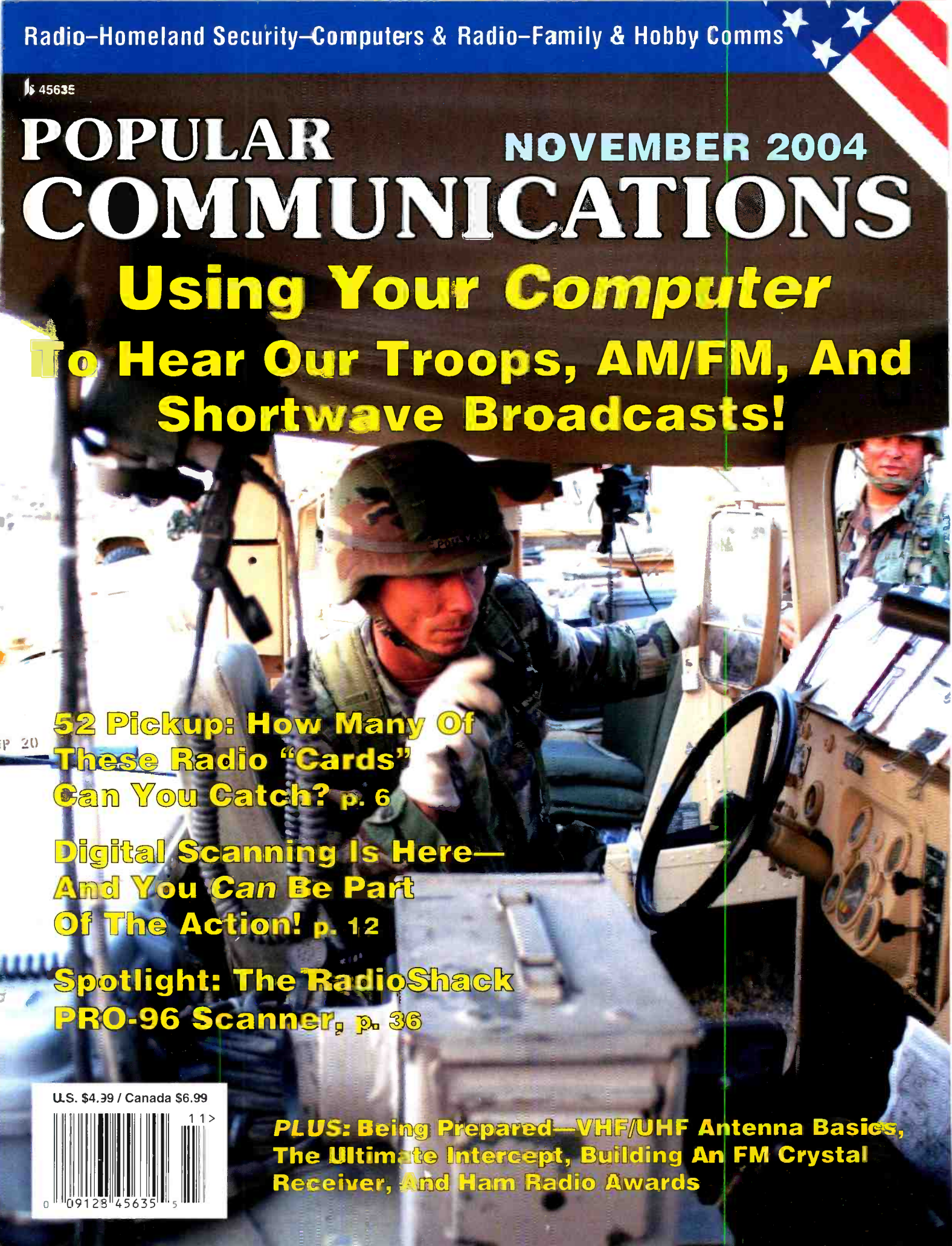
Radio–Homeland Security–Computers & Radio–Family & Hobby Comms

45635

POPULAR COMMUNICATIONS

NOVEMBER 2004

Using Your Computer To Hear Our Troops, AM/FM, And Shortwave Broadcasts!



U.S. $4.99 / Canada $6.99

11>

0 09128 45635 5

Seeking to Achieve the Ultimate...

Ultra-Quiet 400 MHz High-Resolution DDS
1st IF 40 MHz / 3 kHz Roofing Filter Implementation
Quiet Triple Conversion Receiver Architecture
Variable RF filter (VRF) and " μ " Tuning Narrow RF Filter
IF WIDTH / SHIFT, IF NOTCH,Filter Shaping Contour Control,
Super Multi-function 30 kHz/32-bit Floating Point IF DSP
Completely Independent Dual Receive system

*1 Installed in "D" version
*2 Option on "Contest" version

The radio: FT DX 9000

Delivery: December, 2004

FT DX 9000D 200 W Version HF/50 MHz
Large TFT Display, Built-in Memory Board, Main and Sub Receiver VRF, Full Dual RX, "μ" Tuning (3 modules) Installed, Internal Switching Power Supply

Future Production Model: **FT DX 9000MP** 400 W Version HF/50 MHz
Dual Analog Meter Sets, LCD Display, Memory Card Installed, Main and Sub Receiver VRF, Full Dual RX, Switching External Power Supply/Twin Speaker Enclosure.

FT DX 9000 Contest 200 W Version HF/50 MHz
Dual Meters + LCD, VRF Installed in Main Receiver, Extra Key and Headphone Jacks, Internal Switching Power Supply

The radio... YAESU
Choice of the World's top DX'ers

For the latest Yaesu news, visit us on the Internet!
http://www.vxstdusa.com

Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details. This device has not been approved by the FCC. This device may not be sold or leased, or offered for sale or lease, until FCC approval has been obtained.

Now available: FT DX 9000 Technical Supplement Please call (714) 827-7600, Ext 2272
Vertex Standard, US Headquarters, 10900 Walker Street, Cypress, CA 90630

Universal Radio - Quality equipment since 1942.

GRUNDIG SATELLIT 800

The Grundig Satellit 800 is a legend. You will immediately appreciate the smooth flowing, full size design and functional control panel. The 800 receives all longwave, AM, shortwave frequencies, plus the FM broadcast band ***and*** the VHF aeronautical band. With Grundig you expect great rich audio and the 800 delivers with a large speaker, strong amp and separate bass and treble controls. Tune via the large manual knob, keypad or by 70 memories. Other refinements include: synchronous detection to reduce fading, three filters (6/4/2.3 kHz), S-Meter, AGC, Attenuator, SSB and dual 24 hour clock timers. The Satellit 800 comes with a 110VAC power supply or can also be operated from six D cells (not supplied). A set of high quality padded headphones for private listening is also included. This radio will please both the serious DXer and the program listener. One year limited warranty. 20.9"x9.25"x8.25" 15 Lbs. (UPS $15) *Order #0800* **$449.95**

FREE **Grundig FR200 Metallic Bronze** with your Satellit 800 purchase!

FR200

Be prepared with the **Grundig FR200** emergency radios covering AM, FM and shortwave (3.2-7.6 and 9.2-22 MHz.). The FR200 operates from a wind-up generator, 4.5VDC or 3 AA cells. 90 seconds of turning charges the radio for 40 to 60 minutes of operation. With carry handle and canvas carry case. Includes a bright emergency light. Now in 6 fun colors. (UPS $4.95) **$39.95**

Order #0814	Yellow	*Order #0790*	Metallic Pearl
Order #0983	Metallic Blue	*Order #2200*	Sand
Order #0987	Metallic Red	*Order #0767*	Metallic Bronze

YB-400PE

The highly acclaimed **Grundig YB-400PE** is our best selling radio. The value is unbeatable. You get complete coverage of LW, AM and SW plus FM stereo (to ear jack). Enjoy smooth SSB via thumbwheel, backlit 1 kHz LCD, dual bandwidths, keypad entry, 40 memories, scan, search, dual clock timer and more. Comes with AC adapter, ear buds and case. Requires six AA cells (not supplied). Titanium colored. 8"x5"x1.5". One year limited warranty. (UPS $9.95) *Order #0400* **$129.95**

FREE **FR100 *Blackout Buddy*** with your YB-400PE purchase!

FR100

The FR100 *Blackout Buddy* plugs into any AC outlet. When the power fails *Blackout Buddy* automatically shines to the rescue with a brilliant beam of light, and its AM-FM radio gives you the breaking news. The illuminated blue LCD display makes a great nightlight. In metallic silver or pearl. **$29.95**

(Orders under $100 ship for $4.95)

Order #0994 Silver
Order #0866 Pearl

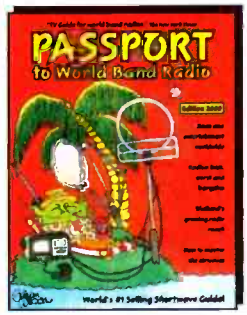
M300PE

The Grundig Mini300PE is perfect for travelling the world. This pocket sized wonder is only 4.7 ounces, and receives AM, FM plus international shortwave. It has both telescopic and ferrite antennas, clock with alarm plus a multi-function LCD screen. Comes with pouch, earbuds and two AAs. In 5 cool colors.

(Orders under $100 ship for $4.95) **$39.95**

#0892	Yellow	*#3300*	Metallic Pearl
#0906	Metallic Blue	*#0884*	Metallic Bronze
#0921	Metallic Red		

NEW



PASSPORT TO WORLD BAND RADIO 2005

A ***must have*** book for every worldband listener. Provides complete visual data on all SWBC stations. See at a glance: station name, location, frequency, time, language and power. Plus candid hard-hitting reviews on SW radios. World's #1 selling SW guide. Indispensable! 592 p. *#1005* ~~$22.95~~ **$18.90**

www.universal-radio.com

◆ **Visit our website or request our free 104 page catalog for other Grundig - Etón products.**

universal radio inc.

Universal Radio, Inc.
6830 Americana Pkwy.
Reynoldsburg, Ohio
43068-4113 U.S.A.

☎ **800 431-3939** Orders & Prices
☎ 614 866-4267 Information
614 866-2339 FAX Line
dx@universal-radio.com

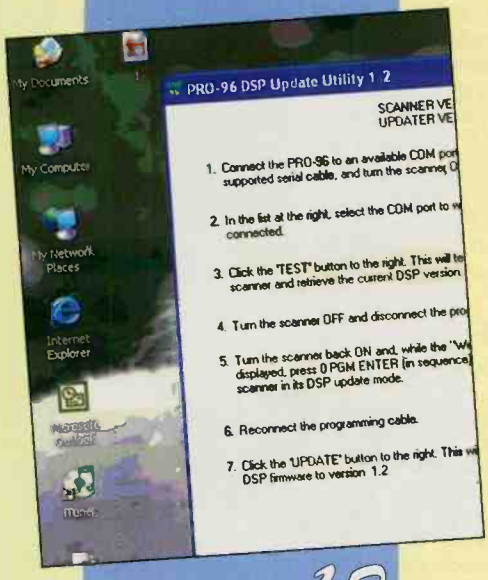
- Visa
- MasterCard
- Discover

- Prices and specs. are subject to change.
- Returns subject to a 15% restocking fee.
- Special offers expire December 31, 2004

Contents

POPULAR COMMUNICATIONS
Volume 23, Number 3 November 2004

6



12

18

Departments

On The Cover

A soldier from the National Training Center at Ft. Irwin, California, radios battalion headquarters while on a desert training mission. If you have a computer connected to the Internet, all you need to hear distant signals from our troops on the ground and in the air, foreign broadcasters, and even public safety pros in distant states is this issue of *Pop'Comm*. Check out Jim Southwick's article on page 18, "How To Listen To The World—With *Someone Else's* Radio." Armed with this information along with Joe Cooper's ongoing series titled, "Network Control Of Your Radio," you'll be running your own User-Controlled Online Tuner in no time! (Photo by Larry Mulvehill, WB2ZBI.)

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

by Harold Ort, N2RLL, SSB-596

The Sky Is Falling!

The end is coming. Pretty soon you won't be able to monitor the cops and firefighters. And even if you *could* get a scanner capable of tuning those frequencies, it'd cost thousands of dollars, so it's better to give up now and take up collecting rubber bands and paperclips. At least it'll keep you busy for a few years.

Don't you believe it for one moment!

It's sad, but that's what some folks *in* the radio hobby would have you believe. I remember hearing similar voices of doom and gloom way back when, before programmable scanners came along as public safety agencies continued the march to the UHF band. I was a lot younger then and certainly a lot more gullible, but even then the *absolute certain* demise of the radio monitoring hobby predicted by those days' editors and movers and shakers didn't make sense. And it doesn't today.

What's worse is for us to constantly hear from respected writers, editors, and well-placed amateurs about how the hobby is dying a slow death. This is really counter to what we need during these changing times—an adult sanity check and words that, as an old radio commercial said, "cools, cools, cools, rather than burns."

Fact is, our radio hobby is indeed in good shape. Is it 1991? No, but then again, other than Elvis, nothing that I know of ever remains on the same high for very long. All things eventually plateau to what I call PFDE, or Post First Date Euphoria.

Remember your first dates with that special someone, how you spent day after day with that special person and you couldn't see enough of each other, the endless phone conversations about how you miss each other—and you just *left* his or her house 30 minutes ago? In a few weeks, if your money held out and you didn't make everyone around you crazy, you both eventually came down to earth to become "normal" again. I believe we're currently at the "normal" stage of our radio hobby, both amateur radio and monitoring. Manufacturers continue to churn out radios, something that just wouldn't be happening if they perceived a dead or dying hobby. It costs a whole lot of buckaroos to take any radio from the planning stage to production. Factor in the high cost of marketing and advertising and you've got a lot of money on the line. So one of the first gauges of the state of the radio hobby is very simple: new equipment is coming on the scene! From transceivers—in all sizes and price ranges—to new state-of-the-art digital and trunking scanners that those same negative-thinking pundits were sure would never happen five years ago.

I believe that the hobby here in the States is different than elsewhere in the world. It has to do with how we Americans inherently think about radio; we live in such a fast-paced TV world with the Tube and the Internet at our beck and call that radio becomes a secondary medium. Naturally that thought process carries over to the radio hobby itself.

Then there's the clique-like way many radio hobbyists behave. Let's face it, if we snub others until they've "paid their dues" with code requirements and bombard newcomers with long-winded on-air discussions about "the good old days when things were different and you earned a license..." how welcome does that make them feel? This is the best hobby in the world; we've got such tremendous resources today that were only dreamed of a few short years ago, from computers and high-tech radio wizardry to software programs that run much of our equipment. Yet all too often I hear of, and personally observe, fellow hobbyists engaging in behavior that's best left to the grade school cafeteria or study hall.

There are those folks who will point to diminished attendance at hamfests as "evidence" of the doom and gloom scenario. Hogwash. At most hamfests that I attend, folks are buying—and many are buying big time. At one recent show, two major dealers were so busy taking orders they hardly had time for a hot dog lunch! One could certainly argue that business could be better, but then again only a business fool would think otherwise. We can *always* do better; after all, isn't that what business is all about? I'd be lying if I said all shows are experiencing a boom in sales and attendance is good. I've also personally seen some hamfests go from near-national extravaganzas to mere shadows of what they once were. Why? I don't have all the answers, but do have a few observations.

Bickering and turf wars are two reasons. Club X wants a show on a specific date, but Club Y has a show five miles away on the following weekend. Instead of combining *both* shows into a fairly large event that might attract more vendors, tailgaters, and attendees, they'll fight and claw each other almost right up to the event, until one or the other (or both!) cancel the show, leaving vendors and attendees thinking the *hobby* is in a tailspin. Nothing could be further from the truth, of course.

Frankly, if there's *anything* wrong with the hobby it's something that's always been wrong with it: too many half-baked opinions serving up nonsense soup that only gets folks thinking negatively and fuels the Chicken Little syndrome. It's high time we stepped back for a moment, took a deep breath, and thought about *professional* ways in which to promote the radio hobby to grassroots America. It's high time we began to think, act, and talk positively and professionally about our radio hobby. Remember, if Joe Six-Pack keeps hearing negativity from the radio camp—just like when politicians keep hammering away accentuating the negative over the positive—before long Joe won't think about radio, period. And that, my friends, would *really* burn!

Each month, we select representative reader letters for "Our Readers Speak Out" column. We reserve the right to condense lengthy letters for space reasons and to edit to conform to style. All letters submitted must be signed and show a return mailing address or valid e-mail address. Upon request, we will withhold a sender's name if the letter is used in "Our Readers Speak Out." Address letters to: Harold Ort, N2RLL, SSB-596, Editor, Popular Communications, *25 Newbridge Road, Hicksville, NY 11801-2909, or send e-mail via the Internet to popularcom@aol.com.*

Memories Of Tristan

Dear Editor:

I received my September issue of *Pop'Comm* several days ago. Let me say, thanks for the good service! I was reading the article about Tristan da Cunha by Manfred Rippich. It was very interesting and brought back memories of my shortwave days. I used to be quite active in shortwave and was a member of nine SW clubs. I logged 195 countries. One of my DX targets was Tristan. This was in the 1980s and they still had a SW station. Well, I didn't log the shortwave station but I *DID* log Andy Repetto [a cartographer and employee at Tristan Radio] on 20 meters, I believe. I was thrilled. I did get it on cassette tape (if I can still find it). I used to record DX and station IDs, especially if the noise level was high, to play back for positive ID.

What shocked me about hearing Andy in Tristan was that it was noon here in Oklahoma and he had a GOOD signal!

Gary Hickerson
Fort Wayne, Indiana

Fighting BPL: An Idea

Dear Editor:

I was just listening to "To the Best of Our Knowledge" on the local NPR outlet and had a thought about a potential source of help in BPL: Radio Astronomy, and particularly SETI. They were interviewing the head scientist with SETI and he noted that the Earth is only getting more crowded with QRM. Perhaps this could help the fight against the UPLC (United Power Line Council), despite that organization's lack of intelligent comments, at least in public.

I also noted the preposterous $5,000 cost of principal "membership" in the UPLC!

C. Hejkal

Uncle Bill's Problems

Dear Editor:

Oh boy, I'll bet the UPLC is all fired up about your September "Tuning In"! Your points about the aging electrical utility equipment, arrestors and other pole hardware, surely must have hit a nerve. Speaking of nerve (and stupidity), like you observed, where does Moroney get his information, talking about radio operators using ancient equipment? Once again, you hit the bull's-eye! Thanks for a great magazine.

Cheryl DiSimone,
Lansing, Michigan

Dear Cheryl:

It's tough to respect such so-called leaders when they spew forth all kinds of lies and disinformation. I think it's incumbent on everyone who cares about our hobby and country to file official comments with the FCC on this issue (and others, of course!), otherwise those in the Big Chairs will think it's okay to behave badly, much like they probably did as children when no one told them "No!"

Just Who Is Shannon?

Dear Editor:

I've been reading *Pop'Comm* for 15 years and, as the hobby has changed, you have changed with the times. Thank you for working on behalf of all radio hobbyists. I for one really appreciate your efforts! One thing bothers me, though. Many years ago Alice Brannigan wrote the old-time radio column and then she supposedly took a hiatus as you said a while back. But it sure looks and sounds to me like Shannon Huniwell is Alice. It's not that I mind, but why would she change her name?

Gerald Brownlee
Sacramento, CA

Dear Gerald:

I hate to disappoint you, but Shannon isn't Alice—and no, they're not twins. Alice is into chocolate donuts, coffee, and an occasional New York pretzel; the younger Shannon is a tea person, works out regularly, and wouldn't eat a donut if Bill Price personally delivered it to her.

POPULAR COMMUNICATIONS

EDITORIAL STAFF

Harold Ort, N2RLL, SSB-596, Editor
(E-mail: Popularcom@aol.com)
Tom Kneitel, K2AES/SSB-13, Senior Editor
Edith Lennon, Managing Editor
Richard S. Moseson, W2VU, Online Coordinator
(E-mail: w2vu@popular-communications.com)

CONTRIBUTING EDITORS

Rich Arland, K7SZ, Homeland Security
Peter J. Bertini, K1ZJH, Restoration/Electronics
Bruce Conti, AM/FM Broadcasts
Joseph Cooper, Computer Assisted Radio
Gerry L. Dexter, Shortwave Broadcast
Steve Douglass, Utility Communications
Bill Hoefer, KBØULJ, Aviation Communications
Shannon Huniwell, Classic Radio
Kirk Kleinschmidt, NTØZ, Amateur Radio
Tomas Hood, NW7US, Propagation
D. Prabakaran, Radio News
Bill Price, N3AVY, Humor/Communications
Laura Quarantiello, Legislative Affairs
Ken Reiss, Technical/Scanning
Bob Sturtevant, Radio Trivia
Gordon West, WB6NOA, Radio Resources

BUSINESS STAFF

Richard A. Ross, K2MGA, Publisher
Arnold Sposato,N2IQO, Advertising Manager
Emily Leary, Sales Assistant
Sal Del Grosso, Accounting Manager
Ann Marie DeMeo, Accounting Department
Catherine Ross, Circulation Manager
Melissa Gilligan, Operations Manager
Cheryl DiLorenzo, Customer Service Manager
Bonnie Perez, Customer Service

PRODUCTION STAFF

Elizabeth Ryan, Art Director
Barbara McGowan, Associate Art Director
Dorothy Kehrwieder, Production Manager
Emily Leary, Assistant Production Manager
Hal Keith, Technical Illustrator
Larry Mulvehill, WB2ZPI, Photographer

A publication of

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

Offices: 25 Newbridge Road, Hicksville, NY 11801. Telephone (516) 681-2922. FAX (516) 681-2926. Web Site:<http://www.popular-communications.com/> Popular Communications (ISSN-0733-3315) is published monthly by CQ Communications, Inc. Periodical class postage paid at Hicksville, NY and additional offices. Subscription prices (payable in U.S. dollars): Domestic—one year $28.95, two years $51.95, three years $74.95. Canada/Mexico—one year $38.95, two years $71.95, three years $104.95. Foreign Air Post—one year $48.95, two years $91.95, three years $134.95.

