Radio–Homeland Security–Computers & Radio–Family & Hobby Comms

45635

POPULAR COMMUNICATIONS

JANUARY 2008

Bhutan Broadcasting Service

The Thunder Dragon Of The Himalayas

- Memories Of Spain— Radio Exterior De España, pg. 16
- The Army Retreats... Zombie Computers, Part II, pg. 20

PLUS...Antennas For Better SW Reception • Nearly 600 SWBC Loggings • Programming The RadioShack PRO-94

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- 2000 MEMORY CHANNELS / 100 MEMORY GROUPS
- DUAL RECEIVE
- DIGITAL SIGNAL PROCESSING / BANDPASS FILTER, NOISE REDUCTION, NOTCH FILTER, NARROW CW PEAK FILTER (Optional DSP-1 requires)
- REAL-TIME SPECTRUM SCOPE
- WORLD CLOCK WITH UTC/LOCAL SETTINGS
- PRESET SHORTWAVE BROADCAST STATION MEMORY BANK
- EXTENSIVE SCANNING CAPABILITY/SMART SEARCH™

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COMMUNICATIONS RECEIVER

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0.1~2599.99998MHz*
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*Cellular blocked

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VR-500

- Frequency coverage : 0.1-1299.99995 MHz**
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OPTION

The **etón E1 XM** is the world's first radio that combines AM, FM, shortwave and XM Satellite radio into one ultra high-performance unit. The E1 is an elegant confluence of performance, features and capabilities. The look, feel and finish of this radio is superb. The digitally synthesized, dual conversion shortwave tuner covers all shortwave frequencies. Adjacent frequency interference can be minimized or eliminated with a choice of three bandwidths [7.0, 4.0, 2.5 kHz]. The sideband selectable Synchronous AM Detector further minimizes adjacent frequency interference and reduces fading distortion of AM signals. IF Passband Tuning is yet another advanced feature that functions in AM and SSB modes to reject interference. AGC is selectable at fast or slow. High dynamic range permits the detection of weak signals in the presence of strong signals. All this coupled with great sensitivity will bring in stations from every part of the globe. Organizing your stations is facilitated by 500 user programmable presets with alpha labeling, plus 1200 user definable country memories, for a total of 1700 presets. You can tune this radio many ways such as: direct shortwave band entry, direct frequency entry, up-down tuning and scanning. Plus you can tune the bands with the good *old fashioned* tuning knob (that has *new fashioned* variable-rate tuning). There is also a dual-event programmable timer. Whether you are listening to AM, shortwave, FM or XM, you will experience superior audio quality via a bridged type audio amplifier, large built in speaker and continuous bass and treble tone controls. Stereo line-level output is provided for recording or routing the audio into another device such as a home stereo. The absolutely stunning LCD has 4 levels of backlighting and instantly shows you the status of your radio.

Many receiver parameters such as AM step, FM coverage, beep, kHz/MHz entry etc., can be set to your personal taste via the preference menu. The E1 has a built in telescopic antenna for AM, shortwave and FM reception. There is a switchable antenna jack [KOK] for an external antenna. Universal also sells a PL259 to KOK antenna jack adapter (*#1052* $14.95) as well as a sturdy angled Lucite radio stand (*#3873* $16.95).

The E1 XM comes with an AC adapter or may be operated from four D cells (not included). 13.1"W x 7.1"H x 2.3"D Weight: 4 lbs. 3 oz.

E1 XM *Order #0101* **$499.95**

➤➤ **New E1 version!**

We are now also pleased to offer the basic **E1** without XM upgradeability at $100.00 less.

E1 *Order #0301* **$399.95**

AUDIOVOX CNP2000

The Eton E1 XM is XM ready, so you may purchase the Audiovox CNP2000DUO XM antenna module at any time. It has a 25 foot cable. (An optional XM-EXT50 50 foot extension cable is also available *#4905* $39.95.)

CNP2000DUO *Order #0072* **$58.95**

Note: The CNP2000 DUO antenna module and XM subscription are sold separately. Activation and monthly subscription fee required for XM.

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Receive a FREE Grundig YB-300PE with your Eton E1 or E1 XM purchase!

The **Grundig YB-300PE** *Professional Edition* covers: AM, FM stereo and shortwave from 2.3-7.8 and 9.1-26.1 MHz. Tune via Direct keypad entry, 24 memories, Band button, scanning plus Up and Down tuning. The YB-300 PE features a large LCD display with display lamp for momentary illumination. Other refinements include: 24 Hour Clock, DX-Local Switch, sleep timer, Scan and Lock. The side of the radio features the DC input jack, the external antenna input jack and earphone output jack. Includes an AC adapter, vinyl carrying case, carrying strap, plug in external wire antenna, Manual and stereo earphones. Operates from three AA cells. Titanium colored case 5.9 x 3.5 x 1.25 inches 13 oz. Originally introduced at $99.00.

YB-300PE *Order #0300* **$49.95**

➤ **Purchase your Eton E1 from Universal Radio before 01/31/08 and receive a FREE Grundig YB-300PE with your order!**

etón E5

FREE

Receive a FREE Grundig FR-200 with your Eton E5!

The **etón E5** is a world class portable radio covering long wave, AM, FM and shortwave. It offers SSB-Single Side Band, 700 memories, keypad entry, scanning and a 24 hour clock timer. You also get: Line Output, Local/DX Switch, Wide-Narrow selectivity and external SW antenna jack. Operates from four AA cells (not supplied) or the included AC wall adapter. Comes with a manual, wrist strap, protective case, wire antenna and ear buds. 6.675 x 4.125 x 1.125" 12.2 oz. One year limited warranty.

List $169.95 *Order #0055* **$149.95**

➤ **Purchase your Eton E5 from Universal before 01/31/08 and receive a FREE Grundig FR-200 AM/FM/SW wind-up emergency radio with your order!**

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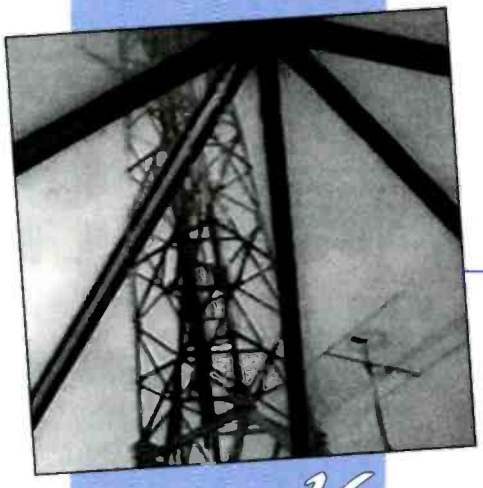

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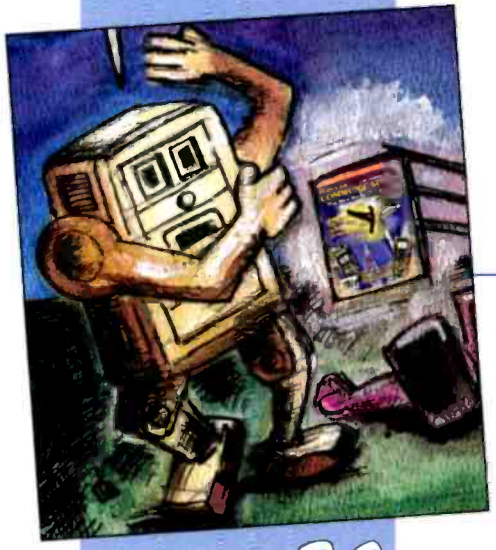

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Features

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On The Cover

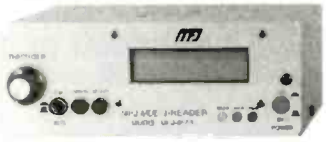
Since 1973 Bhutan Broadcasting Service has beamed its shortwave signal to the people of this awesomely beautiful Himalayan land. That signal, at 6.035 MHz, got louder in 2007 with a new 100-kW Thompson TSW 2100D analog/DRM transmitter. Pictured here, still proudly displayed in the broadcaster's headquarters in the capital of Thimpu, is BBS's first transmitter, with inset of a promotional poster that also graces the studio. See "Bhutan Broadcasting Service—Voices From The Roof Of The World," starting on page 10. (Cover Photos by Steven L. Herman)

Visit us on the Web: www.popular-communications.com

Tap into secret Shortwave Signals

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

MFJ-462B **$199.95**



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

Then *watch* mysterious chirps, whistles and buzzing sounds of RTTY, ASCII, CW and AMTOR (FEC) turn into exciting text messages as they scroll across an easy-to-read LCD display.

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, Iraqui 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.

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

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

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

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

High Performance Modem

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

Easy to use, tune and read

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

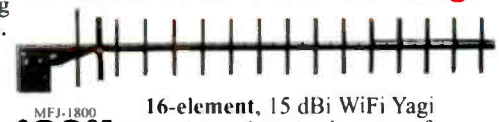
It's easy to tune -- a precision tuning indicator makes tuning your receiver easy for best copy.

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

Copies most standard shifts and speeds. Has MFJ *AutoTrak*™ Morse code speed tracking.

Use 12 VDC or use 110 VAC with MFJ-1312D AC adapter, $15.95. 5¼Wx2½Hx5¼D inches.

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



MFJ-1800 **$29.95**

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

N-female connector. Tripod screw-mount. Wall and desk/shelf mounts. Use vertically/horizontally. 18Wx2¾Hx1¼D inches. 2.9 ounces.

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.

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 elec- trical 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 auxilary or active antenna. 6x3x5 in. Remote has 54" whip, 50 feet coax. 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, $15.95.

MFJ-1024 **$159.95**

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."*

MFJ-1020C **$89.95**

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.

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

MFJ-1022 **$69.95**

Eliminate power line noise!

MFJ-1026 **$199.95**

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 **$119.95**

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 preseletor covers 1.8-54 MHz.

MFJ-1045C **$89.95**

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.

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MFJ-752C **$119.95**

MFJ Shortwave Headphones

MFJ-392B **$24.95**

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.

MFJ-956 **$69.95**

Super Passive Preselector

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

MFJ-1046 **$119.95**

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.

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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 **$59.95** Ship Code A

MFJ Antenna Switches

MFJ-1704 **$74.95**

MFJ-1702C **$34.95**

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!

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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. 4½Wx1Dx2H inches.

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by Edith Lennon, N2ZRW, Editor

A Moment Of Appreciation For Radio Stuff

I spent a good part of this month with every intention of writing about how the FISA bill is shaping up—you know, that thing that basically says, though we can't listen, they most certainly can—on its journey through the halls of Congress. (Truth be told, I really just wanted to get in a jab about Congress, something about "not needing to teach old dogs new tricks when they're just so darn good at rolling over.") But, lucky for you, the coverage slowed, as did my heart rate, and I found myself not in a mood to complain, for a change (and I got my jab in anyway, it seems).

So, the heck with the FISA bill with, among other crowd pleasers, its proposed retroactive-y legal immunity for illegal telecom snoopiness (c'mon, that's really just being neighborly, who can fault that?), I am no Negative Nelly. Maybe it's because it's Election Day as I write this—and there's no disputing the fact that that is a day to be thankful for—I feel instead a little like celebrating. And, luckily, we've got a few occasions to mark.

One falls as I write (not as you read), and it came conveniently to my attention by email, thanks to the fine folks who get it done at the New York DX Association Radio Club via their informative New York DX Association Shortwave & Scanner Listeners Net newsletter. (It doesn't matter if you're a local or a garden-variety scanner/SW news junkie, check out www.nydxa.info/ and browse their archives—it's cool stuff.)

The NYDXA newsletter christened October 27 as "Radio Day," stating,

> Marconi, Fessenden, and De Forest were the catalysts. However, it was an engineer for Westinghouse Electric who, in 1916, was broadcasting music from his garage (in Wilkinsburg, PA, a suburb of Pittsburgh) over a wireless (amateur radio station 8XK) who really got the whole thing started. A newspaper article about the broadcasts caused such interest that the head honchos at Westinghouse decided to build a real radio station.
>
> It took until this day in 1920 for the Westinghouse radio station to receive a license to broadcast. The license for KDKA, Pittsburgh came from the U.S. Department of Commerce. Although the license was officially issued on this day, KDKA did not start their broadcast operations for a week (they had to wait until the license was posted in the station). On November 2, 1920, the station aired the returns of the Harding/Cox election...the first radio programming to reach an audience of any size...approximately 1,000 people.
>
> And so we salute this day as the official birthday of mass-appeal radio.

Election Day was chosen for that first broadcast to illustrate the power of radio: that radio audience heard the election results long before anyone else read about them in the newspaper. And something had changed forever.

Another occasion is the reason behind this month's editorial focus. January is National Radio Month, when people are urged to tune in to a different radio station each day for the month. Well, that's at least according to some sources (including www.partyguideonline.com!); other sources, including a 1958 presidential statement by Dwight D. Eisenhower, locate that festive time in May (apparently, like FISA, anything can be controversial).

Anyway, we ignore controversy this month and choose to celebrate January, urging our readers to tune in to a different radio station each day, starting with two we feature in these pages: Bhutan Broadcasting Service and Radio Exterior de España.

And, of course, we mark one more occasion by wishing our readers a Happy New Year. May it be filled with radio stuff and sundry other reasons to celebrate.

Popular Communications invites your comments, questions, criticisms, compliments, article submissions—in a word, your thoughts. Write to me at editor@popular-communications.com.

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e-mail: info@sangean.com
www.sangean.com

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- Frequencies
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  - c AM 520-1710
- Backlit LCD Display
- Displays Information such as: Channel No., Channel Frequency Ensemble Label, Service Label, Dynamic Label, Transmission Mode, Data Rate, Secondary Service Availability
- FM RDS (RBDS)
- Improved Reception
- Improved Audio Quality
- Redesigned User Interface for better operation
- Force Analog Mode
- Split Audio Mode
- EQ Pre-sets with full Tone & Bass Control
- 12/24 Hour Clock Modes
- Snooze Function
- Adjustable Sleep Timer
- Multicast Capability
- Program Associated Data Service (PAD)
- Hybrid and Full Digital Radio Reception
- Aux-In
- IR Remote Control
- Dimensions (WxHxD): 11.5" x 4.5" x 7.5"
- Weight: Approx 5 lb. 9oz.

by D. Prabakaran

News, Trends, And Short Takes

Broadcasters May Lose Battle To Expand 4–10 MHz Allocation

On October 22, 190 nations gathered in Geneva for the quadrennial World Radiocommunication Conference, which allocates global radio frequency spectrum. Richard Russell, the U.S. ambassador to the conference, described it as the Spectrum Olympics.

In the run up to the Conference, Russell said that it was already looking as if shortwave broadcasters would lose the battle with military users over spectrum used for high-frequency communications in the 4 to 10 MHz bands. The broadcasters want to use this band to replace their analog broadcasts DRM services. But the U.S. Navy wants to use the HF bands—underutilized since the demise of Morse code—to support the broadcast of data over new IP-based services at far less cost than sending data by satellite.

Russell said that except for the European Union, countries were heading into the WRC aligned with the U.S. position to not allow an expansion of shortwave broadcasting in the HF band.

Digital Radio Coming To Mobile Phones In Australia

Australian commercial radio broadcasters have unveiled a digital radio-enabled mobile phone that allows users to view, navigate, and store visual content broadcast by radio stations. The phone features the "Visual DAB/DAB+" application that can receive digital radio broadcasts, along with images such as track details, news headlines, weather images, and competitions.

Digital radio broadcasters could use the technology for a range of interactive services, such as competitions, music charts, shopping, voting, and user-generated content, as well as for revenue opportunities through special offers and electronic coupons.

The Australian government has set an official start date of January 1, 2009, for digital radio in Australia, which will allow radio stations to broadcast multiple channels, along with images and data, *The Sydney Morning Herald* reported.

Czech Government Extends RFE/RL's Contract Of Lease

The Czech government has extended the contract with Radio Free Europe/Radio Liberty (RFE/RL) on the lease of its seat on Wenceslas Square in Prague center to the end of March 2009, Finance Minister Miroslav Kalousek recently told reporters. The original contract was to expire this year. In the meantime, a new RFE/RL seat is being built in Prague Hagibor by the Orco Property Group. It is to be completed by the end of 2008.

RFE/RL previously estimated the construction and relocation costs at about 14 million dollars. RFE/RL will have a 15-year contract of lease on the new building, which will be over 23,000 square meters, with the possibility to extend it by another 10 years. The building will meet the strict security criteria.

RFE/RL began considering relocation from Prague center after the terrorist attacks on New York and Washington on September 11, 2001. The headquarters moved to Prague from Munich, Germany, in 1995.

XM Shareholders To Vote November 13 On Sirius Deal

Shareholders of XM Satellite Radio will vote November 13 on the proposed merger with Sirius Satellite Radio. In a preliminary proxy statement filed with the U.S. Securities and Exchange Commission, Sirius said it would hold a shareholder meeting on the same day in New York for a vote on the issue of shares needed to complete the deal.

XM and Sirius announced the deal in February. XM shareholders are to receive 4.6 shares of Sirius common stock for each share of XM. The deal, which has drawn objections from traditional terrestrial radio companies, still needs regulatory approval.

Once the deal is completed, former XM holders will own about 49.7 percent of the outstanding Sirius common stock, and XM will become a wholly-owned subsidiary of Sirius. Mel Karmazin, Sirius chief executive, will lead the combined company as CEO, while Gary Parsons, chairman of XM, will hold the same position in the new company.

Swissinfo Launches Podcast Service

The English service of swissinfo has launched an audio podcast service. As the successor to Swiss Radio International, swissinfo is continuing a tradition that began more than 70 years ago with the words, "This is Switzerland calling."

The current affairs podcast highlights the top stories of the week in Switzerland, as well as offbeat and cultural news. The reports give a voice to the people making the headlines or who have a unique story to tell. The podcast compliments the news and feature texts available on the website.

swissinfo is an enterprise of the Swiss Broadcasting Corporation. The Internet information platform provides news about Switzerland in the form of text, image, audio, and video reports in nine languages. The focus is on Swiss politics, business, social affairs, travel and culture, and science and technology.

Rai Italy Closes International Shortwave Service

After 72 years, the international shortwave broadcasts of Italy closed down. Rai International ceased its shortwave broadcasts and ceased broadcasting in 25 languages. This news doesn't seem to have gained much attention within Italy, and only some specialized websites about international radio broadcasts mentioned it, as well as a few newspapers. As a result, the broadcasts of English, French, and German news within Italy during the program "Notturno Italiano" on the mediumwave frequencies of Rai Radio 1 have also ceased. However, Rai continues to produce

(Continued on page 25)

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The Bearcat BCT8 scanner, licensed by NASCAR, is a superb preprogrammed 800 MHz trunked highway patrol system scanner. Featuring TrunkTracker III, PC Programming, 250 Channels with unique BearTracker warning system to alert you to activity on highway patrol link frequencies. Preprogrammed service searches makes finding interesting active frequencies even easier and include preprogrammed police, fire and emergency medical, news agency, weather, CB band, air band, railroad, marine band and department of transportation service searches. The BCT8 also has preprogrammed highway patrol alert frequencies by state to help you quickly find frequencies likely to be active when you are driving. The BCT8 includes AC adapter, DC power cable, cigarette lighter adapter plug, telescopic antenna, window mount antenna, owner's manual, one year limited Uniden warranty, frequency guide and free mobile mounting bracket. For maximum scanning enjoyment, also order the following optional accessories: External speaker **ESP20** with mounting bracket & 10 feet of cable with plug attached $19.95. Magnetic Mount mobile antenna **ANTMMBNC** for $29.95.

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APCO 25 9,600 baud compact digital ready handheld TrunkTracker IV scanner featuring Fire Tone Out Paging, Close Call and Dynamically Allocated Channel Memory (up to 6,000 channels), SAME Weather Alert, CTCSS/DCS, Alpha Tagging. Size: 2.40" Wide x 1.22" Deep x 5.35" High

Frequency Coverage:

25.0000-512.0000 MHz., 764.0000-775.9875 MHz., 794.0000-823.9875 MHz., 849.0125-868.8765 MHz., 894.0125-956.000 MHz., 1240.0000 MHz.-1300.0000 MHz.

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 set 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 organized so that it more closely matches how radio systems actually work. Organize channels any way you want, using Uniden's exclusive dynamic memory management system. 3,000 channels are typical but **over 6,000 channels are possible** depending on the scanner features used. You can also easily determine how much memory you have used and how much memory you have left. **Preprogrammed Systems** - The BCD396T is preprogrammed with over 400 channels covering police, fire and ambulance operations in the 25 most populated counties in the United States, plus the most popular digital systems. **3 AA NiMH or Alkaline battery operation and Charger** – 3 AA battery operation - The BCD396T includes 3 premium 2,300 mAH Nickel Metal Hydride AA batteries to give you the most economical power option available. You may also operate the BCD396D using 3 AA alkaline batteries. Unique Data Skip - Allows your scanner to skip unwanted data transmissions and reduces unwanted birdies. Memory Backup - If the battery completely discharges or if power is disconnected, the frequencies programmed in the BCD396T scanner are retained in memory. Manual Channel Access - Go directly to any channel. LCD Back Light - A blue LCD light remains on when the back light key is pressed. Autolight - Automatically turns the blue LCD backlight on when your scanner stops on a transmission. Battery Save - In manual mode, the BCD396T automatically reduces its power requirements to extend the battery's charge. Attenuator - Reduces the signal strength to help prevent signal overload. The BCD396T also works as a conventional scanner to continuously monitor many radio conversations even though the message is switching frequencies. The BCD396T comes with AC adapter, 3 AA nickel metal hydride batteries, belt clip, flexible rubber antenna, wrist strap, SMA/BNC adapter, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO or ESAS systems. Order on-line at www.usascan.com or call 1-800-USA-SCAN.

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Bearcat BCD396T APCO 25 Digital scanner with Fire Tone Out	$519.95
Bearcat 246T up to 2,500 ch. Trunktracker III handheld scanner	$214.95
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Bearcat 244CLT 30 channel base AM/FM/weather alert scanner	$94.95
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Bearcat BR330T handheld shortwave/scanner with Fire Tone out	$274.95
Bearcat BCT8 250 channel information mobile scanner	$169.95
Bearcat 350C 50 channel desktop/mobile scanner	$96.95
AOR AR16BQ Wide Band scanner with quick charger	$199.95
AOR AR3000AB Wide Band base/mobile receiver	$1,079.95
AOR AR8200 Mark IIIB Wide Band handheld scanner	$594.95
AOR AR8600 Mark II Wide Band receiver	$899.95
Deluxe Independent Dual Volume Control Racing Headphone	$29.95
Scancat Gold For Windows Software	$99.95
Scancat Gold for Windows Surveillance Edition	$159.95

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Compact professional handheld TrunkTracker III scanner featuring Close Call and Dynamically Allocated Channel Memory (up to 2,500 channels), SAME Weather Alert, CTCSS/DCS, Alpha Tagging. Size: 2.72" Wide x 1.26" Deep x 4.6" High

Frequency Coverage:

25.0000-54.0000 MHz., 108.0000-174.0000 MHz., 216.0000-224.9800 MHz., 400.0000-512.0000 MHz., 806.0000-823.9875 MHz., 849.0125-868.9875 MHz., 894.0125-956.000 MHz., 1240.0000 MHz.-1300.0000 MHz.

The handheld BC246T TrunkTracker scanner has so many features, we recommend you visit our web site at 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 or call 1-800-USA-SCAN.

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by Richard Fisher, KI6SN

Capitol Hill And FCC Actions Affecting Communications

FCC's Amateur Radio Enforcer Reverses Decision To Retire

After announcing in late October that he would be stepping down this month as Special Counsel for the Federal Communications Commission's Enforcement Bureau, Riley Hollingsworth a few days later reversed his decision, opting to continue in the post.

"After spending the entire weekend thinking about the decision [to retire], it became more and more clear to me that it just isn't the right decision for me right now," he said. "There are several issues on the table that I want to continue to work through with the amateur community." A licensed radio amateur with the callsign K4ZDH, Hollingsworth initially announced he would be stepping down January 3, 2008.

The Enforcement Bureau is the FCC's division responsible for enforcement of the Communications Act, the Commission's rules, Commission orders and terms and conditions of station authorizations. It also oversees enforcement of amateur radio rules in Part 97.

Before reversing his decision, Hollingsworth told the American Radio Relay League that "after about a year of thinking about the 'if not now, when?' question, I decided to retire. I love working for the FCC and I've always had great jobs, but this one involving the Amateur Radio Service has been the most fun and I have enjoyed every day of it.

"For nine years I've worked with the best group of licensees on earth, enjoyed [the League's] support and tremendous FCC support and looked forward every day to coming to work," Hollingsworth said in the *ARRL Letter*.

Hollingsworth is noted "as being the force behind the reintroduction of amateur radio enforcement in 1998 and continuing those efforts through today," the ARRL said. "His contribution in cleaning up the amateur bands has been substantial and effective."

FCC Restricts Missouri Radio Amateur's License For Six Months

The FCC has levied a six-month restriction of the amateur radio license of a Missouri operator, alleging "deliberate interference, broadcasting and failure to identify."

The Commission wrote Darin W. Colville, KMØQ, of O'Fallon, Missouri, that "the information contained in the complaints, if true, raised serious questions regarding your qualifications to retain an Amateur license.

"We requested detailed information from you pursuant to [the Communications Act of 1934], which gives the Commission the authority to obtain information from applicants and licensees about the operation of their station and their qualifications to remain a licensee," the FCC said.

"After telephone conversations between Colville and FCC representatives, it was agreed that Colville would accept 'a six month restriction on your license that would prohibit operation on any Amateur station on UHF or VHF for a period of six months in order to avoid further enforcement sanctions. That restriction is retroactive to July 9, 2007, and will end at midnight Jan. 6, 2008.'"

Organizations Receive Grant For Data Interoperability Program

A $450,000 grant from the Bureau of Justice Assistance (BJA) under the U.S. Department of Justice's (DOJ) Edward Byrne Memorial Discretionary Grants Program has been awarded to the Association of Public-Safety Communications Officials (APCO) International, in partnership with the IJIS Institute, according to reports. IJIS and APCO had submitted the grant proposal for the development of a joint Public Safety Data Interoperability program.

The IJIS Institute is a nonprofit consortium representing more than 200 companies "that supply information technology solutions and services to the justice, public safety, and homeland security sectors," authorities said.

"IJIS and APCO joined forces as alliance partners for the purpose of ensuring that the role of first responders is not forgotten," the APCO and IJIS grant proposal said. "IJIS and APCO are proud to propose a project that will assist public safety professionals at all levels of government to explore, define, plan, and implement standards that will further data interoperability in this realm."

"Post-September 11 Presidential directives and executive orders have established a national imperative for information sharing to improve our ability to prevent, protect, respond to, and recover from major incidents regardless of type," the APCO and IJIS grant proposal said. "The emergency response community is critical to the effectiveness of these missions. They provide a major asset to law enforcement and the coordinating organizations responsible for real-time response to emergencies."

According to APCO and IJIS, "the goal of this program is to improve the real-time information sharing capabilities in the emergency response environment.

"Specifically, the program will define a strategy for the adoption and use of National Information Exchange Model (NIEM) as the standard for sharing critical information between emergency communications centers, within and across jurisdictions, and between the DOJ and other relevant emergency management and intelligence domains of the Department of Homeland Security (DHS) and the Office of the Director of National Intelligence (ODNI)."

FCC Fines Washington State Radio Amateur $7,000

The FCC has issued a Notice of Apparent Liability for Forfeiture to James J. Grinton, K7VNI, of Bellingham, Washington, for "transmitting one-way communications and by failing to transmit his assigned callsign in the Amateur Radio

(Continued on page 82)

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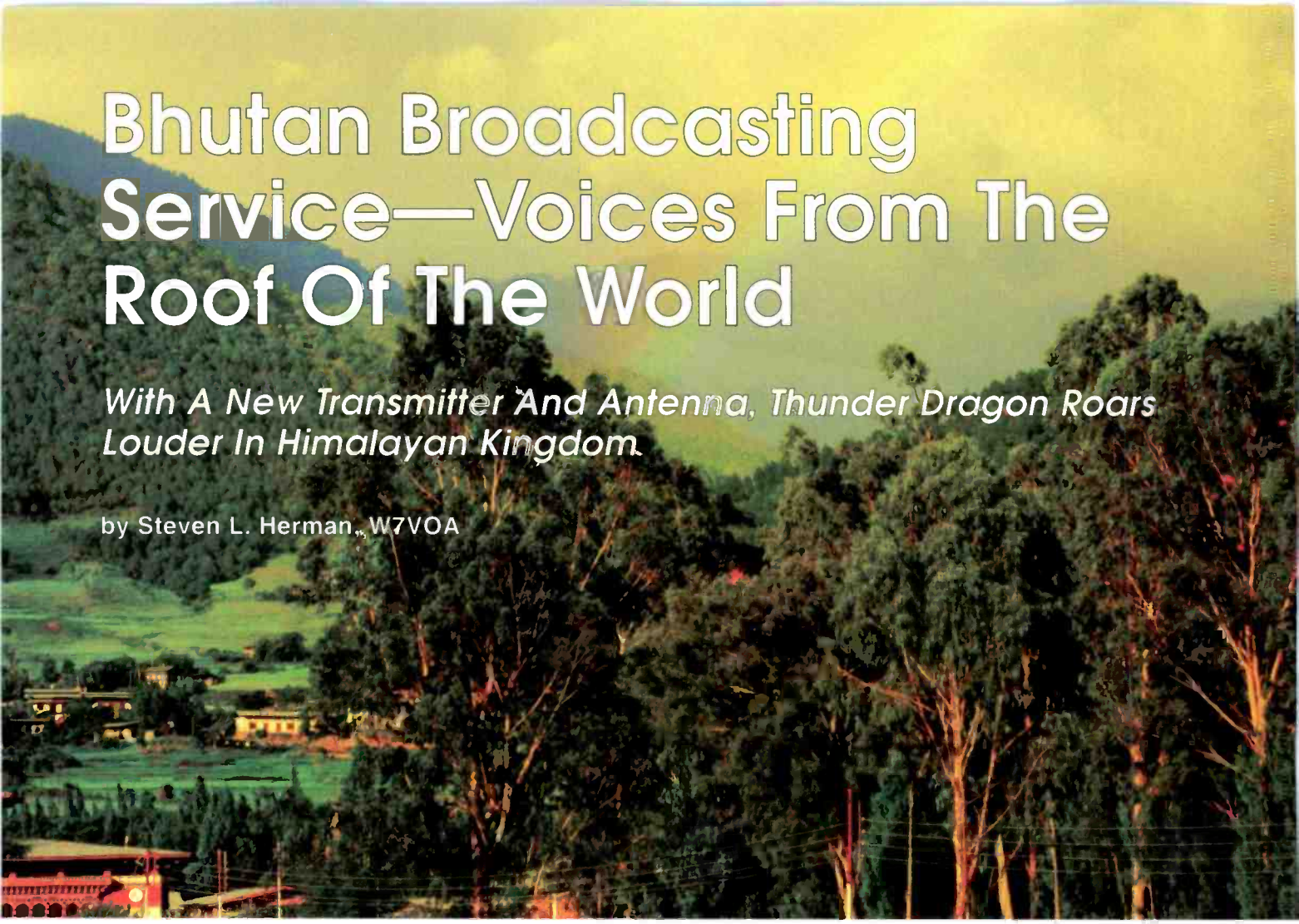
Bhutan Broadcasting Service—Voices From The Roof Of The World

With A New Transmitter And Antenna, Thunder Dragon Roars Louder In Himalayan Kingdom

by Steven L. Herman, W7VOA



A Bhutanese rainbow lights the rarified air of this isolated kingdom nestled in the Himalayas and now served by two commercial FM stations as well as the government-funded shortwave Bhutan Broadcasting Service. (All photos by Steven L. Herman unless otherwise indicated)

Tune a radio across the AM broadcast band during daylight hours in Thimpu, the capital of the Kingdom of Bhutan, and you will hear nothing but static. The small Himalayan state, called Druk Yul (land of the Thunder Dragon), was long in self-imposed isolation. Wedged between giants China and India, it has no AM broadcast band stations. It never has.

Until recently, when FM relay stations were created, the only radio station in Bhutan was the shortwave broadcaster of the government-funded Bhutan Broadcasting Service (BBS).

"We don't have the budget to cover Bhutan with mediumwave," says BBS Executive Engineer Rajesh Kafley. "We would need a minimum of three transmitters."

There would be technical barriers even using multiple transmitters, says former BBS engineer, Dorji Wangchuck. "Ground conductivity is poor here," says Wangchuck, who credits Indian engineers with recommending shortwave as the best wavelength to cover Bhutan. And the experts contend that Bhutan's terrain does not make FM a viable option either, considering the mountains and valleys that must be traversed just to reach a little more than 600,000 people. But that does not mean Bhutan isn't trying.

Steven L. Herman is a veteran broadcast correspondent based in New Delhi, India. He made three trips to Bhutan in 2007 and holds the amateur radio callsign A52SW there.

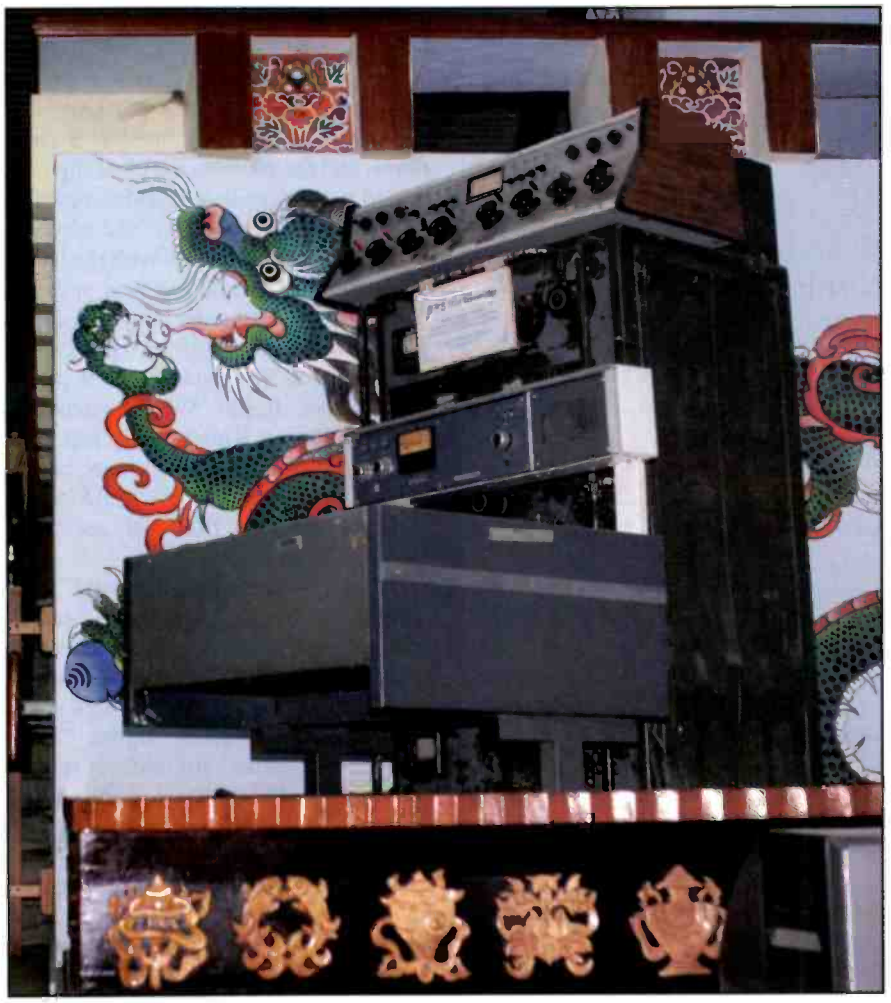
BBS' 34 FM transmitters (a few are even solar powered) cover about 80 percent of the country. Most are only 10 to 50 watts, but a few of the transmitters are in the 1–2 kW range.

Shortwave gives "practically 100 percent coverage" of Bhutan, according to Kafley. But he acknowledges a chronic QRM (interference) problem from China for listeners in northeast Bhutan.

Many Bhutanese have shortwave bands as a standard selection on their car radios. During treacherous nighttime drives, sometimes in blinding downpours, heading east from Thimpu to the former capital, Punakha, via the Dochula Pass (over 10,000 feet altitude), the shortwave bands provide the only radio signals heard in this part of the Himalayas. And my driver and guide, Tshewang Nidup, indulges me by allowing me to do some mobile SWLing after BBS signs off. VOA, BBC, Radio China International, and Voice of Russia provide the strongest and steadiest signals.

A Domestic Mission, But A Broader Reach

For most rural Bhutanese, who are largely illiterate, despite the proliferation of cable television and several newspapers in the cities, the main source of news, information, and entertainment in the remote villages remains the BBS shortwave broadcasts.



BBS' first transmitter in the lobby of the broadcaster's headquarters in Thimpu.

BBS radio broadcasts from 0600 to 2100 Bhutan time (0000 to 1500 UTC) daily in English and in three indigenous languages: Dzongkha, Sharchopkha, and Lhotshampa. Dzongkha, related to Tibetan, is the official language and mandatory in schools. Sharchopkha is spoken in eastern Bhutan by a distinct ethnic group. Lhotshampa is spoken by those with Nepalese roots and is widespread in the south. English, used in official communications, is spoken with near native fluency by most government officials and other educated people, as well as by students and merchants in Thimpu and Paro, the largest cities.

The BBS signal, at 6.035 MHz, got louder in the summer of 2007 when a new 100-kW Thompson TSW 2100D analog/DRM transmitter went on the air, doubling the broadcaster's power from its Sangayang site overlooking the capital, about 8,500 feet above sea level.

Also increasing coverage is a new cage bi-directional antenna, replacing a hanging dipole. The goal is to enhance coverage in some of the border-areas and mountain valleys where the QRM from China is a problem.

At the inauguration ceremony at the transmitter site overlooking Thimpu on August 10, Bhutan's information and communications minister, Lyonpo Leki Dorji, said radio remains the best medium to reach the country's far flung areas, many of them inaccessible by roads.

Although BBS is being heard by an increasing number of DXers (QSLs are coming in from Germany, Denmark, and Japan among other distant countries) thanks to the new transmitter and array, unlike most of the world's shortwave broadcasters, its primary target remains the domestic audience.

But Kafley says that does not mean that BBS does not appreciate the reception reports from abroad. "It's not always possible to send [QSLs] back immediately," he explains, "but after the commissioning of the new transmitter we're going to devote some of our staff to handling QSLs."

From Homebrew To DRM

As is the case with many other shortwave broadcasters experimenting with Digital Radio Mondiale (DRM), BBS management and engineers hope the cost of DRM receivers will one day make them affordable for listeners in the developing world. BBS transmits in DRM with 20 kW from 0600 to 0800 UTC daily.

While today Bhutan experiments with the cutting-edge of digital radio technology and BBS updates its news and programming website daily (www.bbs.com.bt/), for decades the isolated kingdom relied on outside shortwave broadcasts as its sole window to the world. Nearly every Bhutanese will recount to visitors who discuss radio how they relied on shortwave broadcasters, such as VOA, for many years to gain insight of the outside world.

Bhutan's own foray into radio was an all-amateur effort, by the admission of those who inaugurated it in late 1973. Some young graduates and office workers, including a few who would later become government ministers, borrowed a 400-watt transmitter belonging either to the Royal Bhutan Army or the Civil Wireless Department (recollections differ) for a 30-minute broadcast on November 11, 1973.

They had no studio and used a homebrewed mixer with three potentiometers built in an Indian biscuit tin container. A loop antenna made of copper wire provided coverage of much of Thimpu. The station identified itself as NYAB (for National Youth Association of Bhutan) and transmitted on 5.035 MHz.

"It was targeted at the growing number of young and educated in the Thimpu valley," recalls Dorji Wangchuck, who joined the station as a junior engineer in 1985 and holds one of Bhutan's few amateur radio licenses (A51DW).

The 30-minute Sunday broadcasts of music, news and talk shows in English continued as a volunteer effort until the country's Communications Ministry recognized the importance of media for mass dissemination in 1979 and assigned a permanent staff under the Department of Information & Broadcasting for the small broadcaster.

UNESCO in 1986 donated a Harris transmitter and some studio and production equipment, including Marantz cas-

A plaque attached to the original transmitter proudly commemorates the first broadcast.

sette tape recorders. NYAB was then beginning to resemble a real broadcast outlet, and it became BBS the same year when it went to 10 kW and also began transmitting on 6.035 MHz.

Neighboring India began providing financial and technical assistance in 1988 and an actual dedicated broadcast facility was inaugurated in 1991 and BBS increased power to 50 kW.

The new 100-kW transmitter and the unique cage antenna—a $2 million project primarily funded by the government of India—is the most ambitious effort yet by the Bhutanese broadcaster to bring its programming to everyone in the country. Because no additional land was available for the new equipment, BBS had Thompson engineers design an antenna that could use limited space but create the most effective radiation pattern to blanket Bhutan. "It's on the same site as the old antenna, squeezed into the limited space," says Kafley.

Mass Media In Bhutan

BBS remains to this day dedicated to its original mission, set in 1979, of helping Bhutan develop.

"Until today, 60 percent of the programming BBS churns out is dedicated to agricultural development, environmental protection, and culture preservation," says Wangchuck, now a private communications consultant. "It's still very much a developmental radio service."

Despite its folksy image and a programming style with little appeal to Bhutan's educated and urban population, BBS' shortwave transmission of 100 hours of programming weekly is still seen as vital for the landlocked and remote country where the emphasis is on "gross national happiness" (a Buddhist-inspired government policy) rather than gross national product.

