readable, in USB at 0114Z. (GV/CO)

**12581.5:** WLO, idling SITOR-A with CW marker at 1728Z. (JK/NY)

**12702.0:** CKN, Canadian Forces, Esquimalt, BC w/modified ITA2 marker (NAWS DE CKN ZKR F1 2386 4167 6258 8306 12380 16558 22185 AR, in 75/850 reverse RTTY at 2245Z. (SJ/KY)

**12993.0:** KSM, Bolinas CA with beacon in CW at 0037Z. (CG)

**13339.0:** San Francisco Radio wkg Northwest 8001 and receiving position report from same, in USB at 0043Z. (GV/CO)

**13927.0:** AFA6FY (USAF MARS) working an aircraft that was en route to Elmendorf AFB in Alaska, in USB at 0028Z. (GV/CO)

**13927.1:** SHARK 47 (C-130) p/p via AFA3HS (USAF MARS, Kansas) for PPR to Homestead, in USB at 1638Z. (MC/SC)

**15006.0:** Unid aircraft and ATC in simplex Spanish QSO, mentioned route position ARNAL and Miami w/times, in USB at 2221Z. (SJ/KY)

**15016.0:** AFS, Offutt AFB, NE w/phonetic EAM at 1805Z read by male and by female, also heard on parallel frequencies 6739.0, 8992.0, 11175.0 and 13200.0, in USB at 2047Z and 2220Z. (SJ/KY)

**16135.0:** KVM70, Honolulu Meteo, HI w/unscheduled FAX chart at 2150Z titled "18Z EAST PACIFIC SURFACE ANALYSIS" showing "THUNDERSTORM SCALLOP LINES," and followed by standard "24HR WIND/WAVE FORECAST" chart in HF-FAX at 2208Z. (SJ/KY)

**16696.5:** H3UQ, *PLUTO GLORY*, 298,911-ton Panama-registered crude oil tanker w/AMVER/PR in SITOR-A at 1707Z; 3FUQ7, *RUBY CREST*, 73,330-ton Panama-registered bulk carrier w/AMVER/PR 550 mi NE of Miami sailing WSW, in SITOR-A at 1900Z; same vessel heard 2 days later on 8381.0 kHz. (SJ/KY)

**18261.0:** GYA, Royal Navy Fleet Weather and Oceanographic Centre, Northwood, England w/FAX chart of the Persian Gulf region at 1645Z. (SJ/KY)

## Washington Beat *(from page 8)*

a letter February 23, Scot Stone, deputy chief of the FCC Wireless Telecommunications Bureau (WTB) Mobility Division, suggested that the PRARL would be better off to approach the National Conference of Volunteer Examiner Coordinators (NCVEC) Question Pool Committee (QPC) about establishing language criteria."

"The Commission's rules do not specify any particular language(s) in which Amateur Radio Service written examinations must be administered," Stone wrote. "Consequently, no rule change is required for the NCVEC QPC to maintain Spanish-language question pools."

Because Volunteer Examiner Coordinators (VECs) cooperate in maintaining standard question pools, Stone said, "the NCVEC QPC might be the more appropriate forum for the PRARL's request."

The PRARL has developed Spanish-language question pools and has offered them to the NCVEC QPC at no expense. Madera told the ARRL. "We have been using [a standard Spanish-language question pool] for close to 10 years with excellent results, thanks to the ARRL/VEC," he said.

According to the *ARRL Letter*, Madera says he presented the issue to the NCVEC without success before going to the FCC. He's also proposed a standard

Spanish-language question pool to the ARRL VEC, and that issue is pending.

Stone wrote that \$97,523 in part requires that VECs "must cooperate in maintaining one question pool for each written examination element" and that each question pool be made publicly available prior to its use in making a question set. "Thus, the written examination questions are drawn from a uniform national database of multiple-choice questions and answers" that the NCVEC approves, he said.

The PRARL also publishes amateur radio study materials in Spanish, the *ARRL Letter* said. "The organization told the FCC that because there's no uniform Spanish-language version of the amateur radio exam question pools, Volunteer Examiners (VEs) prepare Spanish-language Amateur Radio license examination questions at random."

"You are concerned that this method of preparing examination questions may result in Spanish-language examinations being prepared without following a standard pattern," Stone said, "thereby resulting in Spanish-speaking examinees not being treated equally to English-speaking examinees."

The FCC suggested that PRARL's concern regarding disparate treatment of Spanish speakers appeared to be based on speculation. "The petition presents no evidence of an existing problem meriting a rule change," Stone concluded. ■



# Thailand—Emerging From Tragedy

**K**nown as the Land of Smiles because of the hospitality of its people, Thailand is also infamous for the Golden Triangle, the storied crossroads of a lucrative opium trade at the border of Laos and Myanmar (Burma). Although favored with a timeless landscape of hazy mountains, dramatic karst formations, and sweeping stretches of beach, neither man nor nature has been very kind to the Kingdom of Thailand in recent years. The devastating tsunami of December 2004, a recent military coup, and a worsening Muslim separatist movement in the south have rocked the nation.