U.S. Government Agencies: Subscriptions to Popular Communications are available to agencies of the United States government, including military services, only on a cash with order basis. Requests for quotations, bids, contracts, etc. will be refused and will not be returned or processed.

Printed in the United States of America.

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

by Harold Ort, N2RLL, Editor, and D. Prabakaran

NASB To Add To DRM's North American Broadcasts Schedule

The Washington, D.C.-based National Association of Shortwave Broadcasters (NASB), a Digital Radio Mondiale (DRM) member since 1999, will started sending DRM transmissions into North America in July. The NASB programming will be sent from the Sackville, New Brunswick, transmitter site of DRM member Radio Canada International/CBC, and will reach the Eastern United States and Canada. The NASB's members are 19 privately owned, U.S. licensed, shortwave radio stations. Its associate members include non-U.S.-licensed broadcasters, manufacturers, and others.

DRM broadcasts of the following DRM members are also available in North America: BBC World Service; Deutsche Welle; RCI; Radio Netherlands; Swedish Radio International; and Radio Vaticana. DRM transmissions of China Radio International, Radio Kuwait, and TDP Radio (a commercial, dance mix station from Belgium) also reach North America. For the latest DRM Live Broadcasts Schedule, visit www.drm.org.

NASB will transmit the program "Voice of the NASB" via shortwave to North America on Saturdays, starting at 17:00 UTC, at 11900 kHz. "Voice of the NASB" is a half-hour variety series jointly produced by various NASB members and associate members. It comprises documentaries, travel reports, mailbag programs, religious dramas, music, and station profiles. NASB has been sending DRM transmissions to Europe since 2003 via the Rampisham, England, transmitter site of DRM member and NASB associate member VT Communications.

"The success of our DRM broadcasts to Europe via VT Communications has proven to us beyond any doubt the tremendous capabilities of DRM to transmit programs with FM mono quality and with no fading, static, or interference," said Jeff White, outgoing NASB President and Producer of "Voice of the NASB." "We now look toward our home turf of North America, and we are delighted to bring DRM programs to listeners in the U.S. and Canada in the coming months with the help of CBC."

"The NASB broadcasts are a great addition to the growing range of DRM content available in North America," says DRM Chairman Peter Senger. "We applaud NASB's participation, and we invite broadcasters from around the world to join in providing radio listeners with DRM's superb clarity and excellent reception."

DRM's founding members joined forces in 1998 to create a digital system for the broadcasting bands below 30 MHz. The consortium has expanded to include 82 members from 27 countries. DRM is the world's only non-proprietary, universally standardized, digital on-air system for mediumwave, shortwave, and longwave. DRM gives broadcasters the capability to enhance new or existing audio programs with complementary text and also enables broadcasters to wrap speech in multiple languages around a single music stream, extending the reach of existing audio content.

More than 60 broadcasters worldwide have begun DRM transmissions, including international, national, local, commercial, and public broadcasters. A second-generation DRM consumer receiver, MAYAH's DRM 2010, is already on the market, with the launch of a variety of DRM products coming soon. DRM's Live Broadcasts Schedule and additional information are at www.drm.org (English), and the DRM Koordinations – Komitee Deutschland website (German) is at www.drm-national.de.

From Scotland: Radio Six International Starts Daily Shortwave Service

Radio Six International has just launched the world's first-ever regular daily service from Scotland on shortwave for listeners in the United States, Canada, and Western Europe. They're broadcasting from the facilities of WBCQ ("The Planet") in Maine, on **5105** kHz between 2300 and 2400 UTC.

Strike At Pan-African Broadcaster Africa Number 1

The personnel of Pan-African broadcaster Africa Number 1, based in Libreville, Gabon, started an unlimited strike on July 15. All categories of the staff—journalists, technicians, administrative—are taking part in the action. According to the president of the Trade Union of Africa Number 1, Jean-Claude Miyindou, the personnel went on strike because the negotiations begun on July 2 had reached deadlock.

A minimal service made up of some news bulletins was set up, but all the normal programs were suspended, affecting the relays of Radio France International and NHK-Radio Japan. As we go to press we're told that the management and personnel have reached an agreement to end the strike. Assistant General Manager of the station Michel Koumbagoye said that management has agreed to all the points raised by the strikers. The trade unions and the management were due to sign a document in front of Gabonese Prime Minister Jean-François Ntoutoume Emane.

APCO Launches Call To Action

The Association of Public-Safety Communications Officials (APCO) International has launched a Call to Action on Voice over Internet Protocol (VoIP) Enhanced 9-1-1 (E9-1-1) asking members of the public safety communications community to help ensure that the needs and concerns of our telecommunicators and their agencies are considered in future congressional action on this issue.

In April, Rep. Charles Pickering (R-Miss.) and Sen. John Sununu (R-NH) introduced the "VoIP Regulatory Freedom Act of 2004" in their respective chambers. As stated in the text of the bill, the purpose of the Act is "to provide a clear and unambiguous structure for the jurisdictional and regulatory treatment for the offering or provision of Voice over Internet Protocol applications, and for other purposes." In its current form, the bill provides for the establishment of "voluntary" standards for VoIP E9-1-1 services. The absence of any form of regulatory framework would allow VoIP providers to choose to simply notify their customers that they will not have traditional 9-1-1 services. The rapid proliferation of this new technology under these circumstances could create an immeasurable step backward for

(Continued on page 78)

The 52 Pickup Radio Challenge

Our Game Is Much Better Than Falling For That Age-Old Kids' Trick—And A Whole Lot More Fun!

by Gerry Dexter

We've all been victims of that old kids' card trick that goes like this: "Wanna play 52 Pickup?" says the guy holding a deck of cards.

"Okay."

And the cards fly into the air and flutter to the floor. You know who gets to put things back together!

We'll, we've got a somewhat different version for you here, and we guarantee it will be more fun than reassembling clubs, spades, diamonds, and hearts neatly back into a stack. Our version involves manning your shortwave set to see how many of the following "cards" you can catch. It's a collection of not real-easy, but not super-impossible, targets you can chase, report to, and maybe even QSL. We'll even be nice enough to give you a reception hint or two as we go along. So, if you're ready, let's get going.

The Radio Brazzaville of the 1950s has evolved into RTV Congolaise, which you can sometimes pick up on 5985 at their 0430 sign on.

Ace of Spades—Radio Huayacacotla, Mexico, **2390**, is a pretty difficult catch, especially since it runs only around 500 watts, not to mention its low, low frequency which further adds to the problem. The station normally runs to 0100 sign off, and most logs seem to occur during the 0000 to 0100 period. Reports to: Apartado Postal 13, 92600, Huayacacotla, Veracruz, Mexico. E-mail: radiohua@sjsocial.org.

Two of Spades—Trans World Radio, Swaziland, **3240**. This one is on from 0300 to 0345 using various vernacular languages. Their 25-kW transmitter often makes it to North America during above average African conditions. Reports to: P.O. Box 64, Manzini, Swaziland. E-mail: lstavrop@twr.org. They are pretty good in the QSL department, too, bless 'em.

Three of Spades—Radio Educacao Rural, Campo Grande, Brazil, **4754**. This 10-kW station is one of the steadier Brazilians on 60 meters. It helps that you have two shots at it each day: local evenings and again in the early morning hours, when stations from Latin America are at their best on the lower bands. Reports (and it helps if you have a Portuguese form or cover letter) to: Avenida Mato Grosso 530, Centro, 79002-230, Campo Grande, MS, Brazil. No known e-mail.

Four of Spades—Radiodifusion du Benin, **4870**, from sign on at 0530. A caveat here: This (and other) African broadcaster tend to come and go a lot so there may be periods when this station simply isn't active on this frequency. Reports to: B.P. 366, Contonou, Benin. E-mail: info@ortb.org.

Five of Spades—Meteoroloji Sesi Radyosu (Voice of Meteorology Station), **6900**. This interesting station broadcasts weather reports and Turkish music beginning with their daily 0500 sign on. Not often reported, but still active and definitely one you can add to your log. Reports to: T.C. P.K. 401, Ankara, Turkey. E-mail: info@meteor.gov.tr.

Six of Spades—Voice International, Darwin, Australia. This is part of the Christian Voice group (also Chile and Zambia) and **7245** is just one of several frequencies they employ at various hours. 7245 is scheduled to fire up at 1300, and reception chances on this band would likely be best during winter months at this hour. Reports to: P.O. Box 1104, Buderim, Queensland 4556, Australia. E-mail: dxer@voice.com.au.

Seven of Spades—Radio Sultanate of Oman, **9515**. Oman, with its 100-kW transmitters always seems as though it should be an easier snare than it really is. 9515 tends to be a busy area, so Oman's 0400 sign on can be tough to pull in. Another option on the same band is **9740**. Reports to: Ministry of Information, P.O. Box 600, Muscat 113, Sultanate of Oman. E-mail: tvradio@omantel.net.com.

Eight of Spades—Radio Polonia, **9525**. Poor Poland. Limited facilities and focus makes them quite hard to pick up in North America, although there's some hope that the station may be refurbished and expanded in the future. That doesn't help us now, though. 9525 signs on at 1230 with 100 kW to Western Europe, with English at 1300. Reports to: Office of Telecommunications Regulation, Rozyckiego 1C, PL-51-608, Warsaw. E-mail: w.sega@urt.gov.pl.

The Nihon SW Broadcasting Company's Radio Tampa is now called Radio Nikkei but still uses the same frequencies.

Nine of Spades—Denge (Voice of) Mesopotamia (via Moldova), a clandestine operation of the Kurdistan Workers Party, is a fairly easy catch on **11530**, beaming to the Middle East with 500 kW. It's on from 1300 to 1700 daily. This is a brokered program through the Transmitter Documentation Project. Reports to: TDP, P.O. Box 1, Rijkevorsel, Belgium (from where they are forwarded to the program producer). E-mail: info@dengemesopotamya.com.

Ten of Spades—Radio Nikkei, Japan, **3925**. Formerly Radio Tampa, this privately owned station makes frequent appearances, despite the amateur radio interference on this band. They broadcast for all but six hours or so out of 24, and entirely in Japanese, although there was talk of going to weekends only, which may have happened by now. Your best shot is early in your local morning, say 5 or 6 a.m. Reports to: 9-15 Akasaka 1-chome, Minato-ku, Tokyo 107-8373 Japan. E-mail: web@tampa.co.jp.

Jack of Spades—La Cruz del Sur (the Southern Cross), La Paz, Bolivia, **4876**. Once a 60-meter mainstay, this one is not the snap it once was. But there are still numerous receptions of its 0930 sign on, running on for another hour or so. They are a kilohertz high from their nominal frequency. Programming is religious (in Spanish). Reports to: Casilla 1408, La Paz, Bolivia. E-mail: cruzdelsur@zuper.net.

One of the oldest South American stations, La Cruz del Sur in La Paz, usually rides a bit above its listed 4875.

Queen of Spades—Nei Menggu People's Broadcasting Station, Hohhot, Inner Mongolia, China. One of the Inner Kingdom's many shortwave outlets serving a specific region, this one uses **4000**, and your best chance of finding it is around your local sunrise. Broadcasts are in Chinese and local languages. Reports to: 19 Xinhua Darjie, Hohhot, Nei Menggu 010058, China. Getting a direct reply may be difficult so going via the QSL department at China Radio International is probably a better bet.

King of Spades—Radio Misiones Internacional/HRMI, Comayaguela, Honduras. Operated by IMF World Missions in California, this station carries some blocks of English language religious programs along with lots of Spanish. It's on **5010** and/or **3340**. The broadcasts normally run until 0430. Reports to: Apartado Postal 20583, Comayaguela, Honduras. E-mail: jkpim@msn.com.

Ace of Hearts—Radio Uganda, **4976** can usually be turned up from its 0300 sign on, on a decent "African night." It's just as likely to be heard with its "Blue Channel" service (4976 is "red") on **5026**, both using 10 kW. Most of the programming is in English. Reports to: P.O. Box 7142, Kampala, Uganda. E-mail: ugabro@infocom.co.ug.

Two of Hearts—Armed Forces Network, Guam, carries the AFRTS service 24 hours a day on either **5765** or **13362**, both upper sideband, and is often fairly well heard, especially if you live in the Western part of North America. Reports to: Naval Media Center, NDW, Annacosita Annex, 2713 Mitscher Rd., SW, Washington, D.C. 20373-5819. E-mail: qsl@mediacen.navy.mil.

Three of Hearts—RTV Congolaise, Brazzaville, Congo Republic. It's always a bit of a jolt for an old timer like yours truly, who used to be able to tune in either of the Congos like they were local stations, to realize they qualify as DX catches these days. Months go by with no notice of them, and then we hit a period where one or both are fairly regular. That is the situation as this is written. "Radio Congo" has been appearing on **5985**, an area you'd think would be blocked much of the time. But, that's not the case, at least at its 0430 sign on. During the winter months you can also find it prior to its 2330 sign off, all in French. Reports to: B.P. 2241, Brazzaville, Congo Republic. E-mail: actu_rtnc@hotmail.com.

Four of Hearts—Vatican Radio. A snap you say? Well, maybe not via the Philippines! This broadcast is on **6020** in Chinese from 1230 to 1315. Reports to: 00120 Vatican City. E-mail: dirpro@vatiradio.va.

Five of Hearts—Voice of Guyana, **5950**, is a tougher position than the 90-meter outlet on 3291, but not by all that much. The 49-meter frequency is most frequently heard during insomniac hours (0800 or so), while 3291 sometimes makes it through during the evenings, as well as the early hours of the morning. Reports to: P.O. Box 10760, Georgetown, Guyana. Unfortunately, there's no e-mail.

Six of Hearts—Lao National Radio, **6130**, now we're talking challenge! This one makes it through only on rare occasions, but may hold for several days running when it does happen. Look for it in the early morning hours (it signs on at 0900) in Lao. Reports to: B.P. 310, Vientiane, Laos. E-mail: natradio@laonet.net. (LNR is not a great verifier).

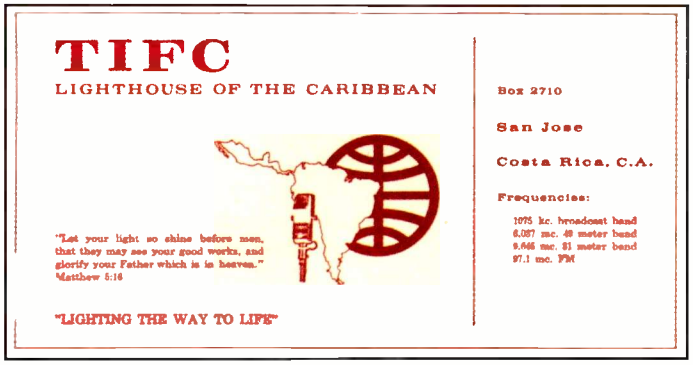
Seven of Hearts—Solomon Islands Broadcasting Corp., **5020** qualifies as one of the easier targets on this list. You'll find it most mornings from around 0800, often carrying blocks of BBC programming. Reports to: P.O. Box 654, Honiara, Solomon Islands. E-mail: sibcnews@solomon.com.sb.

Eight of Hearts—Defense Forces Broadcasting Station, Taunggyi, Myanmar, a.k.a. Burma. This 10-kW military broadcaster is a bit irregular in its activity, and, even when it is on, it doesn't always make it all the way to North America. Now and again, though, someone checks **5570** and finds a signal. Broadcasts are in Burmese and local languages. To our knowledge, no address has ever been found for this station, so it follows that there are no known QSLs either! If you want to have a go at it anyway just use the station name and city, but don't hold your breath after you've mailed the letter!

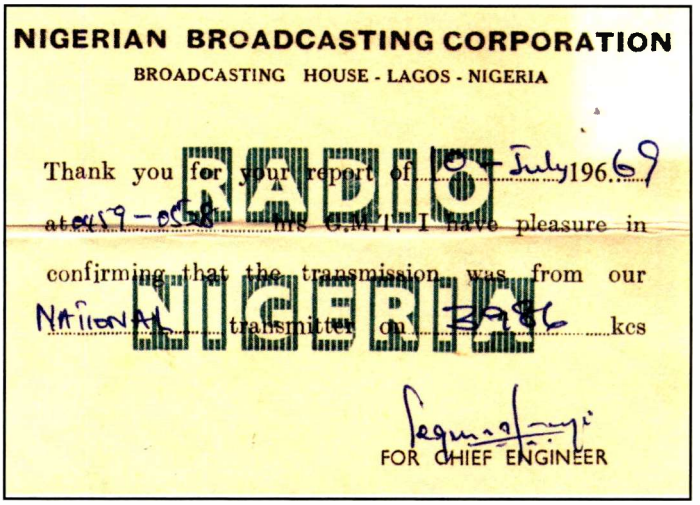
Nine of Hearts—Republic of Sudan Radio, this is another station that hides in the tall grass for months at a time and then reappears for all to hear, which is the case at this writing. Just check **7200** from 0200 sign on. Programming is in Arabic. Reports to: P.O. Box 572, Omdurman, Sudan. E-mail: snrc@sudanmail.net.

Ten of Hearts—Scandinavian Weekend Radio, Virat, Finland. This pirate broadcaster manages to make itself heard, in the East at least, on the one weekend per month (the first) during which it is active. It only runs 500 watts, so it's a challenge no matter where you live. If it's not using **11690** try it on **11720**. The broadcast runs around the clock. Reports to: P.O. Box 35, FIN 40321, Jyvaskyla, Finland.

Jack of Hearts—Radio Southern Highlands, Mendi, Papua New Guinea. One of a number of PNG regionals, this one (not always active) is on **3275**, with the usual combination of English and Tok Pison (Pidgin), often in between U.S. country-western records. It's best heard around your local dawn during the spring and fall months. Reports to: P.O. Box 104, Mendi, Southern Highlands Province, Papua New Guinea. No e-mail.



TIFC, The Lighthouse of the Caribbean, San Jose, Costa Rica, occasionally presents itself on 5055v during the evening hours.



A few checks of 4770 around 0500 will turn up the regional outlet of Radio Nigeria at Kaduna.

Queen of Hearts—Radio Nacional, Angola, **4950**. Considering its listed 15 kW, this one makes it through surprisingly often, usually around 0300 or later. Programming is all in Portuguese. Reports to: C.P. 1329, Luanda, Angola. E-mail; diop@rna.ao.

King of Hearts—Radio Varna, Bulgaria. This tourist information service airs seasonally (summers) and on UTC Sunday/Monday only from 2100 to 0300 on **7400** in Bulgarian. Our evenings, of course, will offer the best opportunity. Reports to: 22blv. Primorsky, 9000 Varna, Bulgaria. E-mail: rcorresp1@bnr.acad.bg.

Ace of Clubs—Radio Centrafrique, Central African Republic, **5035** is another one of those French Africans you have two shots at each day. During the winter you may catch them up to their sign off at 2300. Winter, summer, whatever—their 100-W signal often shows up at 0430 sign on. Everything's in French. Reports to: B.P. 940, Bangui. No e-mail.

Two of Clubs—Radio Kamchatka Rybutskaya, Petropavlovsk-Kamchatka, Russia. This one is reminiscent of the old Soviet Union's Tikhy Okean service; it's intended for Russian fisherman plying the Pacific. It's slightly less in evidence than Tikhy Okean used to be, though, as it airs Sundays only (Saturday evening in North America) from 0000 to 0100 on **5910**. Reports to: GTRK Kamchatka, ul. Sovetskaya 62, 683000 Petropavlovsk-Kamchatkiy, Russia. E-mail: gtrk-buh@mail.iks.ru.

Three of Clubs—Radio Nigeria, Kaduna, **4770**. This is one of Nigeria's regional shortwave services, as opposed to The Voice of Nigeria international service, and can't be considered as a daily visitor. They sign on at 0430 (sometimes 0500) in English. Reports to: P.O. Box 250, Kaduna, Nigeria. No e-mail.

Four of Clubs—Radio Apinte, Paramaribo, Surinam. This anemic broadcaster is your only option if you want to bag this country. It appears to be a bit irregular. There'll be a flood of logs and then nothing for long periods. Keep a watch on **4991** up to 0300 or 0400 and you may turn up with it one day! Reports to: Postbus 595, Paramaribo, Surinam. E-mail: apinte@sr.net.

Five of Clubs—Radio Melodia, Bogota, Colombia, **6140**. Recently reactivated, this 5-killowatter is often the victim of a squeeze play, jammed up next to the powerful Deutsche Welle on 6145. Its Spanish language programming runs to 2330 but is sometimes extended into the evening hours. Reports to: 19823, Santa Fe de Bogota, Colombia.

Six of Clubs—Radio Pyongyang, North Korea, **6250**. Not the more easily heard "Voice of Korea" international service, but the NK regional service beamed at East Asia. This one should make an appearance many mornings sometime prior to their 1130 sign off. Reports to: Ministry of Posts and Telecommunications, Pyongyang, Democratic People's Republic of Korea. (Don't hold your breath!) No e-mail.