"I'm very proud to say that we as a Buddhist country here in Bhutan actually sort of put the teachings, the very primary philosophy of Buddhism into practice and made it a national goal," says the Buddhist holy man Ngidup, who is the Shingkar Lama.

Radio is seen as propagating that officially sanctioned happiness. "Radio still plays the most important role here for anything you can imagine," contends Wangchuck.

Kafley agrees about the importance of radio here, explaining that surveys indicate that "people still rely on it, mostly for the news."

As Bhutan transitions from an absolute monarchy to a parliamentary democracy, BBS finds itself at a crossroads, and there is also the challenge presented by new private broadcasters. The government monopoly of the airwaves ended in September 2006 with the launch of Kuzoo FM, which has now split into two stations (Dzongkha language on 104 MHz and English on 105 MHz) after its initial year at 90 MHz. Another private FM station, Radio Valley, started by music enthusiast Kinley Wangchuk, went on air in April 2007 in Thimpu at 99.9 MHz. Both of the new FM broadcasters received start-up financial assistance from UNESCO.

Television was a latecomer to Bhutan, although a small number of wealthy households were discretely watching Indian broadcasts via satellite before the launching of BBS-TV in 1998, a gift to his subjects by King Jigme Singye Wangchuk during his silver jubilee. Initially, the TV station was only on air for an hour a day before adding an additional hour in 2002.

Cable television, with its imported signals, has been controversial. Many Bhutanese contend that entertainment programming and sensationalistic news coverage from abroad undermine traditional and deep-rooted Buddhist values. This is a country, after all, where the kings and queens are still reverently referred to as "His Majesty" or "Her Majesty" in regular conversation and national dress is

Rajesh Kafley, executive engineer, poses with BBS' first transmitter.

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Inside a BBS radio control room.

mandatory during visits to public offices. Thus most men are seen wearing a *gho*, a knee-length robe tied with a tight belt, and women don the *kira*, a large rectangular cloth wrapped around the body, which results in an ankle-length dress.

The scenes on the small screens of Bhutanese TVs of models gyrating in bikinis and burly men in shorts bashing each other in wrestling rings (the latter a staple of cheap TV programming in many countries when television was introduced in the 1950s and '60s) prompted a backlash and such programs are now proscribed.

Others, however, believe the educational benefits of foreign television outweigh its bad aspects.

BBS' new shortwave antenna for its 100-kW transmitter is helping expand the station's reach. (Photo by Thinley Dorji, junior engineer, BBS)

The number of people listening to BBS in urban areas slumped after the two commercial FM broadcasters were granted licenses. Locals do watch BBS television for the news, but the rest of its programming its comparatively dry fare for those who are enticed by the flashier offerings on cable TV.

"BBS maintains a certain dignity and formality which ordinary and illiterate people in rural areas are used to," explains Dorji Wangchuck. "But the young urban elite want less formal programming and discussions of issues, such as teen pregnancy."

Private terrestrial TV is scheduled to launch in 2008. BBS television also put its unencrypted signal on a satellite (INSAT 4A C-band digital transponder 10) in February 2007, theoretically giving it coverage of the entire nation and 40 other countries from Turkey to Indonesia.

BBS-TV now produces five unique hours of programming daily. But a significant percentage of Bhutanese households still do not have access to electricity, let alone television, although the government intends to have electricity in every village by the end of 2007.

What's Next For BBS?

The unprecedented competition is sparking debate inside BBS and among regulators as to what direction the former monopoly broadcaster should go.

"Does [BBS] continue being a public service or does it go onto becoming a forum for discussing contemporary issues, including the massive political changes," asks Wangchuck. "There is a need for political debate as much as the developmental programming."

With Bhutan's first democratic government to be installed in 2008 there is also concern about preventing BBS from becoming a pawn of whichever group gains political power.

One thing is certain, according to BBS' fans and critics: shortwave radio is not going to fade in Bhutan, where for hundreds of thousands of people TV is an urban luxury and the Internet a distant dream.

"For a long time radio will still play an important role in Bhutan's rural areas," predicts Wangchuck.

BBS officials express confidence that the shortwave voice of the Thunder Dragon will continue to roar for many decades to come.

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A Tour Of Radio Exterior De España

How One SWL's Wildest Dream Came True

by Chip Rice

I'm not sure how the subject of shortwave listening came about in Mr. Zinn's history class during my 8th grade year, but it must have been involved my intense love of all things related to astronomy and spaceflight. My middle school buddy Vonn Mosser was relaying to me that on shortwave he could always hear the chirps, beeps, and whistles of satellites streaming data down from earth orbit. My eyes grew big as he continued about broadcast stations, not much different than my West Virginia hometown's own WKLP *except* that they were beaming programs around the globe that were meant for international audiences.

Vonn told me how the signals were propagated from the antennas in these faraway places and how they reflected off the ionosphere directly to the listener. Well that was it! I just had to have one of these receivers that were the gateway to other nations and even the stars.

This is my personal story of a young shortwave enthusiast, new to the hobby, who one day realized his early dream and visited the studios of one of his favorite international stations. The journey from my initiation into radio by a friend to walking the halls of Radio Exterior de España (REE) has been a fantastic adventure, the kind seldom realized by most SWLs.

The Formative Years

In my youth, RadioShack had just put out the more "kid's-budget" DX-100. While it certainly wasn't the dream receiver, it *was* a table model with a few more controls to fiddle with than most. In no time, I had converted our upstairs linen closet to a listening shack, much to my mother's chagrin. I wrapped a long wire antenna around the attic's support beams and dropped the lead down through the portal on the ceiling of the closet, past the sheets and blankets on their shelves and into my shiny new receiver. If memory serves, I was put to bed early that night for plodding my feet through the attic's fiberglass insulation in more than a few places.

In my new hideaway I would stare dreamily at my copy of the annual periodical *Communications World*. It bore on its cover a Panasonic RF-4900 with its gleaming teal-colored digital frequency readout and shiny, chrome rack handles. The digital readout alone would have made my life easier as I tried to bag distant stations using the DX-100's less-than-perfect analog dial.

Within the advertising pages of *Communications World*, perhaps buried somewhere deep in *White's Radio Log*, was an ad for a light-blue book with nothing on its cover but the words *Shortwave Listener's Handbook*. Intrigued and on my teenager's budget, I bought a copy. Within this thick hardcover guide, I found limitless information on my new hobby as well as pictures of QSL cards from exotic lands.

REE sent the author this QSL card some 12 years before his visit.

One that really spurred my sense of wonder was from station ELWA in Monrovia, Liberia. It had a hand-drawn African scene set next to a ceremonial fire. In the center was a tribesman beating out a metaphorical radio signal from a native tom-tom. I'd dreamed for years of catching that station and finally logged it late one night in early 1981, while a raging thunderstorm flashed beyond my bedroom window.

I'd been a musician since my earliest years in school. I'd just begun to play the piano when I opened my first copy of the *World Radio and TV Handbook*. I immediately zeroed in on the printed musical staves provided for many of the interval signals of international shortwave stations. I would then plunk them out on the piano at my leisure just for fun. Afterwards, I'd run to my linen closet shack and strain through the static to hear these exotic, repetitious strains.

I most fondly remember the first four notes of "O Canada" from RCI, the strains of "Fidelio" by Beethoven from Deutche Welle, and two IS's featuring the strums of acoustic guitar that *really* haunted the imagination. One was from the long-gone Radio RSA, Johannesburg, with its Bomakierie bird chirping between the transmissions of the IS tune. The other was the Flamenco-like strumming of the IS of REE in Madrid. It was that IS and the love of the Spanish language, and of course that

Chip Rice is a Spanish teacher at Frankfort Middle School in Short Gap, West Virginia, and has contributed articles to his local *News Tribune*. He has been an avid DXer for nearly 30 years and a *Pop'Comm* reader since its inception.

The street entrance to REE.

Interior entrance to REE's offices.

outlet's fine programming that led to the station being placed at the very top of my favorites list.

The Stars Align

Flash forward about 15 years when I accepted a position as a Spanish teacher at Northern Middle School in western Maryland. On the first day of my job, I was amazed to find that my old buddy Vonn Mosser was a science instructor there. I wondered if he'd remembered that he borrowed my hallowed copy of the *Shortwave Listener's Handbook* when we were kids and never returned it. Boy, I'd wanted to see that again!

After settling into teaching at Northern Middle, I got a call from the Spanish instructor at a neighboring high school. Unforeseen obligations prevented him from taking eight of his students on a cultural trip to Spain. In desperation, he asked if I'd take his place! The prospects of visiting the mother country of my second language and the home of my beloved REE was too much to pass up. I offered my services.

From inside our tour bus in Madrid, I wondered whether I might catch sight of REE's studios by chance, but back at my hotel room I decided to leave *nothing* to chance. I called Spanish Foreign Radio and set up a tour for my students and me. It took some cajoling to convince the kids that a tour of a radio station they'd never heard of on a frequency they probably couldn't receive would be interesting (after all, on the girls' minds were shopping and boys, and on the boys' minds were girls and visiting a Spanish McDonald's—go figure). With a bit of promising and prodding, though, they finally acquiesced.

The entrance door to REE, which was on the side of the main building, was surrounded by lustrous gray marble, with the name of the station carved in above it. Our tour guide at the station, who was probably much more than just that, obviously had taken time out of his busy schedule to show us around. He took us through the entrance hall, stopping at a large photo of the transmitter site at Noblejas. We then passed a glass-encased world map with miniature blinking lights pinpointing areas of REE's greatest audience percentage, and ever since I've wanted one just like it hanging in my shack and marking my DX catches!

Moving into the studio's main lobby, we discovered that marble was the theme at Spanish Foreign Radio, inside and out. The lobby was a great rotunda, combining ancient European style with the modern touches. Overlooking the center was an encircling balcony and the ceiling was a domical window. Through it we could see, rising high into the sky, the main radio tower that linked the studio to Noblejas. I could almost see the guitar notes from the IS dancing out of the top of the tower, bouncing off the ionosphere, and landing at my antenna thousands of miles to the west. But I no longer had to envision the studio as I was standing in the real thing!

Continuing through stone hallways to the main offices and studios, the lavish and decorative turned to the functional with what seemed like miles of metered consoles, studio windows, clocks and recording decks. With eight students in tow and a huge VHS "non-handy" cam over my shoulder, I tried to capture every detail of the studio. Obsessed with the task, whipping the camera too quickly from place to place, I barely had time to absorb the reality: I was in REE! I did, however, notice the occasional group of announcers with their guests huddled around a studio table, recording programs to be sent out later. And encircling the console were beautiful mics with REE emblazoned on them.

Here and there, behind glass partitions, we'd see writers and producers jostling copy, preparing news or some fine cultural program for world audiences. Always just behind me, too, were the eight American students, each trying to take cover behind a potted plant or marble column (I believed that they were plotting my execution for postponing their lunch by dragging them to REE).

Our guide spoke only in Spanish and although fluent in reading and writing the language, I found the technical jargon a bit hard to comprehend at times. I mustered up my best Castilian dialect with its funny lisped C's to ask questions. One was if I could meet the lady who hosted the nightly English program to the Americas. You know her...the one who tells what's coming up in the next hour with the programs on Spanish culture and language ("Learn Spanish, a language without bounds...*un idioma sin fronteras*," she said gracefully each weekday night). Unfortunately she was only in the studio during the evenings and our tour happened to be in the afternoon. They offered me her office phone number. "Wow!" I thought. "These people really aim to please!"

Upon calling the studio back a day later, I found they'd gone an extra mile. They informed me that news of our tour through

Through REE's skylight one can see the transmission tower linking the studio to the Noblejas transmitter site.

REE would be broadcast on the English service later that week! I just had to hear it. However, I knew that at the time of the broadcast, I'd most likely be somewhere in a jet over the Atlantic returning home. Over the phone, I convinced my mother, with all of her technical non-know-how, to connect a tape recorder to my Realistic DX-440 to capture the program. Mom came through like a trooper, though, and I was able to hear that magical moment. Here's a brief transcript of the announcer's comments. (For those interested, the actual broadcast is on my website, http://users.dishmail.net/ chipspage/ree.html):

Hello Chip! We hope you're back safe and sound in Keyser, West Virginia, after your trip to Spain. For the rest of our listeners today, we need to explain that Chip is Chip Rice, a teacher of Spanish at Northern Middle School in Garrett County, Maryland. He was recently in Spain chaperoning eight of his students on a cultural trip to this country. Chip is a regular listener and arranged a tour of Spanish National Radio's headquarters here in the center of Madrid.

The author in his listening shack.

Well, unfortunately his trip was in the morning and since all of us on the English language broadcast come in in the afternoon and evening, we missed him. Chip was kind enough to take time to telephone us later in the day. Of course, we get stacks of letters and reception reports, but hearing from a real live listener on the phone was absolutely great.

Chip, since you seem to know our programs backwards and forwards and asked to speak to the lady who does the daily spiel, as you put it, about our weekly features...Terry and I decided to thank you right here on our DX spot. Well, we hope you'll be tuning in for a long, long time to come.

Well, that did it, we were radio stars! For an instant I suppose we were world famous, given that it was international radio and all. The whole experience of traveling to Madrid and touring the studios of a favorite international broadcaster like REE was a SWL's dream come true, a dream not too many DX fans ever get to realize, unfortunately.

I hope that sharing these highlights of my DXing hobby and my wonderful visit to REE brought back some fond memories of the beginning of your shortwave listening experience.

And to my old pal Vonn Mosser, my mentor, who I thank graciously for introducing me to this wonderful hobby, I send this message, with a power of 10 MW: Can I have my *Shortwave Listener's Handbook* back?!

REE Through The Years

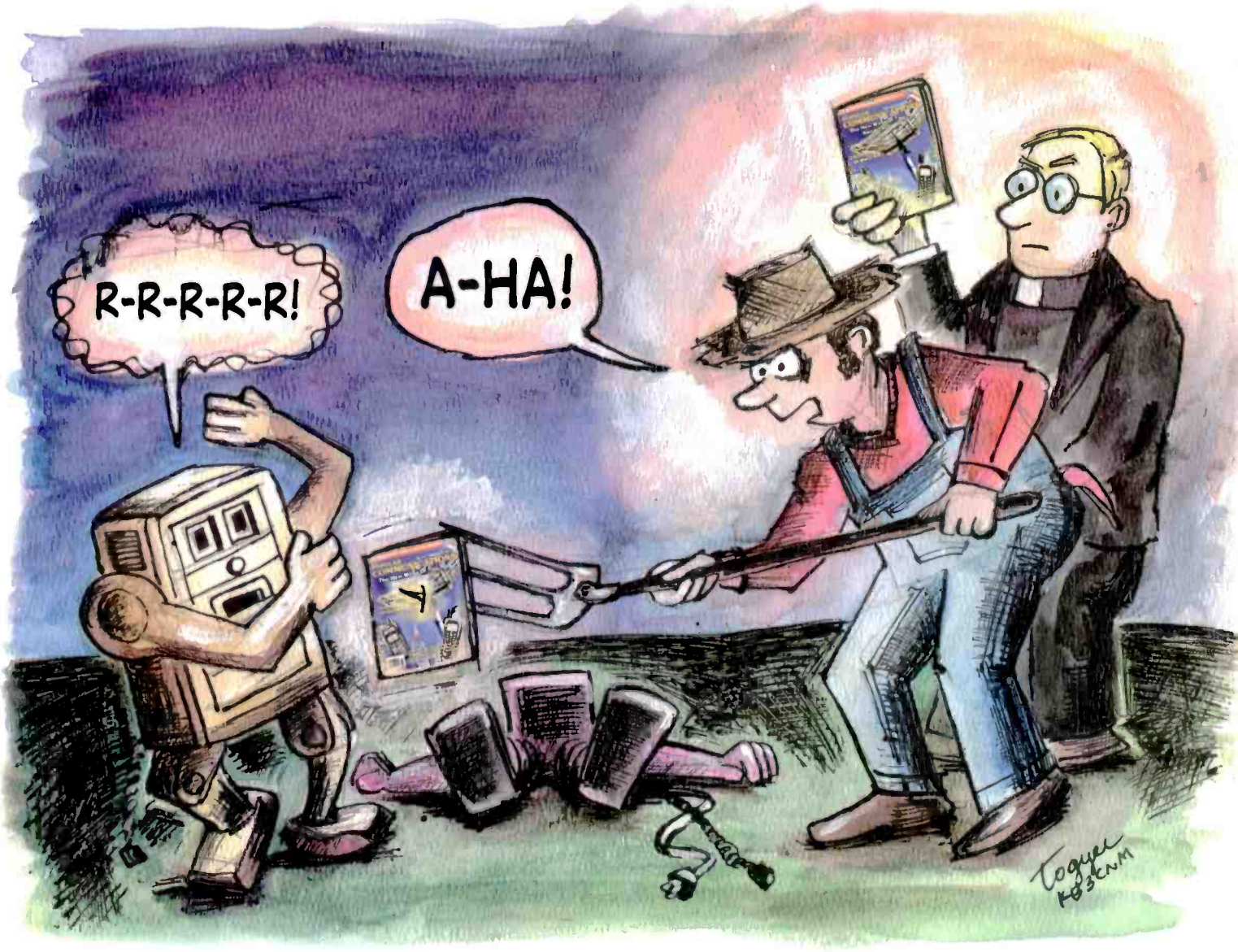
REE is today one of six channels beneath the umbrella broadcasting organization known as Radio Nacional de España, or RNE. This broadcast entity was born in Salamanca, Spain, in 1937 at the height of the Spanish Civil War. Its debut 20-kW Telefunken transmitter was a gift from Nazi Germany to the new Francoist state, rebroadcasting information and propaganda from German and Italian stations through the end of WWII.

Constrained by nationalist censorship, all other radio outlets in Spain were required to connect to RNE to broadcast their daily news bulletins. All this impeded RNE's entry into the European broadcasting Union until 1955, when a new 40-kW central shortwave transmitter was installed at Arganda del Rey (Madrid). Spain's foreign broadcasting also took on a bigger role, with as many English broadcasts being transmitted as Spanish, a large portion of which were beamed directly to the United States.

New higher power shortwave transmitters were brought online during the '60s and '70s providing Spanish national and European coverage. In 1971, Spanish broadcasting abroad matured markedly with the construction of a new central transmission hub in Noblejas, where it remains today. Other channels were added to RNE's network, including Radio 2, now known as Radio Clásica, an outlet devoted to mostly classical music and concerts.

When Democracy arrived in Spain after the death of Franco in 1975, the requirement to connect directly to RNE by private stations was lifted and many "semi-official" stations were consolidated to form Radio Cadena Española. Finally, in 1989 Radio Cadena and RNE were combined, resulting in the current format of six channels which includes Radio Exterior de España.

As the international arm of RNE, Radio Exterior's 80-million listener audience is surpassed only by the BBC and Vatican Radio



Zombie Army Of The Un-dead Computers!—Part II

How To Foil Intruders Before They Hijack Your Personal Computer For Crime, Profit, Or Even Cyberwar

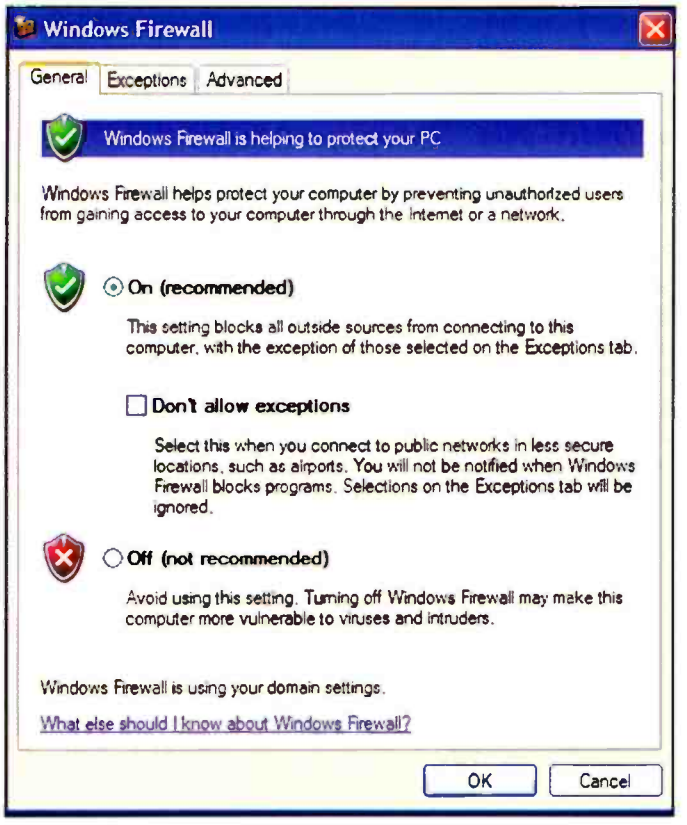
by Joe Cooper

Allow me to briefly reset the scene…In 1968, a young George A. Romero started a part-time industrial movie company in Pittsburgh. Working with a group of friends, he put together a cheap black and white horror flick called *Night of the Living Dead*, never expecting it to do much more than make a bit of money. To everyone's surprise, the movie grossed over $40 million dollars, was entered into the United States National Film Registry, and did nothing less than come to define in the public mind the Zombie archetype of today!

As I outlined in Part I of this article (November 2007), Zombies are not just a product of the imagination, but actually exist!

You may be aware that a computer can be infected with a software virus that can damage valuable files and crash hard drives.

Joe Cooper has been using personal computers since the late 1970s and is head technical writer for a software development company.



The most important setting in your computer is your firewall, which is located in the control panel section of your MS Windows operating system. Always make sure it's set to "On," as shown in this illustration

But did you also know that specialized viruses can hijack your computer, turn it into a Zombie, and instruct it to attack other computers, just like Zombies attacked people in the movie? Zombie computers are not a minor problem; in fact, they've become a matter of national, economic, and personal security.

There are an estimated *150 million* Zombie computers in operation today around the world, and millions more are being recruited, even as you read this article. Because of this Army of Zombie computers, government offices, military installations, and business systems are experiencing an unprecedented level of "cyber attacks." The attacks themselves are becoming increasingly sophisticated and expensive, both in terms of increased security costs and actual damage done to equipment.

It's an interesting point to consider that it used to take a hacker an average of 288 days back in 1999 to figure out a way to exploit a vulnerability that had been discovered. Today it only takes an intruder an average of 10 days to do the same. This is because the people exploiting these vulnerabilities are no longer college kids proving how smart they are; they're organized professional computer programmers, often being paid big money by either crime, rogue governments, or terrorist organizations.

The intruders creating the Zombies deliberately target home computers because of their lax security. The problem is that most owners of "Zombified" computers have no clue that their equipment has been infected and hijacked.

To help you avoid this fate, this article will explain how you can protect your computer from becoming a Zombie under someone else's control. Plain and simply, it's a matter of national security that you take responsibility for keeping your equipment protected from being turned into a Zombie.

You may be surprised to find that you already have the tools you need to protect your computer. Even if you don't, much of what you require is free and easily downloaded from the Internet. So let's learn how to turn your personal computer into a well-protected fortress that can keep Zombie software well at bay.

How To Foil Intruders

There are five tools you need to employ on your home computer if you want to keep it protected: 1) anti-virus software; 2) firewalls; 3) operating system and software patches; 4) anti-spyware software; and 5) pop-up blockers.

Now some of you may be thinking that you already have computer network security software installed. However, studies done on home computer security reveal that most people don't use that software effectively. For most people, their poorly maintained security systems make them just as vulnerable as if they had no software protection at all. So let's take a look at each to see how they should be used in order to be effective.

Anti-Virus Software

While many people have anti-virus software installed on their home computers, far too few use it or maintain it properly. As a result, the version on the computer, or the actual information used to fight the virus (called attack signatures) is often old or obsolete.

Viruses, worms and Trojans are being released onto the Internet on an almost daily basis, and you need to have the latest information on hand to protect yourself. Likewise the computer software that is the basis for that protection often goes through periodic changes to make it more efficient, or to fix design problems. It really doesn't matter which program you use, as long as you ensure that it's working when your computer is running, that it's the most current version, and that it has the most up-to-date information.

Don't practice false economy by using an old version of an anti-virus program. Do yourself a favor and each year buy the most up-to-date version of whatever you're using. Remember that we now live in a world where there are dedicated people out there who are trying to break down your computer's defenses, and they are studying your particular anti-virus software, looking for ways to defeat it. Don't give them an advantage by offering an old version to compromise.

Deploy a Firewall

A firewall is a software program (which sometimes has a hardware component as well) that acts like a barrier between the Internet and your personal computer. It checks what information is flowing in from the Internet to ensure that only "safe" information gets into your computer. Some firewalls also check the information leaving your computer for the Internet to ensure that it isn't being used to send out unauthorized information (say, if it were being remotely controlled and trying to attack another computer).

Firewall software is often built into routers, which can be used to connect one or more computers on a home network to the Internet. If you only have one computer hooked up to the Internet, you can use "stand alone" firewall software to protect yourself.

Once you've installed a firewall, you can set it up to make your exposure to threats on the Internet as wide or as narrow as you wish. Many of these programs also provide visual cues to show you how much or how little "traffic" is flowing between your computer and the Internet, as well as to provide a warning

when an intruder is trying to compromise your computer.

Again, it doesn't matter which firewall software you use, as long as it's turned on, properly configured, and up to date. Like anti-virus software, if it's not properly maintained, it will not protect you when you need it most.

Operating System and Software Patches

If there's one particular area of neglect that leaves your personal computer open for compromise or attack, it's the failure to install system updates on a regular basis. Many people assume that these patches have to do with system performance or new features, but these days they're more about fixing "back door" access to your computer system.

If you use the Windows operating system, the computer update function, which gets a patch from Microsoft and installs it onto your computer, is generally easy to find. You can often set up this function to be automatic, so you don't have to be involved at all. Just make sure that your system is updated regularly. A patch may not appear often, but when it does, it generally means that someone out there is going to try to exploit the vulnerability of your computer until it is corrected. It's a bit of a horse race to see what gets there first: the patch or the virus.

As the method for obtaining a software patch varies from version to version of a computer operating system (and among software programs as well), I won't go into all of the methods here. Instead consult the information provided in the online help that comes with all Microsoft products to find what you need.

Anti-Spyware Software

Software to prevent spyware from being installed on your computer while you surf the net is relatively new, but the proliferation of spyware over the past few years has spurred development in this area. Part of this disturbing trend is the use of Internet websites to distribute "malware."

Malware (short for "malicious software") is similar to the traditional computer virus, worm, or Trojan, except that the delivery method has changed. As a result, many anti-virus software packages don't detect them. Luckily, newer versions of some popular anti-virus software

Arm Yourself Against Intruders

Here are some resources that will help you build up your home computer's anti-intruder defenses. This isn't a definitive list and you're strongly advised to do your own research.

Also, you should know that using the resources provided here won't guarantee that your home computer and network will be 100 percent protected from an outside attack. The amount of protection you can achieve with your particular computer depends on many factors, including your level of skill and understanding in operating and maintaining your defenses.

In any event, always backup important information on storage media separate from the computer on which it was created. Also, carefully read the instructions that came with your computer, its operating system, and the computer software that is installed on it to find out how to get regular updates and patches on-line.

Attack Warnings and General Information

www.cert.org—United States Computer Emergency Readiness Team (CERT) coordination center homepage. An up-to-date advisory of attacks taking place on the Internet as intercepted by computer specialists employed by the Department of Homeland Security.

www.us-cert.gov—CERT home page. Advisories and valuable background technical information.

www.gcn.com—Government Computer News Daily. Has a section on homeland security issues.

https://analyzer.symantec.com/—A daily analysis of attack events from around the world (generally in the millions).

Free (and Safe) Computer Evaluations for Vulnerability

http://security.symantec.com/—On-line service provided by Symantec Inc. (publisher of Norton Anti-Virus); provides complete (and secure) system check for vulnerabilities, whether open ports or computer viruses. Note that the site will only uncover problems, not fix them.

Firewall Protection

www.zonelabs.com —Zone Alarm firewall software. This free downloadable commercial product is well designed and easy to use and is one of the more popular products in use today. If you want more features (such as virus protection) you can buy one of their inexpensive upgrades.

Anti–Spyware Software

There are three excellent software products you should have on your home computer for the best possible spyware protection. Ironically, all three of the products are free. More ironically, in comparison tests conducted with expensive commercial software, the free software worked better.

www.lavasoftusa.com—Ad-Aware SE. One of the first, and still considered the finest, spyware removal programs available. Easy to use and operate, with updates to their malware list provided regularly.

www.javacoolsoftware.com—Spyware Blaster. A must-have program if you're surfing the Net. It runs all the time and blocks spyware from being installed on your computer.

www.spybot.info/en/index.html—Spybot Search and Destroy. Another must-have that not only blocks spyware, but also scans, detects, and removes any that's been installed. Many other features also provided to help keep your computer running clean.

WARNING: The above sites can be trusted and have good reputations. *Don't* be tempted to click on pop-ups that say "your computer may have been infected with spyware, click here to remove it." If you do you will be infected with spyware. Likewise don't allow any site to download and install what professes to be an anti-spyware program; these are fakes that can compromise your computer's security.

Pop-up Blockers

www.google.com/downloads/—Google Search Engine Toolbar. This provides you with several features that will help you search the Net, including a good pop-up blocker. It's free.

http://toolbar.msn.com/—Microsoft Tool Bar. Same as the Google Toolbar, but with some added features for Microsoft products and services. Good pop-up protection as well. It's free, too.

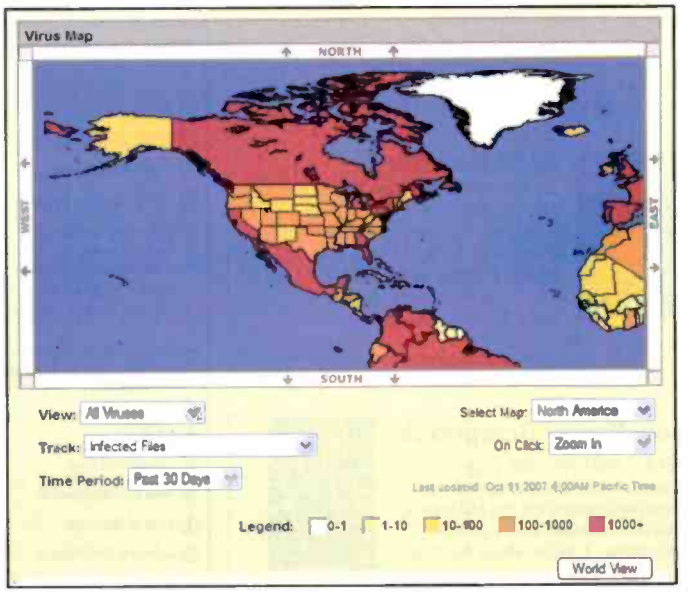
can detect spyware and malware (another good reason to keep this software up-to-date), but their focus is still on traditional virus delivery, such as via email.

The solution here is to use a new anti-spyware program to protect your computer. These programs function like anti-virus software when you receive an email. However, in this case, the software either checks to see if spyware programs have been deposited in your computer, or blocks them from coming in at all. Other programs will scan and clean your computer of any that may have managed to make their way into your computer.

If you've been doing a lot of net surfing over a long period of time, be prepared for a shock when you run your anti-spyware program the first time. And, if you have the type that can scan for problems, you may find that you've picked up a large number of programs that will need to be removed.

Many people have reported that after removing these programs, their computers seem to "come alive" again, running computer tasks and programs faster than before. This is because many spyware programs use a significant amount of computer resources (memory space and CPU power) without the user even knowing they were running.

Even with anti-spyware software installed, you may still need to update their data or versions on a regular basis. Given how quickly new spyware programs are produced, once or twice a week to do maintenance is not excessive (some people check daily).

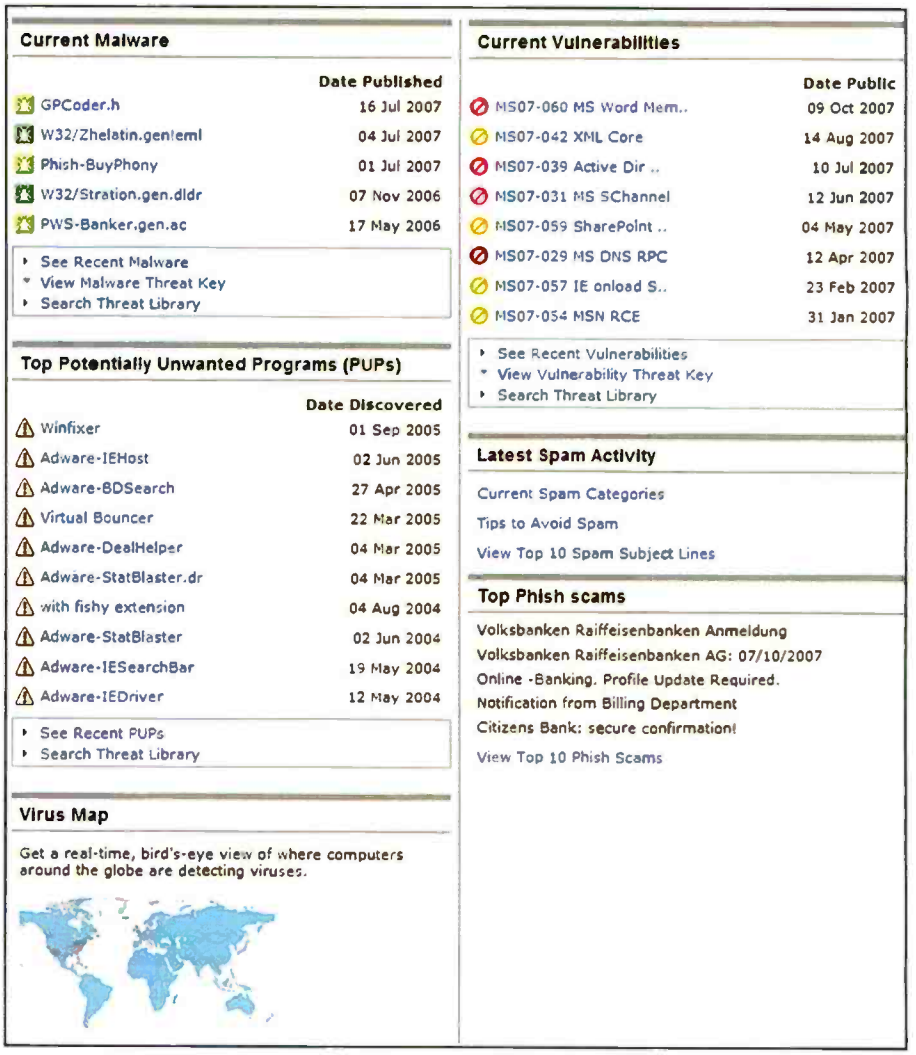


Attacks on personal computers are global and unrelenting. This map shows the distribution of such attacks as measured by the number of infected files identified around North America over a 30-day period. Many of these files contain software that will turn a computer into a Zombie. (Courtesy McAfee Avert Labs)

Pop-up Blockers

These are fairly straightforward components that can be added onto whichever version of Web viewer you're using, say Microsoft's Internet Explorer or Firefox. These add-ons prevent pop-ups from appearing when you visit a website that employs them.

There are also a number of stand-alone programs you can run as separate software programs. These range from freebees that you can download to commercial products that can be bought at computer stores. You should just be aware that some legitimate Web-based services do use pop-ups to control some of their functions, and these may be blocked as well. A good



Current Malware

	Date Published
GPCoder.h	16 Jul 2007
W32/Zhelatin.genteml	04 Jul 2007
Phish-BuyPhony	01 Jul 2007
W32/Stration.gen.dldr	07 Nov 2006
PWS-Banker.gen.ac	17 May 2006

See Recent Malware
View Malware Threat Key
Search Threat Library

Top Potentially Unwanted Programs (PUPs)

	Date Discovered
Winfixer	01 Sep 2005
Adware-IEHost	02 Jun 2005
Adware-BDSearch	27 Apr 2005
Virtual Bouncer	22 Mar 2005
Adware-DealHelper	04 Mar 2005
Adware-StatBlaster.dr	04 Mar 2005
with fishy extension	04 Aug 2004
Adware-StatBlaster	02 Jun 2004
Adware-IESearchBar	19 May 2004
Adware-IEDriver	12 May 2004

See Recent PUPs
Search Threat Library

Virus Map

Get a real-time, bird's-eye view of where computers around the globe are detecting viruses.

Current Vulnerabilities

	Date Public
MS07-060 MS Word Mem..	09 Oct 2007
MS07-042 XML Core	14 Aug 2007
MS07-039 Active Dir ..	10 Jul 2007
MS07-031 MS SChannel	12 Jun 2007
MS07-059 SharePoint ..	04 May 2007
MS07-029 MS DNS RPC	12 Apr 2007
MS07-057 IE onload S..	23 Feb 2007
MS07-054 MSN RCE	31 Jan 2007

See Recent Vulnerabilities
View Vulnerability Threat Key
Search Threat Library

Latest Spam Activity

Current Spam Categories
Tips to Avoid Spam
View Top 10 Spam Subject Lines

Top Phish scams

Volksbanken Raiffeisenbanken Anmeldung
Volksbanken Raiffeisenbanken AG: 07/10/2007
Online -Banking. Profile Update Required.
Notification from Billing Department
Citizens Bank: secure confirmation!

View Top 10 Phish Scams

Next to a properly protected computer, knowledge is the most important weapon in the battle against intruders. There are many good sources of information regarding the latest attack methods intruders employ. This information is most often provided by software companies that sell anti-intrusion software (commonly known as anti-virus or anti-spyware software). Here's an example of the information provided at the McAfee threat center (www.mcafee.com/us/threat_center)

pop-up blocker will let you set up a "safe list" of legitimate sites and will work properly when you visit them.

Again, you need to make certain you have the pop-up blocker properly configured and operating when you surf the Web. Always make certain the blocker is on before you start surfing and check to see that it's actually capturing pop-ups. If it's not working as you think it should, don't leave things to chance; either check with the software publisher's technical support people or get a better blocker.

The Best Computer Defense

The best defense system against an intruder is to have multiple levels of security protection installed, properly configured, fully operating, and properly maintained. It only takes one "bite" for your computer to be turned into a Zombie, so make sure that bite never takes place.

Lack of maintenance or improper operation is the most common cause of security compromises in a home computer. If you have a computer attached to the Internet, make it a point to sit down and check it over to see if you have the proper defense system in place. For further information on home computer network security and software resources, please see the sidebar provided.

Given the importance your personal computer's security now plays in Internet security overall, the work you put into it is truly an act of maintaining America's homeland security. Don't let your computer become a Zombie in somebody's cyber army or criminal organization!

OUR READERS SPEAK OUT

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 email 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 email via the Internet to editor@popular-communications.com.*

Dear Editor

I enjoyed your article on college radio (September '07) and I can add another "first" to the long history of WRUC at Union College: the first remote play-by-play broadcast of an athletic event, the Union-Hobart football game played on November 13, 1920.

I was a "morning man" on WRUC in the late-60s. Our equipment was relatively primitive, and we broadcast in AM over a carrier current system through the wiring of the college residence halls and by telephone line to nearby Skidmore College in Saratoga Springs, New York. But our production standards were high, and many of our alumni went on to successful careers in broadcasting and entertainment, including CBS News correspondent Richard Roth, and film director Phil Alden Robinson (*Field of Dreams* and *Sneakers*).

Today, WRUC enjoys a superb FM studio that is still maintained and staffed entirely by volunteer undergraduates. Their sound is imaginative, and best of all, they're having a great time.

Peter K. Smith
Johnstown, New York

Dear Editor

What a great issue this 25th Anniversary edition of *Pop'Comm* is... with the usual terrific articles/ columns by Gerry Dexter, Shannon Huniwell, Peter Bertini, Gordo, Bill Price, and the rest of the gang!

Then to have two "blasts from the past"—the dynamic duo of Uncle Tom Kneitel and Alice Brannigan as guests was icing on the cake. Thank you!

It was always a pleasure to read their informative and entertaining offerings over the years, and I seem to recall a bit of a "stir" that developed when the first photos of Alice appeared in the magazine?

Afterward, Tom was deluged with requests for more photos, a phone number, an address, etc., etc. A few letters to the editor even appeared before the publishing "taboo" on this subject was enacted. Things only began to return to normal after Tom emphatically stated and restated that Alice's privacy would be jealously guarded. No more photos and no personal information released.

Likely, only Tom and Alice are aware of the extent of the "proposals" received and I doubt they were amused during this "happening." However, it was entertaining to follow and is definitely a part of *Pop'Comm* lore! <grin>

Tom's "pen-presence" in the magazine is missed. He was always willing to take the time from his busy schedule to respond to personal inquiries.

Mike Adams, N3JW
(ex WA4EJV, N4EVS)
Via email

Dear Mike:

Thanks so much for the letter and the kind words about Pop'Comm. *I agree with you about Tom's presence (pen, and more) being missed in (near, with, etc.) the magazine. I personally considered it quite a coup when I talked him into writing a guest editorial (it wasn't easy!). And ditto my agreement on the pieces by our usual suspects. We've got a great bunch of writers, that's for sure.*

We appreciate your taking the time to drop a note. Please keep up the feedback.

—Editor

Kudos To Kent And Pete

Dear Editor:

I'm writing to say that I really appreciate Kent Britain's antenna column. These days, everybody needs something cheap! He knows how to walk a reader through easy steps to make something out of stuff you already have in your garage or basement! Please, keep those great designs coming.

I really enjoy Peter Bertini's articles ["The Wireless Connection"], too. I can't get enough of all that old-fashioned home-brew stuff.

Thanks for publishing such a great magazine. I'm a long-time subscriber.