Sharing land borders with Myanmar, Cambodia, Laos, and Malaysia and lapped by the Andaman Sea and Gulf of Thailand, on the map the country resembles the head of an elephant, a revered animal. Its climate is tropical, with the southern isthmus always hot and humid, the northeast dryer and cooler, and a southwest monsoon annually soaking the population of nearly 65,000,000 from mid-May to September.

## Demographics

Thailand's population is dominated by about 75 percent ethnic Thais. The largest group of non-Thai people is the Chinese; other ethnic groups include Malays in the south and Mon, Khmer, and hill tribes, who tend to remain insular. After the end of the Vietnam War, many Vietnamese refugees also settled in Thailand, mainly in the northeastern regions.

According to a 2000 census, 95 percent of Thais are Theravada Buddhists, and saffron-robed monks are a familiar sight on city streets as well as in the ornate temples. Muslims constitute the second largest religious group in Thailand and live primarily in the south where there is a growing—and increasingly violent—separatist movement. Christians, mainly Catholics, and a small but influential community of Sikhs and some Hindus add to the mix of cultures.

Slightly more than twice the size of Wyoming, Thailand is divided into 76 provinces, gathered into five groups by location. The capital is Bangkok, a bustling—and often sweltering—canal city on Chao Phraya River.

Thanks to a free-enterprise economy with pro-investment policies, Thailand enjoyed the world's highest growth rate from 1985 to 1995, averaging almost 9 percent annually, and remained one of East Asia's best performers in 2002 to 2004, according to the *CIA World Factbook*. Success came with a price, however, and air pollution from vehicle emissions, water pollution from organic and factory wastes, and deforestation are worsening problems.

## History

Previously known as Siam, the country changed its name to Thailand by official proclamation in 1949. The word "Thai" means "freedom" in the language of the main ethnic group and is the country's proud acknowledgment that it's the only Southeast Asian nation never to have been colonized by a European power.

Since its traditional founding date of 1238, Thailand has seen

its share of political upheaval, however. This past century the turmoil's taken the form of bloodless coups, military dictatorships, as well as electoral democracy. But all governments have acknowledged a hereditary monarch as the head of state,

currently King Bhumibol Adulyadej, more familiarly known as Rama IX. Having reigned since June 9, 1946, he is the world's longest-serving current head of state. And, not only is he beloved by his people, in Thailand it's illegal to disparage the King—don't do it.

It's assumed that Rama IX gave his tacit approval after the fact to the military junta that overthrew the elected government of Prime Minister Thaksin Shinawatra on September 19, 2006. The junta abolished the constitution, dissolved Parliament, arrested several members of the government, declared martial law, and appointed General Surayud Chulanont as Prime Minister, later writing an abbreviated interim constitution and appointing a panel to draft a permanent one. While as coups go, this one was nearly amiable and martial law was partially



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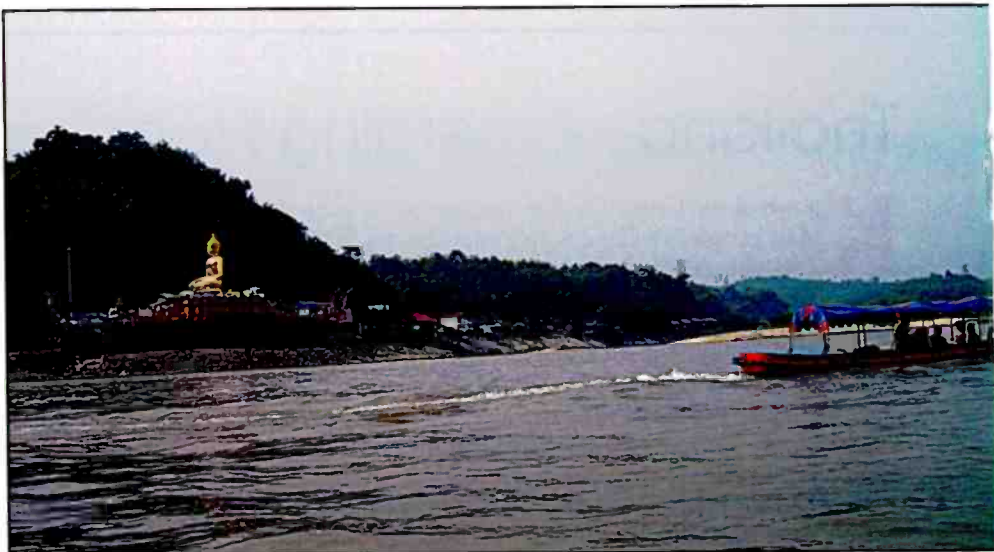


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*A golden Buddha gazes over the confluence of the Sop Ruak and Mekong Rivers—the Golden Triangle. Increased pressure from law enforcement, publicity, and a regional drought have largely pushed the once-vigorous opium traffic elsewhere, and today tourist boats ply the waters.*

revoked in January 2007, the junta continues to censor the media. has been accused of human rights violations, and has banned political activities and meetings. In January 2007, suspects including some military officers believed loyal to the former Prime Minister were detained over a string of New Year's bombings that killed three people in the capital.