Seven of Clubs—Namibian Broadcasting Corporation, **7215**. NBC has been only spottily active in the last couple of years, so trying for this one could be a waste of time. Watch for a 0600 (or slightly later) sign on with programming in Afrikaans, English, and German. Reports to: P.O. Box 321, Windhoek 900, Namibia. E-mail: webmaster@nbc.com.na.

Eight of Clubs—Radio Naylamp, Lambayeque, Peru. This pipsqueak station runs only half a kilowatt from its perch on **4335**. On any given evening (to 0330) your chances are perhaps one in fifty, but you'll have better odds as an early bird checking the frequency around 0930. Reports to: Avenida Andres Avelino Caceres 800, Lambayeque, Peru. No e-mail.

Nine of Clubs—Radio Lesotho, **4800**. Although its status is currently irregular, when it's awake you shouldn't have too much difficulty picking this one off. Check the frequency for its 0300 sign on. Reports to: P.O. Box 552, Maseru 100, Lesotho. No e-mail.

Ten of Clubs—Faro del Caribe, San Jose, Costa Rica, **5054**. Once upon a time, TIFC was a well and widely heard broadcaster. But time has taken its toll on the "Lighthouse of the Caribbean" and today it's more of a challenge. Its 5-kW transmitter is active up to 0400, with the last hour in English. Reports to: Apartado 2710, San Jose 1000, Costa Rica. E-mail: actu_rtnc@hotmail.com.

Jack of Clubs—Radio Burkina, Burkina Faso, **5030**. Radio Burkina must have been graced with a new transmitter a year or two back because signals suddenly took a big leap for the better. Check for their French language broadcasts from 0500 sign on, or during the winter season, late in the afternoon running until 0000. Reports to: B.P. 7029, Ouagadougou, Burkina Faso. No e-mail.

Queen of Clubs—The Voice of the Tigray Revolution, **5500**. This station comes on the air at 0400, after the broadcast of the Voice of Peace and Democracy program ends. Based in Ethiopia, both broadcasts oppose the Eritrean government. Reports to: P.O. Box 450, Mek'ele, Tigray, Ethiopia. No e-mail.

King of Clubs—Xizang People's Broadcasting Station, Lhasa, Tibet, China. This Chinese regional service has several outlets. This one runs 100 kW and should create the makings of an interesting chase on **5935** around 1200. Reports to: 180 Beijing Zhonghu, Lhasa, Xizang 850000, China. (Don't talk about wanting to "QSL Tibet" or imply that Tibet is a separate country!) No e-mail.

Ace of Diamonds—Radio Cima Cien, Santo Domingo, Dominican Republic. Even with 60 meters often comatose in the evenings, this one will occasionally appear on **4960**, often with abbreviated IDs. All in Spanish, of course. Reports to: Apartado 804, Santo Domingo, Dominican Republic. No e-mail.

Two of Diamonds—Galei Zahel, Israel. The Israel Defense Forces Station is active around the clock with programming in Hebrew. In North America it's most often reported on **6973** during our evening hours. An alternate frequency is 15785. Reports to: Military Mail No.01005, Israel. E-mail:glz@galatz.co.il.

Three of Diamonds—Voice of the Broad Masses of Eritrea. Once a clandestine supporting Eritrea in its war with Ethiopia, this is now the official voice of Eritrea. It uses 100 kW and is on the air from 0300 on **7100**, broadcasting in local languages. Reports to: Ministry of Information, Radio Division, P.O. Box 872, Asmara, Eritrea. E-mail: nesredin1@dehai.org.

Four of Diamonds—Radio Amazonas, Puerto Ayachuco, Venezuela, **4940**. That frequency is slightly variable and so is the consistency with which this one is heard. A morning check, around 0900, will bring success more quickly than evening attempts up to the listed 0400 closing. Reports to: Avenida Simon Bolivar 4, Puerto Ayachuco, Venezuela. No e-mail.

Five of Diamonds—The Voice-Africa, Lusaka, Zambia. Part of the Christian Voice broadcast group, this station uses **4965** with 100 kW. But even with that kind of power it doesn't make regular appearances in most shacks. Check it up to 0300 closing or try late afternoons in the winter months. Reports to: Private Bag E606, Lusaka, Zambia. E-mail: cvoice@zamnet.zm.

Six of Diamonds—All India Radio, Port Blair, Andaman Islands. The Andaman Islands are considered a separate "radio country" on some lists, so this one is worth some extra effort. Your best shot is during their 1145 to 1230 segment on **4760** or when they return at 1245, though 60 meters may be on its way down and out by then, depending on where you are on the calendar. Be careful of Radio

Radio Polonia is one of the more difficult European government broadcasters. Try 9525 around 1230 UTC.

Kashmir, from Leh, India, which is on the same frequency. Reports to: Haddo Post, Dilanipur, Port Blair 744 102, South Andaman, Andaman and Nicobar Islands, Union Territory, India. E-mail: airpb@dte.vsnl.net.in.

Seven of Diamonds—Radio El Buen Pastor, Saraguro, Ecuador. This one will likely take some serious effort, as it does not make too many evening appearances on **4815** (variable). Somewhat better chances exist if you try them at their 1100 sign on. Reports to: ACIS, Reino de Quito y Azuay, Correo Central, Saraguaro, Loja, Ecuador. No e-mail.

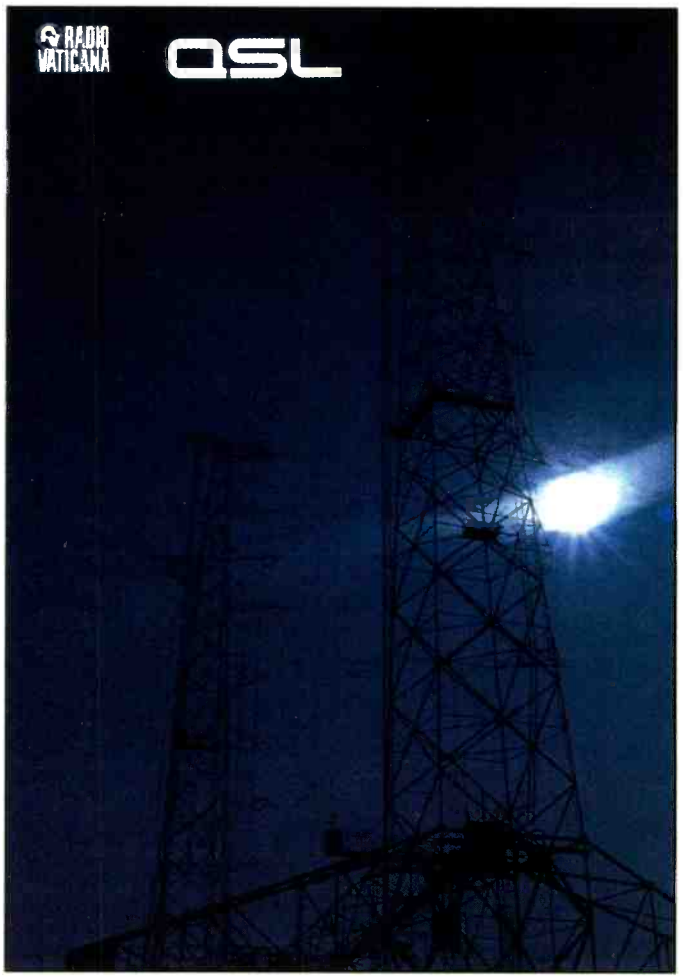
Eight of Diamonds—Radio Nacional, Bata, Equatorial Guinea. Check **4926** or **5004** (they seem to alternate) at 0500 for this one's sign on. Like so many stations, reception seems to run in streaks so there may be long stretches where you won't hear anything on either channel. Reports to: Apartado 749, Bata, Rio Muni, Equatorial Guinea. No e-mail.

Nine of Diamonds—AFN, Pearl Harbor, Hawaii. Another Armed Forces Radio-TV Network station running non-stop. Check **6350** or **10330** (both in **USB**) and it shouldn't take many tries to shake this one loose. Reports to: Naval Media Center, NDW Anacostia Annex, 2713 Mitscher Rd. SW, Washington, D.C. 20373-5819. E-mail: qsl@mediacen.navy.mil.

Ten of Diamonds—RTV Guineenee, Conakry, Guinea, **7125**. What's the line from the nursery rhyme? "When she was good she was very, very good." That's been the case with Guinea over the last year or so. Check for their 0600 sign on and chances are good that you'll hear them on the first or second try. All in French. Reports to: B.P. 391, Conakry, Guinea. E-mail: issaconde@yahoo.fr. (Warning: This station is the pits when it comes to providing QSLs. The only answers recently have been via e-mail reports.)

Jack of Diamonds—Radio UNAMSIL, Freetown, Sierra Leone. This is the United Nations station for this bloodied country. Once in a while, its 1 kW on **6137.8** makes it over here. Programs are in English and run around the clock. Best times here seem to be late at night. Reports to: P.O. Box 5, Freetown, Sierra Leone. E-mail: info@unamsil.org.

Queen of Diamonds—Radio Baluarte, Puerto Iguazu, Argentina. You won't find this an easy pick off but give it enough checks and you should be able to log it, though it has been operating irregularly of late. It's on **6215** with 1 kW running Spanish and Portuguese programming to 0300 sign off. Reports to:



Vatican Radio always has cool QSLs. But can you get one for 6020 kHz?

Casilla de Correo 45, 3370 Puerto Iguazu, Argentina. E-mail: incfuturo@hotmail.com.

King of Diamonds—Radio Republic Indonesia, Makassar, Sulawesi, Indonesia. If there were an Indonesian on 60 meters one could designate a regular, this would be it. That doesn't mean reception is a daily event, but it shouldn't require too many checks to turn it up. The frequency varies around **4753** and you need to be on site a half hour or so plus or minus your local sunrise. Reports to: Jalan Riburane 3, Makassar 90111 Sulawesi Selatan, Indonesia. No e-mail.

Well, we haven't quite got things cleared up yet. Don't forget, there are two jokers in every deck!

Joker #1—Overcomer Ministry, Walterboro, SC. Brother Stair is relayed by Julich as well as some other outlets. Try 1400 to 1600 on **21590**. (If only we could "overcome" him!)

Joker #2—University Network. Dr. Gene Scott is all over the deal, via KIJ and the Caribbean Beacon in Anguilla. Both are a bit too easy. Try the broadcast via Samara, Russia, on **17765** from 0400 to 1700. Reports? Don't bother. Dr. Gene does not QSL. (Although the individual stations, such as the Caribbean Beacon, will).

And that gets them all. Now all you need to do hear them—and let us know how you did!

Now go get a rubber band so this mess doesn't happen again! Good luck! ■

Better than ever - 15 months of value.

CQ 2005/06 calendars

Now Only $10.95 ea. +$2 s/h

TWO Great Calendars for 2005/06!

15 months of spectacular images for Only $10.95

Classics Calendar - After an absence of a few years, we're pleased to offer an all-new CQ Radio Classics Calendar. 15 spectacular sepia-tone images; including Eico, Drake, Ameco, Hammarlund, Heathkit, Hallicrafters, Collins and more!

Amateur Radio Operators Calendar - 15 spectacular images of some of the biggest most photogenic shacks, antennas, scenics and personalities. These are the people you work, the shacks you admire, the antenna systems you dream about!

These 15 month calendars (January '05 through March '06) include dates of important Ham Radio events such as major contests and other operating events, meteor showers, phases of the moon, and other astronomical information, plus important and popular holidays. Great to look at, and truly useful!

1-800-853-9797 • FAX 516-681-2926 • www.cq-amateur-radio.com

CQ Communications, Inc.

25 Newbridge Road, Hicksville, NY 11801

by Ken Reiss, radioken@earthlink.net

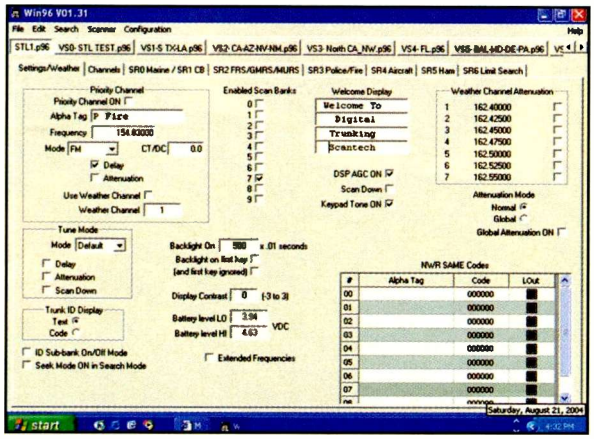
Digital Scanning!

For years the most horrifying words to a scanner enthusiast were "our system is going digital." Yikes! For a very long time it meant that the system you had listened to for years was about to be gone! In some areas that left fast food drive-throughs, the Family Radio Service, and the National Weather Service to listen to.

The nature of scanning is such that consumer equipment lags behind commercial gear. If you think about that for a minute (Harold might have to think longer, but we'll wait...) it makes perfect sense. Until the commercial gear gets into the market and the users actually start using it, there's nothing there for a scanner enthusiast to listen to. Nor is it likely that the scanner manufacturers will know what to make next, as a lot of the equipment evolution can't be predicted. Then there are the actions of the FCC in reallocating frequencies here and there.

"Way back when, as I was getting started in scanning, it was the 800-MHz band that was the great threat."

Way back when, as I was getting started in scanning, it was the 800-MHz band that was the great threat. There were no scanners or receivers anywhere on the consumer market for that band. Before that, it was 450 to 470 MHz that required special equipment. Most of the crystal-controlled scanners from the early '70s didn't include any UHF coverage, which required a separate scanner (and more crystals to get the frequencies you needed, plus a special antenna for these newfangled short wavelengths). Boy, we sure will put up with a lot to listen to this stuff. (Just as an aside, 470 to 512 didn't come around until many years later and was called the UHF-T band—T for Television—from which the frequencies were stolen...er...reallocated. They were only available for public safety use in areas where the normal public safety frequencies were full, and there were no television channels operating in that range.)



When you first open WIN-96, you get the settings screen. Here you can set many default options that affect the entire scanner operation. Everything from the welcome screen message to the SAME codes for the weather receiver can be set on this screen.

Once you've got the settings, including the correct serial port, it might be a good idea to test the communications with the radio. You'll need the correct cable, but unfortunately, receiving this screen on the radio won't help you determine if you're using the correct one. RadioShack has a cable available, as do several other vendors. I used a Yaesu programming cable that I had from another radio, but I had to add a stereo-to-mono converter plug to get communications both to and from the radio. As data is transferred, this screen, as well as the computer screen, will change so you should know fairly quickly if it's going to work or not.

Trunking was the next big "Oh No!" If a system went to trunking, you could probably still listen (provided you had one of those relatively newfangled 800-MHz scanners) but you weren't going to be able to follow conversations very well. You'd also probably have to listen to the parking police, the street department, and anything else that was on the trunking system, while you looked around for those interesting bits of transmissions and then try to piece together what was happening.

All sorts of techniques were developed to help, including using two radios and playing with the order in which you put the frequencies into channels. But, in the end, you really had to sit there with your finger on the scan button as the radio stopped on transmissions that you weren't interested in. Most people gave up in frustration. That was until the mid '90s when the trunktracker radios began to appear. Then there was a learning curve period where we found out about things like fleetmaps and talkgroups, and suddenly, you could listen to your local trunked system just like it was conventional. Unfortunately it took a number of years to get there, and I imagine we lost many scanner enthusiasts in the meantime. But we did get there, and if you stuck it out, or have just joined us, trunking systems today are a lot of fun once you figure out what's happening.

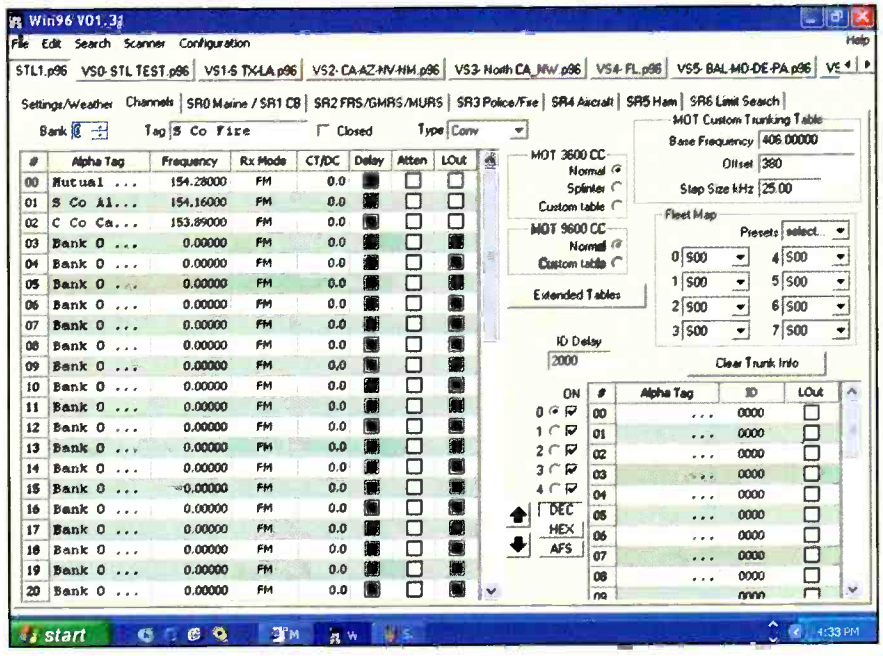
Digital Scanning's Demise?

The next big thing was digital. And digital is scary. I can't begin to count the number of letters and e-mail's I've received over the years about digital and the demise of scanning as we know it. To be honest, there is some ground for concern. Digital,

taken at face value, is just another way to send the voice over the radio, like FM or AM. But digital, because it's computer controlled, can also do other things, like scramble comms.

Early digital systems were very proprietary. No manufacturer of commercial equipment wanted anyone else to have its formula for digital, and several also had ways of encrypting the digital signal for added security. In fact, the early work done on digital modulation was for that purpose—securing communications. You've probably heard of DES (data encryption standard) and DVP (digital voice privacy) encryption that's in use by many federal agencies and some state and local ones also.

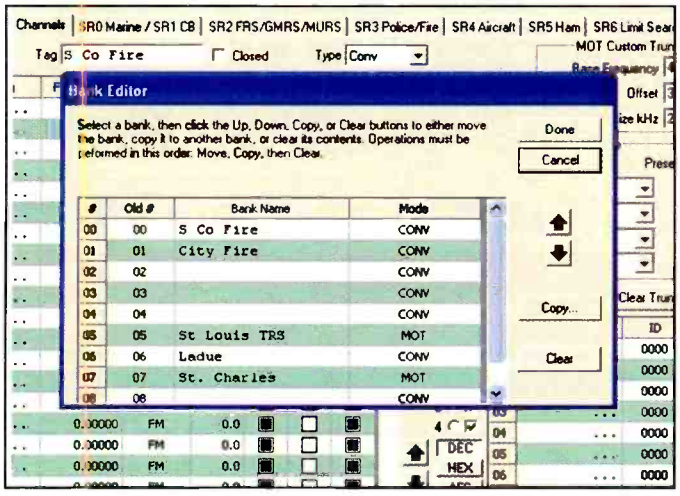
However, the industry suffered some backlash as users began installing these systems. The problem was that once you had bought a Brand X radio, you HAD to always buy Brand X as no other system could work with it. This was great for the radio manufacturers, but not so good for the competitive bidding process required by government agencies. What was needed was a standard, a way that everyone could agree on and that every manufacturer could build equipment to match. That way, you could buy different radios next time and they would still work with your old stuff, as long as the standard was met.



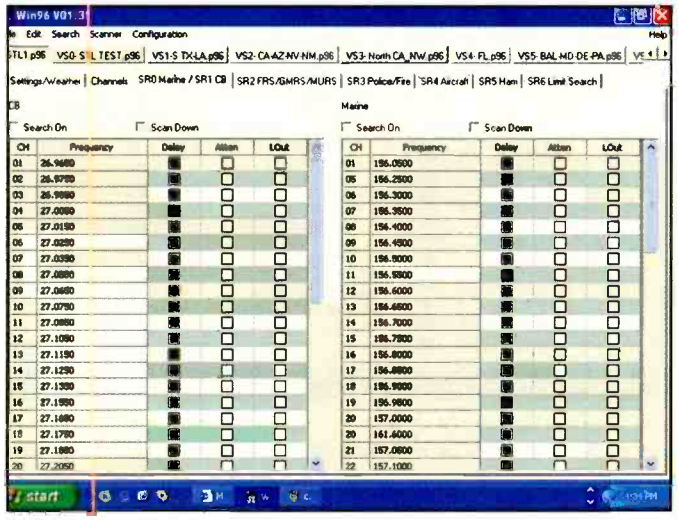
The next most important screen is the channel manager. Here you enter frequency and settings for every memory in the scanner, as well as ID information for trunked systems. Note that there is one full screen for each bank, and some basic bank information (open, closed, and bank text tag, for instance) are set here, too.