Bob Krantz
Via email

INFOCENTRAL *(from page 6)*

German programming including news, thanks to the special status of the Alto Adige region (Sudtirol) where Rai Sender Bozen, which recently also became available on the Internet, is active.

The Italian language radio programs of Rai will continue on satellite, Internet, and some relays on FM in Canada, Australia, and the United States. These broadcasts are mostly relays of Rai Radio 1, Rai Radio 2, and Rai Radio 3. Rai International focuses more on its television activities. Rumors suggest that a Spanish language TV news program might re-appear.

FCC Dismisses Family Radio Application For 26-MHz DRM License

The Federal Communications Commission has dismissed the application of David Joseph for a 26-MHz DRM license in the Experimental Radio Service. The proposed station was to broadcast from the Oakland, California, headquarters of international broadcaster Family Radio.

In an October 5, 2007, letter, the FCC Office of Engineering and Technology told Mr. Joseph:

> You are advised that the Commission is unable to grant your application for the facilities requested. The operation proposed in this experiment cannot be used to broadcast to the general public.
>
> There are a number of 1 kW and 5 kW DRM operations in the 26 MHz band in Europe, and since it would seem reasonable to assume that there had been plenty of DRM transmission testing done in past, the information from that testing should have already been obtained and used in determining if DRM is a feasible means of communication.

The dismissal of the Family Radio application is not a setback to the eventual approval of local 26-MHz DRM broadcasting.

VOA Doubles Broadcasting In Burmese

The Voice of America has doubled its output in Burmese as of late September. The new schedule on shortwave is:

1130–1230 UTC on 11965, 15540, 17775 kHz
1430–1500 UTC on 1575, 9325, 11910, 12120 kHz
1500–1530 UTC on 9325, 11910, 12120 kHz
1500–1530 UTC (Sat/Sun only) on 1575 kHz
2300–2400 UTC on 6185, 7430, 11980 kHz

by Ken Reiss, radioken@earthlink.net

Programming The PRO-94—A Tutorial

Some things just never seem to lose popularity. Although it was just recently discontinued, I continue to get letters about the PRO-94 trunking scanner by RadioShack, so there must be quite a few of them out there. One batch of recent letters dealt with how to program a trunking system on the PRO-94, so I thought I'd offer a few tips and perhaps a somewhat simpler process than the owner's manual. As an added benefit, the PRO-96, the 94's bigger brother is still produced, and much of this should apply to that receiver as well (although the 96 does deal with a few things differently and some of the key sequences are different).

Picking A Bank

The PRO-94 is sold as a 1,000-channel scanner, but that's a bit misleading; it's really two 500-channel scanners occupying the same box. It offers 50 channels in each of 10 different banks, in two separate groups, A and B, and the first thing you need to do is figure out which one you're in. Press the MAN switch to stop the scanning and then press and hold the A/B HOLD switch to switch back and forth. An A or B should show on the display to indicate which group you're in. Once that's decided, then you can pick one of the 10 banks, 1–10, and a channel.

You can navigate to a particular channel by entering the channel number and pressing MAN, or you can use the UP and DOWN arrow buttons to skip through manually. Press PROGRAM to put the unit into the program mode after you've picked the bank group, bank (1–10) and channel (any of the 50 in that bank) that you want to store a frequency in. Enter the frequency and press enter. It's stored there as a conventional channel that can be scanned, as in any normal scanner. If you're entering a conventional frequency, that's about all there is to it.

Again, there are 50 channels per bank, and 10 banks are active at once (group A or B), so up to 500 channels can be scanned at once in the conventional mode. Or, you can choose to dedicate one or more of the banks to trunking mode, and add that in with the conventional channels.

Programming And Trunking Systems

Trunking is where programming always gets a bit tricky. No matter what kind of scanner you have, there's additional information required to scan a trunked system, and each scanner manufacturer handles that differently. Let's take a look at the basics of how the PRO-94 handles a Motorola trunking system, which is by far the most common for public safety use.

To program a trunking system, it's useful to have a little understanding of just what the trunking system is doing that's different. In a conventional system there are allotted frequencies, and each group or service is assigned a frequency for its use. For instance, the first district police would all be on Channel 1, which would be 154.845 in your scanner. All the traffic and conversations for that district would take place on that one channel. When nobody was talking (most of the time) the frequency would sit idle.

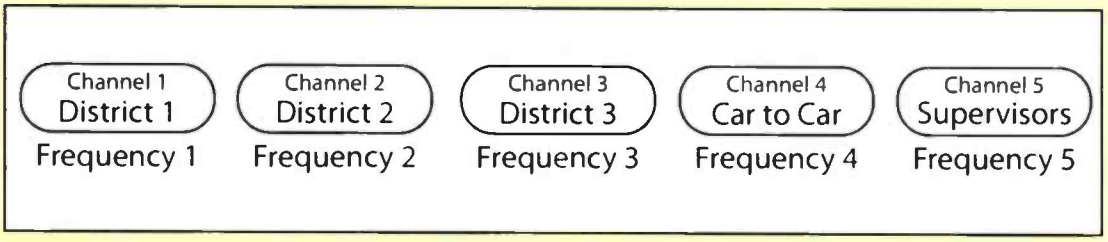
Trunking systems use a computer to manage the individual frequencies a little better and to provide more "virtual" or software channels than is possible with a conventional system. Using this approach, when nobody is talking, the channel can be opened up to other users. When someone on the first district channel wants to talk, a computer assigns an open frequency and sends all the people who want to listen to that communication to that frequency. It seems like Channel 1 to the users of the system, because all they hear is their own traffic, but that conversation could take place on any of the trunking system's available channels.

In addition, another virtual channel could be created to allow the police officers to talk from car to car without having to request any special consideration from the FCC for extra fre-

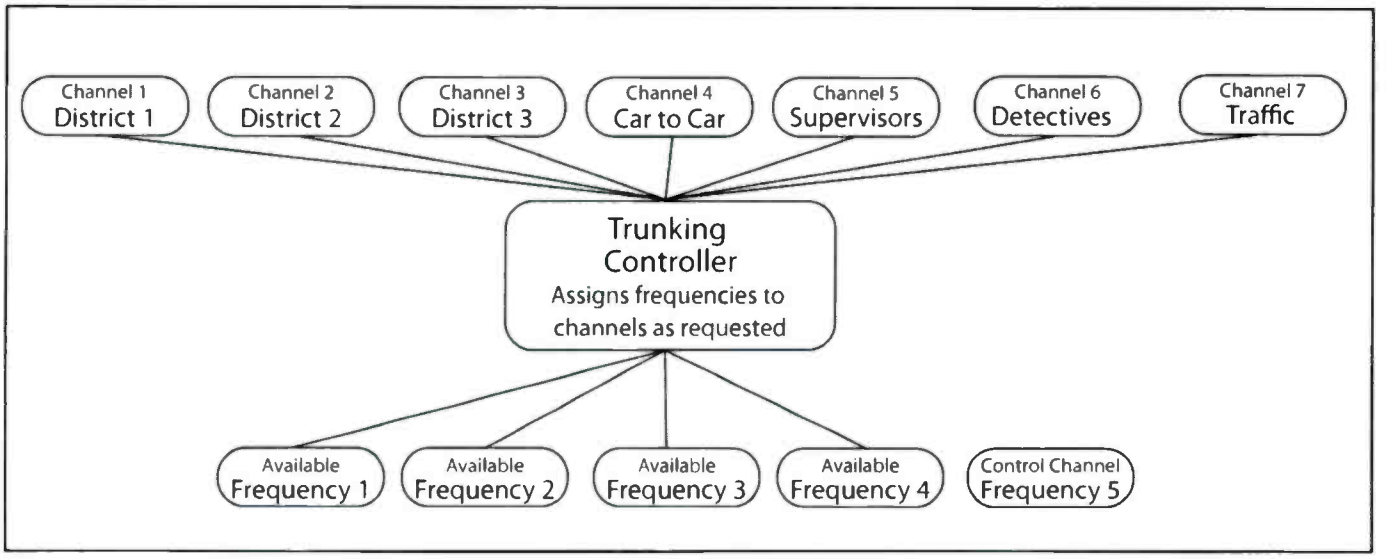
PRO-94 Frequency Coverage

The PRO-94 provides pretty complete coverage and makes a great all-around scanner, as well as a trunking scanner. Here's what you get:

29–54 5 VHF Lo Band
108–137 Aircraft Band
137–174 VHF Hi Band
216–225 1-m Ham Band
406–512 UHF
806–956 Public Service "800" Band, less cellular
1240–1300 25-cm Ham Band



In a conventional system, each user is assigned a frequency for its use. That works fine, but the channel sits empty a lot of the time. These days, it's also very difficult to add channels as all the available frequencies are likely to be assigned to other users.



One of the main advantages of trunking is overcoming the limits on available channels. Here, in a simple five-channel trunked system, one of the frequencies is lost to a control channel, but the remaining four are available to be shared by as many "virtual" channels as desired. When one group needs to talk, the controller assigns the first empty frequency to the group until the conversation is completed.

quencies. It works the same way: when someone wants to talk on the car-to-car channel an open frequency is assigned and anyone listening gets sent there. As you can see, it's a more complex approach and a computer has to manage the frequencies, but a lot of possibilities are opened up. Our scanner has to be aware of this control system and follow along in order for us to scan the channels as we do conventional frequencies.

Trunking systems have three components that we're interested in. Let's look briefly at each.

The first, of course, is comprised of the frequencies the trunking system operates on. These are really just frequencies like any other scanner frequencies, except that by virtue of belonging to a trunked system, they get used a little differently.

Our second point of interest is the control channel, sometimes called the data channel. This is the signal that's sent out on one channel of the trunked system to provide instructions for the transceivers on the system. Some models use that same information to control the scanner. If you listen to a data channel on a regular scanner it just sounds like loud noise, and since it's on almost constantly your scanner would just sit there. It's a channel for information transmission, not listening in a trunking system, but a trunking scanner can use the information also.

Finally, there are the talkgroups or IDs. These are the software functions that actually represent "channels" (virtual channels) to the users of the system. For instance, suppose the officers of the first district all use ID 12300. When one of them transmits, a signal will be sent out on the control channel to tell all who are tuned to the 12300 group to go to a specific frequency for the message. The next time one of them transmits it will likely be a different frequency, but all of the 12300 group will be there, including you if your scanner is programmed to follow along.

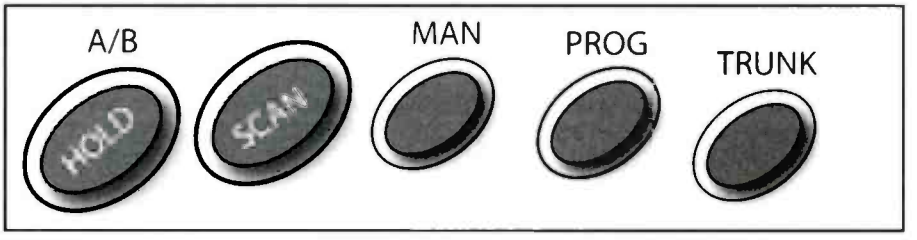
If you don't know all of this information, don't worry. The frequencies are pretty easy to find through online resources like radioreference.com, and once you have all the frequencies programmed in, the control channel will make itself known very quickly. IDs will take a bit of listening, but the PRO-94 has what is called an ID Search mode, where all conversations come through and reveal their IDs to you. Figure out which ones are of interest and you can store them so that you only listen to those later.

Unfortunately, you can't just start entering frequencies into the scanner and have it trunk correctly. You need to tell the scanner that you're entering frequencies that you expect to be used as part of a trunking group. You also need to put them in a bank together and indicate that the bank is trunked. You can mix trunked and conventional frequencies in the same bank so that you can monitor both at once, but I'd recommend against it, at least until you get comfortable with the trunked system.

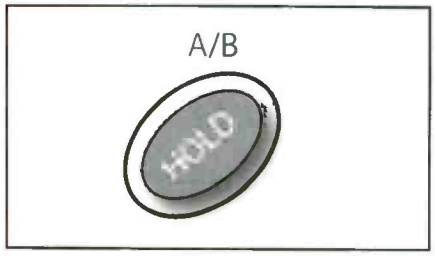
As mentioned previously, you have to dedicate a bank to a trunked system. Only one trunked system can be programmed into each bank, but since you have 10 active banks, you could, in theory, monitor 10 systems at once. But I'm not sure how much you'd hear, as that would be a lot of systems all at once.

Getting Started

To begin programming, pick a bank that you'd like to make a trunking bank. Press PROG and then TRUNK. The bank numbers will begin to flash available banks and you need to press the key that corresponds to the bank you want to program with the trunked system.



The group of keys at the top row of the scanner is where the programming mode and trunking controls are set.

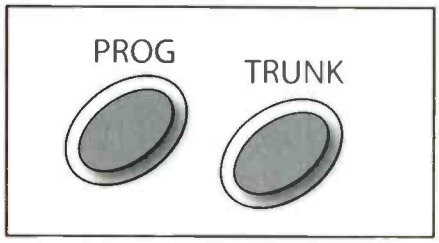


The A/B Hold switch is the key to accessing the other half of your scanner. While it really has 1,000 channels, only 500 are active at a time as either group A or group B. The active group will show on the display.

After pressing the number, you need to press the up or down arrows to step through the trunked system types. Select the one you want; in the case of Motorola, E2-800 for a Type II 800-MHz system (the most common), and then press the E key to confirm your selection. The scanner will then go to the first channel in that bank for you to begin entering frequencies. Press E to enter and the PROG to advance to the next channel. Even a large system usually has no more than 30 frequencies so you won't fill up the 50-channel bank. Many systems have only five or 10 frequencies.

Now that all the frequencies are entered, you're ready to start scanning. Press SCAN then SRC to begin searching for the data channel, and then for the talkgroup IDs. As IDs are encountered, you'll hear a piece of the conversation, and the ID will display. Keep an eye on it, or you may even wish to make some notes about the IDs you hear that sound interesting. Some people make a hobby of trying to identify all the IDs on a particular system. It's easy for the first several you encounter, but gets more difficult on less used IDs.

You can press the HOLD button while the search is running to hang onto an ID for a while, much as you would use the manual mode on your regular scanner. But remember that trunking systems may be talking on different frequencies every time they transmit, so holding an ID is like monitoring the channel, no matter where that channel may be. This feature, that allows you to follow and understand IDs, is what makes a trunking scanner unique and very useful.



Press PROG then TRUNK to enter the trunk system programming mode.

While you're searching, you may start to notice some IDs that contain traffic that you know you're not interested in. You can lock them out by pressing L-OUT. You can have up to 100 IDs locked out of your search in each bank.

Storing Channels

Once you've searched for a little while and started to identify channels that are of interest, you'll want to store them in a scan list. Just to be clear, each trunking system you program into your scanner has a set of five scan lists of 10 IDs each for a total of 50 channels that you can monitor (remember, these are trunked channels, not actual frequencies any longer). Pressing MAN while the scanner is in the trunk search mode will take it to the manual mode and present you with the scan lists.

Press MAN again and then the up or down arrows to select the desired ID. Press PROG to enter the program mode for the IDs and enter the ID followed by E. For a Motorola Type II system, the ID should be a five-digit number. If you're scanning another type of system, consult your manual for the particular format of the ID information that needs to be entered.

Pressing UP or DOWN or PROG again moves you to the next channel you wish to program. Once you're done, press E once again to exit the program mode. Pressing SCAN will begin scanning the IDs you've stored.

As you enter IDs into different lists, you can use the lists like banks of channels for the trunked system; for instance, all the district 1 information could be in list 1 and all the citywide could be in list 5. You could then turn on or off all those IDs at once by activating the list you're interested in at the time. Pressing the number keys 1–5 will activate or deactivate the corresponding bank's list. One list must be active at all times, but you can have all five on at once if you like.

Scan

Keep in mind that all of this is just for the one trunked bank. You can have conventional banks and other trunked banks active at the same time; you simply repeat the process for programming each trunk-

Frequency Of The Month

Each month we ask our readers to let us know what they're hearing on our "Frequency Of The Month." Give it a listen and report your findings to me here at "ScanTech." We'll pick a name at random from the entries we receive and give the lucky winner a free one-year gift subscription, or extension, to *Pop'Comm*.

Our frequency this month will be 860.5875, which is a common trunking system frequency. See if there's anything active in your area and let me know. You can email your results to radioken@earthlink.net or via snail mail to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126. Please be sure to include the frequency on the envelope or in the subject line so it can be routed correctly.

ed bank that you wish to store. There's no reason that you can't store the same trunked system in multiple banks, each with different talkgoup ID lists if you want. You can have conventional banks as well.

Pressing the TRUNK button will turn the trunking mode on and off. With the trunking off, you can select the banks you want to scan by just pressing their number. Once you've selected the banks you're interested in, turn trunking back on and the conventional and trunking banks will be scanned alternately. The trunking systems have some priority for the scanner's time since trunking systems are so active. If there's no activity for one second, it will jump to the next bank. If the delay is turned on, this pause increases to five seconds of quiet before jumping banks. Scanning several active systems at once could mean a long delay before you get back to where you started.

Enjoy!

Of course, a short article like this is no substitute for your manual. Your scanner is capable of a lot more, including scanning several other types of trunking systems. All trunking systems do the same thing (that is create the virtual channels), but different manufacturers do it in different ways, and sometimes use different terminology. Don't be put off—it's the same idea. So start programming your scanner with a trunked system in your area and have fun!

Until next month, good listening.

by Bruce A. Conti, BAConti@aol.com

An Even More Super Super Loop

The Super Loop antenna, a member of the terminated broadband loop genre of antennas that includes the Flag and Pennant, was introduced last August here in "Broadcast Technology." Since that introduction, there have been further developments warranting a design update. Here's another look at the Super Loop, new and improved!

Loop Laconic

The Super Loop, Flag, and Pennant antennas are all terminated broadband loop antennas that feature a single loop of wire with a series "termination" resistor. One major advantage of a loop antenna is its ground independence or floating ground; no direct connection to ground is required at the antenna. Therefore, the antenna "termination" is essentially a "self-termination" rather than a conventional termination to ground. That means a loop antenna can be used anywhere, regardless of whether or not a good ground is available. Other advantages of a loop antenna are its low noise characteristics, broad bandwidth covering longwave through shortwave frequencies, and directional capability. A broadband loop is also easy to build, simply consisting of a single loop of wire, RF matching transformer, and lead-in to the receiver.

What separates the Super Loop, Flag, and Pennant from a simple broadband loop antenna is the termination resistor. The addition of a series termination resistor forces the normal bidirectional figure-8 reception pattern of a loop antenna to favor a single direction with a wide cardioid beam.

Downsizing

The Super Loop initially earned its name because of its super-sized dimensions. Unlike the relatively compact dimensions of the Flag and Pennant, the Super Loop was super-sized in an attempt to improve low-angle gain at mediumwave frequencies. The hypothesis is that the bigger the antenna, the better the performance, due to the long wavelength of AM broadcast band frequencies.

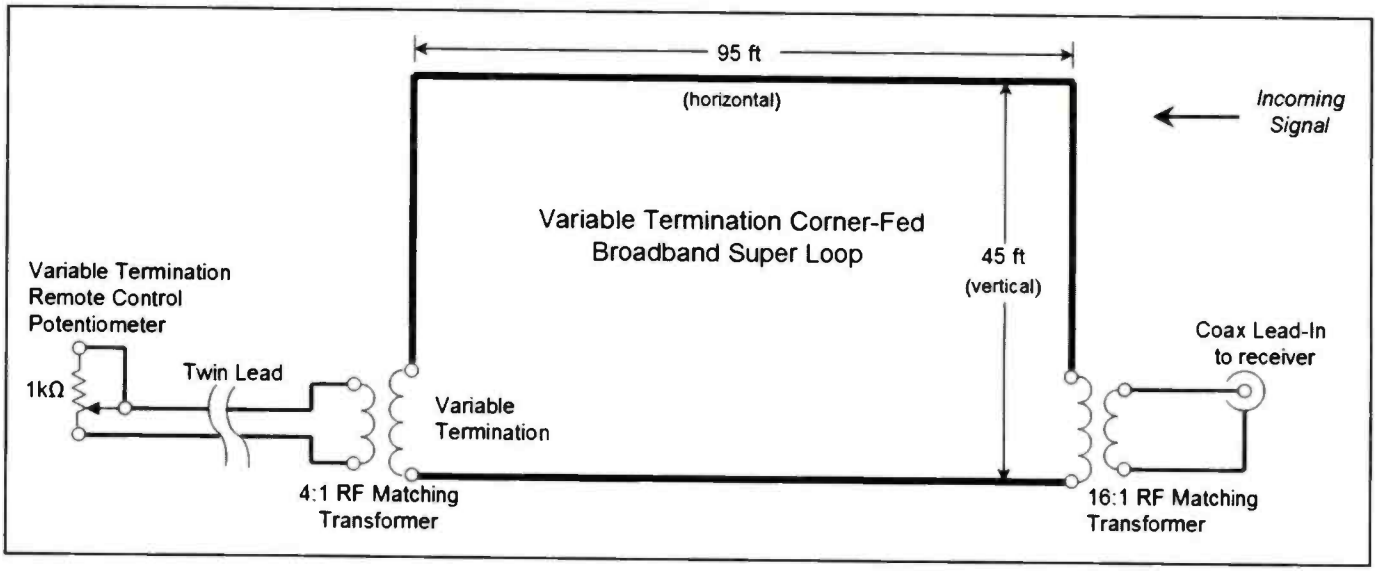
Well, tests of mini and micro Super Loops are proving that size doesn't really matter. Three different size antennas were modeled and tested at a southern New Hampshire site. Super Loop antennas measuring 45 x 95 feet, 50 x 75 feet, and a mini 10 x 20 feet all proved to have comparable performance. Other DXers are reporting similar results with various dimensions. Mark Connelly, WA1ION, went one step further, successfully testing an approximately 6 x 6-foot micro Super Loop while DXing from a coastal Massachusetts site.

"The version I tested was basically an overhauled 2 x 2-meter square broadband loop, now fed at one bottom corner and terminated at the other for a cardioid pattern, instead of being fed at one break in the wire (typically in the middle of the bottom wire) for the bidirectional figure-of-8 ordinary loop pattern," says Mark. He continues:

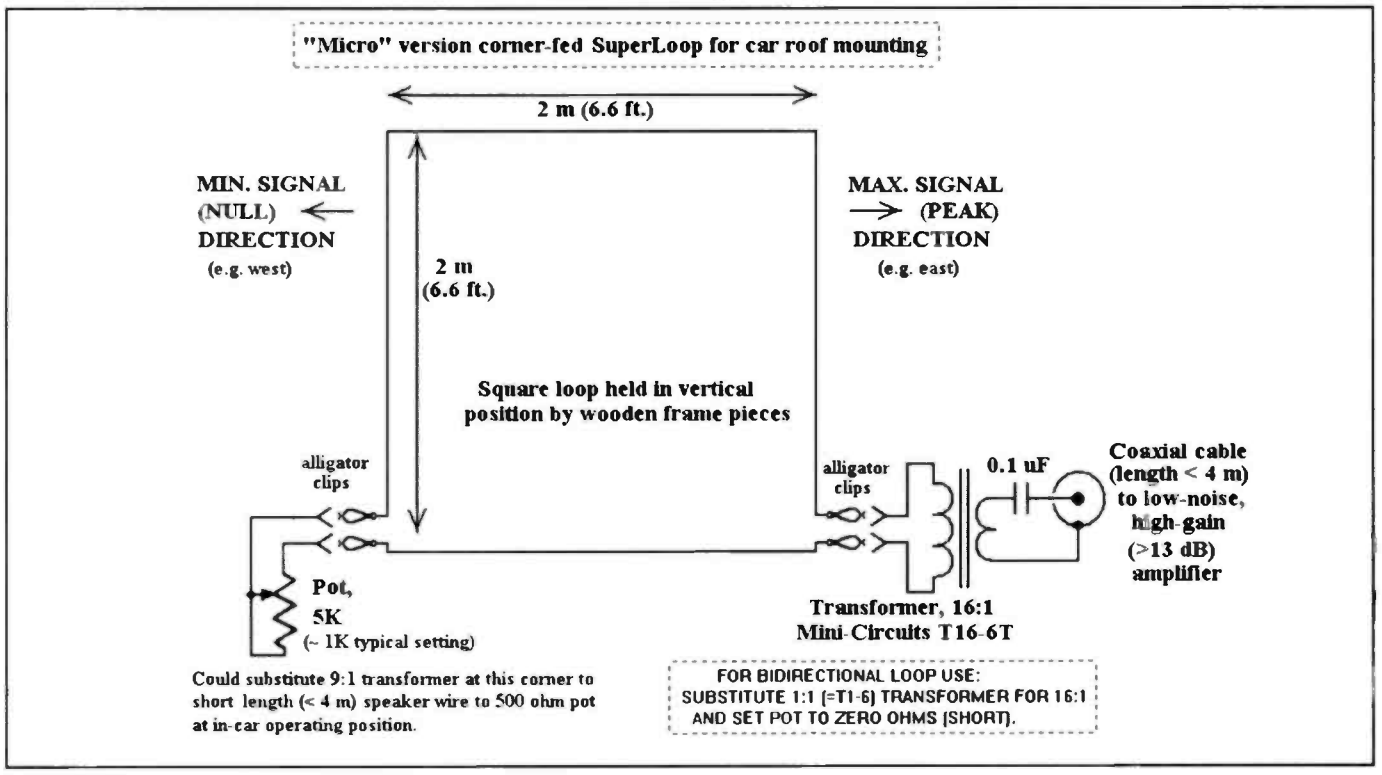
Because of the small dimensions of the antenna, you definitely need low-noise high-gain amplification. A single DX Engineering RPA-1 amplifier, at about 14 dB of gain, is borderline. At night at the seashore with a band full of big fat transatlantic, Latin American, and domestic signals, it was OK. I am thinking of trying out higher gain amplifiers for situations where more signal output is required: daytime DX, inland DX, auroral DX, post-dawn transpacific signals in western North America, etc.

The idea of this antenna is to get at least a moderate cardioid rear null effect (15 to 20 dB would do) from a single car-roof mountable antenna and then phase it against a small amount of signal from a nearby active whip when some additional nulling is required.

While it was still daylight I tuned New York stations 660 WFAN and 880 WCBS, still arriving primarily via groundwave. The termination pot could be adjusted to get a null of about 20 dB on these stations, so I was happy with that. In this first version, a 5k-ohm pot was



The Super Loop antenna with remote-controlled termination.

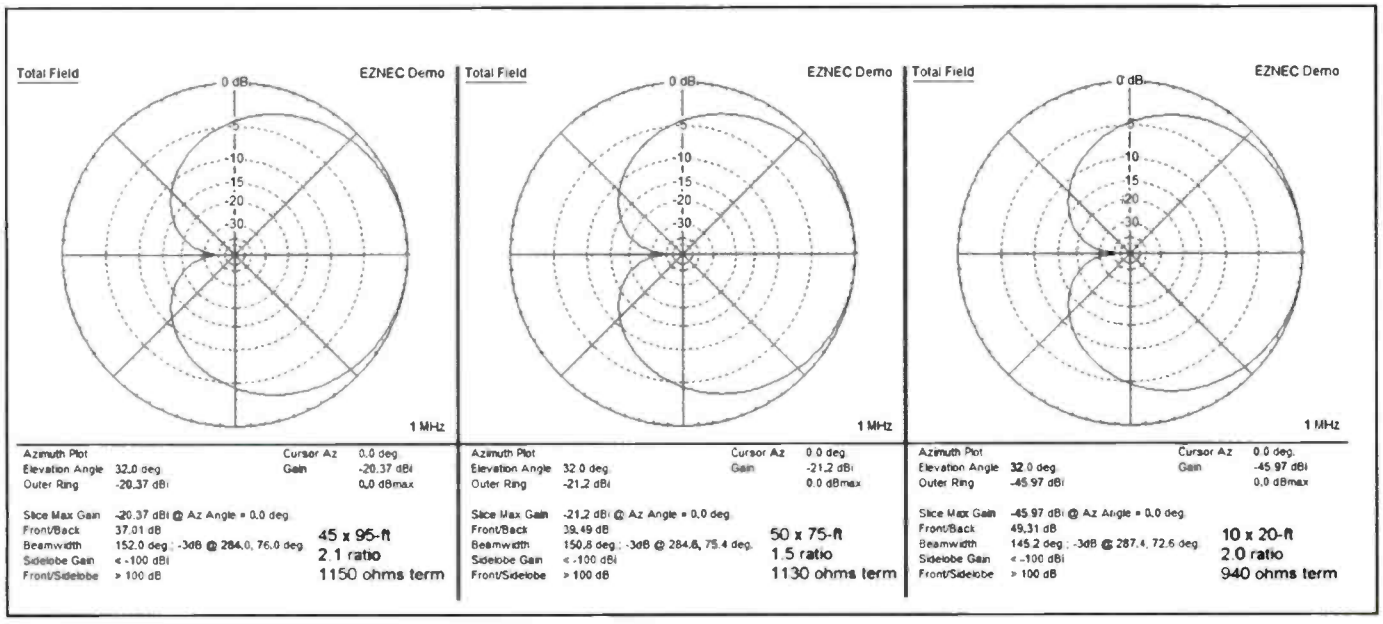


The "micro" Super Loop design by Mark Connelly.

positioned at the antenna. The next thing I'll try is replacing it with a stepdown transformer, a short length of feedline, and a lower range pot at the operating position inside the car. This should allow "on the fly" readjustments of termination resistance as I do on my much larger Super Loop at home.

Transatlantic signals started showing up just about as soon as I was set up. In many cases phasing the whip against the micro Super Loop was unnecessary: little additional rejection of off-the-back stations was required. Had I been using the bidirectional broadband loop, I'd have to phase it against the active whip in many more DXing situations. So this new antenna is a time-saver and efficiency-booster.

An interesting situation was presented by 1170 kHz. Daytime pest WFPB—all waterpath and on a "DX-like" bearing—finally went off, revealing rather strong Radio Sawa, UAE. Once it was totally dark, WWVA began sneaking in under. A small readjustment of the termination pot had UAE alone and in the clear with no evidence of WWVA. Interestingly, at the same time on the active whip, WWVA was becoming dominant.



The cardioid beams of three Super Loop antennas of various dimensions simulated by EZNEC antenna modeling software.

So, in summation, the micro Super Loop was a success in its first field test. Refinements will include the aforementioned operator-position null pot adjustment and higher-gain amp capabilities.

Remote Variable Termination

The next significant improvement is the addition of a remote-controlled variable termination. This remote control can be implemented with any of the terminated broadband loop antennas (the Super Loop, Flag or Pennant). The termination resistor is replaced by an RF isolation transformer, and a twin-lead cable is connected from the transformer to a potentiometer located next to your receiver so you can vary the resistance to optimize antenna performance for specific situations.

For example, let's say you're trying to get a clear signal from 720 WGN Chicago but there's too much interference from 710 WOR-HD New York. Adjustment of the termination resistance can minimize, if not eliminate, WOR-HD interference for clear reception of the "Extension 720" program on WGN, even if the loop isn't aimed directly at Chicago. Adjustment of the termination resistor will allow for maximizing the null depth at various arrival angles and directions while maintaining broadband performance, something that can't be achieved with a fixed resistor at the antenna.

Replacement of the termination resistor with a remote-controlled variable termination is relatively easy and flexible. I assembled a variable termination using components from my electronics junk box. I replaced the fixed resistor on the outdoor Super Loop antenna with a Mini-Circuits 4:1 RF transformer, model T4-6, with the high impedance winding connected to the antenna. I ran twisted-pair speaker wire from the low impedance winding of the transformer to inside the radio room where it's connected to a 1k-ohm potentiometer. Just about any two-conductor cable will work, including 300-ohm twin-lead, speaker wire, and lamp cord.

Again Mark Connelly has taken it one step further by creating a remote-controlled reversible direction Super Loop, whereby the remote terminated corner and antenna lead-in to receiver can be switched. He explains:

> The present set-up here consists of 900 ohm-to-100 ohm binocular-core stepdown transformers at each Super Loop bottom corner. Speaker wire feedlines go to a switch, picking for a given line either the termination pot or a 2:1 transformer to the receiver 50-ohm input. You can set the null to be in either direction.
>
> If the pot is adjusted for 100 ohms, that equates to 900 ohms at the antenna. I find that ideal termination values can vary from 720 ohms to 2700 ohms at the antenna. Most of the time 1080 ohms at the antenna gets close to the best null. Lower on the dial tends to require somewhat more resistance than higher on the dial.

Regarding the remote controlled termination, Mark concludes, "I feel that it's a 'gotta-have' feature for Super Loops, Flags, Ewes, and the like."

Broadcast Loggings

Welcome to Lloyd Rasmussen, W3IUU, who writes:

I read the Braille edition of *Pop'Comm* but have seldom had much to report.

At my home near Washington, D.C., I can hear heterodynes produced by many transatlantic AM stations, but can seldom identify anything. However, while at Ocean City, New Jersey, about 500 feet from the water, I was able to identify Arabic programming on 1521 with WWKB Buffalo nulled out at 0300 UTC. Checking various Web listings convinces me that it was BSKSA from Duba, Saudi Arabia. At 0313 UTC I also identified some French speech on 1206 kHz (France Info, Bordeaux, France). The receiver was a RadioShack DX402 with no external antennas.

Congratulations, Lloyd, on some nice catches for a barefoot portable receiver, and a good demonstration of the power of sea gain.

Richard Hansen checks in to say that he's preparing to build a Super Loop antenna. "I hope to be putting one together very soon as I bought two rolls of 10 gauge wire," writes Richard. "One thought came to mind was if the loop itself were shielded it might even be quieter, noise rejection-wise." An interesting idea, perhaps well suited for the mini and micro versions. It might be implemented using coax for the antenna wire, but with the shield left open circuit. While I experiment with a shielded design, here are this month's selected logs. All times are UTC.

560 WMIK Middlesboro, Kentucky, at 0300 Southern Gospel, ID, "This is Family Christian Radio, WMIK Middlesboro," and an ad for the Sonic Drive-In in Middlesboro. Decent signal mixed with WNSR in Brentwood, Tennessee, from time to time. (New-GA)

585 RNE1 Madrid, Spain, at 0224 good with discussion between two men in Spanish. (DeLorenzo-MA)

567 RTÉ Radio 1, Tullamore, Ireland, at 0325 fair; discussing women's blogs on "The Business." Nice ID at 0330, "RTÉ Radio One." (DeLorenzo-MA)

612 RTM A, Sebaâ-Aioun, Morocco, at 0620 string music, Koranic vocal, woman/man parallel 207 kHz; throwing a loud het against local 610 WGIR. Sebaâ-Aioun sunrise 0622. (Conti-NH)

630 ERTT Tunis, Tunisia, at 0009 an Arabic female vocal; slightly under WPRO and over CHLT. (Connelly-MA)

675 Arrow Rock, Lopik, Netherlands, at 2359 "Under the Bridge" by Red Hot Chili Peppers; to fair peak with WRKO phased. (Connelly-MA)

700 RJR Hague, Jamaica, at 0232 excellent, all alone on the channel with "reggae rap" music and male DJ with Jamaican accent. (DeLorenzo-MA)

747 Radio 5, Flevoland, Netherlands, at 0340 fair; discussion of music by a man and woman in Dutch, into jazz at 0343. (DeLorenzo-MA)

765 RSR Option Musique, Sottens, Switzerland, at 0016 "Xanadu" by Olivia Newton John, then a woman in French; very good. (Connelly-MA) At 2330 excellent; Big Mountain "Baby I Love Your Way." (Conti-NH)

882 BBC Radio Wales, Washford, United Kingdom, at 0035 good; BBC program parallel 198 kHz. (Conti-NH)

1062 Danmarks Radio, Kalundborg, Denmark, at 0337 excellent; pre-sign-on open carrier. 0340 interval signal commenced, 0345 weather. (Conti-NH) At 0343 a repeated interval signal with xylophone or similar instrument, a few words were said by a man in Danish between the interval signals; excellent, better than 1060 domestics. (Connelly-MA) At 0400 fair with news by a woman in Danish, music starting at 0407 included "Poor Wayfaring Stranger" and 1965 hit "Turn Turn Turn" by The Byrds. (DeLorenzo-MA)

1071 3EL Maryborough, Australia, "Easy Mix 10-71." I received a very friendly letter from Bruce Lees, Manager, who mentioned the CD I enclosed was their station and it was also

verified by their logger. They run 5 kW into a two-tower setup at Carisbrook in Central Victoria, using a Harris DX-10 running at half power. He also enclosed the US $2 I sent saying it is their pleasure to respond to my report. The envelope is covered with beautiful stamps of $1.95 Australian. Australia QSL #226. This made my day. (Martin-OR)

1134 Hrvatski Radio, Zadar, Croatia, at 2322 very loud and clear with discussion between two men in an east European language. (DeLorenzo-MA)

1170 VOA Poro, Philippines, full detail QSL card received in 25 days for two-track CD report, signed just "VOA Audience Mail." Address: VOA, 330 Independence Ave., SW, Washington, D.C. 20237. Mentioned my first track was a Mandarin broadcast on top and it was not VOA. The second track in Cantonese was indeed VOA. So the Mandarin probably was either Korea or China. Also received a VOA magazine, VOA sticker and other goodies. Philippine QSL #25, MW QSL #2965. (Martin-OR)

1170 Radio Sawa, Al Dhabiya, United Arab Emirates, at 2334 an Arabic vocal, into nice "Radio Sawa" ID, then a U.S. soul female vocal; good. (Connelly-MA)

1215 Virgin Radio, United Kingdom, at 0311 fair with rock music including "You and Me" by The Wannadies and Don McLean's "American Pie." (DeLorenzo-MA)

1300 KAPL Phoenix, Oregon, at 0530 contemporary Christian music and rare live announcements since first hearing the station off and on over the past week. Clear ID as "KAPL Phoenix," being in Arizona, had me puzzled at first. (Barton-AZ)

1431 Radio Sawa, Arta, Djibouti, at 0030 a mellow vocal, Radio Sawa ID by a woman, then synthesizer and drum-heavy dance music with an Arabic vocal; good. (Connelly-MA)

1458 Fllakë, Albania, at 2225 good with China Radio Int'l (CRI) program, Chinese orchestra instrumental. Signed off 2230 leaving Sunrise Radio weak but alone on the frequency. (Conti-NH)

1458 Sunrise Radio, Brookmans Park, United Kingdom, heard at 0237 fair, at times good; Bollywood-style male/female vocals, Sunrise jingles. (Conti-NH)

1521 BSKSA Duba, Saudi Arabia, at 2240 parallel 9555 and 9870 kHz with a man in Arabic; huge signal, stronger than the shortwave parallels and completely demolishing 1520 kHz. (Connelly-MA)

1530 Radio Vaticana, Vatican City, at 0419 in WCKY null; interval signal and choral vocal. (Conti-NH)

1539 Radio Aap Ki Dunyaa, Al Dhabiya, United Arab Emirates, at 0100 fair to poor; "Voice of America... Washington" ID in English, fanfare into news in Urdu. (Conti-NH) At 2315, Radio Aap Ki Dunyaa IDs; fair. (Connelly-MA)

1548 Voice of Russia, Grigoriopol, Moldova, at 0335 fading up to good levels at times; classical music hosted by a woman in English. 0357 ID, "Voice of Russia World Service." Moldova sunrise 0409. mp3 uploaded to dxclipjoint.com/loco_the_dx_cat. (Conti-NH)

Thanks to Rick Barton, Mark Connelly, WA1ION, Marc DeLorenzo, Richard Hansen, Patrick Martin, Bert New, and Lloyd Rasmussen, W3IUU. Till next time, 73 and Good DX!

Pop'Comm January 2008 Reader Survey Questions

This month we'd like to ask you about your shortwave listening habits. Please use the Reader Survey Card and circle all appropriate numbers. Thanks for participating.

How important would you say shortwave radio is in your hobby?

Very important, I'm hooked....1
Moderately important, I tune in when I get the chance..2
Not very important, but I own a receiver/occasionally listen to streaming....3
Never listen, don't own a radio....4

How often do you typically listen to shortwave radio during the course of a typical week?

Over 10 hours....5
Between five and 10 hours....6
Between two to five hours....7
Between one to two hours....8
Less than one hour....9
I never listen....10

Why do you listen to shortwave radio?

For global news coverage....11
For its entertainment value....12
To learn more about a country or language....13
As a DXing challenge....14
I love all things radio....15

How have your shortwave radio listening habits changed over the years?

I listen to more stations over my receiver....16
I now listen via the Internet....17
They haven't changed, I listen to the same types of broadcasts for about the same amount of time, in the same way as always....18
I don't listen as much as I used to....19
I've stopped listening to shortwave radio....20

I intend to improve my shortwave listening experience by upgrading

My receiver....21
My antenna....22
My computer....23
My software....24
I'm happy with my listening station....25
I don't listen to shortwave radio and don't plan to start....26

by Kent Britain, WA5VJB

Active Antennas For Better SW Reception

Photo A. HF and HF to UHF active antennas.

An easy way to improve SW signal reception is to add an amplifier to your antenna, and the best way to do that is to make the amplifier part of the antenna itself. Putting an amplifier on a small antenna can really improve your SWL experience, so this month we'll be covering a couple of active antennas, the MFJ-1020 and the Ramsey AA7B, which do just that. And, of course, we'll also be covering our usual assortment of side topics as well as addressing a couple of our reader's questions.

In **Photo A** you see a shortwave receiver and two types of active antennas. The idea behind active antennas is that a small antenna with a lot of gain can give the same signal strength as a much larger antenna.