## Tsunami

For decades, the southern provinces along Thailand's Andaman coast were a Mecca for backpackers and the well-heeled alike, and each year witnessed a deluge of tourists descending upon the local population. On December 26, 2004, all were made equal in the face of a wall of water as tall as 100 feet high that smashed across the landscape, shattering nearly everything in its path. As many as 8,500 lost their lives in Thailand, mostly women and children. There was massive destruction of property in the southern provinces of Krabi, Phangnga, and Phuket, but thanks to the concerted efforts of the government and a generous response from the global community, much of the affected area is back to "normal," though reconstruction continues in the harder-hit coastal areas.

## Tourism

All's not dour in the Kingdom, however, and many things continue to lure travelers, making tourism one of the

country's major industries. One of the prominent reasons to visit, according to the official tourism website, [www.thailand.org](http://www.thailand.org), is "Medical Tourism" (it's sandwiched between Family and Meditation, for those prioritizing their trips). "Whether you are after plastic surgery, lasik eye treatment or major heart surgery, you can rely on round the-clock, quality service in Bangkok..." is a promise made on the site. "Indeed, the whole business of linkage between the hospitals and the travel industry took a step forward when Thai Airways International (THAI) began packaging medical check-ups as part of its Royal Orchid Holidays programme." Now that is convenient. (I recommend an orchid tucked behind the ear to fragrantly conceal plastic surgery stitches.)

## Radio In Thailand

And as you recover from that summer elective surgery, you may want to also tune around your radio dial. As befitting an Asian economic powerhouse, Thailand is well served by its communications industry, boasting 204 AM radio broadcast stations, 334 FM, and six shortwave, again according to the *CIA World Factbook* (it's true, they know all).

The government station, Radio Thailand/HSK9 broadcasts worldwide on shortwave in French, German, Indonesian, Burmese, Malay, Lao, Khmer, Japanese, Thai, Mandarin, Lao, Vietnamese, and English. The latter,



intended for North America, is most easily heard on 5890 from 0030 to 0100 and 0200 to 0230. These two broadcasts are actually being transmitted by the IBB (VOA) site at Greenville, North Carolina, so don't be fooled into thinking you've actually got Thailand direct. Other possibilities are at 0030 to 0100 on 9680, 1230 to 1300 on 9810 and 1400 to 1430 on 9725. All of these are via the IBB/VOA relay in Thailand at Udon Thani.

The BBC also has a giant relay station in Thailand at a place called Nakhon Sawan. It can be heard on any number of frequencies. Best bets for us in North America appear to be 5965 at 2100 to 0000, 5975 at 1600 to 1800; 6065 at 0000 to 0030, 6195 at 0800 to 1100, 7105 at 1300 to 1530, 7160 at 2200 to 2300, 7205 at 1400 to 1500, 7225 at 1330 to 1400, 9760 at 0930 to 1000, 11750 at 1200 to 1600, 11945 at 1100 to 1300, 11995 at 1400 to 1500, and 17790 at 1200 to 1400

For whatever reason there seems to be no reciprocal agreement between Radio Thailand and the BBC allowing Thailand to take advantage of the high-power BBC/VT transmitters.

Also, if you find an E2 or and HS over the airwaves you've got a Thai Amateur. Amateur radio is alive and well in Thailand. The Radio Amateur Society of Thailand, which was organized under the patronage of His Majesty the King, has been overseeing the amateur radio community in Thailand since 1963. Licensing limits Novice class operators to what we in America consider the 2-meter band. The only other license class is Intermediate, which covers high frequency as well as 2 meters. Thailand also has active Emergency Preparedness programs for their amateurs.

The HSDX, or Thailand DX Association, is active but having trouble currently getting frequency assignments for 80-meter contests they hope to conduct. Hopefully, the National Telecommunications Committee will be able to see the value of their requests.

Thailand has recently applied to join the CEPT licensing program but details have not been finalized yet. Reciprocal licenses are available to amateurs from the U.S. and certain other countries.

*Thanks to Gerry Dexter and Bob Sturtevant.—Editor*

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## Not Much In Common...