You may also have heard of APCO-25 radios. APCO-25 is the standard for digital modulation that has evolved, and an APCO-25 radio just means that it uses

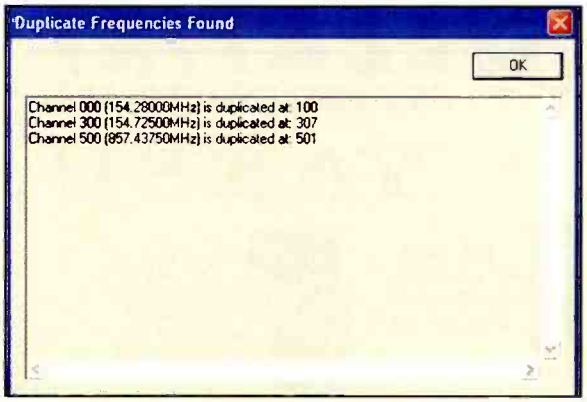
Once you have all that information loaded into the program, the center function will go back and cause all of your text tags to be centered within the line. This sounds like a minor thing, but it can be very annoying when you're using the radio and have to figure out the exact character count yourself. It's very tedious. WIN-96 takes care of this task for you.



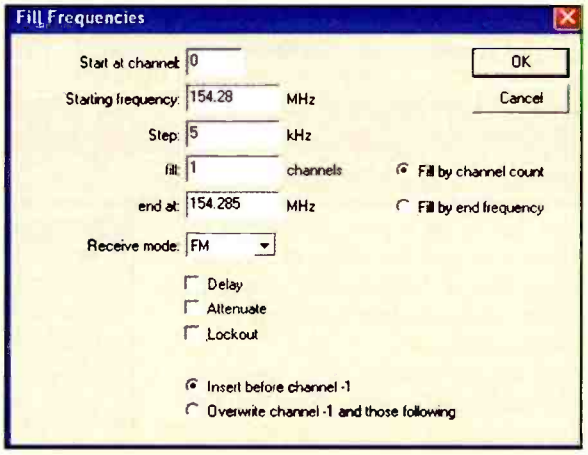
Once you have entered a bank, the bank editor allows you to change the bank order within memory. This can save a lot of retyping and moving things around when you realize you forgot something.



The search screens allow you to enter pre-programmed search ranges, or more accurately to adjust the ranges that were factory set, to your liking. This is a handy feature if you search often, which alas, most of us don't.



One very useful function is to locate duplicate entries. Of course, you may have entered them on purpose, as I have here because some frequencies just belong in more than one bank. This can be a terrific memory management tool (particularly with 5,500 channels to manage!) and a great timesaver. Note that it only finds dupes within the current active memory list, not across the entire V-Scan folder list. (A V-Scan "folder" is a virtual storage drawer where a user can stuff all the programming information for one city or area, while getting another "folder" out to play with.)



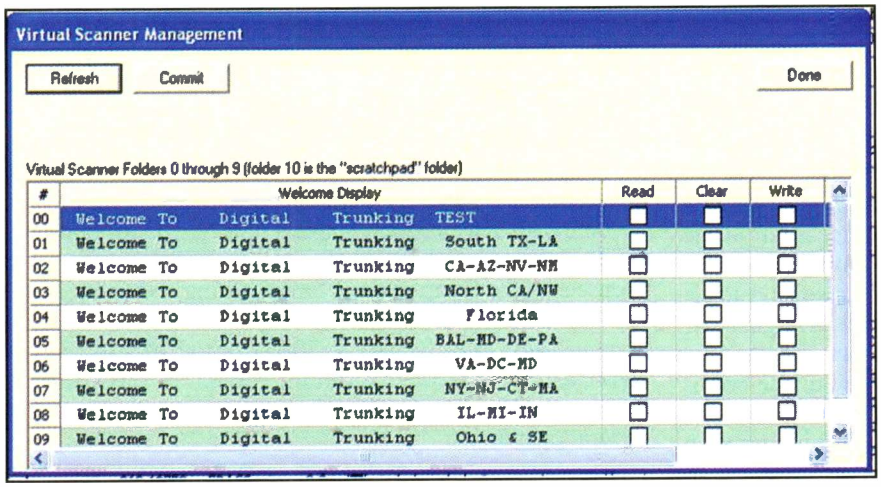
If you'd rather have a range entered into memory for you, there's the Fill Frequencies function. Make sure you have the correct starting frequency and step rate or you'll wind up with memories full of incorrect or very quiet frequencies.

Frequency Of The Month!

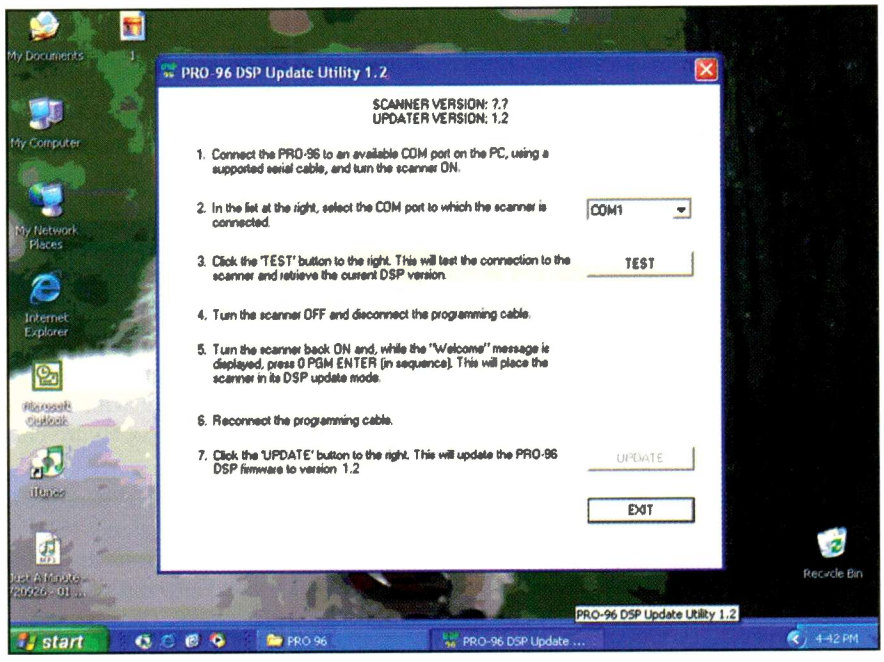
Each month we ask our readers to let us know what they're hearing on our "Frequency Of The Month." Give it a listen and report your findings to me here at "ScanTech." We'll pick a name at random from the entries we receive and give the lucky winner a free one-year gift subscription, or extension, to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

Our frequency this month is **153.875**. Have a listen and let us know what you hear. Be sure to put the frequency in the subject of your e-mail or on your envelope or your mail will get misfiled and not entered.

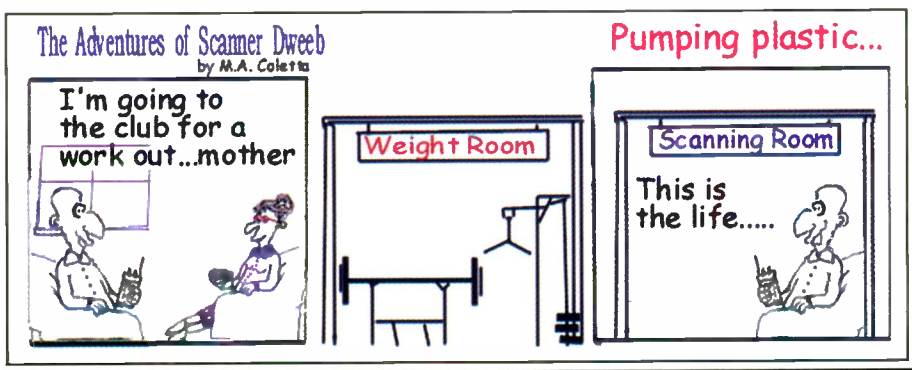
Send your entry, or any questions, to me at radioken@earthlink.net, or to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126.



The virtual scanner manager is where you can choose which of the V-Scan folders to upload and download, as well as get an overview of what's in your scanner now. Once read into the computer, each V-Scan folder becomes its own file and can be saved for later use or edited and re-downloaded to the scanner.



If you own a PRO-96, you should go to www.radioshack.com and follow the links for support, then download and scroll until you get to the PRO-96. There you'll find this Firmware updater that helps fix several issues in the original scanner's firmware. The updater makes quite a point of telling you that you cannot render your scanner inoperable with this process and you can revert to the old version at any time if you don't like it. It seems to help a bit with clarity on some digital signals, as well as with a few other minor bug fixes.



that standard. It's like saying you have an FM radio—it uses FM. Today's digital scanners use APCO-25 as the method of receiving and can tune any APCO-25 digital transmission. Older systems that were installed prior to the adoption of APCO-25, or newer systems where makers have chosen to use encrypted digital, will not work (and probably never will with the current legal and technical environment).

There are currently only a couple of options for digital scanning, but no doubt that number will increase. They're the Uniden BC-250/785 series, which requires an extra digital "card" to be installed in the radio, and the RadioShack PRO-96, which is reviewed elsewhere in this issue.

WIN-96

While reviewing the PRO-96, it became obvious that computer-assisted programming was by far the preferable option for entering all the data and alpha tags by hand. A quick look around found only one program appearing on a regular basis: WIN-96. WIN-96 is distributed as shareware and is easy to try out for a few days if you have a PRO-96. You can download a copy at www.starrsoft.com. It's a one-radio program, however, so there's no need to bother if you don't have a 96.

This is a story best told by pictures, so read the captions to get a feel for how this great program works. Registration is a very reasonable $30, and there's a 30-day fully functioning demo. If you have a PRO-96 you should really check out this finger saving software!

Share Your Experiences

As technology changes in our radio hobby, it's a sure bet that manufacturers will change with it, coming out with new high-tech radios that will keep radio enthusiasts at the cutting edge of monitoring. We'll continue to help you stay abreast of these developments right here at "ScanTech."

As usual, I'm always interested in your monitoring experiences and whether you're in an area that uses trunked comms, or even digital. E-mail me at radioken@earthlink.net or write to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126.

Until next month, good listening! ■

by Laura Quarantiello, lauraq@cts.com

Nextel Gets Spectrum

The Federal Communications Commission has granted Nextel Communications a 10-MHz swath of spectrum in the 1.9-GHz range in exchange for returning airwaves in the 800-MHz band to public safety groups. Nextel will also have to set aside $2.5 billion to cover costs public safety groups might incur while making the switch. Legal challenges are expected by Verizon Wireless, which says FCC officials could face criminal charges for giving the airwaves in exchange for money. The wireless industry expressed disappointment, "Giving up such valuable spectrum without a public auction means the U.S. Treasury is losing billions of dollars. Those funds could've been used to provide public safety with money to make much-needed improvements in the vital care it provides us," stated Steve Largent, President and Chief Executive of the CTIA (Cellular Telecommunications And Internet Association).

Tracking Rover

The uses for wireless technology never end. One new technology is the Global Pet Finder, a miniaturized Global Positioning System (GPS) device attached to a dog's collar. GPS can track an animal's position and notify its owner via wireless handset when the pet goes beyond preset boundaries. The software will give the owner the address where the pet is or directions to the animal. Currently the Global Pet Finder is available for all dogs, excluding toy breeds, and is expected to be available for cats next year. The receiver costs approximately $300 with an estimated monthly monitoring fee of $13/month. It's a small price to pay to keep track of Rover.

Cell Phones In Flight

Qualcomm has announced that the first wireless call aboard an American Airlines jet was a success. Qualcomm tested its code division multiple access (CDMA) technology from 25,000 feet. Overall, calls were generally good, although like ground-bound service, some calls were dropped. Don't be in a hurry to whip out your phone while cruising the friendly skies just yet, however. Currently the FCC bans the use of wireless devices aboard commercial airlines. Qualcomm will spend two years testing and studying whether signals interfered with the jet's system.

Narrowband Proposal

All federal operations in the 150.05- to 150.8-MHz, 162- to 174-MHz, and 406.1- to 420-MHz bands will transition to 12.5-kHz narrowband channels as of January 1, 2005, and January 8, 2005 (depending on the band). Unfortunately, there are some non-government users (PLMR) operating wideband (more than 12.5 kHz) within these bands that may be impacted by the transition. The FCC has proposed amending Parts 2 and 90 of the Commission's Rules to revise the transition plan for PLMR licensees in the affected spectrum (ET Docket No. 04-243). Specifically:

• Incumbent licensees on the Hydro, Forest Fire-Fighting and Conservation, Public Safety, and Medical Radiocommunication Systems channels may continue to operate on existing wideband channels until 2013 (for non-public safety entities) and 2018 (for public safety entities), but licensees in the Hydro, Forest Fire-Fighting and Conservation, and Public Safety bands must modify or discontinue operations if, at any time after January 1, 2005 (for the 162- to 174-MHz band), and January 1, 2008 (for the 150.05- to 150.8-MHz and 406.1- to 420-MHz bands), they cause interference to new Federal operations.

• New Forest Fire-Fighting and Conservation and Public Safety stations in the 162- to 174-MHz band, as well as new Medical Radiocommunication systems at 163.25 MHz, must operate using narrowband equipment no later than January 1, 2005; and new Medical Radiocommunication systems operating at 150.775 MHz and 150.790 MHz must begin using narrowband equipment no later than January 1, 2008.

• Licensing of Medical Radiocommunication Systems at 150.7825 MHz and 150.7975 MHz will cease, and the incumbent stations on these two channels will be grandfathered indefinitely.

• Hydro operations in the 406.1- to 420-MHz band will be included in the transition plan to 12.5-kHz channels and the Rules will be revised by adding 23 channels to the Hydro Channel Plan and deleting six channels in order to make it consistent with the NTIA's (National Telecommunications and Information Administration) Hydro Channel Plan.

• A timeline for new Hydro channels to begin operating on narrowband channels will be established, along with a transition procedure for incumbent operators on the six Hydro channels that will be removed.

• The FCC will seek comments regarding narrowbanding the channel used for Stolen Vehicle Recovery Systems (SVRS), which the rules authorize for wideband operations and which is used by only one operator, the LoJack Corporation.

• The list of radio astronomy observatories and the associated areas where prior coordination for fixed operations is required will be modified, as will the power limit for stations in the fixed and mobile services in order to better protect the radio astronomy service (RAS) in the 406.1- to 410-MHz band.

UK Hospital Wireless Ban

Updated guidance from the UK's Medicines and Healthcare products Regulatory Agency could lift current bans on wireless phone use in hospitals. In a 2003 study by the agency, only 4 percent of hospital devices experienced interference from wireless devices one meter away, with only 0.1 percent showing serious effects. The agency's new report suggests hospitals should consider creating designated areas for wireless phone use, such as entrance halls, corridors, and cafeterias. The agency now suggests that the use of wireless phones could be more beneficial to patients since it enables better communication between doctors. ■

books
calendars • videos

The Short Vertical Antenna and Ground Radial

by Jerry Sevick, W2FMI

This small but solid guide walks you through the design and installation of inexpensive, yet effective short HF vertical antennas. With antenna restrictions becoming a real problem, this book could keep you on the air!

Order No. SVERT $10.00

Keys, Keys, Keys

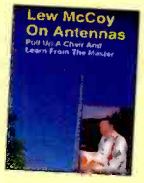
by Dave Ingram, K4TWJ

You'll enjoy nostalgia with this visual celebration of amateur radio's favorite accessory. This book is full of pictures and historical insight.

Order No. KEYS $9.95

McCoy on Antennas

by Lew McCoy, W1ICP



Unlike many technical publications, Lew presents his invaluable antenna information in a casual, non-intimidating way for anyone!

Order No.MCCOY $15.95

Heathkit - A Guide to the Amateur Radio Products

by Chuck Penson, WA7ZZE

This greatly expanded Second Edition is a must for collectors and Ham history buffs, but is a terrific trip down memory lane for any Ham who was there or wishes he had been. Pick up this 328-page volume and you won't be able to put it down!

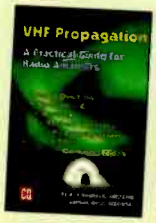
Order No. HEATHKIT $29.95

VHF Propagation

A Guide For Radio Amateurs

Hot Item!

by Ken Neubeck, WB2AMU & Gordon West, WB6NOA



Finally, a comprehensive source-book on VHF propagation by two of the industry's finest authors!

Here's a sampling of what you'll find inside:

- Tropo Ducting
- Aurora
- Meteor Scatter
- TEP
- Sporadic-E
- Combo Modes
- F_2 Propagation

Order No.VHFProp $15.95

Understanding, Building & Using Baluns & Ununs

by Jerry Sevick, W2FMI

The successor to the popular and authoritative *Baluns and Ununs*. Great deal of new tutorial material, also includes new designs, and crystal clear explanations of howand why they work.

Order No. 2BU $19.95

videos

~~$19.95~~

NOW ONLY $12.95 ea.

Buy all 7 for your Club for only $69.95

Ham Radio Horizons: The Video.....*Order No. VHOR*
Getting Started in Packet Radio.....*Order No. VPAC*
Getting Started in Ham Radio.....*Order No. VHR*
Getting Started in Contesting.....*Order No. VCON*
Getting Started in DXing.....*Order No. VDX*
Getting Started in VHF.....*Order No. VVHF*
Getting Started in Amateur Satellites...*Order No. VSAT*

2005/06 calendars

January 2005 through March 2006

NEW!

Classic Calendar
After an absence of a few years, we're pleased to offer this all-new sepia-tone, Classics calendar. 15 spectcular vitage images! **Order No. CCAL** $10.95

Ham Radio Operators Calendar
15 spectacular images of some of the biggest, most photogenic shacks, antennas, scenics & personalities.
Order No. ARCAL $10.95

Ham Radio Magazine on CD

Hot Item!

Brought to you by CQ & ARRL

Here's what you've been waiting for! Enjoy quick and easy access to every issue of this popular magazine, broken down by years!

Three sets, each containing 4 CDs -

1968-1976	Order No. HRCD1	**$59.95**
1977-1983	Order No. HRCD2	**$59.95**
1984-1990	Order No. HRCD3	**$59.95**

Buy All 3 Sets and Save $29.90!
Order No. HRCD Set $149.95

FREE Shipping & Handling with every $75 purchase!

Name _____ Callsign _____

Street Address _____

City _____ State _____ Zip _____

Qty	Item #	Description	Price	Total Price

Shipping & Handling: U.S. & Possessions - add $5 for the first item, $2.50 for the second and $1 for each additional item.* **FREE shipping on orders over $75.00** (merchandise only). Foreign-Calculated by order weight and destination and added to your credit card charge.

Total

Method of payment ☐ Check ☐ Money Order ☐ Visa ☐ MasterCard ☐ Discover ☐ American Express

Credit Card No. _____ **Expiration date** _____

CQ Communications Inc., 25 Newbridge Rd., Hicksville, NY 11801/516-681-2922; Fax 516-681-2926
Order Toll-Free 800-853-9797

Author Jim Southwick standing on his roof with a few of his antennas above him. (All photos by Leah Hogsten)

How To Listen To The World—With *Someone Else's* Radio

There's No License Required To Use The Internet And User-Controlled Online Tuners!

by Jim Southwick, N7HFK

Have you thought about getting a shortwave radio to listen to distant stations, whether broadcast, pirate radio, or ham radio? Maybe you'd like a scanner to cover a broad range of frequencies and modes. In theory, it sounds quite easy to just purchase a radio and start listening. The problem is, as we all know, the radio is only as good as the antenna system it's connected to. This is an additional cost and hassle many fail to take into account. It can even be prohibitive, depending on your location and limitations. And if you want to listen to a broad range of frequencies in various modes (for example, AM, SSB, FM, CW, etc.), the cost for these receivers can be fairly steep.

The UCOT (User-Controlled Online Tuners)

Fortunately these days, you don't need to worry about the radio or the antenna system if you have a computer connected to the Internet. Even a dial-up line will work fine. Welcome to the world of the user controlled on-line tuners, which we'll refer to here as simply UCOTs. Essentially, with a UCOT someone has already gone through the trouble and expense of buying the receiver and antenna system, along with the software needed to make it available through the Internet. This allows you to tune the radio in real time, as if you were sitting right in front of it. Of course, the down side is that you may have to share this radio with other users, but you'll find that you often have a radio to yourself at various times throughout the day and night.

Are There Many UCOTs Around?

Although these public on-line systems have been around for some time in various formats, they have never really taken off because they're expensive to set up, run, and maintain. So,

Here are more of the author's antennas, located on a tower on the hillside behind his home. The elevation is 5,090 feet.

Here's a screen shot of the VisualRadio software, which also offers chat room capability.

although there are sites coming on-line now and then, many other older sites have ceased to exist or have gone private. Also many of the remaining sites have gone to a pay status in order to recoup some of the costs of running the systems.

The good news is that there are some long-time sites still offering full access to the public and, yes, they are completely *free*. And many of these free sites are actually *superior* to the paid sites, as they are offered by ham radio operators who share their radios and antenna systems and who enjoy providing the service for free. My site, jimandleah.com, was started on just that premise (I'll also list other sites to check out later in this article).

What Kinds Of UCOTs Are There?

There are various software "styles" of on-line radio systems. Some of the oldest programs have been written privately and have a more "manual" feel, meaning they don't provide real-time feedback, such as signal strength or graphing and chat capabilities. You basically enter the frequency and mode and then listen. However, the station quality is very good on the sites I've seen that use their own written software. The others, as we'll see, provide a host of information to the user in real time.