Most active antennas amplify a signal 100 to 1,000 times. This extra gain can really help pull in weak signals, but at a price. I've often described this problem as "Wearing a Hearing Aid at a Rock Concert," meaning that if the sound outside the hearing aid is louder than what the little speaker in the hearing aid can put out, the device acts as an ear plug, not an amplifier.

This is the problem in many urban areas. In my case, I live about seven miles from 40 FM broadcast stations, and just over 50 TV transmitters. If I put a power meter on a pair of common TV rabbit ears and set them on top of my living room TV, I read about 0 dBm. Or about 1/1000 watt. This is about the same output power as many Bluetooth products.

(I can't resist and must diverge for a moment here. Do you know who "Bluetooth" was? He was a Danish chap noted for his military exploits nearly 1,000 years ago. In Scandinavia is he considered a king and military conqueror. Most of Europe, on the other hand, considers him a pirate who looted surrounding cities. He seems to have had a dead front tooth, and when he smiled you saw his "bluetooth." I guess if we ever have a similar product in the United States, we could code name it "Red Beard" for our infamous pirate.)

Active Antenna With Preselector

Photo B shows an MFJ-1020 active antenna. The MFJ-1020 is designed to both amplify and preselect from .2 MHz to 30 MHz. Preselection is good for several reasons. Many shortwave radios produce what are known as images. Images are caused by design limitations in a radio, and are what's going on when you think you're listening to one frequency, but are really listening to two, three, or even more frequencies at the same time. With older radios, for instance, you could often tune in WWV at 10.000 MHz, but you could also hear it coming in almost as strong on 10.91 MHz. This was caused by the image of the 455 kHz IF.

Most modern digital shortwave radios have higher frequency IF stages. Ever hear a broad noisy signal that kind of sounded like music on the shortwave bands? Try flipping the radio to WFM, for wideband FM. Quite often that image is an FM broadcast station. Your dial may be in the 31-meter band, but your images are near 100 MHz in the FM broadcast band. In short, any stray image frequen-

Photo B. The MFJ-1020 HF active antenna with preselector.

Photo C. Ramsey Electronics Model AA7B HF though UHF active antenna.

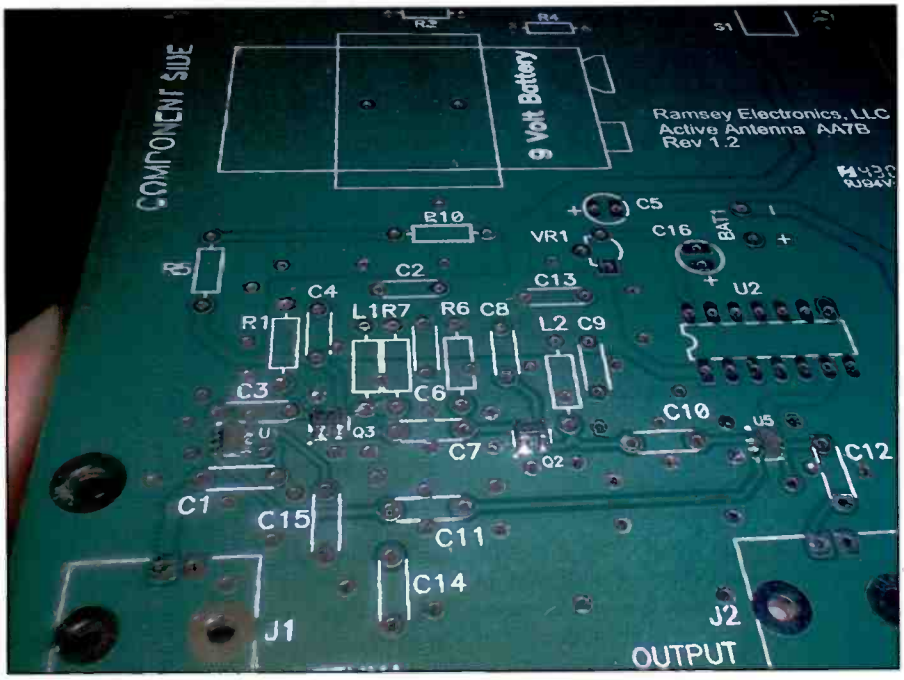


Photo D. Ramsey board with surface-mount components already installed.

Photo E. Active antenna external antenna connections.

cies in your radio are just noise added to the signal you want to hear.

This is where an active antenna connected to your radio comes in. To correct the noise problem, set the antenna's bandswitch on the preselector to the band you want to listen to. Find a good strong signal and peak "tune" on it. Now just that signal, and the signals close to it, are amplified 100-plus times. Signals on your image frequencies are not amplified. Result, a clean strong signal. Keep in mind you want enough gain to do the job, and no more.

While an active antenna will rarely work better than a 100-foot-long wire outdoor antenna, it will almost always outperform the whip on the back of your radio. And the MFJ does have coax connectors, so if you keep the gain low, you can still use it with that long wire antenna to preselect or filter out-of-band signals with the MFJ-1020.

A Slightly Different Active Antenna

Photo C shows the Ramsey Electronics All Band HF, VHF, UHF active antenna. As you can see, the con-

Photo F. An example of those little balls on your antennas.

trols are just for power and gain. Without the preselection filter, this active antenna works from about 1 MHz to well over 800 MHz.

I took advantage of this wide bandwidth to test the Ramsey Model AA7B active antenna with some UHF HDTV signals. It worked fine.

The Ramsey Model AA7B comes as a kit, but most of the parts are through-hole components and go in pretty easily. As shown in **Photo D**, the surface mount PIN diode switches and MOSFET transistors are *very* small, but factory installed, so you don't need a stereo microscope to assemble this kit.

I'm probably not exactly the typical kit builder: I assembled the kit using just the schematic and modified the power supply with reverse polarity protection while I was at it. (I like to put a reverse polarity protection diode in most of my projects to make them a bit more idiot resistant; no luck making my projects idiot *proof* as yet.) The Ramsey AA7B is an easy kit to put together, and from the time I opened the package to the time I was amplifying UHF HDTV signals was just 45 minutes.

Since it's a very broadband amplifier you have to be a bit more careful in urban areas connecting the amplifier to external antennas. The blast of noise will overwhelm most receivers. So, again, be sure to use just enough gain to do the job, and Model AA7B will perk up signals in the AM broadcast, shortwave, TV, FM, aviation, and all three scanner bands.

Keep In Mind

Now these are low-level signal amplifiers; they are not designed to be connected to transmitters. Neither unit has RF sense relays to take them out of circuit when you transmit. And those tiny little MOSFET transistors only last a few microseconds as dummy loads for your transmitter. I recommend using active antennas only with receivers.

Amplifier Vs. Active Antenna

In **Photo E** you can see that both active antennas have BNC connectors for signal in/signal out. These connectors let you use the units just as a preselector for your external antenna, or just as an amplifier. With some BNC-type F adapters, the Ramsey worked great as a 75-ohm TV antenna preamp.

Placement

There's a good reason why everyone hasn't abandoned outdoor antennas in favor of small indoor active antennas: noise! Most homes generate quite a bit of electronic noise. Light dimmer controls, computers, switching power supplies, and other consumer products generate their share of electronic noise. Just try tuning an AM radio off station, and run it close to your computer or cell phone charger. Lots of buzzing noises! An indoor active is in the middle of this electronic fog and is going to pick up this noise more than an outdoor antenna. But, again, the indoor active antenna is going to work better than just that whip antenna.

Letters, Letters, We Get Letters

So, just what are those little balls on the tops of antennas (like the one shown in **Photo F**), one reader demanded to know.

Obviously, you really don't want a sharp point at the tip of an antenna. Sharp points tend to dissipate, or bleed off, static electricity. This constant static electricity bleed tends to be very noisy. On a car you hear a crackling and a pop-pop-pop noise, especially on low humidity days. At a base station you can hear the noise floor change when clouds pass over.

Photo G. Antenna flutes put an end to singing in the wind, if not in the rain.

So, now you know, sharp antennas are noisy—but, mainly, the balls are on the tops of antennas to help prevent you from poking your eye out!

From John in Tennessee we have a question about those spiral flutes you see on many car radio antennas these days. John asked if they were "some kind of special loading coil winding."

No, John, the flutes **(Photo G)** are aerodynamic, not electrical. A tight wire will often sing in the wind. This is also true for a narrow whip in the wind. That spiral flute breaks up the wind pattern and gives the antenna slightly less wind noise. This is somewhat similar to the dimples on a golf ball that gives the ball less aerodynamic drag.

That's It For Now

As always we welcome your letters and emails with questions and suggestions for topics. Just drop a note to wa5vjb@cq-amateur-radio.com. You can also download many other antenna articles from my website, www.wa5vjb.com.

by Kirk Kleinschmidt, NTOZ, kirk@cloudnet.com

Stuff You Really Need To Know About Antennas

When I was a teenage ham in the 1970s, I made a lot of mistakes when it came to antennas. Sure, I measured every wire segment religiously, I used good-quality ceramic insulators—and I even had a 50-foot tower in my backyard from which to hang my creations.

I made quads and wire Yagis out of bamboo poles I scavenged from the local carpet store (they were used as "spindles" inside rolls of carpet that came from the factory). I made G5RVs from enamel-covered copper wire that the guy at the motor repair shop gave me (the ends of big spools that were too small for winding coils for big electric motors) and 300-ohm twin-lead from the corner RadioShack store.

I made an end-fed antenna from a 100-foot orange extension cord (my folks didn't really see the beauty in that!). I guess there's nothing that says, "crazy ham kid on board," like a thick, blaze orange extension cord strung from point to point around the yard.

Because the sunspot cycle was cooperative in those days—unlike today and for the next little while—I worked a lot of stations and even a lot of DX. But if I'd known then the stuff I'm going to mention in this month's column, my experiences would have been better. A lot better!

Confessions Of A Coax Abuser

One of my biggest sins involved 150-foot runs of cheap, crappy coaxial cable. Yep, I had a quad at 65 feet, fed with a seemingly endless run of disgusting, super-lossy coax! I had a two-element "bamboo Yagi" for 15 and 10 meters at about 55 feet, fed with another length of the same disgusting coax. (I couldn't afford a rotator or 150 feet of control cable, so I aimed the beams at Europe or Africa. Seasonally, when it was time to point toward Japan or the South Pacific, I climbed the tower and re-aimed the antennas!) The same went for my G5RV, although because it had a 29-foot length of twin-lead attached to the feed point, the length of junky coax was that much shorter.

The coax was inexpensive and my after-school job paid all of $3.50 an hour. Instead of saving up for something better (and a lot more expensive) or trying to wrangle some leftover 75-ohm hardline from the cable company, I used what I could afford and what was available: cheap RG-58 coax. And I paid a heavy price in the long run.

It's no wonder I gravitated toward QRP operating right from the start. Even though my trusty Tempo One transceiver was putting out 100 watts or more, I shudder to think how much RF was actually making it to the antenna! And when you throw in my "soldered by a teenage ham" PL-259 connectors, well, let's not even go there! (Three issues back I detailed how I handle that nowadays, with RG-6 satellite cable, good-quality crimp-on F connectors, and a selection of handy adapters. Problem solved.)

Tips From Trials And Tribulations

So, now that I've confessed, let my transgressions pave the way for your success—success from the get-go and not from the school of hard knocks! Here are this month's tips, in no particular order:

• *Outside Is Better than Inside*: With only a few exceptions, outdoor antennas almost always outperform indoor antennas. Although a 10-meter dipole inside the penthouse suite of a skyscraper may work better than a similar outdoor dipole 10 feet off the ground, most ops will want to try to put up some kind of outdoor antenna if at all possible.

• *Higher Is Better*: In general, the higher an antenna is, the better it performs. This isn't *always* true, of course—especially when you're trying to work a station 100 miles away on 40 meters, etc.—but for most situations it's pretty much a fact.

• *Bigger Is Better*: Almost universally, the bigger an antenna is (in length and wire/element diameter), the better it performs. A 30-foot vertical whip works better than a 12-footer, which works better than a five-footer. If you could make a full-size loop from solid copper wire (or hollow copper pipe) the diameter of a baseball bat, it would outperform a similarly sized loop made from the highest quality conventional antenna wire.

If you go overboard, however, the rule breaks down. A dipole antenna made with 20 miles of wire (a convenient 10 miles per side) probably won't work better than a dipole cut for 160 meters. In fact, it might not do much of anything! Thankfully, 20-mile-long antennas aren't common (unless you live in Texas). The same holds true for the vertical antenna discussed above. Once the length exceeds 5/8-wavelength or so, almost all the radiated energy will go straight up, off the end of the vertical element. So forget that 500-foot vertical for 10 meters!

• *Pair Up for Best Results*: Even if you've built a ham antenna or two and you're reasonably experienced with safely installing them, have a ham buddy (or some other lowlier friend, spouse, or neighbor) on hand to help out. Two heads are better than one...and not just while working on towers. Even your non-ham buddy should be smart enough not to stand directly below you (if you're on the roof, climbing a tree, etc.).

• *Measure Twice, Cut Once*: Before you go off half cocked and make things more difficult than they need to be, make sure you have a plan or a schematic (from a book, magazine article, an Elmer, or your own fertile imagination) in place before you start cutting and soldering. And make sure you have everything you need on hand so you don't have to make too many trips to the hardware store before the antenna is up in the air.

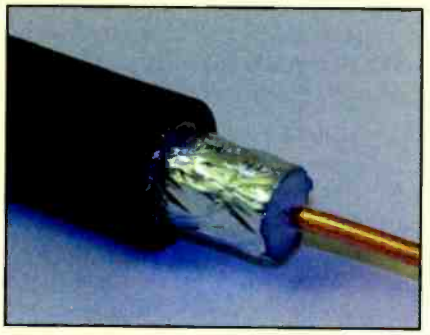
• *Beware of the Gooch!*: I've mentioned Gooch's Paradox here before, so take heed! It's the definitive truism about homebrew antennas, and is simply stated as: "RF Gotta Go Somewhere." Passed down to me by Dave Newkirk (ex-W9VES, ex-WJ1Z), a former ARRL HQ staffer, all-around radio mentor and ham radio columnist for *Pop'Comm* before I took over, Gooch's Paradox is often invoked when explaining the performance—good or bad—of a particular antenna.

Because "RF Gotta Go Somewhere," it might make it to your antenna and efficiently radiate into space (good!); make your

Coax Stripper Makes Connector Crimping A Snap

Three months ago I described how I use RG-6 satellite coax for most of my ham radio applications—and I'm not alone. Lots of hams are using it because it's convenient, affordable, and offers good performance. A few readers wrote in and asked a question or two about how to effectively use RG-6 (and its cousins) for particular installations, and one asked about how to easily attach the crimp connectors that make everything so easy.

After thinking about it, I remembered that I hadn't mentioned much (or anything) about using a coax stripper—the little tool that makes attaching connectors a breeze! The one shown above is the "deluxe" model, available from RadioShack for about $15. Unlike the $7 "non-deluxe" model, this one has a pair of adjustable blades, handles more types of coaxial cable, and just plain works.



After practicing a bit while you adjust the blade depth and spacing to match your particular cable, you can use the tool to make perfectly prepared cable ends (as at left) that make connector crimping a snap. The piece of tape is my modification: It holds the tool's adjusting wrench securely to the bottom of the stripper so it doesn't fall off as it's bouncing around in my toolbox. (Photos by the author)

—NTØZ

coaxial cable hot to the touch (not so good); spew energy from your alleged "station ground" (bad); "zap" your neighbor's TV (up to you); or feed back along the coax shield and shock you on the lip when you're speaking into your mic (painfully bad).

RF *might* go just about anywhere, but it's *gotta go somewhere*. Let's hope that, through good design, construction, and installation, that somewhere is into space!

• *Coax Is for Resonant Antennas Only*: Feed your antennas with coax only if the antennas are reasonably resonant at the operating frequencies involved. Read that again, because it imparts much wisdom! That is, feeding a 40-meter dipole with 50-ohm coax works great (on 40 or 15 meters, where the SWR is reasonable), but using the same antenna and feed line on 80 meters is an SWR disaster! You'll be QRP even if your transmitter puts out 250 watts! Don't feed non-resonant, multiband antennas with coax! Just don't do it!

So what's a ham to do if he can only put up one wire antenna and has to use it on all HF bands? As I've preached previously, simply put up the biggest, highest loop or dipole you can muster and feed it with open-wire line or ladder line (a bit more convenient) through a reasonably balanced antenna tuner. Or use an auto-coupler as described below.

• *Auto-Couplers versus Tuners*: This is HUGE, so pay attention! Shack-mounted antenna tuners can be real lifesavers, especially when the loads they're matching are reasonable. For example, using a shack- or rig-mounted tuner to tweak a coax-fed 80-meter dipole into submission on 75 meters (and probably 10 meters, too) is a piece of cake.

• *Seek Balance in All Things, Grasshopper*: At the risk of incurring the wrath of antenna specialists everywhere, for beginners, balanced antenna designs (dipoles, loops, and reasonable variations) are easier to successfully build and use than unbalanced antennas (verticals, end-fed wires, random wires, and the like). Achieving a decent RF ground for unbalanced antennas can be a real pain, while balanced designs need no RF ground to perform as intended. Period.

On 160 meters, however, things get downright ugly unless you're feeding the dipole with open-wire line and a balanced antenna tuner. Sure, the SWR on the feed line will still be extreme, but the incredibly low-loss characteristics of open-wire line will let you make the best of it. You'll still have to twiddle the knobs on the tuner's inductors and capacitors, however, and that can get tedious for twitchy band hoppers like me!

The lazy ham's approach—and I think the smart ham's approach!—is to put the antenna tuner *at the antenna feed point* and feed the tuner with 50-ohm coax. The tuner tweaks the antenna match, and the SWR on the coax is negligible, which makes life good. These special tuners are called couplers or auto-couplers, and they're also automatic! You talk/key and the auto-coupler matches the antenna for you, in a jiffy. Some auto-couplers even remember the tuning solutions for your favorite frequencies, allowing them to match your antenna in less than half a second! SGC, ICOM, Alinco, and others manufacture auto-couplers. Check 'em out.

Questions? Send 'em In

So, there you have them—antenna tips to change the way you think about your antennas for the new year. As always, send your QSL cards, photos, questions, and letters to the email address at the top of the column or via snail mail to "Ham Discoveries," 25 Newbridge Road, Hicksville, NY 11801.

by R.B. Sturtevant, AD7IL

Radio Fun And Going Back In Time

Q. Before World War II got started, did the Allies broadcast anything to help the Europeans see the danger of war?

A. Yes, but not very effectively. The British, who would become masters of radio propaganda in their own right, had a rather shaky start under Neville Chamberlain. Two days before his historic meeting with Hitler in Munich, Chamberlain made a speech to the British people at 8 p.m. on September 27, 1938. The BBC was asked to broadcast the same speech to the continent in German, French, and Italian, which was something it had never done before. One of the first things the BBC discovered was that it had nobody on staff to do the German and French translations or to read the speech in those languages. The Foreign Office said it could come up with the translations and speakers but didn't.

The BBC's director of overseas services tracked down G. Walter Goetz, a German-born editorial cartoonist for the British Newspaper *The Daily Mail*. Goetz made his radio debut reading the German version of the speech. BBC announcers were found to read the French and Italian versions. Two hours before the broadcast was ready to begin, the Foreign Office wanted all three transmissions to include news announcements with the speech.

The translators began getting the speech at 8:15 p.m. one page at a time. They worked quickly and passed on their work to the speakers, also one page at a time. The last page came in at 8:30. Despite the errors and mispronunciations and other on-air gaffs the transmissions were judged a success, given the circumstances.

The director general of the BBC believed that, on the eve of war, the peaceful intentions of the British people could be demonstrated by sending to Germany the sound of a nightingale in an English wood. During the speech, Chamberlain unfortunately used a phrase about the Czechoslovakian crisis as "a quarrel in a far-away country between people of whom we know nothing."

After a farce like that anything Churchill's government tried was an improvement.

Q. What is the latest research and development coming from Whiz-Bang Corners?

A. One development concerns piezoelectric power. Piezoelectric power is generated by squeezing or applying pressure to certain types of crystal. For instance, when pressure is applied to quartz, rochelle salts, and tourmaline, the crystals will generate electric current. Recently, our friends in Japan have started making pads out of these materials and placing them in high traffic areas like subways entrances and stairs. Enough electrical energy is generated to light the lights in the area around the traffic squeeze points as crowds move over the mats. It's still in the research stages but shows promise. (Maybe we could get them to design seat cushions for hams that will power radios.)

Q. How would modern home computers rate against "the Bombe" used in code breaking during World War II at Bletchley Park?

A. The modern computer began taking shape when Alan Turning and Donald Michie tried to break the famous Enigma Machine codes that the Nazis put so much trust in.

Preset keys and turning rotors confused the messages far beyond what a human being working with pencil and paper could decode. The Nazis continued to change the keys and added a fourth rotor to further confuse the decoders working at Bletchley Park. Some messages, particularly U-boat codes, simply could not be broken.

Today, a group of amateur code breakers have taken some of this unbreakable traffic and are still working on it. Calling it the M4 Project, these modern day code breakers have linked 2,100 computer terminals via the Internet and are using the spare computer power to work on the old codes. They've started to break the "unbreakable" Enigma code traffic left encrypted all these years.

The text isn't really all that important any more, of course. Routine messages on convoy attacks and reports on local weather conditions make up the bulk of the traffic. What is important is that modern science is breaking coded messages that Bletchley Park couldn't touch.

Q. When did the Voice of America get started?

A. Shortly before WWII began, as the world situation was heating up, the Roosevelt administration felt it would be a good idea to have a voice able to cross international boundaries, something that would tell America's side of things. To offer this, he created the Office of War Information (OWI). The OWI took over 13 privately owned shortwave broadcast stations and, a mere 74 days after the Pearl Harbor attack, began to broadcast to the world on February 24, 1942.

The first broadcasts were in German, with English and French starting shortly afterwards. The first broadcast said "Daily at this time we shall speak to you about America and the war. The news may be good or bad. We shall tell you the truth." Unless your receiver is busted, you should know that it's still out there, telling America's side of things.

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

This listing is designed to help you hear more shortwave broadcasting stations. The list covers a variety of stations, including international broadcasters beaming programs to North America, others to 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
0000	7105	BBC Relay, Oman	
0000	15785	Galei Zahal, Israel	HH
0000	4845	Radio Cultural Ondas Tropicais, Brazil	PP
0000	4805	Radio Difusora Amazonas, Brazil	PP
0000	6145	Radio Japan/NHK, via Canada	
0000	4855v	Radio La Hora, Peru	SS
0000	13650	Voice of Korea, North Korea	CC
0030	6010	La Voz de su Concencia, Colombia	SS
0030	4815	Radio Difusora Londrina, Brazil	PP
0030	7440	Radio Ukraine Intl.	
0100	15695	Radio Free Asia, via Northern Marianas	unid
0100	3250	Radio Luz y Vida.Honduras	SS
0100	4915	Radio Nacional Macapa, Brazil	PP
0100	5930	Radio Slovakia Intl.	
0100	4717	Radio Yura, Bolivia	SS
0100	6025	V of Islamic Republic of Iran	
0100	9780	VOA Relay, Sri Lanka	
0130	6025	Radio Amanecer Intl., Dominican Republic	SS
0130	11925	Radio Bandeirantes, Brazil	PP
0130	9600	Radio UNAM, Mexico	SS
0130	7235	Voice of Justice/VOIRI, Iran	
0130	9830	Voice of Russia	SS
0200	9875	BBC Relay, Cyprus	unid
0200	6035	La Voz del Guaviare, Colombia	SS
0200	7270	Radio Cairo/Egyptian Radio	
0200	4780	Radio Cultural Coatan, Guatemala	SS
0200	4815	Radio El Buen Pastor, Ecuador	SS
0200	9805	Radio Farda (to Iran)	Farsi
0200	9780	Rep.of Yemen Radio	AA
0200	11920	RTV Marocaine, Morocco	AA
0200	9905	V. of Islamic Rep. of Iran	SS
0230	9825	Deutsche Welle, Germany, via Portugal	GG
0230	4885	Radio Clube do Para, Brazil	PP
0230	3340	Radio Misiones Intl., Honduras	SS
0230	3320	Radio Sondergrense, South Africa	Afrikaans
0230	6115	Radio Tirana, Albania	
0300	9570	China Radio Intl., via Albania	CC
0300	7345	CVC Intl, via Uzbekistan	
0300	4780	Radio Djibouti	FF
0300	7110	Radio Ethiopia	Amahric
0300	4976	Radio Uganda	
0300	7125	Russian Intl. Radio, via Moldova	RR
0300	5985	Sudan Radio Service, via Rwanda	
0300	3240	Trans World Radio, Swaziland	
0300	9420	Voice of Greece	
0300	9435	Voice of Russia	
0300	4828	Zimbabwe Broadcasting Corp.	
0330	9630	Radio Aparecida, Brazil	PP
0330	7200	Sudan Radio TV Corp.	AA
0330	4775	Trans World Radio, Swaziland	vernacular
0330	6040	Vatican Radio	SS
0330	5975	Voice of Turkey	
0400	7120	BBC Relay, South Africa	
0400	3345	Channel Africa, South Africa	
0400	6185	Radio Educacion, Mexico	SS
0400	6180	Radio Havana Cuba	
0400	4790	Radio Vision, Peru	SS
0400	4965	The Voice-Africa, Zambia	
0400	4930	VOA Relay, Botswana	
0430	7120	BBC via South Africa	
0430	9765	R. V. of the People, via Madagascar to Zimbabwe	
0500	3280	La Voz del Napo, Ecuador	SS
0500	5005	Radio Nacional, Equatorial Guinea	SS
0500	4052.5	Radio Verdad, Guatemala	SS
0500	7190	RT Tunisienne, Tunisia	AA
0530	5910	Marfil Estereo, Colombia	SS
0530	4770	Radio Nigeria	
0600	5030	Radio Burkina, Burkina Faso	FF
0700	6010	Radio Mil, Mexico	SS
0700	5020	Solomon Is. Broadcasting Corp.	
0730	6020	Radio Victoria, Peru	SS
0800	6095	Radio New Zealand Intl.	
0800	9690	Voice of Nigeria	vern
0900	4700	Radio San Miguel, Bolivia	SS
1000	4747	Radio Huanta 2000, Peru	SS
1000	6080	Radio San Gabriel, Bolivia	SS
1000	6175	Voice of Malaysia	Malaysian
1100	5765u	AFN/AFRTS, Guam	
1100	3810	HD2IOA, Ecuador	SS time
1100	4800	Radio Buenas Nuevas, Guatemala	SS
1100	4755	Radio Rural, Brazil	PP
1100	4909	Radio Chaskis, Ecuador	SS
1130	11875	China Radio International	
1130	6160	CKZU, Canada (Newfoundland)	
1130	9430	FEBC Intl., Philippines	CC
1130	9930	KWHR, Hawaii	
1130	6130	Lao National Radio, Laos	LL

UTC	Freq.	Station/Country	Notes
1130	9355	Radio Free Asia, via Northern Marianas	unid
1130	3905	Radio New Ireland, Papua New Guinea	Pidgin
1130	7280	Voice of the Strait, China	CC
1200	4910	ABC Northern Territory Service, Australia	
1200	11750	BBC Relay, Thailand	
1200	11775	Caribbean Beacon, Anguilla	
1200	17680	CVC - La Voz, Chile	SS
1200	9560	KBS World Radio, South Korea, via Canada	
1200	11580	KFBS, Northern Marianas	CC
1200	9780	KNLS, Alaska	
1200	6100	Kyzyl Radio, Russia	RR
1200	15700	Radio Bulgaria	FF
1200	11700	Radio Liberty, via Philippines	RR
1200	11570	Radio Pakistan	CXC
1200	4750	Radio Republik Indonesia, Makassar	II
1200	17700	Radio Solh (to Afghanistan)	Pashto/Dari
1200	3235	Radio West New Britain, Papua New Guinea	Pidgin
1200	7165	Voice of Russia	RR
1200	11885	Xinjiang PBS, China	Uighur
1230	15180	Korean Central Broadcasting Service, No. Korea	KK
1230	7165	Nei Menggu PBS, China	CC
1230	15400	Radio Japan/NHK, via Ascension	FF
1230	7200	Radio Rossii, Russia	RR
1230	15450	Voice of Turkey	
1300	6195	BBC Relay, Singapore	
1300	9675	China Radio Intl.	RR
1300	14670	CHU Time Station, Canada	EE/FF
1300	11510	Deewa Radio (VOA)	Pushto
1300	11960	HCJB, Ecuador	SS
1300	605	Radio Nikkei, Japan	JJ
1300	15630	Voice of Greece	
1300	13750	WINB, USA	
1330	6120	Radio Singapore Intl.	
0700	7125	RTV Guineennee, Guinea	FF
1330	15240	Radio Sweden	Swedish
1330	11905	Sri Lanka Broadcasting Corp.	Hindi
1330	9525	Voice of Indonesia	
1400	15635	CVC Intl., Australia	
1400	11705	Radio Japan/NHK, via Canada	JJ
1400	11690	Radio Jordan	
1400	9580	Radio Australia	
1230	7220	Voice of Vietnam	RR
1400	17870	Voice of Africa/R. Jamahiriya, Libya	
1430	17595	Radio Exterior de Espana	SS
1500	17630	Africa Number One, Gabon	FF
1530	15435	Broad. Service of the Kingdom, Saudi Arabia	AA
1530	13775	Radio Austria Intl., via Canada	
1530	15300	Radio France Intl	FF
1530	11670	Radio Nacional, Venezuela, via Cuba	SS
1530	13765	Vatican Radio	
1700	12035	Radio SW Africa (to Zimbabwe)	
1700	11710	Voice of Korea, North Korea	
1730	15205	Broad.. Service of the Kingdom, Saudi Arabia	AA
1830	11530	Denge Mesopotamia, via Moldova	Kuridsh
1900	11620	All India Radio	Hindi
1900	13650	Radio Canada Intl.	AA
1900	11810	Radio Jordan	AA
1900	11930	Radio Marti (to Cuba)	SS
1900	9290	Radio SWH, Latvia	
1900	15560	RDP Intl., Portugal	PP
1900	11810	RT Algerienne, Algeria, via England	AA
1900	9265	WMLK, USA	
1930	15640	Kol Israel	HH
1930	15120	Voice of Nigeria	
1930	9765	Voice of Turkey	
2000	15260	Adventist World Radio, via Germany	FF
2000	13630	China Radio Intl., via Mali	
2000	11865	Deutsche Welle, Germany, Rwanda Relay	
2000	9550	FEBA Radio, England, via Rwanda	AA
2000	11990	Radio Kuwait	
2000	13720	Radio Tirana, Albania	
2000	15476	R. Nac. Arcangel, Antarctica	SS
2030	17810	Radio Nederland, via Bonaire	
2030	11940	Radio Romania Intl.	
2030	15730	VOA Relay, Sao Tome	
2100	7285	China Radio Intl., via Albania	
2100	12085	Radio Damascus, Syria	
1700	9330	WBCQ, USA	
2100	17630	Radio France Int., French Guiana Relay	SS
2100	17285	Radio Japan/NHK	
2100	11780	Radio Nacional Amazonia, Brazil	PP
2130	9705	La Voix du Sahel, Niger	FF
2130	15720	Radio New Zealand	
2130	6400	Weekend Music Radio, Scotland	
2200	15215	Adventist World Radio, Guam	CC
2200	9580	Africa Number One, Gabon	FF
2200	15345	Radio Argentina al Exterior	SS
2200	6165	Radio National Tchadienne, Chad	FF
2200	15315	Radio Nederland, Bonaire Relay	DD/EE
2230	9445	All India Radio	
2230	15410	CVC-La Voz, Chile	PP
2230	9760	Cyprus Broadcasting Corp.	Greek, wknds
2230	15525	HCJB-Australia	CC
2230	11585	Kol Israel	HH
2230	6300	Radio Nacional de la RASD (to Morocco)	SS
1400	13774	CVC Intl., Australia	EE/CC
2230	7345	Radio Prague, Czech Republic	
2230	4835	RT Malienne, Mali	FF
2230	7135	RTV Marocaine, Morocco	AA
2230	6255	The Mighty KBC, via Lithuania	
2300	11700	Radio Bulgaria	
2300	12050	Radio Cairo/Egyptian Radio	AA
2300	4825	Radio Cancao Nova, Brazil	PP
2300	9550	Radio Havana Cuba	
2300	6060	Radio Nacional, Argentina	SS
2300	11705	Radio Nacional, Venezuela, via Cuba	SS
2300	11880	Radio Romania Intl.	SS
2300	11820	Radio Veritas Asia, Philippines	II
2300	4845	RTV Mauritanie, Mauritania	AA
2300	9925	Voice of Croatia, via Germany	Croatian
2330	15320	Adventist World Radio, Guam	VV
2330	6973u	Galei Zahal, Israel	HH
2330	9875	Radio Lithuania	

New, Interesting, And Useful Communications Products

Rugged PCs For EMS Applications And More

Computer manufacturer GETAC Inc., which offers rugged notebook and convertible tablet PCs for field-based applications, showcased three models at the recent EMS Expo 2007: the V100, M230, and W130.

The new GETAC V100 is a MIL-STD 810F and IP54 compliant notebook that features an LCD screen that instantly transforms into a tablet PC. The portable 4.9-pound V100 features an ultra-quiet fanless design and includes a wide range of standard features, including a 10.4-inch screen, power-saving 1.2 GHz Intel Core Duo Platform Technology, 512 MB expandable to 2 GB of DRAM, 120 GB shock-mounted removable hard drive, integrated bluetooth, reversible waterproof camera, and a full menu of wireless networking capabilities, all housed in a water-resistant, rugged magnesium alloy case and ready for mounting in any emergency vehicle. The V100 offers a variety of advanced options, including a 12-inch LCD screen featuring a daylight readable screen and choice of digitizer or touch screen interface, as well as optional Integrated GPS, 3G and 802.11a/b/g.

The M230 notebook combines high performance and state-of-the-art built-ins and options in a rugged, ultra-portable slim design that meets MIL-STD 810F and IP54 standards. It offers a 14-inch XGA or optional 15-inch SXGA TFT LCD high resolution display—the largest screen available in a rugged laptop format. The W130, a lightweight yet durable high-performance notebook, features low power consumption and is also compliant with MIL-STD 810F and IP51 standards.

The GETAC V100 ($3,595), M230 ($4,195), and W130 ($2,995) are available through GETAC authorized resellers. Please visit www.getac.com for more information.

Nokia 500 Auto Navigation Device Now Available In United States

The Nokia 500 Auto Navigation, Nokia's first hands-free dedicated personal navigation device for in-car navigation and communication, is now being released in the U.S. market. In addition to integrated GPS and in-car navigation features, it also acts as a complete bluetooth hands-free system for your compatible mobile phone. Its wide (4.3-inch) color screen makes it easy to search through your contacts and make and receive calls, and the hands-free speaker system with digital signal processing (DSP) enhances audio quality.

Equipped with high-sensitivity GPS and Nokia Maps navigation software, the Nokia 500 gives clear spoken and visual directions (turn-by-turn, including street and city names). It comes with pre-installed regional maps (of respective target markets), and detailed travel information, including points of interest, such as hotels, gas stations, and tourist sites.

The integration between the device's navigation and communication features also lets you receive contact details for points of interest so you can call directly, or get directions to addresses already stored in your contacts.

A Traffic Message Channel Service lets you avoid traffic jams, and an intuitive Nokia interface with split screen displays additional data, alongside the main screen, offering additional guidance information. The Nokia 500 Auto Navigation's advanced entertainment features allow you to listen to music from the integrated music player, view photographs, or watch videos. The Nokia 500 Auto Navigation device also plays music through your car's FM radio using the built-in FM transmitter.

The Nokia 500 Auto Navigation will be available in the U.S. market in the first quarter of 2008 for $499. For more information, visit www.nokia.com.

The GETAC V100 notebook offers a 120 GB shock-mounted removable hard drive, integrated bluetooth, and wireless networking capabilities in a water-resistant, rugged magnesium alloy case and is ready for mounting in any emergency vehicle.

The Nokia 500 Auto Navigation device offers integration between its navigation and communication features giving you contact details for points of interest so you can call directly, or get directions to addresses already stored in your contacts.

HP iPAQ Protection From OtterBox

The OtterBox 1911 is an interactive, water-resistant case designed for the HP iPAQ 6500 and 6900 series devices (micro SD card not accessible through case) and provides protection with access to phone, PDA, keypad, camera and GPS functions. It replaces the OtterBox 1910 model.

Tailored to fit newer iPAQ models, the 1911 provides sealed access to the keypad as well as headset/headphone, sync and charge connections accessible through the case. A replaceable screen membrane protects the iPAQ touch screen from damage while still providing complete access to the screen and its functions. The camera also remains fully functional through the case.

Compound latches on the OtterBox 1911 offer easy opening and secure closing and polycarbonate/ABS construction provides maximum strength and rugged durability. Rubber overmolding adds grip and drop protection to help with everyday usage. Case available in black with grey rubber or yellow with grey rubber and offers an external stylus holder for convenience. Additionally, Donaldson acoustic vents allow excellent sound transmission while protecting against dust and splash. Accessories include a Ballistic Nylon Holster (KIT077) and a Refurbish Kit (KIT131).

The OtterBox 1911 sells for $99.95. For more information, visit www.otterbox.com.

The OtterBox 1911 water-resistant case for the HP iPAQ 6500 and 6900 series devices offers a replaceable screen membrane that protects the iPAQ touch screen from damage while still providing complete access.

Battery Booster From MFJ

The MFJ-4416 Super Battery Booster eliminates low voltage problems by boosting input voltages as low as 9 volts up to the desired 13.8 volts at up to 25 amps peak with a typical efficiency of close to 90 percent.

The MFJ-4416 Super Battery Booster eliminates low voltage problems by boosting input voltages as low as 9 volts up to the desired 13.8 volts at up to 25 amps peak with a typical efficiency of close to 90 percent.

Today's compact 100-watt HF transceivers are designed to operate from about 12 to 16 volts, with output signal distortion, output power problems, and transceiver reset often occurring when voltage drops below 12 volts. In the mobile environment, even low resistance DC wiring can result in a noticeable voltage drop. For a 100-watt transceiver with a 20-amp typical current requirement, just 1/10th of an ohm resistance in your DC cable and connectors results in a 2-volt drop! And when you turn your car off, the battery voltage drops from around 13.8 volts to close to 12 volts after a short time.

The MFJ-4416 Super Battery Booster helps you avoid problems associated with low voltage. There are also selectable limits on the minimum voltage that the unit will accept: 9 volts, 10 volts (default), and 11 volts, protecting you from over-discharging a battery and possibly damaging it. MFJ-4416 also includes output over-voltage crow-bar protection should regulation be lost, Anderson PowerPole connectors, and high-current five-way binding posts for both the DC input and regulated output. An internal 30-amp input fuse protects the unit from excess output current demands.

Compact (4 x 7 3/4 x 2 1/8 HWD) and lightweight (1.3 lbs), the MFJ-4416, which sells for $139.95, is rugged, reliable, and easy to use.

To order, receive a free catalog, or for your nearest dealer, contact MFJ Enterprises, 300 Industrial Park Road, Starkville, MS 39759; Phone: 800-647-1800; Fax: 662-323-6551; Web: www.mfjenterprises.com.

by Gerry L. Dexter, gdex@genevaonline.com

Radio Happy Isles, Radio Amanecer, And Lotsa Logs

"In other news," it seems that the Solomon Islands Broadcasting Corporation (5020 and, occasionally, 9545) has resumed operations. I'm presuming they were off the air for a while since quite a time went by with no one reporting any activity. They have recently been noted again on 5020 (in reality a shade less than that). SIBC, also known as Radio Happy Isles, carries local, live programming as well as segments from the BBC at various times.

The best time to hear this one is in the early morning hours. They start and stop a lot so if you don't find them right off, give it another shot in half an hour or so. Reports for SIBC can be sent to P.O. Box 654, Honaira, Solomon Islands. (Email: sibc-news@solomon.com.sb.)

Another one recently resurrected is Radio Amanecer from Santo Domingo on 6025. This Christian religious station was also off for a time for reasons unknown—though likely technical—and has now returned at fairly good levels. Send them a report at Apartado Postal 1500, Santo Domingo, Dominican Republic. They ask for letters and are a reasonably good verifier. (Email: cabina@radioamanecer.org.)

We've just heard that All India Radio is discontinuing the use of 10330 in favor of a much more QRM-prone channel in the upper part of 9 MHz.

From the same continent Radio Bangladesh (Bangladesh Betar) is no longer using 7185. It's now on 7250 and runs an "external service" from 1230 to 1630. Actually, they say 7250 is in use until 2000 (not that those later hours help us any) and that 9550 is added from 1630. We have a fair chance for the half hour of English they air at 1230.

Reader Logs

We're short on news this time but long on logs, which are always welcome. Just *pal-eease* be sure to double or triple space between the items, list each one by country and include your last name and state abbreviation after each. Also much wanted are spare QSLs or quality copies, station schedules, brochures, pennants, station photos, and anything else you think would be of interest. And how about sending a picture of you at your listening post? Your 15 minutes of fame awaits!