I have tried for a long time to combine my favorite hobbies. Radio, harmonica, target shooting, and pet rats—and I'll warn you right now that the first letter I get even hinting that I shoot at my furry little friends will be dealt with swiftly and severely! I've thought about shooting at least one radio (and a couple hams, now that I think of it). I've even taken a rat, a gun, and a shortwave radio to a harmonica convention, but to be painfully honest, these hobbies of mine are about as "diametrically opposed" as hobbies can get.

I do use a laser to "boresight" some of my guns—oh, and let me digress for a moment to tell you about two young ladies with all the smarts of two valley girls—and no reference to hair color, because they happened *not* to be blondes. And, no, in the now infamous words of Dave Barry, I am not making this up:

I was in the sporting goods department of a nearby mega-mart and I knew they sold laser boresighters (for the uninitiated, that's for adjusting the sights on guns using a laser sticking out of the barrel), but I couldn't find them. The two young ladies in question were drooling over the guy who worked behind the sporting goods counter. When they paused to wipe their chins, I asked him if he still had any of the laser boresighters, and the two of them looked at each other and one asked me, "You mean there are lasers that will find them for you in the woods?" It was all I could do to avoid mentioning the similarities and differences between "bore," "boar," and "boor."

Anyway...I'm using my electrical skills (learned because of my love of radio) to design and (I hope) build an arcade-style shooting gallery. A few of you might remember these from carnival midway of long time ago, when you could plunk down a quarter for 10 shots at moving steel ducks and hope to win a big stuffed animal (which was nailed to the shelf). Those galleries were soon regulated out of existence, but they still provide some pleasant memories.

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***"...I have this theory that I might even be able to create 'audio FSK' for old time teletype using the 'sharp-button' on my chromatic harmonica if I do it just right..."***

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My rats couldn't care less for my harmonica playing, and it's verboten to play it on the ham radio bands. I tried one day to send Morse code by blowing a single note, and I can send almost 15 words per minute with a harmonica. And I have this theory that I might even be able to create "audio FSK" for old time teletype using the "sharp-button" on my chromatic harmonica if I do it just right...

I think, though, that the rats have gotten closer to my ham radio hobby than either of my other two pastimes. I've found several "ratlist" members who are hams (a big hi to Tom and Karen in the Pacific Northwest) and a few others who are or have been hams, and one—a secret *Pop'Comm* reader—whose family (including some of the rats, I'm told) would like me to publicly rebuke him for taking over "the whole garage," with his ham gear so that no one else can use it, then, much like myself, *never gets on the air with it!*

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***"I have recently read about an electrician who is using trained rats to pull wires through incredibly tiny and impossible-to-reach places and over long distances atop suspended ceilings, saving their human friends countless hours of dirty, tedious labor..."***

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I should probably just be happy that any of my strange hobbies intersect at all. I also have a few friends (okay, *two* friends) who play harmonica and have pet rats. I had first counted three, but the one guy didn't count because the rat actually belonged to his daughter.

I have recently read about an electrician who is using trained rats to pull wires through incredibly tiny and impossible-to-reach places and over long distances atop suspended ceilings, saving their human friends countless hours of dirty, tedious labor, all for an occasional snack as a reward. Wait till the union hears about this.

I have thought that if I ever get back to being active in ham radio, I might ask my little furry friends to run some wires for me, but alas, they are pretty much "lap pets," and would likely revolt against any efforts to train them. Besides, they currently get all the snacks they want without working for them.

And they chew. Specifically, they chew wires.

This point was driven home to me most intensely when Fergus and Finnegan were wombling (at least that *sounds* like it describes the way they move) about on my computer table, seeing what they could taste and knock onto the floor, when my mouse suddenly stopped working. I wiggled it, banged it (all you might suspect of a high-tech person such as myself), then realized that there was no little red light shining from beneath it.

Thinking that it had become unplugged, I ran my hand up the wire and around to the back of the computer to check the plug, and I felt a familiar furry face. I also felt a large area of chewed insulation and frayed mouse cable. The two rats walked around, looked innocently at me, and pointed to each other. Their computer table privileges have since been revoked.

And it was not so long ago that I pulled an awful trick on Norm and put bullet-hole decals all up and down one side of his bus (a pretty nice motor home), but since I didn't really *shoot* the bus, I guess that doesn't count as a blending of two hobbies either. But it was sure good for a laugh.

I think there are a good number of hams who enjoy boating and operate their stations "maritime mobile." If I were to buy a boat, I could enjoy *three* of my favorite hobbies—we can include shooting—because I clearly remember the day when I pointed to the center of my forehead and told Norm, "Norm, if I ever buy a boat, I want you to put a bullet *right here!*"

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*Bill has recently been released on weekends by the Cowfield County Home for the Silly, and readers in that area, if they happen to see him, are encouraged to wave, but keep at a safe distance.—Ed.* ■



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