Two of the most popular public versions that provide real-time feedback and are very easy to use are JavaRadio (www.JavaRadio.com; see also DXTuners.com) and VisualRadio (www.VisualRadio.de). Both versions almost never require you to download anything and will usually work as soon as you access the page. They also offer real-time chat rooms so users can converse and share thoughts while using the tuners. The chat window is a great place to meet people with common interests.

The JavaRadio network consists of many radios worldwide (mainly in Europe) and is very user friendly for the on-line listener and rich with features. You can tune many parameters of the radio, get signal strength, access a directory of stations, and chat. The sites on JavaRadio feature exclusively the ICOM PCR100/1000 receivers. Basically the network offers a free service, but a user can "upgrade" their free account and use more sophisticated radios/sites at more exotic locations. There are also a couple of sites that feature very elaborate antenna systems, which alone are worth the cost of admission, especially if you're into TV and FM radio DXing.

The VisualRadio network is primarily for commercial users, but on their main webpage at the very right is a click-on for "The Radio Servers" and "Advanced Web Receivers," which are free—no demo, no time limits, etc. VisualRadio also tells *Pop'Comm* that in the near future it may be offering other online receivers for non-commercial users (radio enthusiasts!) for about $250.

This network supports any type of computer-controlled radio on the serving end and offers two different formats: Java (although they are not JavaRadios) and Active/x. The VisualRadio Java format basically gives you tuning capability, an S meter, and a chat room. It is quite basic compared to the feature-rich format of JavaRadio. However, the Internet user downloading the free software (available on the main site or my site) can take advantage of the Active/x functions of VisualRadio, which gives exclusive advanced features like signal versus time graph, DX cluster, and a sophisticated display spectrum. The latter allows you to view a group of signals simultaneously for a segment of the band you're listening to and then choose the signal you want by just clicking on the graph.

Now let's move on to the actual operation of a UCOT once you get there.

Online Etiquette

The first and foremost rule on any public UCOT is to ask before tuning! This is simply done by typing "May I tune?" in

the chat room. Even if you think you're the only person on the radio, the actual owner of the radio may be using it at the time. This is just a common courtesy, and you'll find that someone will yield the control to you in almost all cases. If you experience problems with this, the owner of the UCOT will certainly want to hear about it. When the system is busy, you may enjoy just listening to what others users are tuning.

Get To Know The System You're Using!

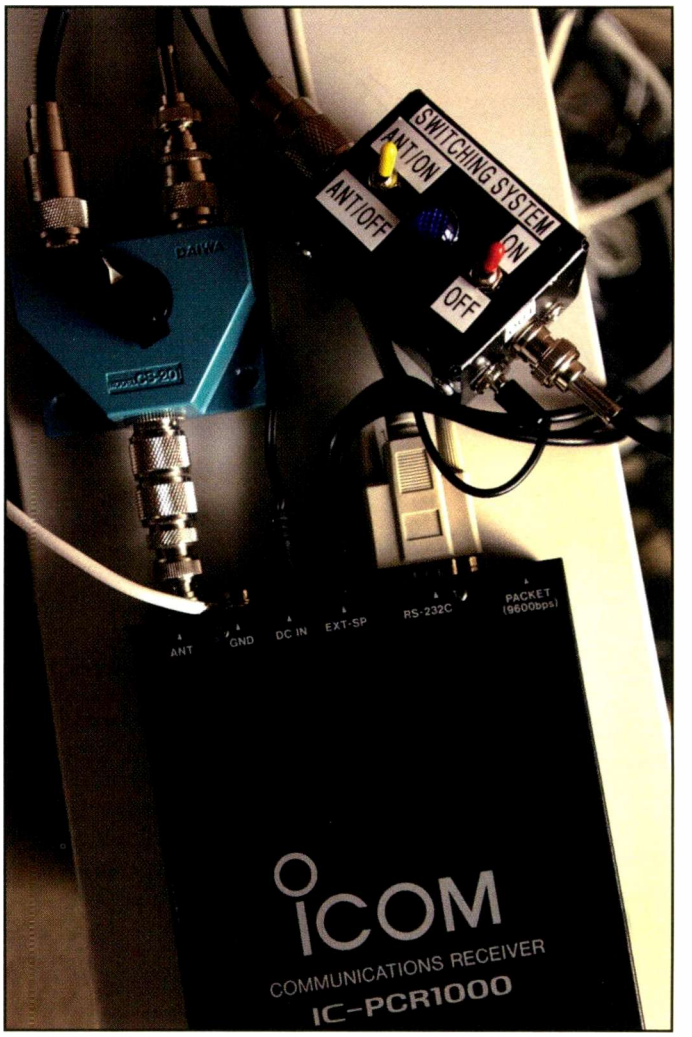
Each system is unique. Some may be designed for listening to VHF and UHF; others may be designed mainly for listening to the HF spectrum. It doesn't do any good if you're tuning for WWV and the UCOT only has an antenna good for UHF. A simple inquiry in the chat window will usually get a response from those familiar with the system. Often the webpage will tell you a lot about the UCOT and what it does.

Since the majority of UCOTs are ICOM PCR1000s, you'll be able to tune from .100 to 1300 MHz (cellular excluded) and use all modes (CW, FM, USB, LSB, and AM). This is a lot of frequency spectrum. The type of antenna the owner has installed will be pretty obvious depending on where you tune. Many owners have chosen to use a discone antenna, which gives decent coverage of the VHF/UHF spectrum (50 to 1200 MHz), but really falls short on the HF spectrum (0 to 30 MHz). Because I'm a ham radio operator, I already had the antennas in place for the receiver. For my online tuner, I primarily use a tower-mounted inverted V with a 45-foot apex, giving me fairly broad coverage across the HF spectrum. I also use a tri-band beam at certain times of the day. For the higher frequencies, I feed the receiver simultaneously with a UHF/VHF Yagi. This would be a disaster on transmit, but fortunately, in this case, we don't have to worry about that when combining antennas. For even better performance from this combination, you can purchase a splitter, which minimizes the effect of one antenna detuning the other.

Who Uses The UCOTs?

The UCOT's lend themselves to a host of applications. Ham radio operators often use the receivers to see if they're being "heard" at the host site and, if so, to determine their signal strength. This is very useful for getting real-time feedback on band conditions and audio quality. Other users listen to the air traffic control broadcasts. Many of these broadcasts are carried on shortwave radio, so a good UCOT can pick up these signals for hundreds or even thousands of miles. With various sites that allow a listener to watch the progress of a plane in real time, you can actually follow flight of a loved one from origin to destination, all in real time, an aspect of the hobby that grew out of 9/11. Still others like the public service broadcasts in the VHF/UHF spectrum. Unfortunately many of these have gone to a trunking system, which is not available on the UCOTs.

Some people enjoy late-night AM broadcast radio DX. If a site has a decent antenna for the low portion of the HF band, it will generally work quite well for AM DXing. A few JavaRadio sites actually feature large antenna arrays, allowing users to listen to troposheric ducting, meteor scatter, and other interesting conditions that mainly affect the VHF portions of the bands. These are usually people who just enjoy general listening across the bands, whether for checking out the local FM radio stations or armchair shortwave listening.



The most popular user-controlled online tuner is the ICOM PCR1000, shown pictured here with a couple of antenna switches, one manufactured and one home-built. Don't forget to ground the system (white wire in left of photo).

My own site has attracted a group of people who gather each night to tune into late-night radio personalityArt Bell, as well as a group of ham radio operators who get together on the HF frequencies.

Setting Up Your Own Public UCOT!

Setting up a public UCOT can be an expensive endeavor, but believe it or not, a few people have set up tuning and transmitting capability UCOTs (though these systems are beyond the scope of this article). You can, however, fairly easily set up a receiving UCOT. Your receiver won't be much of a service, though, if it doesn't have decent reception or is very limited, such as offering AM mode only. Word spreads fast and you'll find your site is only good as a chat room for you and your friends.

JavaRadio has the advantage of the software being free. The downside is that it requires a Linux OS-based system, which most computer users are not set up for or familiar with. If you are, though, you're are in luck! Remember, you're limited to an ICOM PCR100/1000 receiver with this software, so you'll need that before you even get started. You can go to

www.JavaRadio.com for more details about what is involved and how you can get started.

VisualRadio has the advantage of working with the Windows OS format and practically any type of ham radio/receiver that can be controlled by computer. Many people, especially hams, already have radios that can connect to their computers. The downside here is that the company no longer sells the software for the basic amateur. Instead this software is marketed for commercial users, so while it offers the sophistication of a commercial release, it is well beyond what most basic users would ever need—and so is the price. However, as of the date of writing this article, I am told they are considering offering it again to the "amateur" user at a substantially reduced price. I have operated a VisualRadio UCOT for over two years now and found the software very flexible with many features. The Java format is straight forward and easy to use. However, connecting to the Active/x format offers a whole new world in online radio features. You can go to www.VisualRadio.de or my site for more information.

Another format being used is RATS by Kingsmith Software (http://www.kingsmith-software.com) This is also feature-rich and can be run with Windows Net Meeting. The software is inexpensive, but accessing it is not as easy and straightforward as VisualRadio and JavaRadio, and only one person can use it at a time. A site located in Hong Kong has set one up under this format at http://vr2hf.tripod.com.

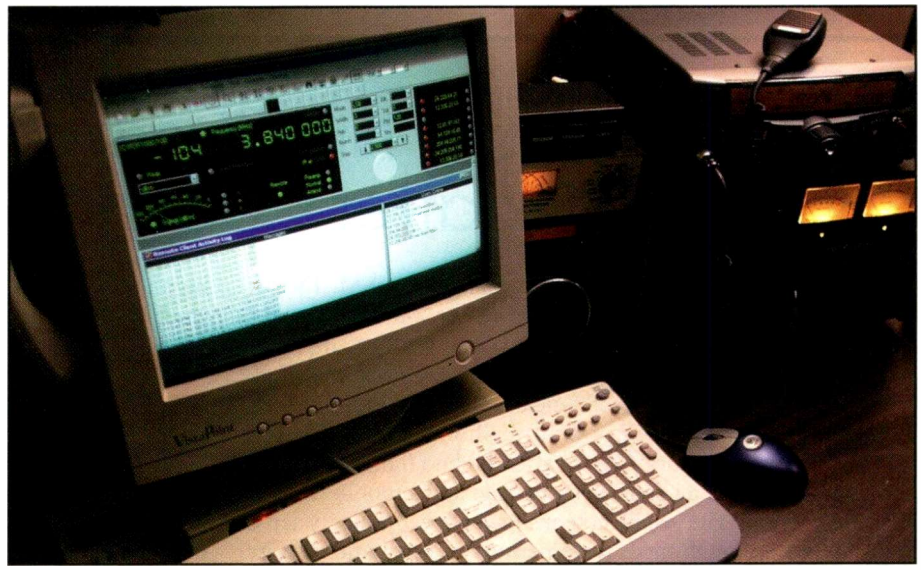
Last but not least, if you can write your own software—and many people have chosen to do just that—one of the oldest self-written sites (it's been operating since 1995) is still available at www.chilton.com. There is also a fairly complete list of most of the UCOTS in existence at the DX Zone site at http://www.dxzone.com/catalog/Internet_and_Radio/Online_Receivers.

Setting Up The Audio

The other aspect designing a UCOT is, of course, providing the audio. This is a biggie as it can require large upload bandwidth if you're going to offer decent audio to many people simultaneously. There are various encoding styles you can choose from, but suffice it to say, a full-time high speed connection is practically mandatory.

JavaRadios mainly use Real Audio as their encoder and VisualRadios mainly use Windows Media Encoder. Both formats are available for free from the Web. I am currently able to stream simultaneously to about 25 people using Windows Media Encoder, but because I sometimes exceed this number, I also stream the audio through live365.com. This can allow practically unlimited simultaneous listenership at a very high bit rate, but also requires a monthly fee from the UCOT owner, depending on how many streams you wants to provide for free or for a membership fee from the listener. If your site gets to this point, you are definitely doing this as a labor of love; you may want to at least ask for donations to offset the cost a little. Just be aware that your outlay is going to far outweigh any money coming in.

If you do set up your site and work to provide a free quality service, however, you'll find that the rewards include meeting a lot of great people who take almost as much pride in your UCOT as you do. You may even find someone sets up a forum if you attract a group of loyal listeners who enjoy your system. For example, the Midnighthams.com forum was started by a group of dedicated individuals who frequented my site and continue to do so.



If you have modern ham equipment and antennas, you may be able to set up your own online tuner with just some additional software. Pictured here is the Kenwood TS-2000, which works out of the box with VisualRadio. Many other modern transceivers will work as well.

Other Useful Services You Can Provide

You can even go the extra mile and provide other services that practically guarantee people will enjoy visiting your site. One of the neatest things I've seen was listeners actually using the on-line radio, in conjunction with software on their computers, to view SSTV (Slow-Scan TV) pictures. If you're not familiar with the term, these are pictures transmitted by hams that can be viewed on your computer with the proper software. A UCOT lends itself to this perfectly, so I feature an automatic picture viewing system on my site that doesn't require any software on the listener end. The listener only needs to tune the radio to the SSTV signal itself (usually 14.235 kHz), and the software on my end will automatically capture the image and upload it to my site. The auto ftp upload software is generously available for free from John Benedict, KE5RS, at www.ke5rs.com. This has been a popular aspect of my site that, amazingly, other on-line tuners to date have not incorporated.

Providing a chat area is also beneficial. Because your listeners have a lot of common interests, you'll get all kinds of ideas to institute. Feedback is guaranteed if you choose to chat with them!

UCOT-a Try It!

So whether you are only interested in using a UCOT or setting one up yourself, you will find that it's really a hobby in itself, one that's still a pretty well-kept secret from the general public. The UCOT numbers are still relatively small, but many of them lie dormant waiting for someone to log on. It's my hope that the word will get out about how useful and fun these are, both to listen to and to operate yourself. Give it a try. ■

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

Be A November Nighthawk: Stay Up Late For Meteor Scatter Communications!

Did you see the Perseids? Did you hear any FM, TV carriers, or Amateur Radio VHF (6- or 2-meter) signals? On August 12, 2004, I had the opportunity to drive out to an open location where my family and I could see the whole sky. The weather was perfect—clear skies and mild temperatures, with the moon staying below the horizon until the early pre-dawn morning hours. Our location had no light pollution. I took with us a 2-meter four-element Yagi and a mobile vertical 6-meter antenna. The visual meteor shower became nicely active after 10 p.m., though there were periods of nearly no activity. But whenever the rate increased, there were some larger and longer-duration meteors, called "grazers," that elicited a few exclamations from family members.

I tuned around on both bands, hoping to hear some meteor-scattered signals from amateur stations. I heard a few Puget Sound stations fishing for meteor scatter contacts (known as "meteor scatter mode," abbreviated, "MS"), but during the entire time I monitored, there were only two or three short and a few nearly impossible contacts. The Puget Sound stations were aiming their high-gain beam antennas toward the south, hoping to catch stations south of Washington State which were pointing their beams northward.

I did hear some tropospheric ducting contacts, some from California, working into the Puget Sound area of Washington State. These were somewhat weak and existed mostly on the lower VHF frequencies (6 meters). I heard one amateur radio operator make a comment that the Perseids were a worn-out comet trail. He postulated that since the Earth has plowed through the trail for so many centuries, there are simply very few larger dust particles left, let alone small chunks of debris. Hence, the sprinkling of minute comet dust is all we'll get, and those particles are just too small to really provide the sort of ionization necessary to propagate amateur radio signals. One needs to have large, slower moving grazers, leaving very large ionized trails, in order to refract VHF signals.

The Perseids have been one of the more impressive yearly showers, partly due to the time of year in which they appear. August is typically a great time of year to lie out on a soft lawn,

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 and especially at the Polar Regions, where the geomagnetic field is weak, propagation may disappear completely. Extreme high indices may result in aurora propagation, with strongly degraded long distance propagation at all latitudes. Low indices result in relatively good propagation, especially noticeable around the higher latitudes, when 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 (SFI): This flux number is obtained from the amount of radiation on the 10.7-cm band (2800 MHz). It is closely related to the amount of ultraviolet radiation, which is needed to create the ionosphere. Solar Flux readings are more descriptive of daily conditions than the Sunspot Number. The higher the Solar Flux (and, therefore, the higher the Sunspot Number), the stronger the ionosphere becomes, supporting refraction of higher frequencies.

Ionosphere: A collection of ionized particles and electrons in the uppermost portion of the Earth's atmosphere, which is formed by the interaction of the solar wind with the very thin air particles that have escaped Earth's gravity. These ions are responsible for the reflection or bending of radio waves occurring between certain critical frequencies, with these critical frequencies varying with the degree of ionization. As a result, radio waves having frequencies higher than the Lowest Usable Frequency (LUF) but lower than the Maximum Usable Frequency (MUF) are propagated over large distances.

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

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

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

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

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

A composite image of six Leonids meteors. (Copyright: ESA/SSD Koschny/Mokler)

peering up at the canopy of stars, wishing upon a shooting star. The shower was first recorded in Chinese history writings in 36 AD, where the recorder tells us of seeing more than one hundred meteors.

Italian astronomer Giovanni Virginio Schiaparelli (1835–1910) computed the orbit of the Perseids between 1864 and 1866, discovering a resemblance to the periodic path of comet Swift-Tuttle. This was the first time any meteor shower had been tied to a comet. The Swift-Tuttle has a period of about 120 years. This would mean that the meteor shower would increase in its hourly rate during those years when the comet is near its perihelion (the point nearest the sun in the comet's orbit), something well demonstrated by the Draconids and Leonids showers.

So, does it hold that the Perseids meteor shower no longer has debris large enough and in a significant concentration to provide us with spectacular showers and the opportunity for exciting VHF MS propagation? In 1973, Brian G. Marsden, an astronomer at the Smithsonian Astrophysical Observatory in Cambridge, Massachusetts, predicted that comet Swift-Tuttle would move through its perihelion sometime on September 16 or 17, during 1980, 1981, or 1982. This caused a lot of excitement. The average rate for the years between 1966 through 1975 was 65 meteors per hour. But then, between 1976 and 1983, the hourly rate average increased to over 90. By 1983 there were counts of 187 per hour. After that, rates declined again.

A new prediction was offered by Marsden that the comet might pass perihelion during December 1992. Observers were able to spot and tract the Swift-Tuttle comet late in the summer of 1992. In 1993, with a lot of observers waiting in great anticipation, the Perseids delivered with hourly rates of 200 to 500 meteors over Europe. And, during 1994, high rates were again observed, this time over a great part of North America.

It was predicted that we would move through a possible extra tail filament left by the comet, a day early, on August 11. There was speculation that we would have a moderately strong shower this year as a result. However, based on my visual and radio observations, this shower did not live up to expectations. Scientific observations do indicate that we did move through the very edge of the extra filament, just as predicted.