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

ALASKA—KNLS, Anchor Point, 6890 at 0322 with a sermon. (MacKenzie, CA) 9780 at 1210. (Brossell, WI)

ALBANIA—Radio Tirana, 6115 at 0235 with ID, news. (Griffin, NC) 13720-Shijak with daily press review at 2006. (Charlton, ON) 13750 heard at 1305 on their parliament. (Maxant, WV)

ALGERIA—RT Algerienne, 11810 via Wooferton in AA at 1912, fair with commentary and Koran. (Ronda, OK)

ANGUILLA—Caribbean Beacon, 11775 at 1203 asking for money. (Brossell, WI)

Radio Vision (4790) operates from this building in Chiclayo, Peru. (Thanks Rich D'Angelo)

ARGENTINA—Radio Nacional, 6059.2 at 2300 with soccer coverage in SS. (Alexander, PA) 15345 in SS at 2140 mixing with Saudi Arabia. (MacKenzie, CA)

Radiodifusora Argentina al Exterior, 15344 in EE to Europe at 1805. (Parker, PA) 15345 at 2210 with SS ID and into rumbas. (Maxant, WV)

ASCENSION ISLAND—BBC Atlantic Relay, 7160 at 0459 with ID, news. Also 15400 at 1535. (Charlton, ON) 2138 on high oil prices. (MacKenzie, CA) 21470 at 1600. (Wood TN)

AUSTRALIA—Radio Australia, 9580 at 1847, 15515 at 2131 with news items and 17785 at 2248 with stock market updates. (Mackenzie, CA) 9580 at 1225 on population growth, 15315 on Dutch organizations there and 17785 at 2350 going into closing. (Maxant, WV) 9580-Shepparton at 1315 and 11650-Shepparton at 2020. (Charlton, ON) 9785-Darwin with jazz and pops at 2219 and 17715-Shepparton with "Breakfast Club" program at 0014. (Ronda, OK) 15320-Shepparton at 2225. (Patterson, Philippines) 17795 with rock at 0142. (Parker, PA)

ABC Northern Territory Service: VL8T-Tennant Creek, 2325 at 1231 with news items. (Strawman, IA) 2040. (Patterson, Philippines) 4910 with pops and interview at 1210. (Brossell, WI) VL8K, Katherine, 2485 at 1209 with country-western, studio chatter. (Ronda, OK) 4835 at 0755 with rugby coverage, local news. Off at 0830. (Alexander, PA)

HCJB Australia, 15525-Kununurra at 0020 with "Word Power" EE lessons. (Ronda, OK) 2245 in CC. (Patterson, Philippines) 15560-Kununurra at 0057 with music program. (Parker, PA)

CVC International, 15635 with music at 1405. (Maxant, WV)

AUSTRIA—Radio Austria International, 6135-Moosbrunn in GG at 2035. (Patterson, Philippines) 9870 at 0110 on trouble with new tunnel under the Alps. (Maxant, WV) 13775 via Canada at 1546 on universities in Kosovo. (Chandler, ON)

BONAIRE—Radio Nederland Relay, 15315 at 1915 on unreliability of the Internet. (Charlton, ON) 17810 in DD at 2108. (MacKenzie, CA) 2035. (Fraser, ME)

BOTSWANA—Voice of America Relay, Moepeng Hill, 4930 on presidential primaries at 0355. (Ronda, OK) 0404 with "Daybreak

Help Wanted

We believe the "Global Information Guide"—month after month—offers more logs than any other monthly SW publication! (This month we processed *591 SWBC loggings*!* Why not join the fun and add your name to the list of "GIG" reporters? Send your logs to Gerry Dexter, "Global Information Guide," 213 Forest St., Lake Geneva, WI 53147 or email them to gdex@genevaonline.com (please see the column for formatting tips).

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

Africa" program. (D'Angelo, PA) 15580 at 1824. (Charlton, ON)

BOLIVIA—Radio Yura, Yura, 4716.7 at 0125 with variety of Bolivian music, Andean ballads, pops, rustic vocals. Off around 0157. (Alexander, PA)

Radio San Miguel, Riberalta, 4699.4 at 0115 with SS talk, Bolivian music, abrupt sign off at 0208. (Alexander, PA)

Radio San Gabriel, La Paz, (p) 6080 at 1040 with non-stop local flutes and rustic vocals. Poor overall due to DRM QRM on the low side. (Alexander, PA)

A Guide To "GIG-Speak"

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

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

Trans World Radio sent Rich D'Angelo this QSL for reception of its broadcasts from Monte Carlo.

This Adventist World Radio souvenir well describes the advantages of shortwave, which too many governments and broadcasters frequently forget. ⟶

BRAZIL—(All in PP) Radio Rural, Campo Grande, 4755 at 1053 with vocals and occasional talk. (Ronda, OK)

Radio Bandeirantes, Sao Paulo, 6089.5 at 0130 with talk and ballads, //9645.2 weak. (Alexander, PA)

Radio Clube do Para, Belem, 4885 with reverbed male anncrs at 0057. (Parker, PA) 0345 with PP vocals, ID at 0347. (Ronda, OK)

Radio Nacional, Macapa, 4915 with pops and piano music at 0114. (Parker, PA) 0602 with full ID and address. (Wood, TN)

Radio Difusora do Amazonas, Manaus, 4805 with man/woman anncrs at 2310. (Parker, PA)

Radio Educacao Rural, Tefe, 4925 at 0120 with call-ins, rap, pops. (Parker, PA)

Radio Difusora, Londrina, 4815 with man anncr and CODAR QRM heard at 0043. (Parker, PA)

Radio Aparecida, Aparecida, 9630 with PP folk songs heard at 0345. (Maxant, WV)

Radio Cancao Nova, Cachoeira Paulista, 4825 with excited male anncr at 2315. (Parker, PA; Ronda, OK)

Radio Cultura Ondas Tropicais, 4845.2 at 0007 with apparent sports coverage, mentions of Brazil, Amazonas. (D'Angelo, PA)

Radio Nacional Amazonia, Brasilia, 6180 at 0945. (Patterson, Philippines) 11780 at 1859. (Charlton, ON)

BULGARIA—Radio Bulgaria, 5900-Plovdiv in FF at 2020. (Patterson, Philippines) 9700-Plovdiv on Bulgarian exports at 2314 and 15700-Plovdiv in BB at 1422. (Charlton, ON) 11700 at 2300. (Paradis, ME) 2318. (MacKenzie, CA) 15700 in FF at 1220. (Brossell, WI)

CANADA—Radio Canada Intl, 6000 at 0040. (Maxant, WV) 9515-Sackville, in FF at 1849, 13650-Sackville with Canadian news in AA at 1905 and 15325-Sackville in FF at 1916. (Charlton, ON) 9660 via Japan monitored at 1225 and 15455-Sackville in SS heard at 2252. (Patterson, Philippines)

CBC Northern Quebec Service, 9625-Sackville with ID at 1910. (Charlton, ON)

CHU, Ottawa, 7335 with EE/FF time annts at 0350. (Maxant, WV) 14670 at 1314. (Wood, TN)

CHAD—RN Tchadienne, N'Djamena, 6165 with FF talk, local tribal music at 2215. Off at 2231. (Alexander, PA)

CHINA—China Radio Intl, 7110-Hohhot, at 1154 closing in listed Mongolian. Switches to Shijiazhuang in Mandarin at 1201. (Ronda, OK) 7285 via Albania sign on at 2100, //5960. (Fraser, ME) 9570 via Cuba at 1318, 9650 via Canada at 1335, 11920 via Albania at 1537, 13630 via Mali on the mine disaster at 2021, 13790 via Cuba closing at 1555 and 15220 via Canada in CC at 1550. (Charlton, ON) 9570 via Albania in CC at 0312, 9690 via Spain at 0302, 11840 at 2343 and 13690 in CC at 0312. (Mackenzie, CA) 9665 via Brazil in CC at 0245. (Maxant, WV) 9675-Shijiazhuang with IS at 1300, into Mandarin, then RR. (Strawman, IA) 11875-Kunming in presumed Chaozhou at 1130. (Parker, PA) 11980-Xi'an at 1318 on Chinese opera. (Ronda, OK)

China National Radio (CPBS) CNR-1, Beijing, 4460 in Mandarin at 1110. (Strawman, IA) 6030 in Mandarin at 1214. (Ronda, OK) 11785 at 1130, //9680, 9780 with local music. (Alexander, PA) CNR-2, 11650-Xi'an (tentative) at 0113 with CC talk and music segments. (D'Angelo, PA)

China Peoples Broadcasting Station (aka CNR) (p)—7165-Hohhot at 1254. (Strawman, IA) 11750 in CC at 0318. (MacKenzie, CA) 17550-Beijing in CC at 0109, 17580-Lingshi in CC at 0116 and 17595-Shijiazhuang in CC at 0122. (Parker, PA)

Voice of the Strait, Fuzhou, 7280 at 1108 with pop and traditional music. (Ronda, OK) 1140. (Brossell, WI)

Xinjiang PBS, Urumqui 11885 in listed Uighur at 1220. (Brossell, WI)

Firedrake music jammer, 5030 at 1125. (Alexander, PA) 9540 heard at 1842. (MacKenzie, CA)

CHILE—Voz Cristiana, 15410 in PP heard at 2220. (Patterson, Philippines) 2325 in SS. (MacKenzie, CA) 17680 in SS at 1225. (Brossell, WI) 1651. (Charlton, ON)

COLOMBIA—La Voz del Guaviare, San Jose de Guaviare, 6035 with Latin music at 0210, quick IDs. Swamped by Vatican Radio via Sackville at 0230. (D'Angelo, PA)

La Voz de su Concencia, Puerto Lleras, 6010 with SS religious talk at 0035. (D'Angelo, PA)

CROATIA—Voice of Croatia, 9925 via Germany with Croatian news at 2217. (Charlton, ON) 2320. (Patterson, Philippines) 2328. (MacKenzie, CA)

CUBA—Radio Havana Cuba, 6180 at 0425. (Mackenzie, CA) 9550 at 2309 and 11760 in SS at 1411. (Charlton, ON)

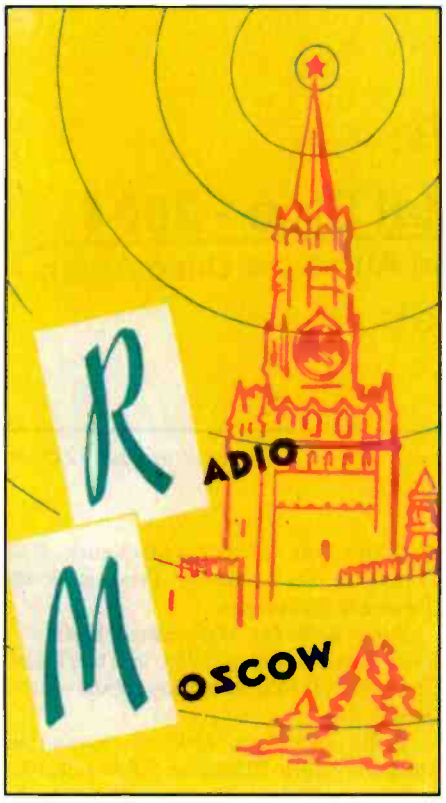
CYPRUS—Cyprus Broadcasting Corp., 9760 heard at 2235 with talks in Greek. (Brossell, WI)

CZECH REPUBLIC—Radio Prague, 7345-Litomysl at 2241 with interviews of chefs. Also 13580 weak at 1312. (Wood, TN) 9415 at 2245 with "Spotlight" pgm. (Paradis, ME) 17540 at 1801 with news and ID. (Charlton, ON)

DJBOUTI—Radio Djibouti, 4780 heard at 0308, fair to good with Koran. (Ronda, OK)

DOMINICAN REPUBLIC—Radio Amanecer, Santo Domingo, 6025 at 0155 with SS religious music, IDs at 0204, more SS talk. Lots of adjacent channel splatter. (Alexander, PA) 2342 in SS. Squeezed by Sweden at their 2359 sign on. (D'Angelo, PA)

ECUADOR—HCJB, 9745 in SS at 0437, 9780 in GG at 0324 and 11960 in SS at 1301. (MacKenzie, CA)



Radio Moscow, 1961. (Thanks Mike Adams, Florida)

Radio El Buen Pastor, Saraguro, 4815 (t) in SS at 0145 to past 0240 with religious music. (Alexander, PA)

HD2IOA, Guayaquil, 3810 at 1045 with time pips but no voice heard due to heavy ham QRM. (Wood, TN)

La Voz del Napo, Tena, 3229v in SS at 0217. (Parker, PA) 0516 with SS church service. (Wood, TN) 1051 with lively flutes and gongs, man in SS. (Ronda, OK)

EGYPT—Radio Cairo, 6135 at 0115 in SS with local pops. Quite distorted. Much better on //7270. Also 12050 in AA at 0040 but very distorted. (Alexander, PA) 7270 at 0200 with ID, pgm on Koran. (Paradis, ME) 9460 in AA at 2315 and 9990 on cooperation between the Arab states at 2155. (Maxant, WV) 9460-Zabal at 2307 and 12050-Zabal in AA at 1900. (Charlton, ON) 12050 in AA at 2303. (Brossell, WI)

ENGLAND—BBC via Meyerton, 3255 at 0430 but poor with ID and into the next program, 6190 via Meyerton with ID and news at 0400 and 7290 via Meyerton at 0444 with PP/EE lesson. (Meyerton, OK) 3255 via Meyerton at 0421. Also 7105 via Oman at 2359 sign on and into news. (D'Angelo, PA) 6195 Singapore Relay at 1330, also 7120 via Meyerton at 0437. Also 15360 via Thailand Relay at 0355. (Ronda, OK) 7120 via Meyerton with ID at 0459. (Brossell, WI) 9410 with "Newshour" at 2010. (Parker, PA) 11750 via Thailand Relay at 1246. 11945 via Singapore in Burmese at 1352. (Strawman, IA) 13650 via USA at 2219, 15245-Wooferton in RR at 1533. (Charlton, ON) 15285 Singapore Relay in CC at 1213. (Brossell, WI)

FEBA Radio, 9550 via Rwanda in AA at 2004. (Charlton, ON)

EQUATORIAL GUINEA—Radio Nacional, Bata, 5005 at 2230 with traditional music and Afro-pops. Off with anthem at 2258. (Alexander, PA)

ETHIOPIA—Radio Ethiopia, 7110 at 0300 sign on in local language, talk and short music breaks, //5990 very weak under a DRM signal and //9704 with low modulation. (Alexander, PA) 0324 with HoA music, ID in Amharic, headlines. (D'Angelo, PA) 0335 in presumed Amharic and local music. Lots of slop from Radio Liberty via Briech. (Strawman, IA)

FRANCE—Radio France Int'l 15300 in FF at 1538. (Charlton, ON) 17630 via French Guiana in SS at 2115. (MacKenzie, CA)

GABON—Africa Number One, 17630 with live soccer in FF at 1535. (Charlton, ON)

GERMANY—Deutsche Welle, 6075 via Wooferton in GG at 2150. (Patterson, Philippines) 9825 via Portugal in GG at 0252. 9495 in AA at 2030. (Parker, PA) 11865 via Rwanda at 2021, 15275 via Rwanda in GG at 1914. (Charlton, ON) 11865 Portugal Relay in GG at 2224 and 17770 via England in FF at 1250. (Brossell, WI)

GREECE—(All in Greek) Voice of Greece, 9420 at 0015 and 15630 at 1315. (Maxant, WV) 9420 at 0315. (Parker, PA) 0357, //7475. (MacKenzie, CA) 2316. (Charlton, ON)

GUATEMALA—Radio Buenas Nuevas, San Sebastian, 4799 at 0154 in SS. (Brossell, WI) 1108 in SS with religious tunes, full ID and organ music. (Wood, TN)

Radio Verdad, Chiquimula, 4052.5 at 0132 with SS religious vocals, ID and frequency anmt, more music. (D'Angelo, PA) 0312. (Ronda, OK) 0550 to 0605 close. (Alexander, PA) 0553. (Wood, TN)

Radio Cultural Coatan, San Sebastian, 4780 with pops and accordion polkas, man in SS at 0026. (Parker, PA) 0256. (Brossell, WI) 1105. (Wood, TN) 1116. (Wood, TN) 1255 with rancheros, ID at 1300. (Strawman, IA)

HAWAII—KWHR, 9930 with sermon and hymns at 1145. (Brossell, WI)

HONDURAS—HRMI/Radio Misiones Intl, 3340 at 0528 with SS preaching. (Wood, TN) 0650, reactivated after several weeks with SS religious talk and EE translations, later a variety of SS pops and ballads, IDs as "Radio Mi." Still there at 1100. (Alexander, PA) 1117. (Ronda, OK)

Radio Luz y Vida, Sao Luis, 3248.5 in SS with ID at 0122. (Parker, PA)

INDIA—All India Radio, 4840-Mumbai in Hindi at 0053. (Parker, PA) 9445 Bangaluru (Bangalore) at 2210 and 11620-Bangaluru at 2034. (Charlton, ON) 9445 at 2040 with traditional music, schedules, "Press Review." (Paradis, ME) 11585 at 1332 with Sindhi service to Pakistan and 11620 with armchair copy at 1833. (Strawman, IA) 11620 in Hindi at 1940 and 17670 at 1830. (Maxant, WV) 11620 with an interview at 1835. (Fraser, ME) 11985-Bangaluru monitored at 0221. (Ronda, OK) 13605-Bangaluru heard at 0030. (Patterson, Philippines)

INDONESIA—Voice of Indonesia, 9525 at 1110 in listed CC, EE ID at 1127 with contract info, back into Chinese. Covered by Poland at 1200. (Alexander, PA) 1135 with vocals, many mentions of Indonesia. (Ronda, OK) 1246 with pops. Also 9680 (p) with pops at 1348, frequent anmts. A very commercial sound. (Strawman, IA)

Radio Republik Indonesia, Makassar, 4750 in II at 1216. (Ronda, OK)

IRAN—VOIRI/V of Justice, 6205 at 2025 at the end of their EE broadcast with IDs, contact info. Into light instl music to 2030 close. (Alexander, PA) 7235 at 0130. (Paradis, ME) 0155. (Maxant, WV) 0220. (Parker, PA) 9905 in SS at 0200 with "Aqui Tehran" ID. (Brossell, WI) 15150 (p) with possible Koran. Chime-like IS at 1530. (Strawman, IA)

ISRAEL—Kol Israel, 9400 in FF at 1935 and 11590 in Tigrigna at 1847. (Charlton, ON) 11590 in EE and Hebrew at 0313, 11950 in HH at 2334. (MacKenzie, CA) 11585 in HH at 2250. (Brossell, WI) 11590 in EE at 1730. (Fraser, ME) 0335 on Lebanese troop casualties. Also 15640 in HH at 1945. (Maxant, WV)

Galei Zahal, 6973 in HH at 2330. (Paradis, ME) 15785 at 0011 with romantic pops, some in HH, some in EE. No ID at the half hour. (Ronda, OK)

ITALY—RAI, 5970 at 2215 in II. (Patterson, Philippines) 11800 at 2335 in II with classical music and 17780 in II at 1410 with female vocals. (Fraser, ME) 11800 with news at 0045. (Maxant, WV)

JAPAN—Radio Japan/NHK, 6110 via Canada at 0510 and 17825 in JJ at 2245. (MacKenzie, CA) 6145 at 0010 and 11935 at 0400. (Maxant, WV) 9535 with pops at 1730 and 9540 closing SS to South America at 1029. (Barton, AZ) 11705 in JJ via Canada at 1408 and 11855 via Canada in SS at 2005. (Chandler, ON) 11730 via Ascension with request pgm at 1155. Also 15400 via Ascension in FF at 1241. (Brossell, WI) 17825 with IS at 0057 and into EE news at 0100, //15325 barely audible. (Ronda, OK)

Radio Nikkei, 3925 in JJ at 1121. (Wood, TN) 1231 with chamber music. (Strawman, IA) 6055 in JJ to sudden close at 1330. (Barton, AZ) 9595 in JJ at 2245. (Patterson, Philippines)

JORDAN—Radio Jordan, 11690 with variety of US pops at 1405, EE IDs, AA pops, techno dance. EE news at 1500. (Alexander, PA) 1410 with FM news relay. (Maxant, WV) 11810 in AA at 1903. (Barton, AZ) 11810 in AA to close at 1959. (Charlton, ON)

KUWAIT—Radio Kuwait, 11675 in AA at 0310. (MacKenzie, CA) 11990 in AA at 1800. (Alexander, PA) 1803 with ID and into EE "Islam and the Destiny of Man." (Ronda, OK) 1915 with Western music. (Maxant, WV) 2052 with EE news, sked and closing anmts and off at 2059. (D'Angelo, PA)

LAOS—Lao National Radio, 6130-Vientiane in LL monitored at 1132. (Patterson, Philippines)

LATVIA—Radio SWH airing "Latvia Today," 9290 via Ulbroka at 1905 with pgm of local history, IDs and artists in Latvia. Off at 2001. (Alexander, PA)

Radio Casablanca-Ulbroka, 9290 (p) at 1105 with light pops and techno-dance but very poor. (Alexander, PA)

LIBYA—Radio Jamahiriya/Voice of Africa, 17660 at 1415 in AA with Western music. (Maxant, WV) 17775 at 1417 on African Union. (Charlton, ON) 17870 at 1400-1600 with EE, local pops, news, Green Book readings, //17725. Also //21695 at 1410 (Alexander, PA) 17870 heard at 1410. (Strawman, IA)

LITHUANIA—Radio Vilnius, 9875 at 2330 with news from "largest broadcaster in the Baltic." (Paradis, ME) 2336 with EE features and folk segments. ID and closedown anmts and off at 2359. (D'Angelo, PA) 2355. Off in mid-song at 2359:55. (Strawman, IA)

MALI—RTV Malienne, Bamako, 4835.5 in FF with local and other music at 2350. (Parker, PA)

MALAYSIA—Voice of Malaysia, Kajang, 6175 in presumed Malay at 1005. (Brossell, WI) 15295 in EE at 0340. (Patterson, Philippines)

MAURITANIA—RT Mauritanie, 4845 with AA call-ins at 0008. (Parker, PA) 2300. (Paradis, ME)

MEXICO—Radio UNAM, Mexico City, 9600 at 0039 with organ music, vocals, short news, all SS. (Strawman, IA) 0150 with SS talk, ID. Use ECSS-LSB to avoid Cuba. (Alexander, PA) 0306 in SS. (Ronda, OK) 0334 with long SS discussion. Severe splash from Havana. (D'Angelo, PA)

Radio Mil, Mexico City, 6010 in SS at 1302. Rarely heard here. (Ronda, OK)

Radio Educacion, Mexico City, 6185 in SS at 0418. (MacKenzie, CA)

MOROCCO—RTV Marocaine, 7135 in AA at 2240. (Patterson, Philippines) 11920 in AA at 0232. (Brossell, WI) Koran at 0431. (Ronda, OK)

NEW ZEALAND—Radio New Zealand, 6095 at 0950 on the development of plastic surgery. (Brossell, WI) With island choral music at 1342. (Ronda, OK) 0810 and 11675 with music from a National Radio DJ at 0340. (Maxant, WV) 13730 at 0253. (MacKenzie, CA) 15720 at 2153. (Charlton, ON)

NETHERLANDS—Radio Nederland, 15315 at 1940. (Maxant, WV) 2246 with a racy comedy show. (Wood, TN) (*Both of these were very likely via Bonaire.—gld*)

NIGER—La Voix du Sahel, Niamey, 9705 at 2110 with a variety of FF and US pops, some local tribal music. Anthem at 2159, test tone and off. Poor overall. (Alexander, PA)

NIGERIA—Voice of Nigeria, 7275 with religious talk, ID, news at 0600. Also 9690 at 0759 sign on with usual theme, ID, vernacular talk. (Alexander, PA) 7255 in an African dialect at 2233. (Brossell, WI) 15120 at 1948 on health policies of West African countries. (Ronda, OK)

Radio Nigeria, Kaduna, 4770 at 0440 with Afro-pops, anmts in EE. (Ronda, OK) 0545 with blues and pops. (Wood, TN) 6090 at 2140 in vernacular. African folk music. Off with anthem at 2300. (Alexander, PA)

NORTH KOREA—Voice of Korea, 11710 with militaristic-sounding opera at 1035. (Parker, PA) 1710 with chorus and speech. (Strawman, IA) 11735 at 1232 and 15180 in KK at the same time but not in parallel. (Brossell, WI) 13650 opening in CC at 0000. (Barton, AZ) 13760 in SS at 1915. (MacKenzie, CA)

NORTHERN MARIANAS—KFBS, 11580 in CC heard at 1220. (Brossell, WI)

OPPOSITION—Radio Southwest Africa, (to Zimbabwe) 12035 via Rampisham at 1751 with news and what seemed a phone-in pgm. (Ronda, OK)

Radio Nacional de la RASD (to Morocco) 6300-Rabuni, Algeria, 2235 in SS. (Brossell, WI) 2340 with rustic regional vocals, flute at 2359 and close down at 0001. (D'Angelo, PA)

Radio Marti (to Cuba) 7405 in SS at 0345 and 17675 in SS at 1935. (Maxant, WV) 11930 in SS at 1905. (Charlton, ON)

Radio Voice of the People (to Zimbabwe), 9765 via Madagascar at 0425 with vernacular talk, EE IDs. Slight QRM from a music loop jammer. Off at 0458. (Alexander, PA)

Voice of Iraqi Kurdistan (p), 6235 at 0242 with Koran, local language and short music breaks. (Alexander, PA)

Radio Free Afghanistan, 17685 via Kuwait in Dari at 0825. (Patterson, Philippines)

Radio Farda, (to Iran) 7295 via Lampertheim at 0059 open with Middle Eastern vocal, IDs by woman and man and into pop/rock with mostly EE vocals. (D'Angelo, PA) 9805 via Morocco in Farsi at 0209. (Brossell, WI) 0336. (MacKenzie, CA) 17845 via Sri Lanka in Farsi at 0640. (Patterson, Philippines)

Radio Solh, (to Afghanistan) 17700 via Rampisham heard at 1225 in Dari/Pasto. (Brossell, WI) 1452 with many upbeat vocals. (Ronda, OK)

Radio Free Asia, 7500 via Kuwait in Tibetan at 2329 to 2358 close. (D'Angelo, PA) 11605 via Tinian, Northern Marianas in Tibetan at 1335. (Strawman, IA) 9335 at 1155 with EE ID at 1157 and close at 1200. (Brossell, WI) 15160 via Tinian in CC at 0302 and 15585 via Saipan at 2318. (MacKenzie, CA) 15690 via Sri Lanka in Lao at 0045 and 17730 via Mongolia in Tibetan at 0210. (Patterson, Philippines) 17695 via Tinian in an Asian language at 0130. (Parker, PA)

Denge Mesopotamia (p) (to Iraq), 11530 via Moldova in presumed Kurdish at 1840. (Strawman, IA)

Radio Liberty, 11700 via Philippines in RR at 1214. (Brossell, WI) 15145 via Thailand in Uzbek at 0330. (Patterson, Philippines)

Sudan Radio Service, 5985 via Kigali at 0315 with talk about schools in Sudan. (Alexander, PA)

Southern Sudan Interactive Radio, 11945 (t) at 0630 with EE talk, doorbell-type sound effects. (Alexander, PA)

PAKISTAN—Radio Pakistan, 11570 in CC at 1210. (Patterson, Philippines)

PAPUA NEW GUINEA—Radio West New Britain, Kimbe, 3235 at 1235 with an apparent church service. (Strawman, IA)

Radio New Ireland, Kavieng, 3905 at 1243 with pops. Lots of ham QRM. (Strawman, IA)

PERU—Radio Vision, Chiclayo, 4790 at 0408 with fervent preaching. (Ronda, OK) 0414 with excited religious talk or preaching. Two IDs at 0436. (D'Angelo, PA)

Radio La Hora, Cusco, 4857.4 with man

The Crystal Ship doesn't sail in the usual pirate waters. Look for it around 3275 or 6850 (usually!).

In Times Past...

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

Peru—Radio Delcar, Chiclayo, 6700 in SS at 0425 on December 24, 1957. 250 watts. (Dexter, WI)

and woman in SS, music. Weak at 0016. (Parker, PA)

Radio Huanta 2000, Huanta, 4747 with SS woman hosting music at 2357. (Parker, PA) 0950 with OA music, ID. (Alexander, PA)

Radio Victoria, Lima, 6019.5 at 0745 with SS religious talk and light instls. Very weak on //9720. (Alexander, PA)

PHILIPPINES—Radio Veritas Asia, 11820 at 2312 in Indonesian. Closed at 2357. (D'Angelo, PA)

Radio Philipinas, 15510-Tinang at 0235. (Patterson, Philippines)

Far East Broadcasting Co., 9430 in CC at 1158. (Brossell, WI) 15465-Bocaue in Burmese at 0025. (Patterson, Philippines)

PIRATES—The Crystal Ship, 3274.6 with political talk at 0411, mentioned Blue States Republic. (D'Angelo, PA) 0904 with variety of music with DJ John Poet. Mentioned 6875 but nothing heard there. (Hassig, IL) 5385.2 at 0157 with folk, clear ID and off at 0203. Belfast address. Also 5385.5 at 2222 with rock, criticizing Bush war policies. Woman gave frequencies of 5396 and 6875 but the latter not audible. (Zeller, OH) 5387//6875 with rock and miscellany at 0215. (Parker, PA) 6855 at 0225. (Griffin, NC) 6875.1 at 1445 with rock. (Alexander, PA)

WBNY—6925u, noted various dates at 2121, 2254, 2314, 2342, 2357 and 0010. Program of clips from Alan Weiner Worldwide on WBCQ, all but one carrying Weiner's remarks. The other was the usual Commander Bunny for president stuff. (Zeller, OH)

Random Radio, 6925u at 0110 with PG and R-rated comedy, spoof on the "Secret Agent Man" song. (Hassig, IL) 0235 with oldies rock and some Johnny Cash. Said this was a rebroadcast and asked for reports to FRN. (Zeller, OH) 0242 to 0248 airing Lyndon Johnson's no second term speech. QSL via FRN. (Wood, TN)

WMPR, 6925 at 2350 with techno and ID as Micro Power Radio. Off heard at 2353. (Wood, TN)

MAC Radio, 6850 at 0023 with "Paul Starr Show," '50s and '60s songs. (Hassig, IL) 6850.8 at 0020 with rock, IDs, email address. (Alexander, PA)

Long Range Radio, 6925u at 0017 with rock, pop and novelty things. Also come comedy sketches. Several IDs but no address announced. (Zeller, OH)

Northwoods Radio, 6925 at 1625 with rock, call of the loon & ID at 1643 f/by CW and SSTV modes. Yahoo address. (Alexander, PA)

Undercover Radio, 6925u at 2210 with Dr. Benway. Mostly rock. Anncd Merlin address. (Zeller, OH)

Radio 6X, 6935 at 0050 with DJ sounding like Wolfman Jack, oldies from '50s and '60s. (Hassig, IL)

Ground Zero Radio (t) 6925u at 2108 with air raid sirens, civil defense anmts. (Alexander, PA)

WSNR (p), 6924.9 monitored at 2233. No ID heard but format is familiar. Several songs about days of the week. No address heard. (Zeller, OH)

Laser Hot Hits, 6925 at 2215. Presumed relay of this Europirate. Dance club, ads for t-shirts and a British SW club publication but no anmt of it being a relay. (Wood, TN)

Weekend Music Radio (Scotland) 6400 at 2118 with pops, weather reports. Weak but readable. (Alexander, PA)

Reflections Europe (p) 6295 at 2130 with religious sermons. Abrupt sign off at 2306. (Alexander, PA)

PORTUGAL—RDP Intl, 15295 in PP at 2205. (Maxant, WV) 15560 in PP at 1918. (Charlton, ON)

ROMANIA—Radio Romania Intl, 11880 in SS with ID at 2300 and into news. (Brossell, WI) 11940 at 2031 with ID, "Newsreel." (Charlton, ON)

RUSSIA—Voice of Russia, 7125 via Moldova in RR at 0318, 9435 at 0315, 9860 via Vatican at 0313, 13635 at 0255 and 15425 in RR at 0245. (MacKenzie, CA) 7165-Vladivostok in RR at 1242, 12065-Komsomolsk-Amur in RR at 0305, 12065-Chita in VV at 1233. (Ronda, OK) 7200-Yakutsk at 1257. Time pips to 1400 were four seconds late. 9435-Petropavlovsk at 0348. Also 12030-Irkutsk with apparent news in RR (Strawman, IA) 7250 via Armenia at 0100. (Paradis, ME) 9515 at 0355 and 9480-Moscow in SS to Europe at 2020. (Parker, PA) 9665 at 0355. (Maxant, WV) 9830-Armavir in SS at 0158. Also 12065-Chita in VV at 1206. (Brossell, WI)

Radio Kyzyl, 6100 at 1200 sign on in RR. (Brossell, WI)

SAO TOME—VOA Relay, Pinheira, 4960 at 0529 in FF with IS, woman with news. (Wood, TN) 15730 at 2033 with country songs and FF host. (Ronda, OK)

SAUDI ARABIA—BSKSA, 15205-Riyadh in AA with Koran at 1747. (Parker, PA) 15435-Riyadh in AA heard at 1543. (Charlton, ON)

SINGAPORE—Radio Singapore Intl, 6120 with service to Indonesia at 1330 and 7235-Kranji in Malaysian heard at 0910. (Patterson, Philippines)

SLOVAKIA—Radio Slovakia Intl, 5930-Rimavska Svobota at 0110 on Communist Czechoslovakia. (Parker, PA) 0410 on negotiations between Slovakia and Croatia. (Maxant, WV)

SOUTH AFRICA—Channel Africa, 3345 at 0347 with music pgm hosted by woman, news by man at 0400. (D'Angelo, PA) 0410 with EE pops. Also 17770 at 1544 with financial news. (Ronda, OK) 5960 with African news and vocals at 0320. Also 9620 at 1420. (Maxant, WV) 15235 at 1757. (Parker, PA) 17770 at 1550 with sign off anmts and request for letters. (Wood, TN)

Radio Sondergrense, 3320-Meyerton at 0252 in Afrikaans with pops. (Wood, TN) In Afrikaans at 0400. (Parker, PA)

SOUTH KOREA—KBS World Radio, 9560 with mailbag at 1215. (Maxant, WV) (*Via Sackville!—gld*)

SPAIN—Radio Exterior de Espana, 3350 Costa Rica Relay, in SS at 0258 with Caribbean music. (Wood, TN) 9630 in SS at 0308. (MacKenzie, CA) 11910 in SS at 1200. (Brossell, WI) 15110-Nobeljas in SS at 2205. (Patterson, Philippines) 15110-Nobeljas in SS at 1909 and 17595-Nobeljas in SS at 1441. (Charlton, ON)

SRI LANKA—SLBC, 11905 at 1305 with Hindi service to South Asia. Marred by WYFR-11910. (Strawman, IA)

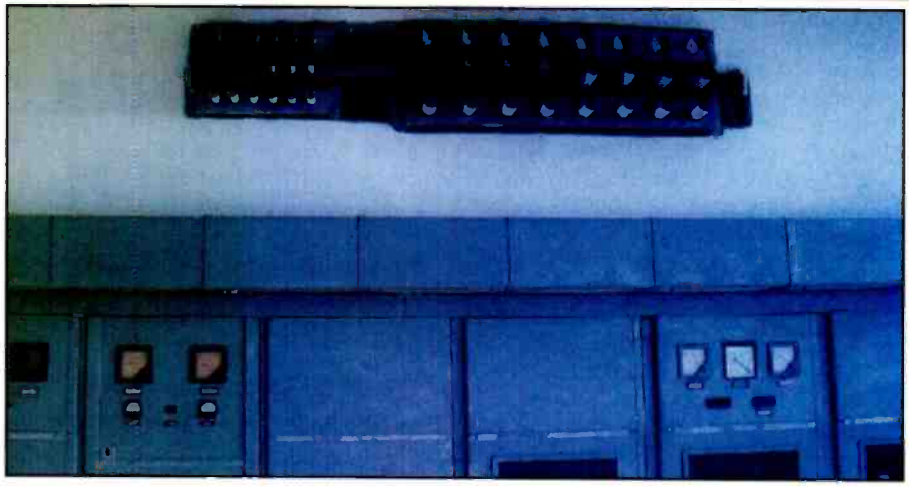
SUDAN—Sudan Radio TV, 7200 at 0351 with woman in AA. Mixing with probable Bulgaria. (Strawman, IA)

SWAZILAND—Trans World Radio, 3200-Manzini at 0413 with sermon in GG, choir and organ. ID at 0331. (D'Angelo, PA) 3240 with ID monitored at 0331. Off at 0345. (Ronda, OK)

SWEDEN—Radio Sweden, 15240 at 1248 on massive honeybee deaths. (Fraser, ME) 1320 in Swedish. (Maxant, WV) 15240-Horby at 1343 and 15735-Horby in EE at 1331. (Charlton, ON)

SYRIA—Radio Damascus, 9330 at 2108 with Mideast vocals, ID and EE news at 2115. (D'Angelo, PA) 12085 heard at 1835 with Koran and later into German. (Ronda, OK) 2110 with local music, EE news, more domestic music. (Alexander, PA)

TAIWAN—Radio Taiwan Intl., 5950 via Okeechobee at 0330. (Maxant, WV) 0518. Also 15290 in CC at 0258 with jamming in



The Chinese built this 100-kW transmitter for Radio Tirana. (Thanks Charles Maxant, West Virginia)

the background. 15440 via Okeechobee in CC at 0255. (MacKenzie, CA) 9735 in an Asian language at 1215 and 11550 in CC at 1145. (Brossell, WI) 11755 via Issoudun in FF at 1910. (Patterson, Philippines) 11785, //9680 & 9780 at 1130 in listed Mandarin. (Alexander, PA) 15290, 15600 via Okeechobee at 2213. (Charlton, ON)

TAJIKISTAN—Tajik Radio, Dushanbe, 4635 with man/woman in RR heard at 2330. (Parker, PA)

THAILAND—Radio Thailand, 7260 at 1100 sign on with EE ID, instl music and into VV. (D'Angelo, PA) 5890 via Greenville with domestic weather at 0050. (Maxant, WV)

TURKEY—Voice of Turkey, 5975 with Turkish vocals at 0330. (Maxant, WV) 7170-Emirler at 2115. (Patterson, Philippines) 9460-Cakirlar in TT at 1543, 9765-Ankara at 1936 and 15450-Ankara at 1324. (Charlton, ON) 9770 in SS to 0200 close and 15450 at 1245. (Brossell, WI) 9785 with "Press Review" at 1845. (Fraser, ME)

TUNISIA—RT Tunisienne, 7190 in AA with possible news at 0500. (Brossell, WI)

UGANDA—Radio Uganda, 4976 at 0255 with EE religious messages, local music at 0300, some US pops. (Alexander, PA) 0340 in local language with music program and news at 0400. (D'Angelo, PA) 0420 very poor with only occasional bits of EE understood. (Ronda, OK)

UKRAINE—Radio Ukraine Intl, 7440 with news at 0000 and "Ukrainian Diary" (Paradis, ME) 0100. (Maxant, WV) 0300. (Mackenzie, CA)

UNITED STATES—Voice of America, 6140 Philippines Relay at 1208. (Ronda, OK) 9780 Sri Lanka Relay at 0111. (D'Angelo, PA) 11510 Sri Lanka Relay in Pushto to Afghanistan at 1325. (Strawman, IA) 11785 Thailand Relay in CC at 1217 and 11990 in CC at 1220. (Brossell, WI) 13755 Thailand Relay at 2306 and 15580 Morocco Relay at 2127. (MacKenzie, CA) 15580 at 1956. (Charlton, ON) 17765 Philippines Relay in CC at 0137. (Parker, PA)

AFN/AFRTS, 5446u, Key West at 1138 and 5765u, Guam carrying NPR at 1129. (Wood, TN)

WINB, Red Lion, 9265 at 2200 sign on with religious pgms. (Alexander, PA) 13570 at 1310. (Wood, TN) 1912. (MacKenzie, CA)

KTBN, Salt Lake City, 15590 at 1910. (Maxant, WV)

KJES, Vado, at 11710 heard at 1425. (Maxant, WV)

WEWN, Vandiver, 5810 at 0350, 5850 at 2230 and 9950 at 1427. (Maxant, WV)

Adventist World Radio, 12105 via Guam in CC at 1215. (Brossell, WI) 15215 via Guam in CC at 2240. (Patterson, Philippines) 15260 via Julich ending FF at 2028. (Ronda, OK) 15320 via Guam in VV at 2333. (MacKenzie, CA)

WWCR, Nashville, 3215 at 0300. (Griffin, NC) 15825 in SS at 2118. (MacKenzie, CA)

University Network, 6150 via Costa Rica at 0350. (Maxant, WV) 7375 with Gene Scott at 0000. (Paradis, ME)

WYFR, Okeechobee, 9620 via Wertachtal at 2215. (Patterson, Philippines) 11875 via Ascension at 2225. (Brossell, WI) 18930 at 1935. (Fraser, ME)

Trans World Radio, 12085 via Novosibirsk, Russia, in Nepali at 0054. (Ronda, OK)

WMLK, Bethel, 9265 heard at 1930. (Alexander, PA)

WRMI, Miami, 9955 in SS at 0307. (MacKenzie, CA)

Christian Voice, 7345 via Uzbekistan at 0305. (MacKenzie, CA)

(Compiling this US stuff is about as interesting as it is to listen to!—gld)

VATICAN—Vatican Radio, 5885-Santa Maria de Galeria, in II at 2135. (Patterson, Philippines) 6040 in SS at 0330, 13765 at 1520. (Maxant, WV) 1532 in EE. (Charlton, ON) 15560 via Novosibirsk, Russia, in Hindi at 0212. (Ronda, OK)

VENEZUELA—Radio Nacional, 11670 via Cuba in SS heard at 1530. (Charlton, ON)

11705 via Cuba in SS monitored at 2315. (MacKenzie, CA)

VIETNAM—Voice of Vietnam, 9840-Son Tay at 2310. (Patterson, Philippines)

YEMEN—Republic of Yemen Radio, 9780 in AA at 0150. (Paradis, ME)

ZAMBIA—The Voice-Africa, 4965 at 0405 with woman singing gospel songs. (Ronda, OK)

ZIMBABWE—Zimbabwe Broadcasting Corp, Gweru, 4828 at 0130 with non-stop Afro-pops. (Alexander, PA) 0203 with hymns. (Brossell, WI) 0314 with continuous pops. (D'Angelo, PA) 0335 with traditional African choral songs, //3396 very poor. (Ronda, OK)

And, once more, order is restored! Many thanks and high praise to all the good guys who checked in with logs this time. Namely, Robert Charlton, Windsor, ON; Joe Wood, Greenback, TN; Rick Barton, Phoenix, AZ; Brian Alexander, Mechanicsburg, PA; Charles Maxant, Barboursville, WV; Stewart MacKenzie, Huntington Beach, CA; Jerry Strawman, Des Moines, IA; Jim Ronda, Tulsa, OK; Robert Fraser, Belfast, ME; George Zeller, Cleveland, OH; William Hassig, Mt. Prospect, IL; Richard Parker, Pennsburg, PA; Rich D'Angelo, Wyomissing, PA; T.C. Patterson, Cebu, Philippines, Robert Brossell, Pewaukee, WI, Bobby Griffin, NC; and Ray Paradis, Pittsfield, ME (welcome back, Ray!). Good show, everyone!