The Next Shower

One of the largest annual meteor showers occurs in November. Appearing to radiate out of the constellation of Leo on the night and morning of November 18 to 19, the Leonids are known to create intense meteor bursts. Since the source of the Leonids, the Tempel-Tuttle comet, passed closest to the sun in February 1998, the years following were expected to produce very strong displays. The greatest display since 1998 was the peak

Optimum Working Frequencies (MHz) - For November 2004 - Flux = 85, SSN = 27 - 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	14	12	11	11	10	10	10	9	9	9	9	9	9	16	18	20	21	21	22	22	22	21	20
NORTHERN SOUTH AMERICA	26	24	18	15	15	14	13	13	13	12	12	12	12	12	20	24	26	28	29	29	30	29	29	28
CENTRAL SOUTH AMERICA	26	23	16	15	15	14	13	13	13	12	12	12	12	12	21	25	27	28	29	30	30	29	29	27
SOUTHERN SOUTH AMERICA	28	26	22	16	15	15	14	14	13	13	13	12	12	12	17	24	26	27	28	29	29	30	30	29
WESTERN EUROPE	9	8	8	8	8	8	8	8	8	8	8	8	8	8	9	13	14	14	13	12	9	9	9	9
EASTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	10	13	11	10	9	9	9	9	8
EASTERN NORTH AMERICA	20	17	13	12	12	11	11	11	11	10	10	10	10	10	17	20	22	23	23	24	24	23	23	22
CENTRAL NORTH AMERICA	12	11	9	7	7	6	6	6	6	6	6	6	6	5	5	10	11	12	13	13	13	13	13	12
WESTERN NORTH AMERICA	6	6	5	4	3	3	3	3	3	3	3	3	3	3	3	4	5	6	6	7	7	7	7	7
SOUTHERN NORTH AMERICA	20	18	15	12	11	11	10	10	10	10	9	9	9	9	13	18	20	21	22	22	22	22	22	21
NORTHERN AFRICA	9	9	9	9	8	8	8	9	8	8	8	8	8	8	12	14	15	16	16	13	11	10	10	9
CENTRAL AFRICA	11	11	10	9	9	9	9	9	8	8	8	8	8	8	10	13	15	16	16	13	13	12	12	11
SOUTH AFRICA	18	15	12	12	11	11	11	10	10	10	10	10	10	10	17	19	21	21	22	22	22	22	21	20
MIDDLE EAST	9	8	8	8	8	9	9	9	8	8	8	8	8	8	8	12	13	11	10	10	9	9	9	9
JAPAN	18	17	17	16	14	10	10	10	9	9	9	9	8	8	8	8	8	8	8	8	8	14	16	18
CENTRAL ASIA	18	17	17	16	14	10	10	9	9	9	9	9	8	8	8	8	8	11	10	10	10	10	16	18
INDIA	8	13	12	9	9	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
THAILAND	17	17	16	15	13	10	10	9	9	9	9	9	8	8	8	8	8	11	11	11	11	10	10	14
AUSTRALIA	25	26	27	25	22	16	15	14	14	13	13	13	12	12	12	12	12	16	15	15	17	20	22	24
CHINA	16	16	15	14	12	10	10	9	9	9	9	8	8	8	8	8	8	9	8	8	8	8	8	13
SOUTH PACIFIC	28	29	27	25	20	16	15	14	14	13	13	13	12	12	12	12	16	15	18	20	22	24	26	27

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	14	13	13	12	12	11	11	11	10	10	10	10	19	22	23	24	25	26	26	25	25	24	22
NORTHERN SOUTH AMERICA	23	19	16	15	14	13	13	12	12	12	11	11	11	18	22	24	26	27	28	28	28	27	26	25
CENTRAL SOUTH AMERICA	23	17	16	15	14	14	13	13	13	12	12	12	12	23	25	26	27	28	29	30	30	29	28	26
SOUTHERN SOUTH AMERICA	26	23	19	17	16	15	15	14	13	13	13	13	12	19	23	24	26	27	28	29	29	30	30	28
WESTERN EUROPE	9	9	8	8	8	8	8	8	8	8	8	8	8	13	15	16	16	15	15	14	11	10	9	9
EASTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	8	11	12	12	12	11	10	9	9	8	8	8
EASTERN NORTH AMERICA	14	10	9	9	8	8	8	8	8	7	7	7	7	12	14	16	17	17	18	18	17	17	16	15
CENTRAL NORTH AMERICA	7	6	4	4	4	4	3	3	3	3	3	3	3	3	6	7	7	8	8	8	8	8	8	7
WESTERN NORTH AMERICA	12	11	9	7	7	7	6	6	6	6	6	6	6	6	6	10	12	12	13	13	13	13	13	13
SOUTHERN NORTH AMERICA	14	12	9	8	8	7	7	7	7	7	7	7	6	6	12	14	15	15	16	16	16	16	15	15
NORTHERN AFRICA	11	10	10	9	9	9	9	9	8	8	8	8	11	15	16	17	18	18	19	17	13	13	12	12
CENTRAL AFRICA	11	10	10	9	9	9	9	9	8	8	8	8	10	15	16	17	18	18	18	13	13	12	12	11
SOUTH AFRICA	18	15	15	14	13	13	13	12	12	12	12	12	18	23	26	27	28	29	29	29	28	26	24	22
MIDDLE EAST	9	9	8	8	8	8	9	8	8	8	8	8	8	13	15	16	16	14	11	10	10	9	9	9
JAPAN	17	16	14	10	10	10	9	9	9	9	8	8	8	8	8	8	9	8	8	8	8	13	16	17
CENTRAL ASIA	16	15	14	10	10	9	9	9	9	9	8	8	8	8	8	9	11	11	10	10	10	10	14	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	15	14	12	10	10	9	9	9	9	8	8	8	8	8	8	11	12	11	11	11	10	10	10	10
AUSTRALIA	25	26	24	20	15	15	14	14	13	13	13	12	12	12	12	17	17	16	15	15	18	20	22	24
CHINA	15	14	12	10	9	9	9	9	9	8	8	8	8	8	8	9	9	9	8	8	8	8	8	12
SOUTH PACIFIC	28	27	24	17	16	15	14	14	13	13	13	12	12	12	12	17	16	16	19	21	23	25	26	28

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	12	11	11	10	10	9	9	9	9	8	8	14	17	19	20	20	21	21	21	21	20	19	17
NORTHERN SOUTH AMERICA	20	18	16	15	14	13	12	12	11	11	11	10	15	18	21	23	24	25	25	25	25	24	24	22
CENTRAL SOUTH AMERICA	21	20	18	17	16	15	14	14	13	13	13	16	21	23	25	26	27	28	29	30	30	29	28	25
SOUTHERN SOUTH AMERICA	25	22	20	18	17	16	15	15	14	13	13	13	19	21	23	25	26	27	28	29	29	30	29	28
WESTERN EUROPE	9	8	8	8	8	8	8	8	8	8	8	12	15	16	17	17	17	16	15	14	12	10	9	9
EASTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	10	14	14	14	14	14	13	12	9	9	9	9	8
EASTERN NORTH AMERICA	6	4	4	4	4	4	3	3	3	3	3	3	5	7	8	8	8	9	9	9	8	8	8	7
CENTRAL NORTH AMERICA	14	10	10	9	9	9	8	8	8	8	8	8	8	13	15	17	18	18	18	19	18	18	17	16
WESTERN NORTH AMERICA	20	17	13	12	12	11	11	11	11	10	10	10	10	10	18	20	22	23	24	24	24	24	23	22
SOUTHERN NORTH AMERICA	16	11	10	10	9	9	9	9	8	8	8	8	8	14	17	18	19	20	20	20	20	20	19	18
NORTHERN AFRICA	11	11	11	11	10	10	10	10	10	10	10	18	21	22	23	24	24	23	21	19	13	13	12	12
CENTRAL AFRICA	12	11	11	11	10	10	10	10	10	10	10	18	21	22	23	24	24	22	20	15	14	13	12	12
SOUTH AFRICA	16	15	15	14	14	13	13	13	12	12	12	22	26	28	29	29	30	30	30	29	28	26	24	18
MIDDLE EAST	10	10	9	9	9	9	9	8	8	8	8	14	16	17	18	19	19	19	13	13	12	12	11	11
JAPAN	14	10	10	10	9	9	9	9	8	8	8	8	8	9	9	9	9	8	8	8	8	12	15	16
CENTRAL ASIA	13	10	10	9	9	9	9	9	8	8	8	8	8	12	12	11	11	11	11	10	10	10	10	15
INDIA	8	8	8	8	8	8	8	8	8	8	8	8	12	14	16	14	10	10	10	9	9	9	9	9
THAILAND	10	10	9	9	9	9	9	8	8	8	8	8	9	13	13	12	12	11	11	11	11	10	10	10
AUSTRALIA	25	22	16	15	14	14	13	13	13	12	12	12	12	12	19	18	17	16	15	15	18	21	23	24
CHINA	11	10	10	9	9	9	9	8	8	8	8	8	8	10	9	9	9	9	9	8	8	8	8	8
SOUTH PACIFIC	26	22	18	17	16	15	14	14	13	13	13	12	12	18	18	17	16	18	21	23	25	26	27	28

of 3,700 per hour in 1999! Every year since has been significantly less spectacular. However, a few forecasters think that we still might have a meteor storm with an hourly rate of thousands sometime in the next several years. If this year is more typical than the last few, we'll see a rate of several hundred per hour. The large, spectacular visuals might only be 10 to 20 per hour, but when we're talking about MS radio propagation, we count any meteor-formed plasma clouds that will support VHF radio signals.

The best time to work MS off the Leonids is around 11:30 p.m., local time, in the Northern Hemisphere. The shower should increase in rate the closer you get to midnight and last through the predawn hours.

Working Meteor Scatter

Meteor particles are debris from a passing comet, ranging in size from a spec of dust to a small pebble, and some move slowly while others move fast. When you view a meteor, you typically see a streak that persists for a little while after the meteor vanishes. This streak is called the "train" and is basically a trail of glowing plasma left in the wake of the meteor. Meteors enter Earth's atmosphere traveling at speeds of over 158,000 miles per hour. Besides being fast, the Leonids usually contain a large number of very bright meteors. The trains of these bright meteors, which last from several seconds to several minutes, are typically created in the *E* layer of the ionosphere. MS propagation is a mode where radio signals are refracted off these trains of ionized plasma. Because the location of these plasma trains is in the *E* layer of the ionosphere, the range of an MS contact is between 500 and 1,300 miles. The frequencies that are best refracted are between 30 and 100 MHz. However, with the development of new software and techniques, frequencies up to 440 MHz have been used to make successful radio contacts off these meteor trains.

Lower VHF frequency contacts are more stable, and last longer, off these ionized trails. A 6-meter contact may last from a second to well over a minute. The lower the frequency, the longer the specific "opening" made by a single meteor train. Conversely, a meteor's ionized train that supports a 60-second refraction on 6 meters might only support a one-second refraction of a 2-meter signal. Special high-speed digital modulation modes are used on these higher frequencies to take advantage of the limited available time, like high-speed CW, in the neighborhood of hundreds of words per minute.

MW Propagation

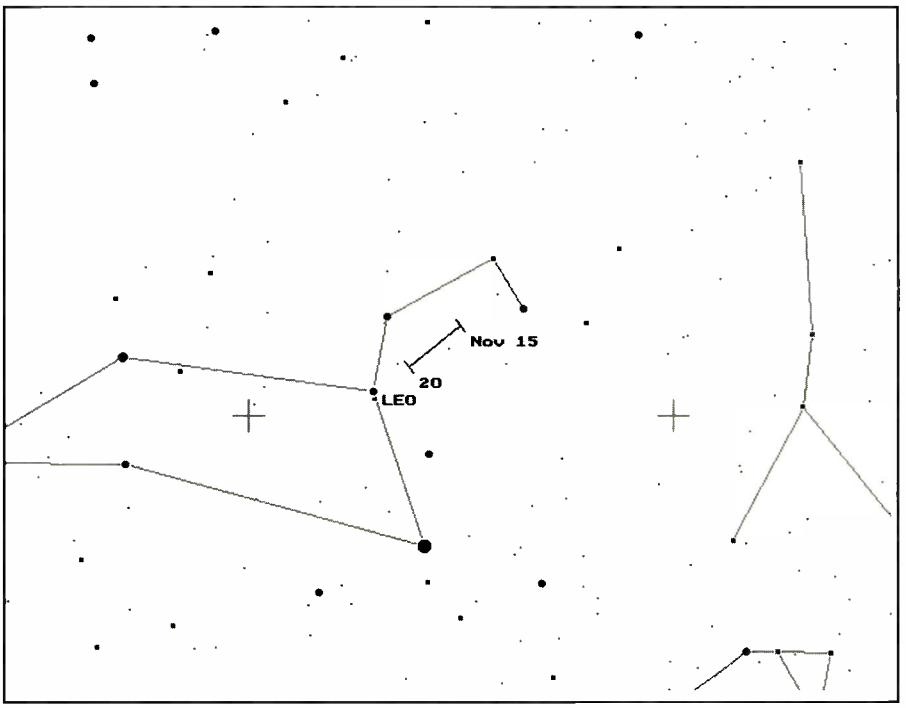
The mediumwave AM broadcast band DX season is starting to perk up now that we're having longer hours of darkness in the Northern Hemisphere. The FCC requires domestic broadcasters to reduce station power, or to cease operating, at night in order to limit interference with other AM broadcast stations. This can make the hunt for AM DX stations all the more challenging. The wavelengths of AM radio signals vary from a maximum of 556 meters (1,825 feet) at 540 kHz, the lowest AM carrier frequency, to a minimum of 176 meters (580 feet) at 1700 kHz, the highest carrier frequency at the upper end of the AM expanded band.

During the hours of sunlight, the lowest layer of the Ionosphere, the *D* layer, becomes highly energized. This causes the *D* layer to absorb radio waves. The more energized, the higher the frequen-

cies that are absorbed, and the more intense the absorption over the range of frequencies absorbed. The lowest frequencies are usually totally blocked by the *D* layer during the day. During the hours of darkness, the *D* layer loses its energy. At night, it nearly disappears, allowing mediumwave signals to pass through to then be reflected back by the *E* layer. During daytime hours, when ionospheric reflection does not occur to any great degree, mediumwave signals travel over the surface of the Earth. This is known as "groundwave" propagation. Useful daytime AM broadcast reception is generally limited to a radius of no more than about 100 miles, even for the most powerful stations. However, during the hours of darkness, mediumwave signals can travel over hundreds of miles by reflection from the ionosphere, a phenomenon called "skywave" propagation.

At least two things make AM DXing possible at night: the reduction in *D*-layer absorption, which opens up the band to signals beyond the reach of groundwave propagation, and the possible decrease in local interference due to daytime stations going silent after dark. However, at the same time, distant stations you wish to catch are switching to lower power or modifying their antenna's directivity. Other phenomena that can present a real challenge to mediumwave DXing are lightening-related noise and sporadic-*D* (*D*s) absorption. During summer months in the northern Temperate Zone (where most of North America is), there are a higher number of electrical storm events, causing broadband noise. Most of the energy of these electrical storms is concentrated at lower frequencies. These electrical storms can create ionization in the lower atmosphere, in the *D* layer of the Ionosphere, causing mediumwave radio signal absorption. This will occur at any time of day, even at night. Those signals that do make it to our receivers compete with the noise generated by these storms. During the winter, however, along with the longer hours of darkness, there is a significant reduction in seasonal electrical storms, making conditions much better for long distance propagation of these mediumwave broadcast signals.

When is the best time to look for mediumwave DX? Most AM broadcast stations in the United States change from high power to low power after their local sunset. If you are trying to catch a station to your west, listen just prior to its local sunset time. You will be in the dark, and the *D* layer above you and somewhat to your west will be less dense and energized, allowing signals to skip off the Ionosphere. And their higher power will help their signals propagate well because of the characteristics of nighttime ionization. The idea is to maximize the degree of darkness between you and the station, while it is still on day power and pattern.



Sky chart showing the area from which Leonids meteors appear to be coming from. (Copyright: IMO, International Meteor Organization, from http://www.imo.net/calendar/cal04.html)

At the same time, any station to the west that has a favorable nighttime signal in your direction (in other words, it has significant night power and no deep null antenna pattern aimed at you) is a potential sunrise target. *D* layer absorption increases rapidly when in direct sunlight, and east of you begins to ionize while the west of you is still dark and free of *D*-layer ionization. For some time around your local sunrise the relative strength of stations to the west of you increases, while eastern stations will start to fade, allowing the western stations to emerge from underneath the interference from the east. On rare and exciting occasions, this period will last long enough for some western stations to go to their higher power and daytime pattern. Here, as with sunset, the time of month can be critical as the more darkness on the path, the better. Of course, take this same principle to figure out when to tune in for stations to your east.

To find out what daytime and nighttime operations are authorized for AM broadcast stations, conduct an AM Query at http://www.fcc.gov/mmb/asd/amq.html. The Hours of Operation for the Record field for the station will indicate what hours the station may operate with the listed station parameters. Note that a station may have multiple records for different daytime and nighttime operations.

HF Propagation

Shortwave signal paths on 31 through 19 meters are becoming ever more reliable between North America and Europe in the morning, and between North America and Asia during the late afternoon hours. The strongest openings occur for a few hours after sunrise and during the sunset hours. Thirty-one and 25 meters will often remain open into many areas late into the night and will open early in the morning, especially when part of the propagation path moves through sunlit regions. Twenty-two and 19 may still offer nighttime paths, though these will become less reliable later in November.

Nineteen, 22, and 25 meters compete with 16 for the good daytime DX during November. They will open for DX just before sunrise and should remain open from all directions throughout the day,

with a peak in the afternoon. Nighttime conditions will favor openings from the south and tropical areas. Since the Southern Hemisphere has long daylight hours, DX paths on these bands from stations in the south will be common.

The all-season bands, 31 and 25 meters, are crowded and signals are usually very strong and steady. Twenty-five meters is expected to be an excellent band for medium distance (500 to 1,500 miles) reception during the daylight hours. Longer distance reception (up to 2,000 to 3,000 miles) should be possible for an hour or two after local sunrise, and again during the late afternoon and early evening. Heavy congestion will occur here since many international and domestic broadcasters make use of 25 meters. Thirty-one meters, the backbone of worldwide shortwave broadcasting, will provide medium-distance daytime reception ranging between 400 and 1,200 miles. During November, reception of up to 2,500 miles is possible during the hours of darkness, and until two to three hours after local sunrise. Thirty-one meters, too, is highly congested, making reception of weak exotic signals a bit more of a challenge.

Thirteen and 16 meters will be open during a fair number of days through November when flux levels remain above 100. Paths from Europe and the South Pacific as well as from Asia, at least during days of higher solar flux levels, are common, especially on 16 meters. Look for best conditions from Europe and the northeast before noon and from the rest of the world during the afternoon hours. Reception from the South Pacific, Australia, New Zealand, and the Far East should be possible well into the early evening. When flux levels fall below 120, though, these openings may be short.

Seventy-five through 120 meters are coming alive in late October. Throughout November, expect an improvement in nighttime DX conditions. Since the night is longer, and there is the seasonal decrease in the static levels, expect long-range DX on the low bands, starting close in right after sunset and extending farther as the night develops, with Europe possible in the late evening. DX paths will move farther west through the night. By morning openings from Asia should be common.

Signals below 120 meters have improved, with the night-paths growing larger in the Northern Hemisphere. Seasonal static, which makes it difficult to hear weak DX signals, is still decreasing as we move into the depth of winter.

Propagation On VHF And Above

A slight increase in sporadic-*E* (*Es*) starts late in November, peaking in December. So keep your ears open for low-VHF (FM, TV carrier, and 6-meter amateur) signals via this mode. Other modes that might provide some exotic and long-distance DXing would be the rarer Aurora-mode (Au) events (I don't expect this to materialize, but we've been surprised before), and possibly some tropospheric ducting. Tropo ducting is not common this late into the year, however. Don't forget that the Leonids can provide some excitement, though. If there are enough larger meteors, or if a meteor storm occurs (we can hope!), you could well hear FM station pings or amateur radio operators working this mode.

Current Solar Cycle 23 Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for July 2004 is 51, up from June's 43, May's 42, and April's 39, and even up from March's 49. That made July the most active month up to that period this year. The lowest daily sunspot value during July 2004 was recorded on July 7, with a count of 9, half of June's lowest count. The highest daily sunspot count for July was 100 on July 19. The 12-month running smoothed sunspot number centered on January 2004 is 52, down from the 55 of December 2003. A smoothed sunspot count of 29 is expected for November 2004, give or take about 12 points.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-centimeter observed monthly mean solar flux of 119 for July 2004, quite a bit higher than June's 100, and also the highest to date since the beginning of 2004. The 12-month smoothed 10.7-centimeter flux centered on January 2004 is 118. The predicted smoothed 10.7-centimeter solar flux for November 2004 is about 88, give or take about 17 points.

The observed monthly mean planetary A-Index (Ap) for July 2004 is 21, considerably more active than June, when the monthly mean Ap was 9. This is also the highest Ap so far from January to July. The 12-month smoothed Ap index centered on January 2004 is 18, one point down from December 2003. Expect the overall geomagnetic activity to be quiet during most days in November, with possibly one major storm during the month. Refer to the Last Minute Forecast for the outlook on what days this might occur.

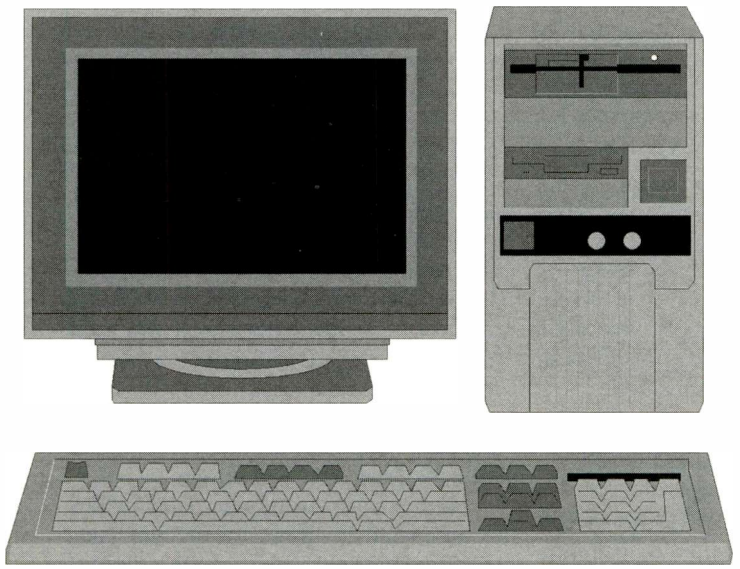
Questions, Comments, Or Suggestions?

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

I hope to hear from you. Send a letter or an e-mail. I might not include your specific letter in the text of this column, but I do often take questions and use them as the topic of the month. See you again next time! ■

by Joe Cooper, carm_popcomm@hotmail.com

Network Control Of Your Radio—Part IV



This is the fourth of what will be a five-part series that examines controlling—and listening to—a compatible monitoring radio over a computer network. The network over which you perform this control can be anything from a simple home-based LAN (Local Area Network) to the Internet. In last month's column I covered the basics of how to send an audio signal from your monitoring radio over your computer network. If you're sending that signal from just one computer to one or two other systems, this can be done fairly simply.

As I've already pointed out, all versions of Microsoft Windows, from versions 98 through XP, come with a simple multimedia utility called NetMeeting, which you can use to send audio over a network, including the Internet. What makes this utility valuable for our purpose is that you can leave it on and have it automatically send audio to a remote computer when requested to do so by another.

I also wrote about Bob Arnold, N2JEU's on-line radio control project and the RealAudio server that he uses for his Web-based system. The beauty of his approach is in its simplicity and low cost—the audio server software was originally free. The Basic RealAudio streaming audio server Bob originally used is no longer available, having been replaced by a newer version called "Helix." While this is also free, Helix is really an evaluation product for commercial users that has been limited to only five connections at one time, far too few for any application other than testing. That evaluation software would be fine if you were planning on only using it yourself, or only having a small number of people connected to it. However, that product does require a higher degree of computer skills than the average person may possess, so its installation and operation is definitely tricky unless you have a background in LAN operation and configuration.

To help set up your own streaming audio server I'm going to provide you with information on an alternative software product called *icecast*, which is free to download and much easier to use. See "Introduction To The icecast Audio Server" for information on how to get started using this fine product.

Having wrapped up "piping" the audio over a network or the Internet, the main task we are left with is the remote control of the monitoring radio. We'll look at three approaches to that: a stand-alone remote control program, a third-party control system, and a Web-based "public" system that was developed by Bob Arnold.

Basics of Remote Control

When you operate a properly set up compatible monitoring radio over a network you'll find the actual mechanics of remote control fairly straightforward. You simply use some type of service (software- or webpage-based) that allows you to run your existing radio control program from a remote site. The software on the remote computer, regardless of the type of service you are using, lets you send control codes to the monitoring radio as if you were running the computer directly. All you are really doing is sending a set of commands over the network to the control software that is, in turn, sending another set of commands to the radio in order to control it.

With the audio stream software turned on you can hear the audio output of the radio, which has been connected to the sound card of the remote computer. As you tune the radio via the remote control software the audio signal out of your monitoring radio changes and is then turned into digital "samples" in the remote computer's sound card. These samples are sent first to the audio server software (whether NetMeeting or another program), which sends them over a network to the audio receiving software on the computer you are using. That software directs the digital audio to that computer's soundcard, which then turns it back into an analog audio signal. Once that conversion from digital to analog occurs, you can hear the radio's original audio signal over that computer's loudspeakers or headphones. Before that conversion, you could also use Digital Signal Processing (DSP) software on that computer to further filter or enhance the original digital audio before listening to it.

The only real difference between being in direct control of the monitoring radio and remote controlling it may be in the time lag that can occur between sending a request for a frequency change and hearing that change in your speakers. This time lag will vary according to the type of audio server you use, with NetMeeting having the least lag.

The other thing you will notice is the lack of fidelity in the audio signal. This is because what you're hearing is not an analog signal (that is, a signal that contains all audio information coming from the radio), but rather a series of digital samples. You may remember from my series of columns on digital audio recording (see October to January 2003) that digital audio signals are not made up of continuous information. Rather they are a series of "slices" of the original analog information that are represented as binary within the computer. The number of samples made per second will determine the fidelity (listening qual-

ity) of the audio when the slices are put back together into an analog audio signal by the computer's sound card. The key point is that because it is a sample, you are losing some part of the original signal, which can be noticeable. In addition, the samples are compressed in the computer so that less bandwidth is needed to send the audio signals over a network. This can sometimes cause a further loss of quality. depending on how much compression is used.

I mention these points because the decisions you make about the type of remote control system you install will have an impact upon the quality of operation and audio output. If you decide on a system that will have only one streaming audio connection, you'll get the best audio sound at the remote location. This is simply because the more audio connections that are made to the server computer the harder the computer's CPU and circuitry will need to work in order to "pump out" the digital stream of information. To provide multiple connections, the system may have to send out fewer slices of digital information, which will result in a perceptible reduction in audio quality.

Having said that, I think it's important to point out that audio quality is not dependent upon the type of computer you're using. You don't need to have the fastest CPU or even the most up-to-date equipment in order perform the tasks I've been describing in this series of columns. This means that you don't have to spend a lot of money setting up a remote-controlled monitoring radio; you can use an inexpensive computer with an older CPU and operating system, as well as free software to undertake the streaming audio. There are several inexpensive options available for the remote control of the monitoring radio (though you can spend a bit of extra money and get a much better level of control, along with other functions that may prove to be valuable). The bottom line is that the real investment you will need to make is in yourself, by developing your computer skills, if you want to have the best possible remote control system. Your own ability to install, configure, and operate the software and hardware of your computer will have a greater impact upon the sound and operation of your remote control system than anything else.

I can't teach you everything you need to know to successfully set up a remote control system within the space of this column. However, can give you a guide as to what you should be aiming for and where to find the resources you'll. Remember that computer-assisted radio monitoring is still in the experimental stage and there is still a great deal of development to be undertaken before all the "bugs" have been worked out of the systems I'll be describing. The reward for undertaking this project is that you'll learn more about computer networking and will be able to expand the use of your monitoring radio. As I've mentioned before, I do believe that this approach to radio monitoring is the future of the hobby.

So now let's continue on with our exploration of the "new school" of computer monitoring.

Remote-Control Software Issues

Again, there are several ways to undertake the remote control of a computer over a network for the purpose of controlling a monitoring radio. The two primary approaches are to either access the remote computer as an individual, or to open it up to either a small group of people who are given passwords to a restricted computer site or to anyone who wants to access it (such as over the Internet).

The "private" control of a computer over a network (as opposed to "public control") is probably the simplest way to operate your radio remotely. This method is also easier for many people because of the accessibility of "off the shelf" software and pre-existing Web-based services that let you perform the control task in a relatively easy way.

In help you understand what it is you're tying to accomplish, here's some background information on remote control software so you'll better appreciate its actual application.

With the advent of large computer networks in business and government settings, there's an increased difficulty in servicing the problems found in them. One of the biggest problems has been assisting individual users within that network environment when they have problems operating their computers. The big issue with most people who have problems is describing exactly what's going wrong with their computers to the person trying to help them. And if they have to do that over the telephone rather than in person, the matter is even more complicated. One solution is for a technician to go to the computer with the problem and work on it directly. This approach, however, involves travel time, which can be expensive and unproductive. These costs can also be unwarranted if the problem was really not all that big to begin with. This is where remote-control software becomes a very important tool for many companies.

Today if there is a problem with someone's computer at a remote location, a technician can use the remote-control software to directly take over the control of a properly set up computer and operate from a remote site as if he or she were sitting right in front of it. With the remote software running, when the technician types on the keyboard of his own computer, the remote computer responds, and the technician sees on his computer screen what is taking place on the remote computer's screen. The remote-control software also allows the technician to transfer files between the two computers and to install new software if needed.

Using Remote-Control Software

There are other applications for this type of software beyond technical support, which are more in keeping with what we want to do with our monitoring radios. There are versions of this software that allow ordinary users to control a base computer from a remote location in order to perform work tasks using the remote computer's software.

The original intention of this software was to give business users access to their office computer from a remote site, such as a hotel room. Using a laptop computer, for example, they would be able to access files, run programs, or retrieve e-mail as if they were sitting in front of their computers at work. The point of all of this is that the software tools and techniques that have been developed for the business user can now be utilized for other purposes as well. You can use these remote-control programs and services to run your monitoring radio's control software from a remote site.

With either NetMeeting or some other streaming audio software turned on at your home computer, and with the remote-control software installed and running, you can listen to and operate your monitoring radio from a remote location as if you were sitting in front of it. Likewise, if there are any problems with the home computer's operating system or software, you could possibly fix it from your remote location as well.

The two primary methods that you can use to perform this type of personal remote control is through the use of either a dedicated software control package that you install or through the use of a special web based service that allows you almost the same degree of control.

There are many different remote control programs available today, though most tend to be oriented towards administrators of large computer networks. The two I would suggest you consider are Symantec's PCAnywhere and 3 AM Labs Remotely Anywhere.

PCAnywhere is now available in version 11, so it is a definitely a mature software package that's been well tested in the real world (see www.symantic.com for details). As a result, it's considered the industry standard for remote control software and will certainly provide you with all the bells and whistles you will ever need. At $200 for the "home user" package, it's a bit pricey for the hobbyist, but for your investment you get a product that works very well. However, the software is made rather cumbersome because you need to do two installations of the same software; one on the home computer and the other on the remote computer in order to make the remote connection work. This means that to be able to perform the remote control, you must have a dedicated second computer with the software installed. If you are a business user and need a laptop computer on a business trip, this obviously makes sense.

There may be a situation where you can't take a laptop with you, such as when you're traveling or going to work. However, if you can access a computer with an Internet connection at a remote site, you can still control your home computer and the monitoring radio connected to it without using special software. This can be accomplished through a fee-based Web service that allows you to connect to, and control, your home computer from any computer connected to the Internet, as long as your home computer is turned on and connected to the Internet as well.

One product specifically designed for such use is Remotely Anywhere, which retails for $110 (see www.remotely anywhere.com for details). Like PCAnywhere, this software gives you complete control of your computer from a remote location, except that it uses a Web viewer (for example, Microsoft's Internet Explorer or Netscape), rather than a stand-alone software package. You can download a fully functional 30-day trial copy from the company's website if you want to explore the software's capabilities.

Another option is available to people using Microsoft's Windows XP Pro operating system on their PCs. One of the features provided by this version of Windows is a Terminal Services utility called Remote Desktop Connection. (Note that Terminal services are NOT available in the XP Home version). To use this feature you must have two computers that are both using Windows XP Pro and are connected to each other over a network, or are capable of making such a connection over the Internet. The features provided are more limited than the commercial products described earlier, but can be useful if you are working in a home network environment and simply wish to experiment.

Still another option that allows you to control your computer via a third-party remote-control server offers the advantage of keeping installation and configuration issues to a minimum by letting the server perform the majority of work. In this case, you download and install a small software package from *Access My PC from Anywhere* (see www.gotomypc.com for details) onto the computer connected to your monitoring radio. Note that in order to be able to connect to that computer from a remote location it must be continuously connected to the Internet via a cable modem or DSL line. Once you have the software installed, you can connect to that computer and operate it remotely by simply logging into the server via its webpage. Your home computer's desktop screen appears and you can control the computer as if you were sitting in front of it. The service allows you to try it out for free for one hour before service charges apply. You can either pay $20 per month or $180 per year, with the main advantage being the simplicity of the operation of the system versus having to set up and maintain your own software.

So, as you can see, you have a wide range of options in how you can implement a remotely operated computer and monitoring radio. These are far from the only types of software and services available, so take some time to check out alternatives to find the one that best suits your needs before making a decision.

Remote-Control Security

The only other issue you must definitely keep in mind when setting up a remote-control software package is how to prevent other people from accessing your computer via a network or the Internet. Obviously, if you can get into your computer system to operate it, then computer hackers may be able to do so as well. To keep your home computer secure you should install a Firewall software package to prevent hackers and intruders from taking over control of your remote-control software. The software and service I outlined here has various security methods built in, but may also require the additional software. I strongly advise you to see if a separate Firewall package is required and which one the software manufacturer or service provider suggests you use.

Again, what has just been outlined here is suitable for individuals to be able to control their own computers in order to control their monitoring radios. However, what if you want others to be able to have control as well, particularly if you don't feel that you need to have security features, such as log in? You may then want to consider going to a public system, such as the one developed by Bob Arnold, which I have described in previous columns. The advantage in this approach is that you can have access from any computer in the world that is connected to the Internet, without having to be dependent upon having a software package or third party service.

Let's look at how Bob has done this.

Free Access Remote Control

Bob's online radio control project supports two dedicated radios (the ICOM R75 and Ten-Tec RX-320) that you can tune via his personal webpage (www.ralabs.com/webradio) from the LF bands up to 60 MHz. I went into Bob's computer and radio setup in great detail in Part II of this series (September 2004), so I won't repeat that here. The only important thing to note is that if you intend on allowing full public access to your radios, you *must* provide the proper bandwidth on your Internet connection. In this regard, Bob strongly suggests that you arrange from your local telephone company for a 112-k ISDN that is connected to an Internet Service Provider (ISP) that can properly manage such a line. Any connection slower than that provided by ISDN will simply not work for more than one or two simultaneous users. (You will also need to register a domain name

(URL) so people can find you on the Web; this can be arranged for you by the ISP). While you will not need a very powerful computer, you *will* need a properly configured operating system and additional files. Certainly using Microsoft's Windows XP Professional is strongly advised, though Bob's software can work successfully with Windows 98.

Network and computer security against computer hackers is a must, along with the installation of the most current service pack for your version of Windows. Along with a good anti-virus program, you will definitely need a properly configured Firewall. This does not have to be very expensive as there are several good Internet Security programs available today at very reasonable prices. A good example is Zone Labs Zone Alarm, which costs $40 and provides protection against hackers, worms, and viruses (see www.zonelabs.com for details).

Bob is willing to provide you with a free version of his Web-based software to run as your own webpage. Obviously you will need either an ICOM IC-R75 or a Ten Tec RX-320 connected to your comput-

Introduction To The icecast Audio Server

As with everything in life, there is much change taking place in the world of multimedia communications. This is particularly true with the Internet, where new software is introduced almost every day. Since the earliest days of computer software there have been numerous debates as to how this new medium should be treated. Some believe that everything should be strictly controlled by copyright, while others believe that, in some cases, it should be freely distributed.

I'm not talking about software piracy, meaning stealing someone's work and income by copying it or sharing it without their permission. I'm referring to a practice called "open standards," where people willingly share their software with other people and encourage its free distribution. One of the best-known examples of this is the LINUX operating system (the one with the penguin, Tux, as a mascot), which was developed by Linus Torvalds in the early 1990s. While he owns the copyright on this operating system, the license states that the source code (the part of the program that creates the part that runs on a computer) can be freely copied and distributed for free. As a result of this license agreement, the LINUX operating system has become a new standard that rivals big commercial packages, such as Microsoft Windows. And because it's an open standard, software developers can improve upon it and add their own enhancements as required, rather than having to live with what was developed by others.

icecast is a streaming audio server that is open standard as well and free for distribution. It is designed to support Ogg Vorbis and MP3 audio streams, and it can be used to "broadcast" over the Internet or be a private source of audio signals. (Ogg Vorbis, by the way, is an open source method of audio encoding designed to be a competitor to the MP3 standard. It is being promoted by some because you do not have to pay royalties, as you do to the commercial software developers who developed MP3).

You can get all the required software and documentation for icecast (yes you are supposed to write the name in lowercase, because it is a cool thing to do) from the official website at www.icecast.org. You will need to download the free software for three programs in order to set up a streaming audio server. These are:

- icecast, a program that streams the audio to other computers on the Internet
- Libshout, a program that acts like a bridge between icecast and the monitoring radio audio signal you want to stream by keeping the digital data flowing properly
- IceS, a program that prepares the audio signal being fed into your computer's sound card from your monitoring radio to be sent to the icecast server.

The files as a group are called "the project." When they are properly downloaded, installed, and configured you can begin streaming your monitoring radio's audio over the Internet. Someone who wants to listen to the audio stream would do so using a compatible audio player, such as winamp (www.winamp.com) or foobar2000 (www.foobar2000.com), which you can download for free. Along with the support provided by the icecast development team and documentation, there are a number of individuals and user groups supporting the software on the Internet. You can get information on how to find these resources by going to the icecast website.

er, as other makes of computer-controlled radios will not be compatible. You'll also need Web server software that supports standard CGI applications. One Web server software package is from a company called Xitami (http://www.xitami.com/), and Bob has been using it for several years now and found it very satisfactory. What makes it particularly attractive for amateur use is that it's free!

Please note that Microsoft's Personal Web Server software that comes supplied with most versions of Windows will not work, except in the case of Internet Information Server (IIS) when using NT4 workstation or server, Windows 2000, or Windows XP Pro. The Personal Web Server software was intended to be used only as a development tool when it was included by Microsoft, and it should not be used as a "production"-type Web server because of its lack of built-in security against hackers and other threats when you connect to the Internet.

After having installed and set up the proper Web server, you will need to install the files for Bob's Web application program, which is relatively easy to do. The complete set of files will be sent to you in a compressed ZIP file. After you unpack the files you simply place them into the cgi directory of the Web server (this is very easy to identify, so don't worry about it). Once you have done that you simply follow the instructions provided by Bob with the program to configure it into your own personal webpage. This is also easy as all you need is a text editor to change the content of the file to suit your needs. With everything properly hooked up and running anyone will be able to go to your website to control the radio(s) that you have hooked up to your computer. Likewise, you will be able to do so if you are away from your home computer and radio.

There are some additional administrative features that will allow you a degree of control over your website. For example, you can log everyone who comes to your site to use your radios and keep a complete record of all frequencies and settings used. You can also lock out certain frequencies if you find that there is abuse or over-use of your radios for one particular service or mode.

The key point to remember is that you are not providing high-fidelity audio or fast tuning. It's not going to be able to scan a range of frequencies either, so it may not be suitable for certain types of radio monitoring, such as utility communications. However, if you want to listen to a shortwave broadcaster, a broadcast band station, or some other service that uses a fixed frequency, this set up will work very well. This type of configuration may also be an excellent project for a shortwave or ham radio club to undertake. It would not be difficult to set up a "members only" section of the club webpage that would restrict access. Such a service would be of great benefit for people who don't have access to a good monitoring radio, who live in an area where there's a great deal of interference, and to those who live in retirement communities or other institutional situations.

The truth is that the possibilities of such Web-based radio monitoring have only just begun to be investigated and there is great potential for new innovations. As I've shown, this is not a project that requires a lot of money, but it *will* require some computer skills and perseverance on your part. The rewards you'll get from making an investment into acquiring those skills will be significant enough to warrant the time taken. While it may seem intimidating at first, the truth is that the majority of the information is not that difficult to master. As I've said before, if you take time to plan things out, keep good notes, and keep track of where you are in a project, the possibility for success is extremely good.

Next Month

Next month I'll be finishing up this series of columns by looking at how you can connect your computer-compatible monitoring radio into a worldwide radio monitoring service. I'll be looking at DX Tuners (www.dxtuners.com), which is a subscription-based service for the non-professional radio monitoring community. Started by Kelly Lindman and located in Sweden, this English-based service has 39 networked-receivers covering LW, BCB, HF, VHF, and UHF frequencies in North America and Europe. To use this service you'll need to set up a computer using the LINUX operating system, which I'll show you how to do. It's a little tricky, but once done your radio becomes part of a leading-edge subscription service that definitely points to the future of radio monitoring in the 21st Century.

If you want to e-mail me with any questions, please use carm_popcomm@hotmail.com. I cannot answer general questions on computers, but will be more than happy to help you with any issues raised in the columns. You can also write to me at "Computer-Assisted Radio Monitoring," PMB 121 - 1623 Military Rd., Niagara Falls, NY 14304-1745. I have placed a list of my columns from the past two years, along with a summary of the content, in my personal webpage at www.provcomm.net/pages/joe. I've also included instructions there on how to purchase back issues of *Popular Communications*. Remember that I can't release previously published material because *Pop'Comm* owns the copyright. I'm still interested in any pictures you may have of your own computer-assisted monitoring station or stories about how you have built and run it. Don't worry about your writing, as I'm more than happy to help you by editing it.

So, again, please take time to write a letter to one of our service people in Iraq offering them your thanks and support. Remember that you can send letters of general thanks and support by simply marking the envelope "Any service person—Iraq". Don't forget to put your name and proper return address on the envelope as well, otherwise it will not be forwarded due to security concerns. It may take several months to get to someone, but I'm certain that it would make the day of who ever receives it. ■

Pop'Comm Survey Results!

What You're Telling Us About Pop'Comm *And Your Radio Hobby*

by Harold Ort, N2RLL, Editor

Indeed, it's been a couple of months since we last reported results of our survey questions to you, but please know that we sincerely appreciate your taking the time to complete the cards and send them in each month. We're *always* working to make *Pop'Comm* better and fine-tuning it to your needs based on what you're telling us!

Some of the interesting comments we've received with the survey cards included one from Greg in California who said, "...my station has been operating on 12-VDC deep cycle batteries charged by solar panels for over 15 years."

John Chalmers in Missouri tells us, "I read *Pop'Comm* cover to cover and especially like the "Global Information Guide" and the way you continue to tackle the politicians who would rather we play golf in our spare time..." Well said, John!

Jerry in New Mexico informs us, "I...like the changes in *Pop'Comm* over the past few years and your honest equipment reviews...good to see a lot of diversity in the products you review..."

The winner of this month's free subscription is **Fred Pickett, Jr.,** of Annandale, Virginia. Fred will receive a free one-year gift subscription to *Pop'Comm* for being our randomly drawn winner. Have ***you*** sent in your survey card?

Here's what we asked you and here are your responses. Again, thank you!