Until next month, good listening!

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!

This month's prizewinner is **Jim Ronda of Tulsa, Oklahoma**, who receives a 2008 edition of *Passport to World Band* Radio from Universal Radio. *Passport* is as great a source of shortwave information as Universal is for all your radio and DXing needs. Call or email them if you aren't receiving their free catalog of radio goodies. The number is (614) 866-4267 or email dx@universal-radio.com. Postal requests go to 6830 Americana Parkway, Reynoldsburg, OH 43068.

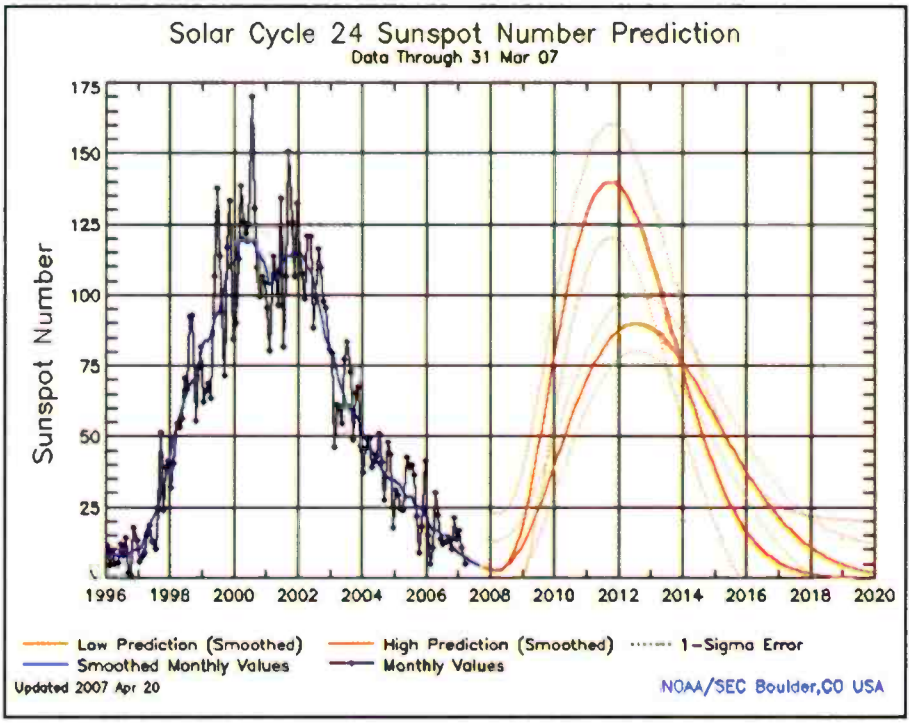
by Tomas Hood, NW7US, pc-prop-man@hfradio.org

Got Spots?

From September 2007 through the submission of this month's column (late October), the sun has become spotless. In a major change in solar activity, no sunspots appeared for three weeks in row during September. In the final days of September, a single sunspot developed and then disappeared. After another brief early October sunspot, the sun again went spotless for weeks.

This has caused me to reconsider when Solar Cycle 23 is ending. I believed, based on the numbers (sunspot averages), that the solar cycle minimum occurred in March 2007. The **Table** illustrates the projected smoothed sunspot numbers that most forecasters held as reliable. Certainly, the three-month sunspot number averages seemed to support the March minimum. Until now, that is.

Now, with the nearly spotless record from September through October, the three-month average is likely to be lower than March's 11.2. Already, we see lower averages, such as August's 10.2, which is based on the middle of July through September period. When you average the sum of all days from the beginning of August to the end of October, then divide that by the number of days for the three months (92 days), you get an average that is lower than any so far during Cycle 23. Clearly, then, the cycle is not over, as I had postulated.



NOAA/SEC Cycle 24 Prediction (April 2007). (Source: NOAA/SEC)

The official NOAA, NASA, and ISES (International Solar Energy Society) Solar Cycle 24 prediction, released in April 2007, puts the end of Cycle 23 in March 2008. This will put the length of Cycle 23 at 11.75 years, which is longer than the average 11-year cycle. This forecast also has the peak of Solar Cycle 24 in October 2011, with a peak smoothed sunspot average of 140. However, the forecast also states that the peak might occur in August 2012, with a smoothed

Table. Projected Smoothed Sunspot Numbers

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1996										8.8	9.8	10.4
1997	10.4	11.0	13.5	16.5	18.3	20.3	22.6	25.0	28.3	31.8	35.0	39.0
1998	43.7	48.9	53.4	56.5	59.3	62.4	65.4	67.8	69.5	70.5	73.0	77.9
1999	82.6	84.6	83.8	85.5	90.5	93.1	94.4	97.5	102.3	107.7	110.9	111.0
2000	112.9	116.8	119.9	120.8	119.0	118.7	119.8	118.6	116.2	114.6	112.7	112.0
2001	108.7	104.0	104.8	107.5	108.6	109.8	111.7	113.6	114.1	114.0	115.5	114.6
2002	113.5	114.6	113.3	110.5	108.8	106.2	102.7	98.7	94.6	90.5	85.2	82.0
2003	81.0	78.5	74.1	70.3	67.8	65.0	61.8	60.1	59.6	58.1	56.7	54.8
2004	52.0	49.3	47.1	45.5	43.9	41.7	40.2	39.2	37.5	35.9	35.3	35.2
2005	34.6	33.9	33.5	31.6	28.9	28.8	29.1	27.4	25.8	25.5	24.9	23.0
2006	20.8	18.6	17.4	17.1	17.3	16.3	15.3	15.6	15.6	14.2	12.7	12.1
2007	12.0	11.6	10.8	10.9	11.1	11.4	12.0	12.7	13.5	14.3	15.3	16.3

Actual and Predicted monthly smoothed sunspot numbers for Solar Cycle 23. (Source: NOAA)

sunspot average of 90. Either way, Cycle 24 is not expected to be a cycle of very high activity levels (see **Figure**).

While there are no sunspots, there has been plenty of space weather. "Space weather" is a term used to describe a collection of physical processes, beginning at the sun and ultimately affecting radio propagation conditions. The sun is always emitting energy. These emissions come in the form of flares of electromagnetic radiation, including radio waves, infrared, ultraviolet, and visible light, and X-rays, and as energetic electrically charged particles through coronal mass ejections (CMEs) and plasma streams.

These solar particles travel outwards away from the sun in a constantly fluctuating solar wind. The solar wind carries the sun's magnetic field with it. The electromagnetic radiation travels at the speed of light and takes about eight minutes to move from the sun to the Earth, whereas the charged particles travel more slowly, taking from a few hours to several days to move from the sun to the Earth.

The radiation and particles interact with the Earth's geomagnetic field and outer atmosphere in complex ways, causing concentrations of energetic particles to collect and electric currents to flow in regions of the outer atmosphere, the magnetosphere, and ionosphere. These can result in geomagnetic variations, aurora, and can affect the way radio signals are propagated.

Through October 2007, there were a number of days when the geomagnetic activity was elevated to storm levels, due to coronal hole activity and the resulting bombardment of the Earth's geomagnetic field of solar plasma particles. This can be a blessing, or a curse.

Where's The DX?

With such long periods where there are no sunspots, you might think that radio propagation on shortwave frequencies is all but non-existent. Yet, the reports coming in show that DX can still be had. Some of this DX activity is the result of how the geomagnetic field disturbances can cause normal radio signal paths to become blocked, while other paths remain open.

Another blessing hidden in geomagnetic storms is the possible aurora that can occur when the solar particles enter Earth's atmosphere in the polar regions (in the aurora oval). The *E* region of the ionosphere can become highly ionized during an aurora. These clouds or patches of highly energized ions reflect radio signals, providing a great radio propagation path on higher frequencies (upper shortwave through low-VHF). Overall, though, DX is better when the geomagnetic activity is low.

You can get 45-day planetary A Index and solar flux predictions at www.swpc.noaa.gov/ftpmenu/forecasts/45DF.html. You can see the progress of the current solar cycle at www.swpc.noaa.gov/SolarCycle/.

HF Propagation

A moderate to low level of solar activity is expected during December, with 10.7-cm flux levels peaking around 70, at most, dipping down to 60. That's not too bad, considering that we're at the solar minimum period at the end of Cycle 23 (I think that we're already in Cycle 24, though the majority of solar forecasts say otherwise).

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 (Kp > 5 or Ap > 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 andat 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 transpolar 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 Index (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 long 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 wax and wane with an approximate 11-year cycle.

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

Optimum Working Frequencies (MHz) - For January 2008- Flux = 80, Created by NW7US

UTC TO/FROM US WEST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	18	15	12	11	10	10	10	9	9	9	9	9	9	9	12	17	19	20	20	21	21	21	20	20
NORTHERN SOUTH AMERICA	26	24	20	15	14	14	13	13	12	12	12	12	12	11	13	22	25	26	27	28	28	28	28	27
CENTRAL SOUTH AMERICA	25	23	18	15	14	14	13	13	12	12	12	12	12	12	16	22	25	27	28	28	29	28	28	27
SOUTHERN SOUTH AMERICA	27	25	23	16	15	14	14	13	13	12	12	12	12	12	12	21	24	26	27	27	28	29	29	28
WESTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	11	13	12	12	11	9	9	9	8
EASTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	11	10	10	9	9	9	8	8
EASTERN NORTH AMERICA	20	18	13	12	12	11	11	11	10	10	10	10	10	10	13	18	20	21	22	23	23	23	22	21
CENTRAL NORTH AMERICA	12	11	9	7	7	6	6	6	6	6	6	5	5	5	5	8	10	11	12	12	13	13	12	12
WESTERN NORTH AMERICA	6	6	5	4	3	3	3	3	3	3	3	3	2	2	2	2	5	5	6	6	6	7	7	6
SOUTHERN NORTH AMERICA	20	18	16	12	11	11	10	10	10	9	9	9	9	9	9	15	18	20	21	21	22	22	21	21
HAWAII	19	18	17	16	14	10	10	9	9	9	8	8	8	8	8	8	8	12	15	17	18	18	19	19
NORTHERN AFRICA	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	12	14	15	15	13	10	10	9	9
CENTRAL AFRICA	11	10	9	9	9	9	8	8	8	8	8	8	8	8	8	11	13	14	15	13	12	12	11	11
SOUTH AFRICA	18	15	12	11	11	11	10	10	10	10	10	10	9	9	13	17	19	20	21	21	21	21	20	19
MIDDLE EAST	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	11	12	10	10	9	9	9	9
JAPAN	17	17	16	15	14	10	10	9	9	9	9	8	8	8	8	8	8	8	8	8	8	11	15	16
CENTRAL ASIA	17	17	16	15	13	10	10	9	9	9	9	8	8	8	8	8	8	8	10	10	10	10	10	17
INDIA	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
THAILAND	16	16	15	14	13	10	9	9	9	9	8	8	8	8	8	8	8	8	11	10	10	10	10	10
AUSTRALIA	24	25	26	25	22	16	15	14	14	13	13	12	12	12	12	12	12	16	15	14	16	19	21	23
CHINA	14	15	15	14	12	10	9	9	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	10
SOUTH PACIFIC	27	27	27	25	21	16	15	14	13	13	13	12	12	12	12	12	12	15	16	19	21	23	24	26

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

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

The great thing about the winter season is that the density of ionization in the Northern Hemisphere is expected to increase more rapidly after sunrise than during other seasons. Additionally, static and atmospheric noise levels will be at seasonally low values during the month of January. Reasonably strong signal levels are expected on most of the lower shortwave bands (lower in frequency), while the higher bands will not be as hot as during the peak years.

Looking forward to what is coming this year, we're expecting a moderate rise in solar activity because of the start of Cycle 24 (starting in March). This means that we'll continue to have the sort of conditions that favor the tropical shortwave bands (below 6 MHz), as well as the mediumwave frequencies during the longer hours of January.

The mediumwave broadcast band, also known in the United States as the AM Broadcast band (or AM band) currently extends from 525 to 1700 kHz. In the United States and Canada, channels are spaced in even 10-kHz increments starting at 530 kHz. Elsewhere, channels are spaced in 9-kHz increments starting at 531 kHz.

The hunt for signals from distant AM broadcasting stations is an exciting activity, especially during the late fall and winter seasons. The distant stations you're able to hear depend largely upon signal propagation. Propagation at these frequencies is very different than it is at frequencies in the high-frequency range (3 through 30 MHz). Propagation of mediumwave signals varies depending upon the time of day, the season, and other factors.

For mediumwave, the most obvious factor for good DX is the time of day. The *D* layer of the ionosphere almost always absorbs mediumwave radio signals during the daylight hours. As a result, nearly all mediumwave signals received during midday hours will arrive by groundwave propagation, rather than by skywaves refracted off the ionosphere. Groundwave propagation makes reception of signals over a few hundred miles away unusual in daylight. At night, however, the ionosphere refracts these mediumwave signals, making it possible for radio stations to be heard at much greater distances, sometimes as far away as Australia, Europe, and Asia.

Reception of mediumwave signals tends to be better in winter than in summer, due to lower levels of atmospheric noise and longer hours of darkness. During times of severe geomagnetic storms, when the planetary K index is above 4, auroral ionization can absorb the skywave mediumwave signals, causing any higher-latitude broadcast signals to disappear, which would allow weaker mid- and low-latitude stations to be heard. At the same time, it has been observed that mid- and low-latitude skywave signals may be enhanced during these times because of ionospheric tilting and other phenomena. DXing of stations from south of the equator is often possible during highly active geomagnetic storms.

One of the most exciting aspects of mediumwave DXing is known as the "sunrise and sunset DXing window." The most fruitful times to reap distant mediumwave signals are from just before sunset to a few hours after sunset and again just before sunrise to a few hours afterward. The sunset skip period is particularly useful to DXers in the eastern part of North America, because stations in time zones farther west become audible after local daytime stations have stopped transmitting. Western DXers, on the other hand, have an advantage in being able to pick up many eastern stations as they begin their broadcast days in the morning.

Because of the seasonal decrease in geomagnetic activity during December and January, and because of the longer hours of darkness in the Northern Hemisphere, you will find a rich selection of mediumwave AM signals from as far away as Europe, South America, Asia, and even the South Pacific. Let me know your experiences.

During the winter months the maximum usable frequencies (MUFs) are generally higher during the daylight hours than during the summer daylight hours (see the notes at http://vesuvius.jsc.nasa. gov/er/seh/sun.html). This provides short but strong openings on higher shortwave bands during the winter day. Then, at night, the MUF dips down much lower than what would be seen during the summer nights. Summertime MUFs are generally higher during the night hours than during the winter nights, in part because the ionosphere stays energized through the short nights. Winter nights are longer, so recombination of the ionosphere (which results in a lowering of the MUF) is more complete.

Paths on 31 through 15 meters remain at their seasonal peak, especially between North America and Europe in the morning, and between North America and Asia during the late afternoon hours. Twenty-two and 19 meters continue to be the best daytime DX bands, with 31 and 25 running a close second. Plenty of surprises are possible on 31 meters during the morning and evening hours, and well into the hours of darkness.

North/south paths on 25 through 15 meters will be reliable and open for most of the daylight hours, especially where paths terminate in the Southern Hemisphere. Nighttime conditions on these higher frequencies remain short and weak, with mostly north/south path openings since the Southern Hemisphere has longer daylight hours.

Signals are strong on 90 through 41 meters this year, and seasonally they are at their nighttime peak. DX activity tends to increase later in the evening toward midnight. Look for Africa and South Pacific (Australia, Papua New Guinea, and so on) on 90 through 60 meters throughout the night. On 41, 49, and 60 meters, long-path DX is possible along the gray line.

Seventy-five through 120 meters continues to remain stable, with very low noise levels. Some high noise may occur during regional snowstorms, but on average you can expect great nighttime DX conditions with the longer hours of darkness. Look for Europe and Africa around sunset until the middle of the night, and then Asia, the Pacific, and the South Pacific as morning approaches.

Signals below 120 meters are also greatly improved, unless we experience those intense CME events, where conditions will become degraded. Medium-wave DX is really hot during this season.

Propagation On VHF And Above

Actively monitor the low VHF for DX TV signals (remember European TV uses AM for their audio, instead of FM), as there might be sporadic-*E* (*Es*) openings once or twice this month. With the coronal hole activity we've already seen during the latter part of 2007, it's possible for some strong aurora activity occurring, making VHF DX possible. I'd like to hear from you if you catch such propagation.

Es activity can appear on three to four days during January on the low VHF frequencies for stations in the Northern Hemisphere. The average opening may last an hour or two with distances of up to 1000 km possible.

The Quadrantid meteor shower is the major meteor shower for January, and it can appear any time during the first week of January. This can sometimes be quite intense, so it may be a good idea to set up some 2- and 6-meter schedules. Morning meteor openings may be the best bet during this month. Refer to *Popular Communications*' sister publication *CQ VHF* for more information about VHF DXing and radio propagation.

Current Solar Cycle Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for September 2007 is 2.4, the lowest recorded during Cycle 23. The lowest daily sunspot value of zero (0) was recorded for September 6 through September 27. The highest daily sunspot count was 14 on September 1. The 12-month running smoothed sunspot number centered on March 2007 is 10.8. A smoothed sunspot count of 22, give or take about 12 points, is expected for January 2007.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 67.1 for September 2007. The 12-month smoothed 10.7-cm flux centered on March 2007 is 76. The predicted smoothed 10.7-cm solar flux for January 2007 is 80, give or take about 14 points.

The observed monthly mean planetary A Index (Ap) for September 2007 is 8. The 12-month smoothed Ap index centered on March 2007 is 8.4. Expect the overall geomagnetic activity to vary greatly between quiet to active during most days in January. Expect continued coronal hole activity what will increase the geomagnetic activity for extended periods.

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, 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 that you have noticed. Do you have questions about propagation? I look forward to hearing from you.

Happy signal hunting!

by Rich Arland, W3OSS, richard.arland@verizon.net

Solar Power—For The EmComm Volunteer, Its Time Has Come

I have a friend who, for his safety, we'll call "Herb." Herb lives in "The Great White North" (aka Alaska). Herb and I have been friends for quite some time. We both share a military background, the love of the radio hobby, a common philosophy regarding our country and readiness for situations hostile to same.

If the truth be told, Herb is one of those kinda guys that I would gladly go to war with. He's experienced in the ways of the world, and, as my old Top Kick used to say, "He's been to the big city and seen the elephant!!"

Herb is my sounding board. Several times a week he will send me emails with links to sites he has found on the Internet that he thinks will be of interest to me. About 95 percent of the time he's correct...sometimes to the point of being scary. It seems that we're linked subconsciously at the very least, *or* we're twins separated at birth. Either way, Herb provides me with many hours of thought provoking, extremely interesting, and sometimes mind-boggling reading material.

Recently Herb wrote letters to several of the radio hobby magazines lamenting the lack of EmComm/survival radio communications articles. I applaud his direct approach to an on-going problem. Over the years I've done my share of beating the EmComm drum, but I can't always have column after column focusing on just emergency/survival communications. For one thing "Homeland Security" would become a very "Ho-Hum" column, not to mention a very difficult column to maintain.

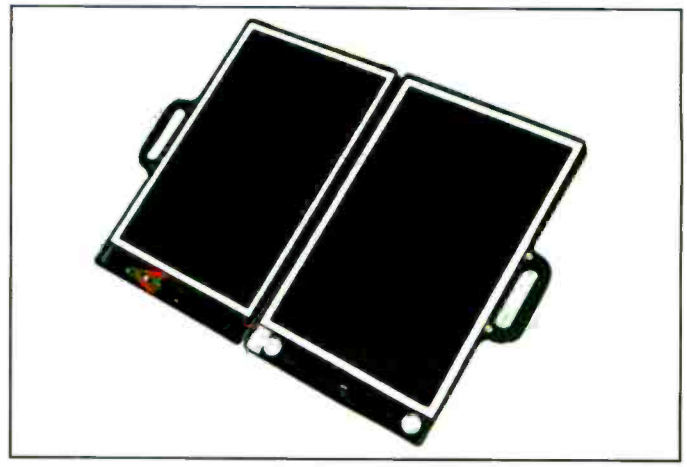
Of course, Herb sent me copies of the letters and, in some cases, the replies he got from the various editors. One thing for sure, Herb's direct approach certainly got some attention, not only from several magazines, but also from me. I realized that I did, in fact, need to place more emphasis on emergency and survival communications in my column. Thanks, Herb, I needed that wake up call.

Power To The People!

One of my worst recurring nightmares is about being stranded without the ability to generate and use electricity. I firmly believe that if you have the ability to make power, then you can do just about anything. Power is the thing that makes the world go 'round. All too often we take power for granted. Sure, we think about power when the lights go out during a thunderstorm or, in the case of the East Coast blackout a couple of years ago, when a small power company's connection to the national power grid fails (that one caused a domino effect that blacked out most of the eastern seaboard and as far west as Ohio!).

No doubt about it, power is one of the basics in today's high-tech world, and you can't do much if you don't have the ability either to generate the necessary power or to somehow keep your equipment running on storage batteries.

The Internet is a great resource for gathering information and putting together the necessary research to plan an alternative energy generation plant for your home and/or retreat.



Here's a photo of my 13-watt PV system. This unit folds up in the middle for easy transport. A piece of closed cell foam pads the PV surfaces when the unit is closed and being transported. This system will yield over 1A of recharging current in full sunlight, more than enough to recharge most EmComm battery systems.

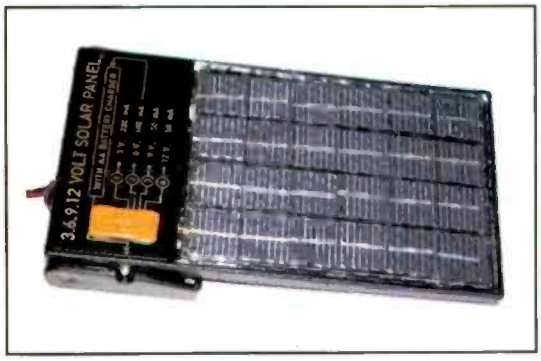
Although we've discussed it before, it never hurts to revisit this topic. There are many great sites on the Internet that show you, step by step, how to put together an alternative energy source of power.

Probably the method that most people instantly think of regarding alternative energy production is solar power. That's right, we have a huge (as in really big) nuclear reactor source of power about 93 million miles away from us. Our sun, while not on the "A List" of stars as far as the universe is concerned, generates billions of tons of storable electricity; you only need photovoltaic (PV) cells, more commonly known as solar panels, to capture the photons from the sun and turn them into useable electricity. PVs are quiet, extremely low maintenance, readily available, and, in most cases, portable. Solar power is non-polluting, which makes it an ideal source of alternative energy. The sun is always shining (well, okay, not *all* the time in Northeast Pennsylvania).

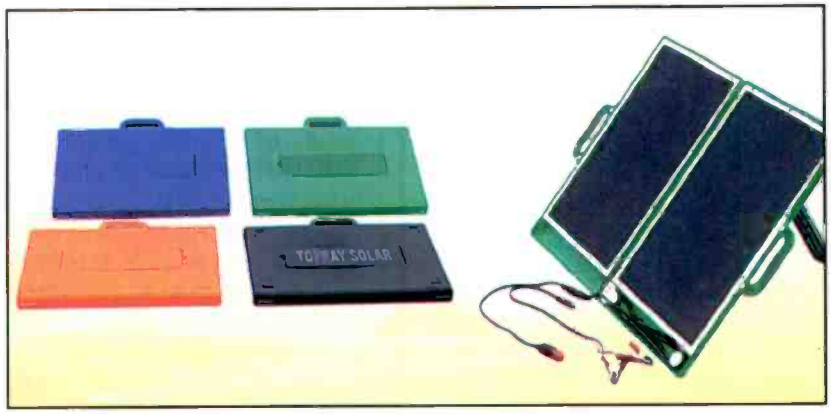
The primary thing you must be concerned with is the size of your system, that is the number of PV panels and battery storage capacity needed to adequately generate and store the power you'll use on a day-to-day basis. There are several extremely good books on this topic, so I won't go into great detail here in this column. Suffice it to say that the topic of solar power is adequately covered and all one has to do is search the Internet for a copy of one or more of the books.

One Caveat

One downside to solar power is the cost. In the PV power game it's called dollars per watt ($/W). You would think that after about five or six decades the cost of generating solar



I keep this smaller unit around to ensure that I have spare battery power for my cell phone and my RadioShack HT-420 VHF/UHF handheld transceiver. In a pinch, I could recharge the laptop batteries, too, but not much else.



This image was taken directly from an ad on the Internet. Notice the various case colors on this 13-watt PV system. Now, I gotta tell ya...that's a nice touch: color-coordinated PV briefcase systems!

power would have been driven down sufficiently to allow almost anyone to with a modest income to assemble a nice little PV system and provide some off-grid self-sufficiency. Not so, unfortunately. For one thing the folks who own a lot of the patents in photovoltaic technology are the very people who don't want "the little guy" to be self-sufficient when it comes to power generation.

Over the years, the cost of PV technology has gone down to roughly $6/W, which some say isn't too bad. In reality, the cost should be down to pennies per watt, but that hasn't happened...yet. You'll get a real case of sticker shock when you spend the time to critique your alternative power system and do the math. The components of a small PV system that would adequately power a single family dwelling could easily cost around $10 to $15 thousand for starters. I don't care who you are, that is a LOT of money!

A Small Portable PV System

If the price of a PV system for your house is scary, let's focus on something smaller that will take care of your radio gear and provide power for your survival in the wilds. While two or three 45- to 60-watt PV panels are desirable, they're a little bit too large and cumbersome for a portable PV system for "the bush." The three 45-watt PV panels I've discussed previously in this column are primarily for the times we take our Scamp camping trailer

out and we need to generate a fairly large amount of power.

The demands of EmComm gear can range from simply recharging internal NiCd or NiMH batteries in your VHF/UHF handheld to supplying power to run your HF+ VHF/UHF radio for more band coverage and improved versatility. In this instance a small 5- to 6-watt PV system would be about all you'd need to keep the spare batteries topped off during emergency operations.

The requirements of using higher-powered gear with more bells and whistles negates the use of these smaller systems. Instead you must resize your PV hardware to include larger panels that will gather more light and give you more output. This is where a 12- to 15-watt PV panel arrangement comes into play.

If you don't have the time or inclination to build your own solar-powered generating system, relax: the Internet is full of sites that will sell you a nice little system for use with your comm gear (again, do a search). Once more, the main downside here is the cost. A 13-watt "briefcase" PV system will cost about $75, with shipping and handling, which works out to slightly less than the average $6/watt. But that's not bad, when you think about it. I have one of these systems and it's a good buy, as far as I am concerned, since it takes the burden off me, as an EmComm volunteer communicator, of finding and procuring the necessary PV panels, wiring up the system, and packaging it for use in the bush.

I also have one of the smaller units, which stays in my laptop bag. Its primary function is to power my cell phone, or possibly trickle charge my VHF/UHF handheld radios in a pinch. To be sure, the smaller unit doesn't really offer much beyond the occasional recharge capability of a small electrical appliance, like a cell phone, MP3 player, or HT. However, if you don't have one when you need one, then you will literally be cursing the darkness!

The Care And Feeding Of Small PVs

The small PV panels we've been talking about are not meant for rough usage in the bush. If you drop them or are careless in packing them for transport, you'll shorten their lifetimes to minutes rather than years. If you want the kind of PVs that will take a lot of abuse, talk to NASA...and be sure to have your checkbook handy!

PVs are really self-contained power generation systems. Aside from careful handling, both in the bush and at home, you might have to wipe their exposed covers off with a damp cloth to remove excess dirt/grit/dust build-up which causes light dispersion and reduces efficiency.

It's also not a good policy to short the connections coming out the back of the PV panel. You can, if you must, place an ammeter across the "+" and "-" terminals and point the PV panel to full sunlight to get an idea of the full current output of the panel under max light. But don't short the leads together. Use good engineering practices and you'll have a PV system that will last you years.

Still Waiting For Your Contest Entry...

Well, that's it for this month. Remember, our contest is still on for the best "outside the box" thinking on a portable Go-Box for rapid deployment for EmComm support. The winner(s) will get a one-year subscription or subscription extension to *Pop'Comm*. Can't go wrong with that.

And, until next time, remember: Preparedness is not optional.

by Gordon West, WB6NOA, WB6NOA@arrl.net

Ham Radio Homers

What is a ham radio "Homer" you ask? It's a 11-mW, 20-mS pulse "pinger." It may also contain a CW ID. The pulse repetition rate is once per second, and the tiny, battery-operated transmitters run about a month on frequencies interstitial to recognized band plan voice channels.

This month we look specifically at some really neat 222-MHz Homers. The 222–225 MHz band is home for many ham radio modes, including FM voice, SSB and CW weak signal, meteorscatter data bursts, data communications, and linked repeaters. And, for your pulsing pleasure, these "pingers" have a variety of uses, some ham radio-related, other important for other reasons, including high altitude balloon recovery, R/C model finders, rocket payload finders, T-hunt trainers, Fido and Fluffy locators, and loaned equipment trackers.

"Our County Fair was loaned a $ 10,000 transceiver to demonstrate high-frequency operation from our ham radio booth," said Julian Frost, N3JF. "We also had an HP spectrum analyzer at the Fair," he added, showing me where the tiny imbedded 222-MHz transmitter was hidden inside. "If someone in the area borrows our equipment overnight, we can easily track it down the next morning," said Frost, although the equipment remained safe for the entire County Fair run.

In The Field

So how far does a 20-mS pulse travel on 222 MHz? It's all in your receiver!

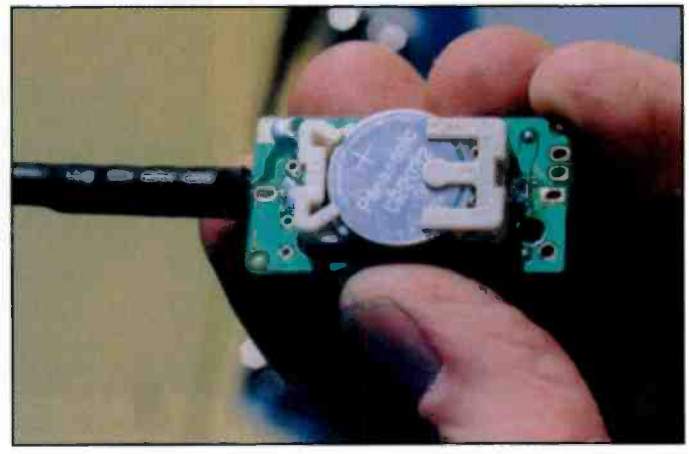
"I can get about a block away in our neighborhood before the signal fizzles out," said Spence Porter, WA6TPR, of Communications Specialists, Inc. (www.Com-Spec.com), a manufacturer of tone signaling equipment. Porter tags wildlife, among other things, with his exotic tiny transmitters.

"For hot air balloons, they burst at 100,000 feet with our line-of-sight signal still copy-able!" said Porter, saying that this simple technology won't go splat when the balloon makes a hard landing that could damage APRS (Automatic Position Reporting System) transmitters. These tiny 1-mW tags contain their own built-in (replaceable) lithium 3-volt 2032 cell, held in place with a simple screw-on battery cap over the sealed transmitter on the inside.

"The antenna for our ham radio transmitters may be imbedded in an animal collar or self-deployed as a tiny hair-like stinger. The battery lasts up to a month at 1 mW, and we can even program ham radio callsigns for ID," said Porter. Porter works closely with amateur radio T-hunt groups, as well as 222–225 MHz repeater users, who could not detect the transmitter with their FM equipment.

Interference Free

"Our tags can be ordered on any frequency from 222.0 MHz to 224.9975 MHz, in 2.5-kHz steps. We absolutely steer clear of recognized SSB and CW frequencies, so as never to cause interference to weak-signal operators," added Porter. During a recent test at his technical facility in Orange, California, my little 220-MHz handheld could not pick up the 20-mS pulse on either side of the interstitial frequency.



The longer-range 100-mW radio tag is ultra thin and offers an eight-day battery life.

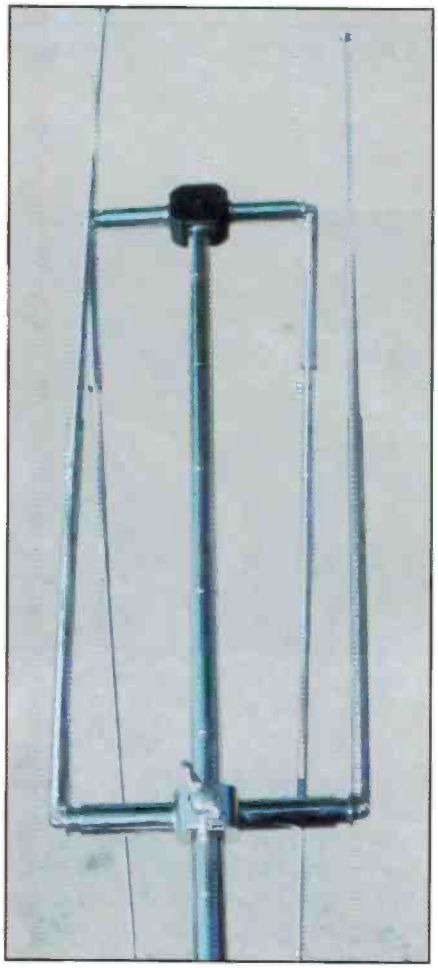
"It takes a 222-MHz CW/SSB receiver spot-on our interstitial frequency to hear the pulse at any distance," said Porter. Frequency is held to 2 ppm (parts per million) by a temperature-compensated crystal oscillator, and Porter explained that his 1-ounce transmitter can withstand repeated crash landings on concrete and keep on "pinging." In addition to the 1-mW, 30-day battery, special versions of his tags are available at 50 mW, with battery playing time dropping from 30 days down to 10 days, but with range dramatically improved.

Mark Your Calendars... Gordo's Coming To Ham Radio University 2008!

The halls and classrooms of Briarcliffe College in Bethpage, New York, will be rocking with signals when Ham Radio University 2008 opens its doors on Sunday, January 13. Exciting forums, displays, presentations, and live operating events are scheduled. The event is also the ARRL NYC/LI Section Convention and there are special events geared to ARES and EmComm. Other forums will cover new twists on contesting, low-power operating and many other aspects of ham radio.

A highlight of the event will be the keynote address by *Pop'Comm*'s own Gordon West, WB6NOA, one of the most dynamic speakers in ham radio. Gordo is flying in from California especially for HRU, so if you're in the area, the least you can is stop by and say hello. But don't miss his presentation—Gordo's well known for his surprises, so be forewarned if he asks you to be a volunteer...

Ham Radio University 2008 starts Sunday, January 13, at 9 a.m. Visit www.hamradiouniversity.org for more information and updates.



A 216/218-MHz collapsible Yagi direction finder antenna. This one is from Diamond Antenna.

The lightweight 222-MHz transmitter affixed to the underside of this R/C model plane's wing offers one-mile range. (Photo by David Corsiglia, WA6TWF)

Most R/C enthusiasts choose the 1-mW tags so not to overload their on-board 51-MHz fight receiver. In tests, no interference was found on R/C 6-meter frequencies from the 222-MHz locator, even though the transmitter was within 10 inches of the model's receiver.

Zeroing In

The key for picking up a distant locator signal at 1 mW or 50 mW is the design of the Communications Specialists' extra-narrowband 222 MHz–225 MHz tunable CW receiver. The receiver runs on a simple 9-volt battery, and offers 1-kHz incremental thumbwheel tuning. The receiver is so selective that it cannot hear strong repeater outputs on the interstitial frequencies between them.

The Communications Specialists' receiver comes with both a simple rubber duck unity gain antenna and a Moxon PCB directional antenna. The highly

Going the distance—helicopter long-range radio trials on the 222-MHz band proved the usefulness of these locator tags.

What better use could there be for a radio locator tag than keeping a loved one safe?!

directional 222-MHz antenna will dramatically improve detection range, allowing you to find, for instance, a distant downed R/C model. Alternately, you can use another antenna of your choice, such as the versatile MAY1000 from Diamond Antenna. This fold-up, three-element beam can be field tuned to 222 MHz, offers portable direction finding with outstanding results, and may cover any frequency from 121.5 to 500 MHz.

Out in the desert, a 1-mW transmitter will cover the sandy terrain at lot better than it will a city block with all the obstructions. During desert testing at the Quartzsite Hamfest in January, we were detecting 1/2 mW, 20-mS "ticks" up to a mile away with the Moxon antenna. Likely, the 50-mW, 10-day tags will have a range greater than five miles.

During ham radio Field Day, we tagged 1-mW and 50-mW transmitters onto fellow hams. Our local police helicopter, piloted by hams, could pick up the 50-mW signals at five miles away, and the 1-mW signal within a mile. This proves the usefulness of these locator tags if, for instance, ham radio search and rescue personnel would needed to fan out in the mountains. An overhead aircraft could easily home in on either 1-mW or 50-mW signals.

The homing receiver from Communications Specialists offers impressive specifications, including: (for Model number R-300)

- Selectivity: 70 dB down @ 4 kHz, 80 dB down @ 10 kHz
- IF Filtering: 10.7-MHz, 8-pole crystal filter, 455-MHz, 8-pole ceramic filter
- Front end: dual MOSFET with 6 helical resonators, high side (eliminates desense from TV Channel 11)

Other features include:

- Antenna jack: BNC female
- Size: 6.3 x 3.5 x 2.7 inches
- Earphone jack: yes
- S meter: yes
- Variable attenuation: 3 levels
- Battery type: field changeable, common 9-volt

Popular With Good Reason

"Our new 222-MHz tags are popular at ham convention T-hunts," said Porter. "At ham conventions and big ham gatherings, the 2-meter and 446-MHz bands are saturated with local signals, creating interference for local T-hunts. On the 222-MHz band, we are virtually interference free, and our inexpensive high-sensitivity receiver, along with the directional Moxon antenna, really gets attention and finds the hidden Ts fast."

"Conventional 222-MHz FM users should have zero interference problems with our milliwatt power tags, on interstitial frequencies," Porter added, showing pages of testing done here in the 222-MHz-active southern California region.

The cost of each tag is $99 and the companion receiver system, including directional and non-directional antennas, is $300. There are low-power tags for various other radio location services near the 218-MHz band. Higher power tags are also available, on specific restricted frequencies, for law enforcement.

To learn more, contact Spence Porter at Communications Specialists, Inc., 426 West Taft Ave., Orange, CA 92865-4296; Phone: (800) 854-0547; Web: www.com-spec.com.

by Ron McCracken, KG4CVL / WPZX486

Not Knowing What To Do Can Kill You... Or Someone Else!

Have you heard of the "golden hour"? It begins the moment an emergency occurs. What medical attention a victim receives within that golden hour will impact the patient's recovery substantially. The faster paramedics arrive to begin treatment, the better a patient's prospects.

If you're the first person at the scene, how well you use your radio to summon help can make a vital contribution to that golden hour. A good operator can speed the arrival of paramedics; a poor one can cause delay and erode that precious golden hour. You need to know your stuff.

We are smack in the deepest part of winter. Weather alone can eat into that golden hour, so your skill as a radio operator becomes all the more important. The same radio skill that can help to save someone else's life can save your own, so everyone benefits when you learn what to do.

Prepare Yourself

First, realize that you may be unable to hear any reply to your distress call. Distance, weather, and/or terrain can cause that. REACT, police, or other monitors can send help however, once they hear vital details. Broadcast *repeatedly* the information they will need. Since they can't ask for clarification, your distress message must be clear, complete, and correct. Stay calm.

Broadcast your distress call on the emergency frequency (see box) first. Repeat each portion of the message three (3) times. If you hear no reply, seek a channel that's in use. Interrupt and give your distress message just as you did on the emergency channel, as follows:

WHERE *exactly* you are: the single most critical element of your emergency message. Include the state, road, mile marker, nearest town, crossroad, landmarks, etc. Jot the data down, if possible, to help yourself. Keep the order the same each time. REACT or police monitors may need to piece your message together and the same sequence will help them greatly. Once they have the precise location, help can be on the way.

WHAT is wrong: the second item to broadcast. Missing child? Medical emergency? Collision? Fire? Are there injuries? How many? Is anyone trapped? This information allows authorities to roll extra units of the right type of assistance sooner. That can save lives.

WHO is calling: the final element. Identify yourself. Give your name, callsign, etc. This will help monitors contact you for updates, etc.

Get It Right

Staying calm and alert is extremely important. I once monitored a trucker's distress call late at night from 600-plus miles away. His emergency message was clear and detailed so it didn't matter that he couldn't hear my replies. He needed Missouri State Police, he said, to stop a wrong-way driver on Interstate 57. He updated the location as I contacted MSP from Ontario. Oddly, the information made no sense to the MSP dispatcher. Both puzzled, we hung up. The trucker soon reported that the car had struck another head-on. The next day, television news reported the fatal collision, which had occurred in Illinois. Agitated, in the dark, and near a state line, the trucker had requested the wrong troopers.

In a fierce, late winter, Kansas blizzard, another trucker wasted nearly half of his own golden hour while he shouted "Help! I'm freezing to death." He was over 800 miles away from me, and broadcasting no useful information. I listened intently for 20 minutes at 2 a.m. Suddenly, a lady answered him and he gave her the critical details. I immediately used those details to notify his terminal, which the lady had not called by that point.

Established Emergency Frequencies

CB Channel 9 – FCC regulation
FRS Channel 1 – Gentlemen's agreement
GMRS 462.675 – Gentlemen's agreement

To the rescue...Waterloo Regional REACT in Ontario, Canada, proudly took possession of the "Rescue Argo" (forefront), an all-terrain vehicle specially designed for off-road rescues where access is difficult. It's the first one off the line.

Hopefully, he was rescued and spared frostbite, or worse, despite those wasted precious 20 minutes.

Emergencies play some role in prompting most of us to buy radios for our vehicles. However, unless you take the time and trouble to learn how to make that most important call of all *correctly*, the radio may not bring the help you need, or may bring it too late. Not knowing what to do can kill you...or someone else.

Nice To Be Popular

Waterloo Regional REACT in Ontario, Canada, gets calls from police, fire, and EMS. Little wonder: the Team just took delivery of a "Rescue Argo," an all-terrain vehicle specially designed to assist in off-road rescues where access can be very difficult. It's the first one off the line.

Police, fire, and EMS personnel had input into the design so they have a vested interest in the new unit. It's an improved version of an earlier REACT vehicle that authorities had often called in to assist them. You can see the new "Rescue Argo" and other pieces of specialized equipment that endear this REACT Team to emergency agencies at their website. www.wrreact.com.

Moving Up In The World

REACT Negor and REACT Pasayaw in the Philippines recently cooperated with their Department of Natural Resources to test radio communications and report observations on Mt. Kanlaon.

Nine REACTers in two groups reached the summit after two days, maintaining radio links with one another and the park office at the base of the mountain. They reported signs of illegal logging and returned with 50 pounds of trash that had been left along the hiking trails. It was properly disposed of to preserve the natural beauty of the park. Natural Resources officials were very pleased with the results of the joint REACT effort.

You Never Know

Prince Georges County REACT in Maryland was asked to provide safety communications for a festival involving about 3,000 attendees. A lost parent and a late group of performers were about it for the activity level, until REACTers noticed a commotion. They investigated and found a lady who had recently undergone knee replacement surgery. She had fallen and could not get up. EMS was summoned, but by the time they arrived the woman felt fine and declined transport. As a REACT volunteer you never know what surprises await you at an event.

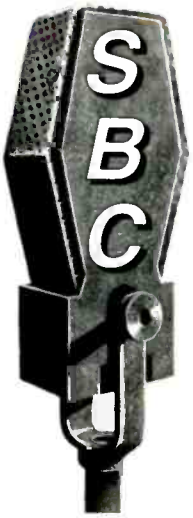
How About You?

You can see from these accounts that REACT offers plenty of variety in its radio activities to benefit communities. And these are but a few. There's a role for you, too. Gather a few friends to form a REACT Team. If you are fortunate to have a Team already in your area, strengthen it by joining. Visit www.REACTintl.org for more details or call 866-REACT-9-9.

Until next time, keep those emails coming. Thanks to those who have written; we appreciate your feedback.

by Shannon Huniwell, melodyfm@yahoo.com

The Week Riverhead Rained Radio



"If WNEW's summer 1962 weather reports had been completely accurate," a talkative man at the estate sale speculated, "you'd probably be the only person here who's interested in this old broadcast receiver." The pleasant-looking fellow, probably in his late-50s, paused and then smiled, waiting to see if I'd be curious enough to request an explanation. From different corners of the big room, we had simultaneously walked over to a table strewn with knickknacks, bundled stacks of mildewed *National Geographic* magazines, some tangled Christmas decorations, and that wooden-cased Zenith. And almost simultaneously, we'd reached for the brightly varnished radio from opposite sides.

"Don't the darn thing look like it's frowning at us?" he asked, pulling on the power cord like a short leash and wondering if I had enough abstract imagination to picture the Truman-era AM/FM set's rainbow-shaped dial as having a contagious sour-puss expression.

"I guess I can see how you'd think it isn't too happy," was my pensive response.

Those few words were all it took to cue the storyteller. He picked up the radio and balanced it on his left palm. With his right-hand forefinger, the guy twice traced the down-curved dial, closed his eyes as if recalling a grave hardship.

"You think this old Zenith looks depressed?" he began his saga with a question. "Well then, young lady, you should have seen my grief during mid-August in the year of our Lord, nineteen-hundred and sixty-two."

Luckily, an informal grouping of various and sundry garage sale chairs waited for us only a few feet away. My unexpected master of ceremonies carefully sat the Zenith in a wicker one, motioned for me to be seated on a cushiony boudoir chair, and then relaxed in an upholstered wingback, reminiscent of Archie Bunker's favorite piece of furniture. Seconds later, he was off and running with a tale about just why the vintage Zenith meant so much to him.

Melodic Weaponry

"My house was a veritable musical battlefield!" the loquacious fellow exclaimed. "Mom and Dad listened to WNEW all day. Between the easy patter of that 50-kW Gotham station's sophisticated smooth-voiced announcers were records by Sinatra, Henry Mancini & the Orchestra, Rosemary Clooney, and other such pre-rock artists. 'Double-You, N - E Double-You...Eleven-Three-Oh in New York,' the jingle singers harmonized every quarter hour.'" As a red-blooded American teen, my regaler said he couldn't stand it. In fact, on the rare occasions when he got a crack at the radio dial, variable gang capacitors at his Irvington, New Jersey, address experienced a quick twist to either 570 or 770, where the latest hits popped in from Big Apple rock 'n' roll stations WMCA and WABC, respectively. Apparently, his parents constantly fought his penchant for Top 40 fare.

A snapshot of the real Zenith featured in our story. That is to say, this was taken in the Riverhead-area fishing cabin during the main character's summer 1962 vacation. Talk about wanting an esoteric memento! Looks to be a rare model 8-H-034, especially uncommon because it's not only AM & FM, but has a second frequency modulation band designed to receive the original 42- to 50-MHz FM broadcast stations. These pioneer FM frequencies were declared obsolete by 1948.

"'When you're out on your own and earn a good salary,' they'd preach, 'you can use your money to pay psychiatrists to reverse the psychological effects of that *so-called* music on your brain,'" he recounted his parents warning. "'Until then,' my parents would scold, 'kindly refrain from polluting our household with such discordant noise!' And then, to accent the lecture, they would often sing in unison, '*Please make that radio go... back to eleven-three-oh.*' How unbearably corny!"

"Besides each other, their easy listening WNEW tunes, and possibly me," he continued, "mother and father loved fishing. As luck would have it, I liked angling about as much as I enjoyed being subjected to a Lawrence Welk weekend on The Big W. Imagine my ecstasy then, when father announced he had accepted a coworker's offer to use the guy's Eastern Long Island 'get-away fishing cabin' for a few August days."

This ad hoc excursion coincided with a WNEW forecast for decent weather—a prediction that didn't make it too far into Long Island, New York, though. The muggy, rainy ride there would have been completely interminable had WNEW's musical signal not disintegrated into fringy static about a half-hour from Riverhead, about 70 east of New York City. The radio in their dramatically winged, two-door 1960 Chevy Biscayne wasn't so great. The antenna—recently bent to a stub, no doubt, by some neighborhood ne'er-do-well—was the culprit.

In search of WNEW-type music, his mother fiddled with the tuning knob, but only managed to snag some "mildly acceptable tunes" (via an old geezer-type station from across the Long Island Sound in New Haven, Connecticut) for a few miles, and only then with the volume turned so high that the hiss was incredibly annoying. "I complained that the racket was interfering with my job of navigating with a hopelessly crumpled ESSO road map," our audio sufferer remembered. "The radio got clicked off, but the silence was apparently too much for my folks, who soon started humming together and then burst into a series of show tunes.

Near Riverhead, Dad reminded me—in improvised Broadway musical tones—that we were looking for a connection to Route 24 and onto our destination in Flanders, New York."

What's A Nice Radio Like You Doing In A Dump Like This?

Even his normally upbeat folks got eerily quiet after pulling into a soggy patch of weeds that served as a short driveway to the family's borrowed "getaway." Actually, the structure could be more accurately described as a linoleum floor divided into four dank rooms bordered by wavy paneled walls that would defeat any carpenter's level. An odd odor that conspicuously permeated the place had probably been living there for decades.

The smell might have been emanating from an old couch shoved up against the paneling separating the living room from the kitchen. There, next to a rust-stained toaster, our hero noticed a big wooden table radio. It was a Zenith, according to the black lettering pressed into its gold ID label.

"Mom and Dad were unpacking their suitcase and laughing about the lumpy bed. I'd been assigned to a sleeping bag on that stinky sofa. In teenaged protest, I dramatically parked myself there, refusing to accompany my folks on their exploratory fishing voyage." Oblivious to the late afternoon rain, they seemed eager for the chance to wet their fishing lines from their dubious host's even more dubious rowboat.

Bored out of his proverbial wits, the son eventually got up and wandered morosely back to the kitchen, studying the random shapes of torn holes in a green shade rolled partly down the window. A calendar with a girl in an orange bathing suit stuck at June. After flipping it ahead two months, he walked over to that radio. "My hand pulled away from the heat radiating from its back cover," he said. "Someone had left the dusty thing on, though the volume was too low to hear. None of the three knobs seemed to do much except make the speaker crackle or move a pointer along its upside down dial arc. Nothing...Not even an obsolete Bing Crosby song out of that 5000-watt AM signal wafting over the water from New Haven. And, certainly no sign of anything resembling my beloved Top-40."

Fortunately, the rowboat wasn't seaworthy enough for three people plus fishing gear, keeping the son out of the drizzle. Safe and dry inside, he decided to tinker with the kitchen Zenith. "Looking intently, poking around with a bent butter knife, and removing stringy, dusty webs from around the tubes were my primitive repair methods. Man, the dishtowel I had enlisted for this cleaning job got grungy fast! But the Zenith sure appeared a whole lot more presentable," he recalled. In fact, it looked worthy of being plugged in again and getting the old college try.

For readers not familiar with Long Island geography, check it out sometime on a roadmap. It's a long way from end-to-end! Lots of folks are surprised to discover that it takes far less time getting to Eastern Long Island locales—like Riverhead—by ferry from New London, Connecticut, than it does by car from New York City, or even from western Long Island communities. That kind of isolation can make for a great local radio venue.

The most exhilaration the reluctant sojourner felt during the entire Long Island vacation occurred between the time he nervously switched on the Zenith and about 30 seconds later when a man's voice vibrated its speaker paper. "In go-for-broke fashion, during the tube warm-up, I'd clicked the 'band' knob back and forth and then started dialing from one end to the other," he said. Somewhere around the 104, voices materialized. According to the announcer's message, he had stumbled upon the first words ever spoken over WAPC-FM 103.9 megacycles in Riverhead.

America's Youngest Station

His parents found him transfixed to the broadcast. Damp from fishing in more drizzle, they'd returned to a cabin now filled with "acceptable" music. While his mother made them sandwiches, he explained how he'd fixed the old Zenith and discovered a brand spanking new radio station in the process. Even though he did a little experimenting with the AM band and was able to pull in some rock 'n' roll out of New Haven and Bridgeport, Connecticut, he found myself eager to flip back to 103.9 megacycles for more eavesdropping on WAPC-FM's debut.

"My suddenly awakened interest in broadcasting made the music genre secondary to the fascinating electronic aspect of radio," he explained. "I wondered aloud about the studio, transmitter, and tower. Dad suggested we try to find the place after lunch."

He Can See It Now...

According to my estate sale storyteller, he and his father did pay WAPC-FM a visit. After all, it was still a bit too rainy for waterfront activities. They got directions from some kid pumping gas and found the station housed near a drive-in theater. He recalls it being a 10-minute tour that changed his life and set him on a course for a radio career.

Still fresh in his memory is the eclectic grouping of the facility's studio gear: a period Collins control board that handled two turntables, a mic on a gooseneck,

and a portable stereo AMPEX reel-to-reel tape recorder. Though originally mono, the Collins mixer was locally revamped to produce stereo via the main and audition channels. These outputs were piped into a pair of mono amplifier/limiter processors from two different makers. In retrospect, that couldn't have generated a very clean left or right, but in those very early days of FM stereo, it represented radio progress—or at least that same old college try by a tiny newcomer.

But just how tiny was WAPC-FM? Thanks to a copy of the 1963 *Broadcasting Yearbook*, I soon discovered the Riverhead station's output was mighty small indeed. Only 170 watts came out of its antenna, which was situated at just 115 feet about the average terrain. Full use of WAPC-FM's Class "A" allocation called for 3000 watts at 300 feet or equivalent. When I contacted him on the subject, Pete Wenk, a local kid who joined WAPC-FM and its 1-kilowatt directional AM sister in 1964, verified that this frequency modulation operation was notably diminutive.

At the time of its inception, Wenk said, WAPC-FM was the lowest-powered commercial FM in the nation. And it was on the air quite some time before WAPC-AM got officially licensed. At 1570, the AM was sandwiched between WPAC (1580) Patchogue, New York, and WQXR (1560) New York City. This short-spacing, plus objections from the old RCA communications receiving station, about a mile away, created potential interference issues for quite some time.

Why So Small?

I'd figured that the WAPC-FM founders decided to apply for the modest 170-watt authorization out of sheer economy. Take one affordable 250-watt FM transmitter (preferably secondhand), hook it to about 150 feet of inexpensive 7/8-inch foam transmission line, and connect that to a basic single bay antenna. With some line loss and less than 1 dB gain from the antenna, the transmitter's 250-watt output would understandably shrink down to about 170 watts of effective radiated power.

Sure, that doesn't yield much over the FCC's 100-watt minimum for a Class "A" FM operation, but for a small market start-up on waterfront flat terrain, 170 watts would be okay for reaching around town. Plus, what self-respecting Riverhead-area resident wouldn't take civic pride in knowing he or she lived within the coverage of America's cutest little FM station?

Why is this kid smiling? Like thousands of other newly minted radio professionals, Dave Doughty couldn't believe his luck when he was hired as an announcer/control board operator by an actual FCC-licensed broadcast facility, albeit a 170-watt FM in an AM world in his small Long Island hometown. Note the Collins mixer, early AMPEX stereo tape recorder, and the fancy signage (scribbled on a sheet of note paper) reminding the DJ of this little station's call letters: WAPC-FM.

So much for my Norman Rockwell-style hometown America logic...It turns out that the 170 watts was coldly calculated to meet FCC broadcast ownership standards. In the good old days of the FCC's sensible Duopoly regulations (forbidding anyone from owning two or more stations in the same service with 1 millivolt or greater signal overlap), a full-power WAPC-FM would never have been approved because its 1-millivolt coverage ran smack into the 1-millivolt footprint of WPAC-FM (106.1 with 7800-watts), a station also owned by the WAPC-FM folks in nearby Patchogue.

While crunching slide rule numbers for what would pass muster on the Commission's application form, an engineering consultant found that anything over 170-watts would trespass on WPAC-FM's coverage, thus raising red flags in Washington. The throttled back power level wasn't quaint—it was academic.

While still in high school, another local named Dave Doughty secured an announcer position at fledgling WAPC-FM. Today long associated with a Central New York broadcast group, the talented radio engineer has memories of being very interested in FM reception even as a young child when his dad, who worked for RCA Labs in Riverhead, brought home a Howard-brand FM tuner they had been testing in about 1950. As an 11th grader, 10 years later, he'd already adorned his parents' roof with a directional Yagi on a rotor and DXed with that Howard tuner quite often.

One day, while listening to WAPC-FM, the teenaged Doughty noticed the announcer slurring his words and apologizing for sounding so tired on the air. He'd been there since 5:00 a.m. and it was now 10:30 p.m. The next day, the same thing happened with the same announcer on duty from 5:00 a.m. till 11:00 p.m. sign off. That was Doughty's clue that a radio job might be available. So, he got the guts to go to the station to see if they needed any help. The WAPC-FM guy, who turned out to be one very fatigued program director, said he sure could and asked if Doughty could work evenings until sign off a few days a week for $2.00 an hour, good money in the early 1960s!

A radio with an FM band cost a pretty penny in the Kennedy era, and it's doubtful that there were more than a few FM households on the tip of Long Island when WAPC-FM went airborne in late summer 1962. One could argue that our story's Zenith AM/FM set lived in the riparian cabin only because it had been deemed surplus at the cottage owner's primary residence. Why, then, did WAPC's founders opt to get into the FM business in Riverhead without firing-up an AM to support it?

Doughty says it's his "recollection that WAPC-AM (1-kw directional at 1570) *was built before* the FM but couldn't go on the air because of some objection from WQXR, New York City (1560). In the meantime WAPC-FM received its construction permit." Consequently, its owners, The Patchogue Broadcasting Company, motivated to extend the firm's aggregate radio footprint well beyond the reach of its WPAC AM/FM Patchogue, decided to slap up an FM antenna on one of the virgin WAPC-AM towers and at least get some kind of signal in that part of the salty air.

Admirably, according to Doughty, "The company built WAPC-FM for stereo using the Collins console. The program channel fed the Gates 'Level Devil' and the audition channel fed a GE limiter." Both of these were filled with lots of tubes, he said, and "the announcer therefore needed to use two pots for each program source—one in program and the other in audition. The limiters fed a Gates stereo generator and exciter, which, in turn, drove a Gates 250-watt transmitter.

As bad as this set-up sounded, it knocked the socks off of rival Riverhead station WRIV AM 1390."

Sorry To Bother You At Home, But...

Reportedly, socks weren't the only things to get knocked off in WAPC-FM land. Busy at the Collins board at about 8 o'clock one night, Doughty said he heard "some serious arcing coming from the refrigerator-size 250-watt transmitter." He phoned the station engineer and described the dangerous electrical commotion. The tech said to turn it off and go home. "The next day," said Doughty, "the program director called and said not to bother to come to work until the transmitter got fixed. About a week later he called and said it was fixed."

Obviously several Long Islanders and even a few curious Connecticut frequency modulation buffs were listening that night, because Doughty "kept getting phone calls saying that the little station was coming in at many places all over the FM dial." He frantically verified the problem and called the engineer again, who said to shut the transmitter off and go home. Another week went before the PD called again, but by this time, it was on speaking terms with Labor Day and Doughty had to tell the guy he was all set to head off to college, so couldn't pull any more air-shifts at WAPC-FM.

When he came home for Christmas, the AM was up and running and simulcasting with the FM, until the AM's sunset sign-off. It's interesting to note that while the AM construction permit was granted before FM authorization, the WAPC-FM was actually on the air for more than a year before the AM.

Few Watts, Many Stories

Like Dave Doughty, Pete Wenk became interested in radio by being an avid listener. He remembers that the Connecticut AM stations, like full-service WELI 960 New Haven, dominated Eastern Long Island in those Eisenhower and Kennedy days. Because WABC New York was difficult to receive out there, kids on the Island's end tuned to New Haven rocker, WAVZ 1300 and contemporary-formatted WICC 600, which had an excellent night signal from Bridgeport.

Since the mid-1950s, Riverhead had been home to daytimer WRIV 1390. Rather than spend money on another radio outlet, WRIV got into a short-lived UHF television venture to increase its influence. Way up the dial at Channel 55, though, this WRIV-TV had less of a chance for success than an early rural FM.

Wenk increased his opportunities to learn about radio by hanging out at WRIV, but later was hired by WAPC-AM/FM. He smiles at the thought of the 170-watt incarnation of Riverhead's 103.9, recalling WAPC-FM as "barely able to get out of its own back yard, which it shared with the old Flanders Drive-In Theater." Some WAPC alumni liked to catch a movie or two simply by standing outside the studio and gazing at the big screen. Understandably, the soundtrack was tough to decipher on a breezy night. Though not indicating whether he ever caught a free flick during his WAPC tenure, Pete Wenk, who lived in downtown Riverhead, did say "it took the wind in the right direction to get the FM signal delivered to my house."

From Las Vegas, far from his own first fulltime radio gig in Riverhead, Bill Croghan (WBØKSW and chief engineer for five Vegas area stations) happily confesses to being one of the early FM stereo jocks at WAPC, working 4 p.m. to midnight sign-off for about a year before going into the Air Force in 1965.

Said Croghan, "The control room was so small that a picture of someone sitting at the console would be a back shot only. The other 'studio,' [dubbed *the newsroom*] was sort of a small closet with a board nailed between the two walls for a desk. [The quarter's] double glass window between the newsroom and the control room was just a hole in the wall with two pieces of glass held in place by two by fours nailed to the wall."

In those days, circa 1963 to '66, the FM was only switched to stereo *after* sunset when the AM went to bed. Croghan had been a music major at the State College in Fredonia, New York, before going into radio. This education came in handy in terms of record selection and composer pronunciation, as WAPC-FM's last hour each night featured classical music.

During one of his first weeks conducting this highbrow serenade, Croghan received a complaint call from a listener who insisted that one channel kept going up and down in level, playing havoc with the Bach crowd. While the young announcer was trying to calm down the annoyed classical aficionado, the fellow

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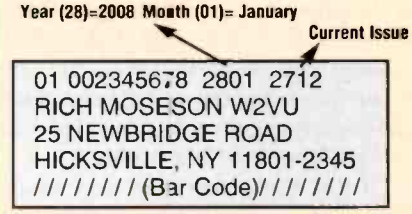

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screamed, "The levels just dropped again when you answered the phone!" Croghan instantly "realized that the control room monitor was being used as the second stereo channel!"

He immediately apologized and vowed to treat the studio amplifier controls accordingly. Of course, nobody had apprised Croghan of the jerry-rigged monitor circuit. Later, when taking equipment readings, he inadvertently added injury to insult, by getting "an RF burn from a filter on top of the transmitter. The filters, rigged up in the transmitter room, were to prevent interference to the large arrays of receive antennas off the road to nearby Center Moriches. Bill Croghan was told that these protected sticks were part of RCA's long haul communications and telephone system to/from Europe, a venue the FCC considered more vital than a tiny FM outlet transmitting some late night overture to Riverhead.

"Most of the usual small market radio stories people tell," Croghan noted with a litany of favorite tales, "could be told about the WAPC operation." Several are loosely quoted here:

There was the salesman who would call the night disc jockey to air commercials for his favorite bar, while he sat in that bar trading the advertising for drinks. There was the weekly race to the bank when the paychecks were issued because it was not unusual for the last check there to bounce. There was a guy who bought time from WAPC so he could broadcast his specialty music show and wanted to trade the use of one of his apartments in exchange for the airtime. (WAPC management approached Croghan to see if he wanted the place—with the corresponding cut in pay.)

And then there was the Christmas Eve when he tried cueing-up the public relations tape from NORAD Combat Operations Center. Kids across the United States and Canada looked forward to hearing the good-natured "NORAD tracking Santa Claus" routine, and many of those anxious Rudolph enthusiasts were glued to WAPC-FM 103.9 for the special broadcast. Along with these kids, Croghan discovered the tape was blank.

Frantic for a remedy, he called the local Air Force Base Public Information Officer at Suffolk County Air base. The official was having a party at his house that night and got a couple of fighter pilot top-guns attending the shindig to call back and simulate the air-to-air radio traffic following Santa's sleigh. Initially, they did a great job for the admittedly sparse 170-watt FM audience, but towards the end of the night, and after a good deal of partying, the pilots sounded distinctly influenced by the "jet fuel" they'd been enjoying.

"If that flight operation were real," Croghan smiled, he'd "have worried about their ability to land safely!" They had a ball with the holiday aeronautical skit, as did Croghan while flying the Collins control board.

Nothing Stays The Same—Even In Radio Land

Four and a half decades have zoomed by since our story's main character first caught WAPC-FM on the wooden Zenith. His parents, music lovers and avid anglers to the very end, had practically worn through a shoebox full of cassette tapes he'd recorded for them right off of the old WNEW's air. That venerable standards station had been sold in 1992 and then immediately converted into a business news outlet, completely wiping out Eleven-Three-Oh's happy-go-lucky Sinatra-era culture.

His mother's passing two years ago was soon followed by his brokenhearted father's death. In a reach for closure, he decided to retrace the route he and the folks had taken to the far end of Long Island—a significant pilgrimage from Ohio where he manages a cluster of stations for a major broadcast group, but one promising the fondest of memories. Perhaps he'd find that cabin outside of Riverhead...maybe he could stop by WAPC-FM again.

The fellow told me he thinks he found where that rickety cottage once stood. Now a row of expensive condos is there. The drive-in was gone, too. Some old-timer in a convenience store thought the outdoor theater had closed in the 1970s after a hurricane blew down its screen. Armed with a couple of customers' seemingly contradictory directions, he managed the rest of the way by happily sighting the two old WAPC towers that were new the last time he'd seen them.

Though concerned because the AM was off the air, he felt fortunate to see a pickup truck near the modest studio building that he and his dad toured in 1962. The guy there was surprised, but delighted to host a curious visitor who spoke the broadcasting language *and* possessed vivid recollections of the station's debut.

Then on the receiving end, it didn't take long to get the nutshell version of how WAPC-AM/FM Riverhead were built as sister operations for WPAC AM/FM Patchogue (hence the similar callsigns), had simulcast some of the Patchogue "mother" stations' programming, been sold and then changed to personality/contemporary-formatted "The Wharf" WHRF AM/FM. No longer co-owned with the Patchogue FM, WHRF-FM 103.9 was free to seek FCC permission to go to full Class "A" power or equivalent. With 1,520-watts at 466-feet above the average terrain, WHRF-FM's signal grew and later morphed into album rocker WRCN-FM.

Meanwhile, the old WAPC-AM 1570, a.k.a. WHRF, really kept the Commission's call letter department busy. Stints as WRCN, WRHD, WRHZ (purveying the erstwhile edgy Z-Rock format), back to WRHD again, then WFOG, occurred prior to the most recent identity, WFTU, under ownership of Five Towns College. Those are a lot of monikers for a facility that also clocked several almost year-long silent periods.

Journeys Continue

On his return trip home, our main character felt at peace with the quiet of his thoughts. A few times, he even found himself humming some song that WNEW used to spin. And what about the estate sale Zenith? Well, he bought it. After hearing his story, I sure didn't want to compete for that $30 link with his past. Besides, I had my own memories to make with my family that week—and the radio was forecasting decent weather.

And so ends another day of broadcasting history at *Pop'Comm...*

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A Last Look At The DoD *Flight Information Handbook*

As previously warned about in this column, effective on October 1, 2007, the U.S. Department of Defense (DoD) Flight Information Publications (FLIP) have been moved to the National Geospacial-Intelligence Agency (NGA) NIPRNet site, and are no longer accessible to the general public via the World Wide Web.

The FLIP documents contain aeronautical information for use by DoD aircrews. The primary reason for radio hobbyist interest in these documents is that the publications contain a treasure chest of military radio frequency and callsign information. However, September 30, 2007, was the last day radio hobbyists could download these documents from the NGA website, and so this wealth of information is no longer available on the Web.

The good news is that a notice, which began appearing in these documents in July 2007, stated that the documents will now be available only to authorized users via NIPRNet. If the documents were classified, they would be on SIPRNet instead. So we can at least discuss the contents of these publications, which were publicly available on September 30, without fear of being lined up against the nearest wall and shot after October 1.

The military frequency information included in these documents covers not only the HF portion of the radio spectrum, but VHF and UHF as well. The VHF/UHF frequencies are beyond the scope of this column, however, so the "Utility Communications Digest" webpages will have more detailed information on the subject as time permits.

Much of the HF frequency information contained in these documents is well known to experienced utility enthusiasts. However, not all readers of this column fit into that category, so it's worth taking a look at some of the material, with an eye toward the HF frequencies mentioned in it. Most of what follows is taken from the DoD *Flight Information Handbook* (*FIH*), part of the DoD FLIP containing information needed by DoD aircrews in flight, but which is not subject to frequent change.

FIH Frequencies And Callsigns

The *FIH* section on emergency procedures gives us a couple of frequencies and a few callsigns. For example, 2182.0 kHz, a well-known international distress frequency, is given as an emergency frequency for voice distress (MAYDAY) or urgency (PAN PAN) message transmission. Also given is information on the Western Space and Missile Center (WSMC) HF Net stations at Vandenberg AFB in California (callsign ABNORMAL ONE ZERO) and at Wheeler AFB in Hawaii (ABNORMAL TWO ZERO), which, in addition to the HF-GCS stations, can be used to contact a USAF Air Combat Command (ACC) command post by phone patch. The frequencies given for these two WSMC HF Net stations are 5700.0 and 13218.0.

Incidentally, the *FIH* also notes that an ACC command post may be called on UHF frequency 381.3 MHz using the generic callsign GOLDEN. The command post would answer the GOLDEN call with its respective callsign, similar to the use of MAINSAIL on the HF-GCS. While the frequency may not necessarily be of interest to those who strictly listen to HF, those who also monitor VHF/UHF military communications may find the meaning of the GOLDEN call useful in correlating identification of called parties under some circumstances, so I have included it here.

The *FIH* also notes frequencies 4125.0 (primary) and 6215.5 (backup) in the AM mode for use in establishing radio communications between U.S. and Russian aircraft, or between aircraft and air traffic control or other monitoring facilities of the two nations' armed forces, as part of the procedures for preventing dangerous military activities between the two nations. These again are well-known international distress calling/reply frequencies, and are agreed upon for use in contacting U.S./Russian aircraft, ships (on 2182.0), or ground communications facilities (4125.0/6215.5).

There are eight generic callsigns set aside for identification of aircraft, ships, ATC/monitoring facilities, and ground forces/units—four identifying Russian and four identifying U.S. forces. For ships, the Russian callsign is BUGEL (pronounced BOO-gel); the U.S. callsign is PORT MAST. For aircraft, the corresponding callsigns are SEDLO (pronounced Sed-LOW) and IVORY EAGLE. An ATC or monitoring facility would use ZEMLYA (pronounced Zem-le-YAW) for a Russian facility or ELECTRIC LIGHT for a U.S. facility. Ground forces or units use POLYA (POLE-yaw) or POST POUNDER for Russian and U.S. forces/units, respectively.

There are specific established procedures governing the use of these callsigns. The station attempting to initiate contact is supposed to transmit the callsign of the party to be contacted three times, followed by the words DELTA ECHO and the caller's callsign once. In case you're wondering, the use of DELTA ECHO reflects the internationally recognized DE used by hams and other radio services, and it's understood to mean "from" in the context of these procedures as well. Naturally, a variety of other signals and phrases has been agreed upon to deal with several commonly encountered situations. The general idea is to prevent having a major international incident result from innocent circumstances, such as a lost pilot or a crippled aircraft needing to make an emergency landing.

Another interesting section of the *FIH* deals with the USAF High Frequency Global Communications System, or HF-GCS. As defined in the *FIH*, the HF-GCS is a worldwide network of 15 high-power HF stations providing support to DoD authorized users, including (but not limited to) general phone patch and message relay services, automatic link establishment (ALE), HF data support, and, of course, emergency assistance.

As previously reported in this column, and stated in the *FIH*, "All HF-GCS station transmit and receive equipment is remotely controlled from the Centralized Network Control Station (CNCS) at Andrews AFB, MD." Aircrews use either the famil-

iar "MAINSAIL" collective callsign or an HF-GCS station's callsign to contact an HF-GCS station.

The first group of HF-GCS listings given in the *FIH* pertains to the use of the six primary frequencies (4724.0, 6739.0, 8992.0, 11175.0, 13200.0, 15016.0), plus 6712.0, which is used by HF-GCS Croughton in the UK. This shows 8992.0 and 11175.0 to be primary frequencies monitored 24 hours a day. The 4724.0 and 6739.0 frequencies are backup frequencies during local nighttime, while 13200.0 and 15016.0 are daytime backup frequencies. Croughton uses 6712.0 instead of 6739.0 as a nighttime backup frequency.

The *FIH* also lists ALE addresses and frequencies. The HF-GCS stations and their ALE addresses are as follows: Andrews (ADW), Ascension (HAW), Croughton (CRO), Diego Garcia (JDG), Elmendorf (AED), Guam (GUA), Hawaii (HIK), Keflavik (IKF), Lajes (PLA), McClellan/West Coast (MCC), Offutt (OFF), Salinas (JNR), Sigonella (ICZ), South Atlantic (MPA), and Yokota (JTY). The frequencies for the ALE net are 3137.0, 4721.0, 5708.0, 6721.0, 9025.0, 11226.0, 13215.0, 15043.0, 18003.0, and 23337.0. All stations cover all 10 frequencies, with the following two exceptions: (1) Ascension, Croughton, Hawaii, and Yokota do not cover 5708.0, and (2) Sigonella and Yokota do not cover 23337.0.

The *FIH* also lists UK RAF (Royal Air Force) flight watch centers providing flight watch support, along with their frequencies and callsigns: ARCHITECT (United Kingdom TASCOMM station), 4742.0, 5702.0, 9031.0, 11247.0, 13257.0, 18018.0; HAVEN (Ascension), 4742.0, 9031.0, 11247.0; CYPRUS, 4742.0 (H+15 weather broadcasts when active), 9031.0 and 11247.0; VIPER (Mount Pleasant...this is the "South Pacific/MPA" station listed in the ALE Net), 4724.0 and 11247.0 (H+35 weather broadcasts both frequencies when active).

The *FIH* also gives the following callsigns for USAF Air Mobility Command (AMC) Tanker Airlift Control Centers (TACC): DENALI for Elmendorf AMCC, BRICKWALL for Osan AMCC, HILDA EAST (TACC East Cell) and HILDA WEST (TACC West Cell), located at Scott AFB, and TRACKER for the USAFE UTRACC. This section of the *FIH* further notes that the Air Force Eastern Test Range HF Network may be used as a backup to the HF-GCS by contacting CAPE RADIO on 10780.0 (primary) or 20390.0 (secondary).

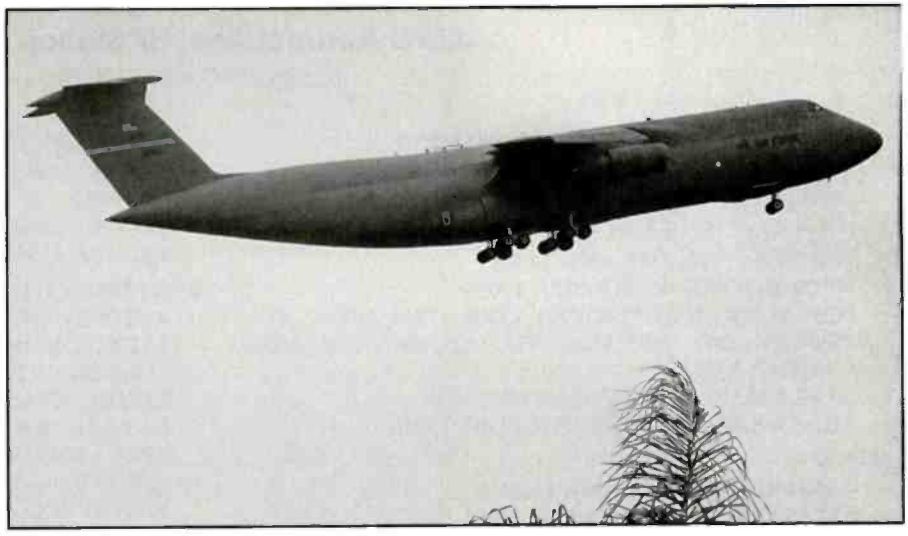

Photo A. Wright-Patterson C-5A, tail number 69-0005, as it looked on September 19, 2007, through the viewfinder on Allan Stern's camera. (Photo courtesy of Allan Stern)

The various military stations discussed up to this point generally do not provide air traffic control support, and in fact are not even properly equipped to do so. Although they will accept ATC messages and relay them, even military aircraft generally rely on the civilian air traffic control system for routine flight purposes. Undoubtedly, this is why the *FIH* includes considerable information concerning International Civil Aviation Organization (ICAO) aeronautical stations and frequencies.

These are the same frequencies that commercial and private aircraft use to talk to ground stations during overseas flights. Following these flights is also a popular pastime among utility station listeners, and I think it's been quite some time since an up-to-date list of these frequencies has appeared with this column. I even wonder about the ones on the Internet; these frequencies don't change very often, but they do change sometimes. I have to wonder how often websites that present lists such as this one actually get updated, given the fact that they rarely require it. Because of these considerations, I've compiled a new listing of ICAO HF aeronautical stations and frequencies, and I'm cutting back somewhat on the text portion of this month's column to ensure that there's ample room to present this extensive listing (see "ICAO Aeronautical HF Station List"). It should be noted that not all stations are active on all frequencies at all times.

I've also compiled a new listing of HF VOLMET (aviation weather broadcast) stations based on the information in this last publicly available *FIH*, which is also an extensive listing of HF stations and frequencies. I will include this new HF VOLMET listing with next month's column, and it, along with the ICAO aeronautical stations listing, will be available for downloading from the "Utility Communications Digest" website (point your browser to http://utecomm-digest.kc2hmz.net, then click on the link to the library page).

I'm sure I'll find more good information for utility monitors as I have time to peruse the numerous other documents whose last publicly available versions I managed to grab before they vanished from the Web on October 1, so stay tuned to this column for more updates.

A Monster Craft

Since no "Utility Communications Digest" column would be complete without some accompanying artwork, we are again this month indebted to regular contributor Allan Stern of Satellite Beach, Florida, who snapped **Photo A**, a beauty of RHINO 90, a USAF C-5A Galaxy transport aircraft out of Wright-Patterson AFB in Ohio. Al says that RHINO 90 didn't break out of the clouds until it was down to 1,000 feet. We're glad that Al was patient on this overcast day and was rewarded with a nice photo of the largest aircraft in the USAF inventory.

While I'm not one to overuse the all-too-common word "awesome," the C-5

ICAO Aeronautical HF Station List

(Compiled October 2007)

NORTH ATLANTIC

NAT-A
- CANARIES - 2962, 6628, 8906, 11309, 17946
- CAYENNE - 3023, 5440, 5526, 5540, 8825, 11291, 13297
- GANDER - 3016, 5598, 8906, 13306
- GEORGETOWN - 6730.5, 8855, 10096
- NEW YORK - 3016, 5598, 8906, 13306, 17946, 21964
- PIARCO - 2887, 2910, 5526, 6577, 8825, 8855, 8918, 10096, 11387, 13297
- SANTA MARIA - 3016, 5598, 8906, 13306
- SHANWICK - 3016, 5598, 8906, 13306, 17946

NAT-B
- GANDER - 2899, 5616, 8864, 13291
- REYKJAVIK - 2899, 5616, 8864, 13291
- SHANWICK - 2899, 5616, 8864, 11279, 13291, 17946

NAT-C
- GANDER - 2872, 5649, 8879, 11336, 13306
- REYKJAVIK - 2872, 5649, 8879, 13306
- SHANWICK – 2872, 5649, 8879, 11336, 13306, 17946

NAT-D
- BODO – 2971, 4675, 8891, 11279
- CAMBRIDGE BAY – 2971, 4675, 8891, 11279
- CHURCHILL – 2971, 4675, 8891
- IQALUIT – 2971, 4675, 8891, 11279
- MONTREAL – 2971, 4675, 8891, 11279
- REYKJAVIK – 2971, 4675, 8891, 11279, 13291, 17946
- SHANWICK – 2971, 4675, 8891, 13291, 17946

NAT-E
- NEW YORK – 2962, 6628, 8825, 11309, 13354, 17952
- SANTA MARIA – 2962, 6628, 8825, 11309, 17946

NAT-F
- GANDER – 3476, 6622, 8831, 13291
- SHANWICK – 3476, 6622, 8831, 13291, 17946

CARIBBEAN ATLANTIC

(CAR-A)
- BARRANQUILLA – 2887, 6577, 8918, 11387
- CARACAS/MAIQUETIA – 5550, 6577, 8918, 13297
- GUATEMALA – 2887, 5550, 6577, 8918, 11396, 13297
- HAVANA – 2887, 5550, 6577, 8918, 11396, 13297
- MERIDA – 2887, 5550, 6577, 8918, 11396, 13297, 17907
- NEW YORK – 2887, 3455, 5550, 6577, 8846, 11396
- PANAMA – 5520, 6577, 8918, 11396
- PARAMARIBO - 8855
- PIARCO – 5526, 6577, 8825, 8855, 8918, 10096, 11387, 13297
- SAN ANDRES – 2887, 3455, 6577, 6586, 8846, 8918, 11387
- SAN JOSE/EL COCO – 2887, 5550, 6577, 8918, 11396, 13297
- TEGUCIGALPA – 2887, 5550, 6577, 8918, 11396, 13297

(CAR-B)
- CAYENNE – 3023, 5440, 5526, 5540, 8825, 11291, 13297
- GEORGETOWN - 6730.5, 8855, 10096
- NEW YORK – 5520, 6586, 8918, 11330, 13297, 17907
- PIARCO – 5526, 6577, 8825, 8855, 8918, 10096, 11387, 13297

SOUTH ATLANTIC (SAT 1,2)
- ATLANTICO – 2854, 3452, 5565, 6535, 8855, 8861, 11291, 13315, 13357, 17907, 17955
- BRASILIA – 3452, 8861, 13357
- CANARIES – 2854, 3452, 5565, 6535, 8861, 11291, 13315, 17955
- CAYENNE – 3023, 5440, 5526, 5540, 8825, 11291, 13297
- DAKAR – 3452, 5565, 6535, 6673, 8861, 11291, 13315, 13357, 17955
- RECIFE – 3479, 5526, 6649, 8855, 10096
- SAL – 2854, 5565, 6535, 8861, 11291, 13357, 17955

WESTERN SOUTH AMERICA (SAM-1)
- ANTOFAGASTA – 4669, 5604, 6649, 10024
- ASUNCION – 6649, 10024, 11397
- CORDOBA – 2944, 6649, 10024
- EZEIZA – 2944, 6649, 10024, 11360, 17907
- LA PAZ – 4669, 6649, 10024
- LIMA – 6649, 10024
- MENDOZA – 2944, 6649, 10024
- MONTEVIDEO – 6649, 10024
- PANAMA – 2944, 6649
- PASCUA/EASTER ISLAND – 4669, 5643, 6649, 8667, 10024, 13300, 13261
- PUERTO MONTT – 4669, 5454, 6649, 10024
- PUNTA ARENAS – 4669, 6649, 10024
- RESISTENCIA – 2944, 6649, 10024
- SALTA – 2944, 6649, 10024
- SANTA CRUZ – 2944, 4669, 6649, 10024
- SANTIAGO – 4669, 5583, 6649, 10024, 13300

EASTERN SOUTH AMERICA (SAM-2)
- AMAZONICA – 3479, 5526, 8855, 10096
- ASUNCION – 5526, 8855, 10096
- BOGOTA – 3488, 5556, 6649, 8855, 8918, 10024, 10096
- BRASILIA – 5526, 8855, 10096
- CAYENNE – 3023, 5440, 5526, 5540, 8825, 11291, 13297
- CARACAS/MAIQUETIA – 5526, 8855, 10096
- CURITIBA – 3479, 5526, 8855, 10096
- EZEIZA – 3479, 5526, 8855, 10096, 17907
- GEORGETOWN - 6730.5, 8855, 10096
- GUAYAQUIL – 4669, 5595, 6535, 6649, 10024, 11360
- LA PAZ – 5526, 8855, 10096
- LETICIA – 3488, 5526, 6553, 8855, 8894, 10096
- LIMA – 6649, 10024
- MANAUS – 3479, 5526, 8855, 10096
- MONTEVIDEO – 3479, 5526, 8855, 10096, 17907
- PANAMA – 2944, 6649
- PIARCO – 2887, 2910, 5526, 6577, 8825, 8855, 8918, 10096, 11387, 13297
- RECIFE – 8855, 10096
- SANTA CRUZ – 3479, 5526, 8855, 10096

EUROPE (EUR-A)
- BEIRUT – 2910, 4689, 8875
- MALTA – 5661, 10084
- MOSCOW – 11390
- MURMANSK – 4672, 9024
- SANKT - PETERBURG – 4672, 9024
- TUNIS – 3411, 4689, 5519, 8826

MIDDLE EAST

(MID-1)
- ADEN – 5100
- AMMAN – 2992, 5667, 8918, 13312
- BAGHDAD – 2992, 5667, 8918
- BAHRAIN – 2992, 5658, 5667, 8918, 13288, 13312
- BEIRUT – 3404, 5603, 8847, 13336
- DAMASCUS – 2992, 5667, 8918, 13312
- JEDDAH – 5667, 8918
- KUWAIT – 2992, 5667, 8918, 13312

RIYAN – 7595, 8918
SANAA – 13288
TEHRAN – 5856, 5667, 6925, 8091, 8918, 10018, 13288, 13312

(MID-2)
BAHRAIN – 2992, 5658, 5667, 8918, 13288, 13312
MUMBAI – 3467, 5658, 8879, 10018, 13288
DELHI – 2872, 3467, 5580, 5601, 5658, 8906, 8948, 10018, 13288
KABUL – 3467, 5658, 10018, 13288
KATHMANDU – 2923, 6607
KARACHI – 3467, 5658, 10018
KUWAIT – 5658, 10018, 13288
LAHORE – 3467, 5658, 10018
MUSCAT – 5658, 10018
NAGPUR – 2872, 5601, 6583, 8861, 8948
TEHRAN – 5856, 5667, 6925, 8091, 8918, 10018, 13288, 13312
URUMQI – 3467, 5658, 10018
VARNASI – 2872, 5580, 8948

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ALMATY – 3467, 4669, 4728, 8951, 10018
AKTYUBINSK – 3440, 4669, 4728, 5586, 8951
DUSHANBE – 3476, 4095, 5658, 8145, 9955, 10018
KYZYLORDA – 4669, 8951
MOSCOW – 11390
SAMARKAND – 3467, 5658, 10018
TASHKENT – 3467, 4669, 4728, 5658, 8951, 10018
URALSK – 3440, 4669, 4712, 5586, 8951
YEREVAN – 2926, 4712, 5487, 8918, 11333

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(NCA-1)
MOSCOW – 11390
SYKTYVKAR – 3422, 4712, 5596
VOLOGDA – 4672

(NCA-2)
BARNAUL – 3046, 6704
KIRENSK – 3046, 3425, 4728, 6704
KOLPASHEVO – 4712
KRASNOYARSK – 3046, 6704
NOVOSIBIRSK – 4712
YENISEYSK – 3046, 6704

AFRICA

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BAMAKO – 6673, 8861
BOUAKE – 6673
CASABLANCA – 3452, 5554, 6535, 8861, 13357
DAKAR – 3452, 5565, 6535, 6673, 8861, 11291, 13315, 13357, 17955
MONROVIA – 3452, 6638, 6673, 8861, 8882
NOUADHIBOU – 6673, 8861
NOUAKCHOTT – 6673, 8861
SAL – 3452

(AFI-2)
ALGIERS – 5652, 8894, 13273
GAO – 8894
KANO – 3411, 5519, 8826, 13304
NIAMEY – 3419, 5652, 8894, 13294
TRIPOLI – 3419, 5652, 8894, 13273
TUNIS – 3411, 5519, 8826

(AFI-3)
ADDIS ABABA – 5517, 7595, 8870, 11300
ADEN – 5658, 11300
BENGHAZI – 3467, 5658, 11300, 13336
BUJUM BURA – 8879, 8903, 8913, 11300, 13294
CAIRO – 3467, 5658, 6574, 11300, 13288
DAR ES SALAAM – 5517, 8870, 8879, 11300
DJIBOUTI – 5658, 7595, 11300
HARGEISA – 5517, 5658, 11300, 13288
JEDDAH – 5658, 11300
KHARTOUM – 3467, 5517, 11300, 13288
MOGADISHU – 5517, 5658, 11300, 13288
MUMBAI – 2872, 3467, 5601, 5634, 5658, 6655, 8879, 8909, 8948, 10018, 11300, 13288
NAIROBI – 3467, 5517, 5634, 6559, 8879, 8888, 11300, 13306
RIYAN – 5658, 11300, 13288
SANAA – 11300
SEYCHELLES – 3467, 5517, 5658, 11300, 13288, 17961
TRIPOLI – 5517, 11300

(AFI-4)
ACCRA – 5493, 6586, 8903, 13294
BRAZZAVILLE – 2878, 5493, 6559, 8873, 8903, 13294
JOHANNESBURG – 5565, 6559, 8861, 13315, 17955, 21926
KANO – 3411, 5519, 8826, 13304
KINSHASA – 2851, 2878, 5493, 6559, 8888, 8903, 13294, 13304
LAGOS – 8826, 5519
LUANDA – 2878, 5493, 8903, 13294
LUSAKA – 2878, 5493, 8873, 8879
NIAMEY – 2878, 5493, 6586, 8903, 13273
SAO TOME/SALAZAR – 5493, 8903, 13294
SEYCHELLES – 10018
WINDHOEK – 8861

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ANTANANARIVO – 5634, 8879, 13306
BEIRA – 2878, 3476, 5493, 6586, 8879
COCOS – 3476, 5634, 8879, 13306, 17961
COLOMBO – 8879, 13306
DAR ES SALAAM – 5517, 8870, 8879, 11300
JOHANNESBURG – 5634, 8879
LUSAKA – 5634, 8873, 8879, 13306
MAHAJANGA – 8879
MAURITIUS – 3476, 5634, 8879, 13306
MUMBAI – 2872, 3467, 5601, 5634, 5658, 6655, 8879, 8909, 8948, 10018, 11300, 13288
NAIROBI – 6559, 13306
PERTH – 3476, 5634, 8879, 13306, 17961
ST. DENIS/GILLOT – 3476, 5634, 8879
SEYCHELLES – 3476, 5634, 8879, 13306, 17961
TOAMASINA – 8879

SOUTHEAST ASIA

(SEA-1)
CALCUTTA – 2872, 2923, 2947, 3470, 3491, 5484, 5580, 6556, 6583, 8861, 8906, 8948, 10066, 13318
CHENNAI – 2872, 3470, 5670, 6583, 6655, 8861, 8909, 10066, 13318
COCOS – 11285
COLOMBO – 3470, 5670, 11285, 13318, 17907
DHAKA – 2947, 3491, 6556, 10066
KARACHI – 3467, 5658, 10018
KATHMANDU – 2923, 6607
KUALA LUMPUR – 3470, 5670, 6556, 11285, 13318, 17907
MALE INTL. – 3470, 5670, 11285, 13318, 17907
MEDAN – 3470, 5670, 11285, 11396, 13318, 17907
NAGPUR – 2872, 5601, 6583, 8861, 8948
SINGAPORE – 6556, 11297
TRIVANDRUM – 3470, 5670, 11285
VARNASI – 2872, 5580, 8948

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HOCHIMINH – 5655, 8942, 11297, 11396, 13309,
HONG KONG – 3485, 5655, 8942, 11396, 13309

KINABALU – 6825
KUALA LUMPUR – 5655, 8942, 11396
MANILA – 3485, 5655, 8942, 11396, 13309
PHNOM PENH – 8942
SINGAPORE – 5655, 8942, 11396

(SEA-3)
BALI – 3470, 6556, 11396
COCOS – 6556, 13318
JAKARTA – 3470, 6556, 10066, 11396, 13318, 17907
PERTH – 3470, 6556, 11396, 13318, 17907
SINGAPORE – 6556
UJUNG PANDANG – 3470, 6556, 11396

CENTRAL WEST PACIFIC (CWP)
BEIJING – 3016, 6571, 8897
DAEGU – 6425, 6665, 6675
HONG KONG – 6532, 8903, 13300
MANILA – 2998, 6532, 6562, 8903, 13300, 17904
NAHA – 2998, 3455, 4666, 6532, 8903, 11384, 13300, 17904
PORT MORESBY – 3419, 3425, 5565, 6622, 8837, 8861, 11393
SAN FRANCISCO – 2998, 4666, 6532, 8903, 11384, 13300, 17904, 21985
SEOUL – 3004, 6532, 8903, 13300, 13303, 17904
SHANGHAI – 3016, 6571, 8897
TAIPEI – 6532, 8903, 13300
TOKYO – 2998, 3455, 4666, 6532, 8903, 11384, 13300, 17904

NORTH PACIFIC (NP)
BEIJING – 3016, 6571, 8897
SAN FRANCISCO (ARINC) – 2932, 5628, 5667, 6655, 8915, 8951, 10048, 11330, 13273, 13339, 17946, 21925
SHANGHAI – 3016, 6571, 8897
TOKYO – 2932, 5628, 6655, 8951, 10048, 11330, 13273, 17904

CENTRAL EAST PACIFIC

(CEP-1)
SAN FRANCISCO (ARINC) – 3413, 3452, 5574, 6673, 8843, 10057, 13288, 13354

(CEP-2)
SAN FRANCISCO (ARINC) – 2869, 5547, 11282, 13288, 21964

SOUTH PACIFIC (SP)
AUCKLAND – 3467, 5643, 8867, 13261, 17904
BRISBANE – 3467, 5643, 8867, 13261, 17904
MELBOURNE – 3461, 4693, 6580, 8858
NADI – 3425, 3467, 5643, 6553, 8846, 8867, 11339, 13261, 17904
PASCUA/EASTER ISLAND – 4669, 5643, 6649, 8667, 13300
RAROTONGA – 3425, 6553, 8846, 11339, 13354
SAN FRANCISCO (ARINC) – 3467, 5643, 8867, 13261, 17904
TAHITI – 3467, 5643, 8867, 13261, 17904

NORTH CENTRAL ASIA (NCA-3)
CHITA – 3425, 6670
CHULMAN – 2986, 3461, 4465, 4728, 5568, 6589
EKIMCHAN – 3461, 6589
KHABAROVSK – 2868, 3102, 3461, 4465, 5557, 6589, 6692, 7870
KIRENSK – 3046, 3425, 4728, 6704
ULAANBAATAR – 5505, 5715
ULAN UDE – 3425, 6670

Galaxy is truly an awesome aircraft. For those of you who like to work on cars and other machinery, how'd you like to change the tires on this baby? According to the USAF Marathon website, there are 28 of them, each of which weighs 4,214 pounds and holds 181 pounds of air when inflated to the prescribed pressure. Or perhaps you'd like to fill her fuel tanks instead. There are a dozen of them in the wings, with a total capacity of 51,150 gallons (332,500 pounds) of fuel, which means that if a C-5 pilot told you to "Fill 'er up!" you'd be able to empty 6-1/2 regular size railroad tank cars full of jet fuel into the craft. If cars ran on jet fuel instead of gasoline, that would be enough for the average American car to make 130 round trips between New York and Los Angeles, or 31 trips around the world.

Each of the C-5's four General Electric TF-39 engines weighs 7,900 pounds and provides 43,000 pounds of thrust and gulps approximately 42 tons of air a minute. The total engine power equals that produced by 800 average cars. Then again, they need all that power—just the paint on the interior and exterior of a C-5 weighs 2,600 pounds. According to the U.S. Air Force, a single C-5 Galaxy could carry 277,263 12-ounce cans of your favorite beer, or—in case you and your friends actually tried to drink all that beer—328,301,674 aspirin tablets!

Photo B. USAF ground crew backing a tractor-trailer rig into a C-5 Galaxy for transport to Iraq. (Photo courtesy U.S. Air Force)

If you doubt any of this, have a look at **Photos B** and **C**. They're USAF photos I found on the Internet showing a tractor-trailer full of relief supplies being loaded onto a C-5 for transport to somewhere in Iraq. As you can see in the photos, this is an airplane that can swallow a semi whole!

More than a hundred miles of wiring and over four miles of tubing are needed to functionally operate all the aircraft systems on a C-5. Each engine nacelle (the streamlined enclosures aircraft engines are mounted in) is large enough to garage a Mustang. The environmental control systems on a Galaxy have a total cooling capacity of 24 tons, enough to air condition eight average sized homes. All this is handled by a crew of seven—a pilot, co-pilot, two navigators, and three loadmas-

Photo C. Here's another tractor-trailer that has been successfully loaded into a C-5 for transport. (Photo courtesy U.S. Air Force)

ters—and handling an aircraft as large as a C-5 is no easy task. Asked in a Usenet newsgroup a few years ago what it's like to fly a C-5, one Galaxy pilot replied, "It's like trying to fly your house while sitting on the toilet in the bathroom."

Our Readers Log In

So, hats off to Allan Stern for snapping and sharing his photo of RHINO 90 in the Florida sky, as well as for the nifty batch of logs he submitted again this month. And yes, that brings us rather nicely to said logs, doesn't it? I love it when things work out so conveniently, don't you? This month's list of contributors: Allan Stern, Satellite Beach, FL (ALS); Steven Jones, Lexington, KY (SJ/KY); Glenn Valenta, Lakewood, CO (GV/CO); Mark Cleary, Charleston, SC (MC/SC); Chris Gay, Lexington, KY (CG/KY); and Yours Truly (JK/NY).

4023.9: AAR9AD (U.S. Army MARS), NCS with numerous western stations in Army MARS Region 8 Net, in LSB at 0055Z. (MC/SC)

4027.0: AAM4EGA and other stns in a MARS net. Discussion of an emergency preparedness exercise for a category 3 hurricane hitting Atlantic coast, in USB monitored at 2015Z. (CG/KY).

4038.5: NNN0RVS, NNN0RBC, NNN0AOC and numerous others in USN/USMC MARS Region 4 Net, in USB at 0116Z. (MC/SC)

4102.3: Pirate beacon, W followed by variable beeps, suspect beeping is wind speed indicator, in CW at 0606Z. (GV/CO)

4149.0: Tug CENTURIAN WBN3022 with radio check in USB at 0519Z. (MC/SC)

4149.0: WPE Jacksonville (Crowley Marine) wkg Tugboat WBN-5040 for formatted status report; several other tugboats report in also, in USB at 0457Z. (ALS)

4270.0: Canforces Meteo-Halifax Military with WeFAX at 0333Z. (GV/CO)

4469.0: FLORIDA CAP 904, FLORIDA CAP 910 and numerous others in Florida CAP Net in USB at 0031Z. (MC/SC)

4476.0: AC 24 and AC 42 running some type of track called Oscar Mike. Talked about how someone stole their CDS. Unique distortion upon keydown as heard in other USN comms. In USB monitored at 0530Z. (GV/CO)

4500.0: AFA2QB and numerous others in USAF MARS Region 2 2S1 Net in USB at 0039Z. (MC/SC)

4772.0: Link-11 data transmission at 0041Z. (MC/SC)

4865.0: Link-11 data transmission at 0040Z. (MC/SC)

4991.0: NK1 (FBI, Newark, NJ) clg QT1 (FBI, Quantico, VA) in ALE USB heard at 1303Z. (MC/SC)

5058.5: SE1 (FBI, Seattle, WA) clg AN1 (FBI, Anchorage, AK) in ALE USB at 0304Z. (MC/SC)

5389.0: UNID repeating VVV VVV 666666 CAT CAT HWQAR in very poor hand-sent buzzy CW. Later sent 61157439 as the number. Other stns on freq with similar xmissions. In CW at 1315Z. (CG/KY)

5396.0: Unid Tadiran voice in USB at 0352Z. (GV/CO)

5598.0: Santa Maria Aero wkg various aircraft with position reports and SELCALs, in USB at 0540Z. (GV/CO)

5696.0: USCG RESCUE 1702 (HC-130H7) working COMMSTA KODIAK for flight following, in USB at 0450Z. (GV/CO)

5732.0: JULIET 41 (MH-60J, CGAS Elizabeth City) airborne en route Cape Hatteras requests guard from CAMSLANT, in USB at 2312Z. (MC/SC)

6264.5: WFDP, GREAT LAND, 16,138-ton U.S.-registered Ro-Ro cargo ship 1,100 mi ENE of Jacksonville, FL, w/BBXX format WX OBS, in SITOR-A at 0646Z. (SJ/KY)

6501.0: NMN, Chesapeake VA, synth OM/EE with WX info in USB at 2155Z. (CG/KY).

6761.0: HOSR 11 (KC-135) AR coordination with MOVER 25 (KC-10A) on track AR-631, in USB at 2359Z. (MC/SC)

6855.0: UNID YL/SS (ENIGMA V2A) with 5-fig groups in AM at 2113Z. (CG/KY).

6911.5: R10240 (CH-47D) clg T5B159 (5-159 AVN, Felker AAF) in ALE USB at 1801Z. (MC/SC)

6977.0: CIW681, Trenton, Ontario, OM/EE closing a CFARS net, in USB at 2213Z. (CG/KY).

6985.0: R26141 (UH-60A) clg T12 (12th Aviation Bn) in ALE USB at 1955Z. (MC/SC)

7635.0: HEAD CAP 40 net control in CAP net in USB at 1402Z. (MC/SC)

7778.5: NK1 (FBI, Newark, NJ) clg QT1 (FBI, Quantico, VA) in ALE USB at 2302Z. (MC/SC)

7887.0: UNID YL/SS (ENIGMA V2A) with "atencion" followed by 15-figure callup, then into 5-figure groups, in AM at 2000Z. (CG/KY).

7903.5: QT1 (FBI, Quantico, VA) clg SF1 (FBI, San Francisco, CA) in ALE USB at 0201Z. (MC/SC)

8097.0: UNID with 5-figure cut number groups (ENIGMA M8A) in CW on AM carrier at 1911Z; also heard another night at 1800Z. (CG/KY).

8122.0: Amigo Net, OM/EE Don Henderson with WX forecast for Mexico's Pacific coast, in USB at 1420Z. (CG/KY).

8199.7: PJC (Dutch Navy, Curacao) wkg Dutch Coast Guard aircraft with position of vessel MARANI, in USB at 2321Z. (MC/SC)

8378.0: 9VHF, MADAME BUTTERFLY, 28,223-ton Singapore-registered vehicles carrier w/MMSI and abbreviated callsign "MBUX," no coast station response (Italy, Iran, and Indonesia listed), possibly chose wrong frequency, in SITOR-A at 0229Z. (SJ/KY)

8379.0: WDD7312, JOHN COGHILL, new 265-foot U.S.-registered anchor handler w/MMSI and abbreviated ID "COG" in SITOR-A at 2103Z; WCP5628, CAROLYN CHOUEST, 2,110-ton U.S.-registered offshore supply ship w/MMSI and abbreviated ID "CLYN" in SITOR-A at 2354Z; WDA8419, HOS BRIMSTONE, 3,500-ton U.S.-registered offshore supply ship w/unlisted MMSI 369139000, abbreviated ID "BRIM" and test message in SITOR-A at 0205Z; 3FAU3, ZEUS, 99,450-ton Panama-registered VENFLEET crude oil tanker 75 mi S of Haiti and en route to SABINE LIGHTERING AREA U.S. GULF to arrive in 4 days, w/AMVER/PR in SITOR-A at 0418Z; ELZU2, ORANGE SKY, 26,863-ton Liberia-registered fruit juice tanker w/tfc to WLO, Shipcom R., Mobile, AL on 8419.0 kHz, including MMSI and abbreviated ID "OSKY" in SITOR-A at 0425Z; C6FR7, TROPICAL MORN, 11,979-ton Bahamas-registered refrigerated cargo ship en route to Lisbon, Portugal, to arrive in 8 days, w/partial AMVER/PR in SITOR-A at 1308Z; WSDK, COAST RANGE, 40,631-ton U.S.-registered oil products tanker w/callsign and 5-digit SELCAL 11113 in SITOR-A at 1407Z; WMLG, MAERSK NEVADA, 36,003-ton

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 State 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."

U.S.-registered container ship w/callsign and TEST command in SITOR-A at 1335Z. (SJ/KY)

8381.0: 9MBO3, ALAM SENANG, 27,654-ton Malaysia-registered bulk carrier w/test traffic including QUICK BROWN FOX string and request for acknowledgement, in SITOR-A at 2252Z; DYRT, STAR SAVANNAH, 18,764-ton Philippines-registered bulk carrier w/very detailed AMVER/SP for departure from Port Kaiser, Jamaica, en route to Rotterdam, Netherlands, included 25 route leg segments, full MMSI, INMARSAT and TEL/TLX IDs plus 5-digit NBDP SELCAL 76757, to arrive in 14 days, in SITOR-A at 0605Z; KAQL, NEW RIVER, 39,483-ton U.S.-registered chemical/oil products tanker 65 mi E of Hilton Head, SC, en route to Lake Charles, LA, to arrive in 4 days, w/AMVER/PR in SITOR-A at 1657Z. (SJ/KY)

8383.5: C6OH9, CLIPPER WESTOE, 8,447-ton Bahamas-registered general cargo ship w/MMSI and abbreviated ID "WEST," actual frequency 8383.475 slightly off standard frequency of 8383.5 kHz, in SITOR-A at 2227Z. (SJ/KY)

8777.0: Unid fishermen discussing the day's shrimp catch, in USB at 0337Z. (GV/CO)

8843.0: San Francisco Radio wkg an A/C for a radio check, in USB at 0331Z. (GV/CO)

8983.0: CAMSLANT Chesapeake (VA) calling CG2112 to request flight ops, QSY to 5696.0, in USB at 1739Z. (CG/KY).

8983.0: CG 2129 (HU-25, CGAS Cape Cod) position report to CAMSLANT in USB at 2330Z. (MC/SC)

8983.0: CAMSLANT wkg CG 2117 (HU-25A, CGAS Miami), passes position 26-19N 80-11W, in USB at 1904Z; Heard again at 1929Z passing "Ops normal" message; CAMSLANT wkg CG RESCUE 2134 (HU-25A, ATC Mobile), CAMSLANT passes ELT Beacon ID ADCDO 21C894180I to RESCUE 2134 and instructs him to continue to attempt contact with vessels in the area, in USB at 1905Z; heard again later passing position 29-22 N 87-41 W (south of Pensacola), reporting has made contact with four out of the five vessels in area; all say their ELTs are off; attempting to contact fifth vessel, in USB heard at 1943Z. (ALS).

8983.0: CAMSLANT wkg CG 2120 (HU-25 Falcon), departing from homeplate Mobile w/5 POB; CAMSLANT assumed guard, in USB at 2142Z; CAMSLANT wkg STINGRAY 28, en route homeplate Gitmo (Guantanamo Bay NS, Cuba) with 5 POB, in USB at 2157Z; CAMSLANT wkg CG 6001 (MH-60J, CGAS Elizabeth City) in USB at 0354Z; CAMSLANT wkg CG 1500 (HC-130H, CGAS Elizabeth City), CG 1500 passes ops normal and position report, in USB at 1854Z; CAMSLANT calling V7B repeatedly, V7B responds, heard loud and clear at my QTH, but CAMSLANT cannot hear, in USB at 1950Z. (ALS)

8983.0: CAMSLANT wkg STINGRAY 28, which passes position 220 degrees true from benchmark "Bear" in USB at 1927Z; heard again later passing position 128 degrees true, 12 nmi from "Bear" in USB at 1958Z; CAMSLANT wkg CG 2112 (HU-25C+, CGAS Cape Cod), landing at home plate, guard secured, in USB at 1910Z. (ALS).

9007.0: CANFORCE 3905 (CC-130) (near Winnipeg) wkg TRENTON MILITARY for WX at Yellowknife in USB at 1633Z. (MC/SC)

9025.0: 200177 (C-17A) with ALE initiated morale p/p via Andrews HF-GCS to Charleston, in USB at 1814Z. (MC/SC)

9046.0: Two unid. stations, one very weak, w/poor handsent CW at 2335Z. (SJ/KY)

9130.0: Israeli ENIGMA E10, female repeating "ECHO ZULU INDIA TWO," USB at 2330Z, off at 2333Z. (SJ/KY)

10051.0: New York Radio with aviation WX in USB at 1440Z. Also heard on 13270 at 1635Z. (CG/KY).

10242.0: JULIET 41 (MH-60J, CGAS Elizabeth City) requests guard from CAMSLANT, in USB at 2316Z. (MC/SC)

10588.0: WGY901 (FEMA Region 1, Maynard, MA) and WGY904 (FEMA Region 4, Thomasville, GA) in weekly test comms in USB at 1810Z. (MC/SC)

10780.0: CAPE RADIO (Cape Canaveral AFS) wkg Ascension Radio for radio check; also calls Antigua Radio, test counts, in USB at 1218Z. (ALS)

11175.0: HF-GCS Station OFFUTT wkg

REACH 31223 for radio check in USB at 1518Z. (ALS)

11175.0: HF-GCS Station OFFUTT wkg TIGER 02 for phone patch to a DSN number to check HF connectivity; then phone patch to a commercial number, in USB at 0002Z; HF-GCS Station PUERTO RICO wkg AKELA 24 (MC-130P, Kirtland AFB) for radio check; good signal from both parties, in USB at 0050Z; HF-GCS station ANDREWS wkg PEACH 24 (JSTARS E-8C, Robins AFB 116ACW) for phone patch to Robins AFB "Peachtree Ops." in USB at 1745Z; ANDREWS wkg PATCHWORK 01 (spelled; prob E-6 TACAMO) for phone patch to DSN number at Offutt AFB, in USB at 1730Z; ANDREWS wkg AXE KNIFE (spelled, two words) for phone patch to DSN number for "Quitclaim" (Orderwire Controller at OFFUTT AFB) for orderwire coordination, in USB at 1745Z. (ALS)

11175.0: BOEING 67 calling Andrews with no joy, in USB at 2034Z; SHILL 11 with p/p via Offutt to Command Post, reported departure time and expected land time, in USB at 1815Z; ANDREWS with 28-char EAM in USB at 1445Z; COPPER 9 calling McClellan for radio check with no joy, then COPPER 9 called by Elmendorf (not heard here), in USB at 1455Z; SPURS 51 calling MAINSAIL for HF radio check, answered by McClellan, in USB at 1912Z; ELOPEMENT with p/p to Royal Ark via Offutt, in USB at 1430Z; Navy LL76 with p/p via Andrews in USB at 1440Z. (CG/KY)

11175.0: DESIRABLE (U.S. Mil) via PUERTO RICO HF-GCS, pp to RAILMAN for orderwire coordination, in USB at 2306Z. (JK/NY)

11205.0: SHARK 43 position report to SMASHER in USB at 0001Z. (MC/SC)

11232.0: AKELA 75 (MC-130, 58 SOW) p/p via TRENTON MILITARY to Davis Monthan Meteo for WX at Albuquerque IAP. In USB at 1638Z. (MC/SC)

11232.0: Trenton Military wkg AWACS SENTRY 07 (Tinker AFB) for phone patch to DSN number for Tinker AFB "Cornerstone"; passes ETA of 45 minutes, in USB at 1813Z. (ALS)

11494.0: JULIET 33 (HH-60J, CGAS Clearwater) p/p to CLEARWATER AIR regarding current search tasking, flight time, and WX in USB at 2028Z. (MC/SC)

12479.0: 3EEZ6, STAR FIRST, 13,300-ton Panama-registered refrigerated cargo ship 1,000 mi E of Miami, FL, en route to Antwerp, Belgium, to arrive in 7 days, w/multiple AMVER reports, including Sailing Plan delayed 2 days for departure from Rio Haina, Dominican Republic, previous day's Position Report, current Position Report, and full INMARSAT data and MMSI, in SITOR-A from 1740-1754Z. (SJ/KY)

12482.0: V7KH6, CCNI ANGOL, 46,376-ton Marshall Islands-registered general cargo ship 850 mi E of Miami, FL, en route to Marin, Spain, w/AMVER/PR in SITOR-A at 1558Z. (SJ/KY)

12490.0: C6FS2, TROPICAL MIST, 11,998-ton Bahamas-registered refrigerated cargo ship 150 mi NW of Barranquilla, Colombia en route to Lisbon, Portugal, to arrive in 10 days, w/AMVER/PR in SITOR-A at 1945Z; 9V6486, TAPIOLA, 30,464-ton Singapore-registered vehicles carrier en route to Auckland, New Zealand, w/garbled AMVER/PR and abbreviated ID "TPLA" in SITOR-A at 2106Z. (SJ/KY)

12654.0: TAH, Istanbul R., Turkey w/WX in Turkish in SITOR-B at 2004Z, then English at 2009Z, back to CW+SITOR-A idle marker at 2016Z. (SJ/KY)

12711.0: PWZ, Brazilian Navy, Rio de Janeiro w/navigational warnings in English at 2138Z, ITA2 at 75 baud/850 Hz, into Portuguese at 2203Z. (SJ/KY)

13050.0: UDK2, Murmansk R., Russia w/CW+SITOR-A idle frequency marker at 1950Z. (SJ/KY)

13050.0: UDK2, Murmansk Radio, Russia with beacon in SITOR and CW at 1454Z. (CG/KY).

13927.0: USAF MARS Operator AFA1EN (Shelbyville, IN) wkg KING 52 (C-130) for phone patch to a DSN number for itinerary reports in USB at 1800Z; USAF MARS Operator AFA2XD (Satellite Beach FL) wkg KING 52 (C-130) for phone patch to DSN number to get WX for 2030Z arrival at San Juan, in USB at 1803Z; RAVEN 908 (Little Rock C-130 over West TX) via USAF MARS operator for M&W phone patch to commercial phone number, in USB monitored at 1621Z. (ALS)

13927.0: REACH 527 via USAF MARS, M&W phone patch to a commercial number in Massachusetts, in USB at 1643Z. (ALS)

13927.0: USAF MARS Operator AFA6AY (Dennis, CA) wkg KING 76 (HC-130P #65-0976, Patrick AFB 920RQW) for phone patch to Patrick AFB; King 76 terminates rqst, in USB at 2056Z; USAF MARS operator AFA1YV Binghamton, NY) wkg DRAGO 51 for phone patch, DRAGO 52 on time, DRAGO 51 delayed; will be in area 2305Z; wants to change Time over Target to 2325Z, in USB at 2120Z; USAF MARS Operator AGA2PF (Patrick AFB) wkg FREEDOM 01 (MO-ANG C-130H, Rosecrans MAP, St Joseph, MO) over Toronto at FL200 for phone patch, they QSY to 14389, back to 13927, in USB at 1655Z; same aircraft heard 1715Z working MARS operator AFA6PF (Los Angeles) for another phone patch. (ALS)

13927.0: REACH 312 (C-17A) (over Savannah) morale p/p via USAF MARS to Charleston, in USB at 1528Z. (MC/SC)

15034.0: Trenton Military, Trenton, Ontario, OM/EE with WX info in USB at 1650Z. (CG/KY).

16685.5: C6FX9, DOLE COSTA RICA, 11,800-ton Bahamas-registered container ship 30 mi offshore from central Bahia California, Mexico, en route to San Diego, CA, arrive in 2 days, w/AMVER/PR in SITOR-A at 1631Z. (SJ/KY)

17436.0: UNID YL/SS (ENIGMA V2A) with "atencion" followed by 15-figure callup, then into 5-figure groups, in AM at 1700Z, also on 7887 at 2000Z, and 6855 at 2100Z. (CG/KY).

WASHINGTON BEAT *(from page 8)*

Service." The Commission announced it was fining Grinton $7,000.

According to FCC documents, in December 2006 "in response to a complaint alleging intentional interference to amateur radio communications on the 146.340/146.940-MHz repeater—callsign VE7RPT—repeater, an agent from the Enforcement Bureau's Seattle Office, using mobile direction finding techniques, located the source of the signal to the residence of amateur radio operator K7VNI." From December 9, 2006, to January 1, 2007, "the Seattle agent monitored 146.340 MHz (repeater input frequency) and observed 59 transmissions of varying lengths from Grinton's residence."

In January, the Seattle Field Office issued a Warning of Interference to Communications Letter to Grinton, warning him "that his station may be the source of willful or malicious interference to amateur communications and that if the 'transmissions continue, you will be investigated during ongoing FCC enforcement efforts.'"

On January 25, Grinton received and signed a receipt for the Warning Letter, "but has not sent a response to the Seattle Office," the FCC said. "In February, in response to continued complaints, a Seattle agent using mobile direction finding techniques, again located the source of a signal on 146.340 MHz to Grinton's residence in Bellingham," the FCC alleges. "The Seattle agent monitored and recorded 17 minutes of a continuous transmission of one-way communications of music by Grinton on 146.340 MHz."

"During the period of January 19, 2007 to June 23, 2007, the Seattle agent monitored 146.340 MHz and observed 163 transmissions by Grinton in which Grinton failed to transmit his assigned call sign, K7VNI," FCC documents revealed.

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by Bill Price, N3AVY (and Son)

Don't Try This At Home

Ha! That could be the title for *most* of my columns—but the warning stands. Remember, with me, you never quite know where reality ends and my imagination takes over. Neither do my friends or my boss.

And as to that curious byline up top, which looks as if it might belong above a hardware store—well, there's even a story behind *that*.

About a year ago, my son Scott wrote a "Loose Connection" and suggested that I submit it on his behalf. His story line was good, but you loyal readers would know in a moment that someone else wrote it. Only after writing and editing something like a million words, reading almost everything written on writing, and studying the masters, can a person score a high-status column such as this one.

When my understudy read a recent column about Norm helping remove a television antenna from our roof, he became incensed because he said I had used a phrase of his—something like "...the antenna fell unceremoniously to the ground," or words to that effect. Then he went away in a huff (after arriving in a Ford) mumbling about how I'd probably write about the radio communication system they use where he works and take all the credit for it. Hence this month's byline.

Join me, if you will, in a tale of yesteryear, when the earth had just finished cooling and I was driving my father's '66 Dodge Charger with the all-tube Lafayette Comstat 25 CB radio complete with Channels A and B (for future planned expansion of the band...). I had turned into the parking lot of the new bus terminal in Coaldust, Pennsylvania, while I was speaking on the CB when I heard the strangest phenomenon: My voice was amplified and was echoing all around the parking lot, bouncing off nearby buildings.

I quickly stopped transmitting and almost as quickly deduced that either my radio was breaking right into the terminal's PA system, or the thing was set to receive the CB channel I was using, so that arriving and departing bus drivers could make announcements by using their onboard CB radios. Either way, the die was cast.

Later that night, after the terminal was closed and the inside lights were turned off, I drove by once again and keyed the mic and heard the telltale "click" that told me the system was left on for buses that arrived after the station was closed and before it opened in the morning. I parked nearby.

Soon, a man walked along the sidewalk, and when he got in front of the terminal, I spoke softly into the mic, "Psssst! Hey, buddy! Wanna good deal on a watch?"

He stopped and looked toward the overhang of the roof, where the buses parked. He stood still. He was not a vagrant-type—he was neatly dressed, maybe on his way home from a movie.

"C'mon—back here—alongside the building," I said, still in a stage whisper.

He looked up and down the street, trying to appear casual, and walked back toward the side of the building, looking into the shadows. I couldn't have planned this next part if I'd written a script.

A police cruiser came slowly down the street toward the terminal. I'm sure they were just riding down the street, but it was perfect for me. I whispered, "Run—it's the cops! Dive in the bushes over there before they see you.

Not in my wildest dreams did I expect this normal-looking man to dive into those bushes in front of the bus terminal—but he did. And when he did, he must have hurt his knee or something, because he yelled "Ow!" which, combined with the movement of the bushes, caught the eyes and ears of the officers.

They stopped the car, turned on the big flashing red light on the roof, and then spoke into their radio briefly before getting out of the car. I turned off the power to the CB, just to make *sure* I wouldn't accidentally key the mic. While the officers' backs were toward me, I opened and shut my car door, started the car, and drove off as they were "frisking" their suspect. One can only imagine the conversation that followed.

Advance the clock now to the late '80s, when I had met Norm and was working in my first HPJIE.* Norm had picked up a Gunn transmitter at a hamfest for a few dollars, and I asked him if he ever planned to work someone point-to-point, line-of sight. He told me such things were much more fun on the interstate highway (now you see why I say "don't try this at home!")? We were soon making people all around Boston slow to the speed limit—something they only do when their radar-detectors start beeping at them.

Here let me briefly touch on how certain VHF radios can overpower the headset receivers at most drive-thru food establishments, as long as they're at least *near* the system's frequency. A scanner can listen to the employee talk back to the person in his car.

Now picture an invisible car and invisible driver pulling up to a drive-thru speaker and trying to get the employee's attention.

"Hey! Anybody in there? Are you gonna take my order? How long do I have to wait here?"

The confused McWaiter looked out the window and to see a completely empty drive-thru and went back to his register. Again, "Hey! I haven't got all day!"

We could hear the employee talking to his manager, explaining what he thought he heard, and the manager rather gruffly taking the headset from the young man. He walked to the large window on the side of the restaurant (*their* word—not mine) and saw no car at the drive-thru position. As soon as he turned his back, he heard, "Hey! Are you gonna take my order, or what?" He quickly returned to the large window and, again, saw the empty drive-thru. We then asked for several items that are only available at the *other* major fast-food chain, said thank you, and left our victim for the day.

Now we'll move to the near future, and to a certain retail establishment in which all employees wear a VHF radio with a small headset. The entire system is simplex; that is, everyone speaks and listens on the same frequency. Questions are asked to no one in particular and answers are given by the first person who knows the answer. The system is a small part of a bigger system which makes the business run efficiently, but I digress.

If I have to tell you what's going through my mind about this system right now, well—you haven't been reading my columns long enough. Yes, Scott—*your* store!

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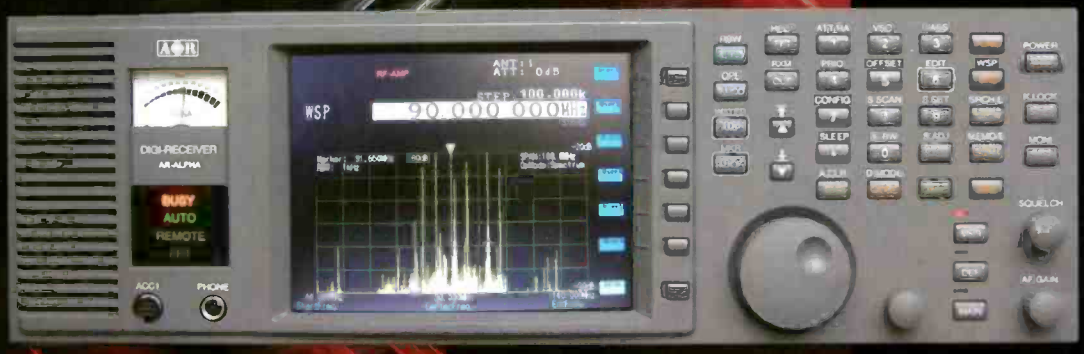

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