I'm a shortwave radio listener/DXer and regularly use "World Band Tuning Tips" on pages 40 and 41:

Yes: 45%
No: 12%
Sometimes: 30%
I would, but it's hard to understand: 3%
I just search the band for stations: 9%

My primary shortwave activity is:

International broadcasts for news value: 52%
Military comms in sideband: 8%
Military digital comms: 1%
DXing broadcast stations: 15%
DXing aircraft: 4%
Monitoring amateur comms: 10%
Monitoring pirate and clandestine stations: 6%
I rarely use shortwave: 4%

I listen to AM broadcast band stations:

Yes: 66%
No: 3%
Sometimes: 6%
I used to, but not any more because there's little variety: 5%
I used to, but not any more because there's a high level of noise at my home monitoring shack: 2%
I mainly DX broadcast stations in the winter when the band is quieter: 15%
I listen to stations on the Internet because it's easier: 2%

I find the loggings in "Broadcast Technology" useful:

Yes: 56%
No: 3%
Sometimes: 41%

Pop'Comm November Survey Questions

I'm a member of a local volunteer emergency radio group:
Yes 1
No 2
I plan on becoming a member, but don't have time right now 3
There is no local emergency radio communications group 4

I know that emergencies can happen anywhere, anytime so I'm prepared at home with:
Enough alkaline batteries to power my two-way radios for at least 48 hours 5
Enough alkaline batteries to power my two-way radios for three or four days 6
A ready-to-go portable antenna for my ham gear as well as my scanners 7
A ready-to-go portable antenna for a small mobile CB radio 8
A ready-to-go portable antenna for my shortwave receiver 9
Portable battery power packs with appropriate adapters for my radios 10
At least one pair of FRS radios with alkaline batteries 11
At least one pair of FRS radios with fully charged NiCd or NiMh batteries 12
A pair of CB walkie-talkies with alkaline batteries 13
A pair of CB walkie-talkies with fully charged NiCd or NiMh batteries 14
A NOAA All Hazards receiver with extra batteries 15

I've had to leave my home under a mandatory evacuation order in the last year:
Yes, because of a hurricane 16
Yes, because of a hazardous material spill/leakage 17
Yes, because of a police action (criminal activity/ nearby hostage situation) 18
Not sure 19
I was told to, but stayed anyway 20

If I left under an evacuation order I took some emergency radio equipment with me:
Yes 21
No 22
No time to get the radios 23

My "emergency radio package" is contained in a:
Small piece of luggage in case I need to stay overnight somewhere 24
Soft camera bag 25
Hard camera case 26
Briefcase 27

by Ken Reiss, radioken@earthlink.net

The RadioShack PRO-96 Scanner

The RadioShack PRO-96 has caused quite a stir in the scanner community. It represents the first scanner to include digital scanning in the APCO-25 mode as standard equipment (Uniden's digital scanners require an add-on board for digital operation). These radios allow us, for the first time, to receive digital modulation, which represents a major advancement in scanning technology. Before we get to the fun stuff, though, let me tantalize you a bit with some of the other features of this versatile receiver.

Not A Pocket Scanner

The PRO-96 is certainly not something you'll want to carry around in your shirt pocket. It's comfortable in the hand and has enough weight to feel solid as you hold it. The keys are large enough for my fat fingers and it does have a belt clip. If you're looking for tiny, this isn't it. It's 6-3/16 x 2-7/16 x 1-3/4 inches (HWD). You'll definitely know you have it with you, but at the same time it's not a bulky brick-type radio either. I found it very comfortable to use, and a nice size for sticking in the otherwise useless drink holder in my car. It runs off AA alkaline batteries (hooray!). Six are required to get it moving, although you can also use rechargeable NiCd, NiMh, or LiIon if you prefer.

The scanner features all the frequency coverage you'd expect, except for the military air 225- to 406-MHz range. This has been left out of a number of receivers over the past few years, with manufacturers citing both a lack of interest by most scanner users and design difficulties in rejecting cellular images in these areas.

Memories A-Plenty!

The PRO-96 features 500 channels in 10 banks. Not much new there, as many of the recent radios have this configuration, or larger. What is new is that there are also "V-Scanner" memories. V-Scanner (for Virtual Scanner) is simply a virtual "folder" where you can store data and programming information for different cities or areas while you use another folder to scan. You can also set up V-Scanners for areas of a city or country that you travel to, or for things that you might not normally listen to, but want to have ready just in case.

The RadioShack PRO-96 brings digital reception into the hobby and it packs a whole list of features, both for conventional scanning and trunked systems. This is a very serious handheld scanner!

The way this works is that you program the scanner as you normally would. Then a few keypresses let you store the current memory in any of the 10 V-Scanner memories. You can then choose to stay where you are, or load any of the other 10 V-Scanners. It's almost like having 10 radios in your pocket. There is actually an eleventh "working" memory V-Scanner as well, accessed through the decimal point key, but I didn't have reason to use this with the 10 "normal" ones available.

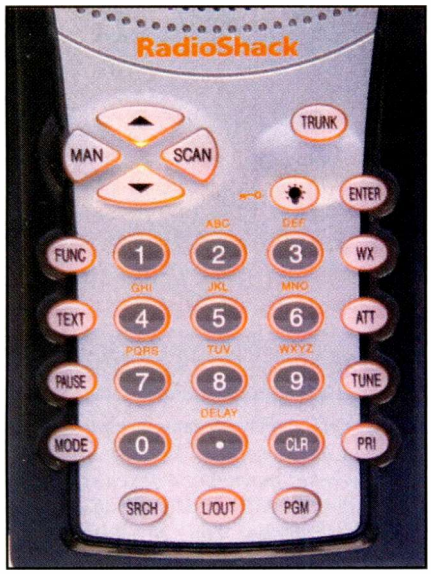
It takes about 15 seconds for the radio to completely save or load a V-Scanner configuration, so you wouldn't want to do this all the time, but it's a lot better than trying to retype all that information if you need the radio reprogrammed in a hurry. Of course, all of this can be done with PC programming too, making the whole job of programming as many as 5,500 memory channels a bit more realistic.

Here's the radio scanning. The numbers indicate the active banks, and the "+" or "–" symbol indicates an open or closed bank. Closed banks only receive the trunking channels that are programmed into the ID list. An open one will receive anything to help you identify new channels.

Programming

The PRO-96 is programmed very much like many of the other RadioShack Trunktracking scanners in years past (except for the ones that were manufactured by Uniden). There is a program mode that you have to enter to select a bank. If it's a conventional bank, you can just proceed; a trunked bank will take a few extra keystrokes. Trunked banks also have lists of IDs that can be stored so you can identify who's talking more readily.

Banks are either "Open" or "Closed." You'll encounter this primarily on a trunked system. An open bank will allow any transmission through and identify the talkgroup that's active. If it happens to be a talkgroup that you've stored in memory with an alpha tag, then it will be identified that way. Otherwise just the number appears. If it's not one that you've identified, it will still be heard but will only show the number.



Here is the key layout of the PRO-96. The radio is large enough that the keys are spread comfortably across its front, even if you have large hands like mine. The Function key is used to access all kinds of special programming settings and information. You'll learn quickly which ones are important. As for the rest, I'd recommend a computer program to deal with all the settings at once.

Closed banks are only allowed to hear the IDs that you have programmed in. If you've got a list of IDs for the police and fire channels that you're interested in, then only that list will be heard, and the dog catcher, water department, and anything else on the trunked system will be ignored. The manual states that you only need to enter the control channels for a Motorola trunked system and that the radio will find the rest as needed. You can also enter conventional frequencies with a trunked system, potentially saving a lot of memory spaces, but I did not find opportunity to experiment with this function.

There are only two down sides to the whole radio; they're both related to programming, but are really minor issues. First, there is a FUNC (Function) key used for many things in the programming of the radio. I find it very difficult to remember the correct key sequence for things, since I tend to see a lot of radios during a year. I'm sure with regular operation though, you'd quickly learn the important ones. The other drawback is shared with any scanner with alpha tags—it takes quite a bit of button pushing to get them in there. The PRO-96 uses an interesting two-key sequence to enter a single character. First, you press the number for a group of letters (these are on the label above the key), like ABC. Then A, B, and C appear on the display and you press the 1, 2, or 3 button to pick the first, second, or third character. There are four on some screens. I don't really know that there's another system that works better, but I wouldn't want to have to type 5,500 of these things in either! Computer software is highly recommended with this receiver. (See this month's "ScanTech" for a discussion of WIN-96, a program that I highly recommend.)

The PRO-96 uses a unique method for entering alpha tags and other text. One keypress gets you in the neighborhood, while a second is required to select the specific letter. It takes a bit of getting used to, but once you do, entry is reasonably quick and there is never more than two keypresses (but there are always two required). Here, the 7 key has been pressed, revealing P Q R S and the radio is waiting for the 1 2 3 or 4 key to be pressed before entering another P into the first space.

One unique feature in this handheld is the mode to search for either CTCSS or DCS codes if you don't know them. Here, this memory is being programmed to search for DCS codes and display any it finds.

Tone Squelch

The PRO-96 is one of a very few scanners that recognize both CTCSS (Continuous Tone Code Squelch System) and DCS (Digital Code Squelch) tone squelch. These are two methods of relieving interference on conventional channels that are already very popular and gaining in popularity all the time. You can set the scanner to show you any tone that may be present on the channel, or if you know the code, it can be programmed and then only signals with the appropriate tone will be passed through the squelch system. If you've never had tone squelch, you'll find that it's a worthwhile addition, particularly with a handheld!

Oh Yeah...Digital

Of course, the big news is that the scanner also receives and processes digital. Specifically, it receives APCO Phase I digital as well as analog Motorola type I and II systems, Motorola's ASTRO (unencrypted), and EDACS. That's a lot of alphabet soup! All the Motorola systems are the same ones that other trunk-tracking scanners have been receiving for some time. EDACS is a competing system. You'll have one or the other, so between the two of them it covers a large percentage of the trunked radio systems in the country. (If you're not familiar with these systems, don't worry—we'll take another look at this topic in an upcoming issue of "ScanTech.") ASTRO and APCO-25 are new digital systems. More and more trunked systems will be going to APCO-25, while ASTRO represents slightly older (but not very different) technology. If you have an ASTRO system near you, you can use it for a while, as I don't believe any new ASTRO sys-

Once you've identified the tone you're interested in, if it's programmed directly into memory, that channel will only receive if that tone is present—tone squelch! Here a CTCSS tone of 103.5 has been programmed for this memory channel.

tems are being installed (opting for APCO 25 and standardization instead).

There isn't really a whole lot to tell you about these modes, however. There's no programming required for digital to work; it just kicks in when a digital signal is detected in a trunked or analog system. And it works well if the signal strength is high enough. Just like analog, it doesn't take a huge signal to get digital reception. The difference is that if an analog signal fades in and out a bit, the human mind can compensate and follow the conversation fairly well. If you start losing pieces of a digital conversation, it quickly turns to garbage. In operation, with reasonable signal strength, I found the scanner very easy to listen to. There is a slight "mechanical" sound to the voice that isn't there with analog, but you can certainly pick out one person from another and follow the conversation (which we couldn't do at all before!), so it's a major enhancement. In marginal signal areas, the dropouts begin to cause missed words or syllables, and then a general breakup of the speech.

Check It Out!

This versatile scanner deserves a look. It's an excellent conventional scanner loaded with features seldom seen on handhelds. If you're near a trunked system, its performance is good and it offers quite a bit of versatility in the scanning of trunked systems. And, of course, if your trunked system or non-trunked system is digital, you don't have very many choices at all, but this is a good one!

It's available at RadioShack. Retail price is $499, which is very reasonable for the amount of radio you're getting, but it has been on sale from time to time as well. You may also want to consider the PC Interface cable for $24.95 to save you a lot of typing on the small keyboard. ■

This is the ID number screen. A Motorola system is in use here, and any time this ID is received in this particular trunked system, the alpha tag of "DISPATCH" will show rather than the ID number. You can set it up to display the numbers if you prefer, but why would you want to do that if you went to the trouble of entering alpha tags?

Here is the menu for the V-Scanner function. V-Scanner folders are like storage drawers that hold an entire scanner memory and settings. It's really like having 10 radios built into one. It takes about 15 seconds to switch from one to another, so you won't want to do it often, but it's great for travel or special events. A computer is the best way to program this, but it can be done from the scanner keypad if you're patient.

Tap into secret Shortwave Signals

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

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.

MFJ-462B **$179.95**

Printer Monitors 24 Hours a Day

MFJ's exclusive *TelePrinterPort*™ lets you monitor any station 24 hours a day by printing transmissions on an Epson compatible printer.

Printer cable, **MFJ-5412,** $9.95.

MFJ MessageSaver™

You can save several pages of text in an 8K of memory for re-reading or later 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 -- the 2 line 16 character LCD display with contrast adjustment is mounted on a brushed aluminum front panel for easy reading.

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

Use 12 VDC or use 110 VAC with MFJ-1312B AC adapter, $12.95. 5¼Wx2½Hx5¼D inches.

No Matter What™ Warranty

You get MFJ's famous one year *No Matter What*™ limited warranty. That means we will repair or replace your MFJ *MultiReader*™ (at our option) *no matter what* for one full year.

Try it for 30 Days

If you're not completely satisfied, simply return it within 30 days for a prompt and courteous refund (less shipping). Customer must retain dated proof-of-purchase direct from MFJ.

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, $12.95.

MFJ-1024 **$139.95**

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 **$79.95**

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, $12.95.

Compact Active Antenna

Plug this *compact* MFJ all band active antenna into your receiver and you'll hear strong, clear signals from all over the world, 300 KHz to 200 MHz including low, medium, shortwave and VHF bands. Detachable 20" telescoping antenna. 9V battery or 110 VAC MFJ-1312B, $12.95. 3⅛x1¼x4 in.

MFJ-1022 **$49.95**

Eliminate power line noise!

MFJ-1026 **$179.95**

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 **$99.95**

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, $12.95.

High-Gain Preselector

High-gain, high-Q receiver preseletor covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Push buttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18 VDC or 110 VAC with MFJ-1312, $12.95.

MFJ-1045C **$99.95**

Dual Tunable Audio Filter

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

MFJ-752C **$99.95**

MFJ Shortwave Headphones

MFJ-392B **$19.95** New!

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 **$49.95**

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 **$99.95**

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.

New!

MFJ-281 **$12.95**

MFJ All Band Doublet

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

New!

MFJ-1777 **$49.95** Ship Code A

MFJ Antenna Switches

MFJ-1704 **$69.95**

MFJ-1702C **$24.95**

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!

MFJ-461 **$79.95** New!

MFJ 24/12 Hour Station Clock

New!

MFJ-108B, $19.95. Dual 24/12 hour clock. Read UTC/local time *at-a-glance.* High-contrast 5/8" LCD, brushed aluminum frame. Batteries included. 4½Wx1Dx2H inches.

Free MFJ Catalog
and Nearest Dealer . . . 800-647-1800

http://www.mfjenterprises.com

• 1 Year *No Matter What*™ warranty • 30 day money back guarantee (less s/h) on orders from MFJ

MFJ ENTERPRISES, INC.
Box 494, Miss. State, MS 39762
(662) 323-5869; 8-4:30 CST, Mon.-Fri.
FAX: (662) 323-6551; **Add s/h**
Tech Help: (662) 323-0549

Your Monthly International Radio Map

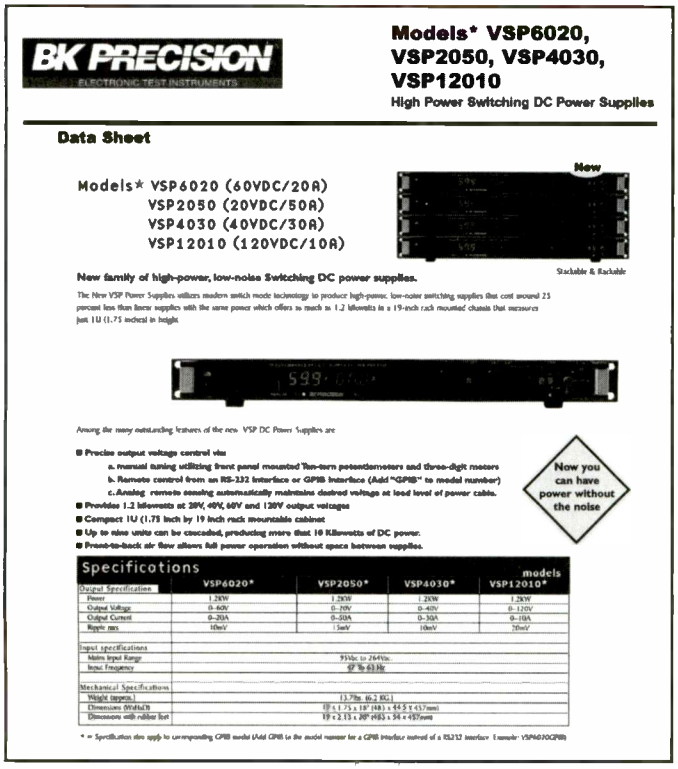
This listing is designed to help you hear more shortwave broadcasting stations. The list includes a variety of stations, including international broadcasters beaming programs to North America, others to other parts of the world, as well as local and regional shortwave stations. Many of the transmissions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

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

UTC	Freq.	Station/Country	Notes
0000	11725	Radio Cairo, Egypt	
0000	12020	HCJB, Ecuador	PP
0000	7545	Radio Ukraine Int.	
0000	9580	Int. Radio of Serbia & Montenegro	
0030	9845	Radio Netherlands, via Neth. Antilles	
0030	6145	Radio Japan/NHK, via Canada	
0030	11800	RAI Int., Italy	II
0030	7545	Radio Ukraine Int.	
0030	11905	Sri Lanka Broadcasting Corp.	Hindi
0030	3310	Radio Mosoj Chaski, Bolivia	SS
0030	5010	Radio Cristal, Dominican Republic	SS
0030	11690	Radio Vilnius, Lithuania	
0030	5970	BBC Relay, Oman	
0030	11775	Radio Marti, US	SS
0100	6175	Voice of Vietnam, via Canada	
0100	4800	Radio Buenos Nuevas, Guatemala	SS
0100	4052.5	Radio Verdad, Guatemala	SS
0100	9690	Radio Budapest, Hungary	
0100	7345	Radio Prague, Czech Republic	
0100	4915	Radio Anhanguera, Brazil	PP
0100	11710	RAE, Argentina	
0130	6536	Radio Huancabamba, Peru	SS
0130	11585	Kol Israel	HH
0130	9715	Radio Tashkent, Uzbekistan	Uzbek
0130	9715	RDP Int., Portugal	PP
0130	6055	Radio Exterior de Espana, Spain	SS
0130	11520	Radio Free Asia, via Tajikistan	unid
0130	5678	Radio Ilucan, Peru	SS
0130	4985	Radio Brazil Central	PP
0130	9870	Radio Austria Int.	
0200	9860	Voice of Russia	
0200	4996	Radio Andina, Peru	SS
0200	9905	VOIRI, Iran	
0200	9680	Radio Taiwan Int., via Florida	
0200	9460	Voice of Turkey	TT
0200	5930	Radio Slovakia	FF
0200	3300	Radio Cultural, Guatemala	SS
0200	9420	Voice of Greece	Greek
0200	9965	Voice of Russia, via Armenia	SS
0230	11920	RTV Marocaine, Morocco	AA
0230	9665	Voice of Russia, via Moldova	
0230	3320	Radio Sondergrense, South Africa	Afrikaans
0230	9875	BBC Relay, Cyprus	unid
0230	9440	Radio Slovakia	
0230	6115	Radio Tirana, Albania	
0230	7160	Radio Tirana, Albania	
0230	4750	Radio Peace, Sudan	
0250	7305	Vatican Radio	
0300	3215	Adventist World Radio, via Madagascar	Malagasy
0300	4810	XERTA/Radio Transcontinental, Mexico	SS
0300	9840	RAI Int., Italy	II
0300	4965	Christian Voice, Zambia	
0300	4910	Radio Zambia	unid
0300	9770	Channel Africa, South Africa	
0300	9925	Voice of Croatia	Croatian
0300	5815	World Music Radio, Denmark	
0300	3240	Trans World Radio, Swaziland	
0300	4976	Radio Uganda	
0300	9980	AFN/AFRTS, Iceland	USB
0300	6140	Voice of Turkey	
0300	9345	Reshet Bet, Israel	HH
0300	9755	Radio Monte Carlo, Monaco, via Canada	AA
0315	5500	Voice of Peace & Democracy (cland)	vern
0315	9780	Republic of Yemen Radio	AA
0330	6030	SWR, Germany	GG
0400	15270	Radio New Zealand Int.	
0400	4950	Radio Nacional, Angola	PP
0400	5446	AFN/AFRTS, Florida	usb
0430	15195	Radio Japan/NHK	
0430	9737	Radio Nacional, Paraguay	SS
0430	3345	Channel Africa, South Africa	
0430	5985	Radio Congo	FF
0500	7275	RT Tunisienne, Tunisia	AA
0500	7255	Voice of Nigeria	
0500	6250	Radio Nacional Malabo, Eq. Guinea	SS
0530	5030	RTV Burkina, Burkina Faso	FF
0530	6105	Radio Universidad, Costa Rica	SS
0600	5995	RTV Malienne, Mali	FF
0600	4760	ELWA, Liberia	
0600	4915	Ghana Broadcasting Corp.	
0600	7210	ORTB, Benin	FF
0700	6185	Radio Educacion, Mexico	SS
0730	9870	Trans World Radio, Monaco	
0800	11765	KNLS, Alaska	
0830	9970	RTBF, Belgium	FF
0900	11995	RDP Int., Portugal	PP

UTC	Freq.	Station/Country	Notes
0900	13840	Italian Radio Relay Service, Italy	
0900	3290	Voice of Guyana	
0900	9690	Deutsche Welle, via Antigua	GG
0900	6135	Radio Santa Cruz, Bolivia	SS
0930	6115	Radio Union, Peru	SS
0930	6110	Voz Cristiana, Chile	SS
0930	11755	YLE/Radio Finland	Finnish
0930	6010	La Voz de tu Concencia, Colombia	SS
0930	6070	CFRX, Canada	
0930	6160	CKZN, Newfoundland, Canada	
1000	17805	Radio Romania Int.	unid
1000	4870	La Voz del Upano, Ecuador	SS
1000	4919	Radio Quito, Ecuador	SS
1000	9695	Radio Rio Mar, Brazil	PP
1030	4747	Radio Huanta 2000, Peru	SS
1030	9710	Radio Australia	Pidgin
1100	4890	NBC, Papua New Guinea	
1100	5020	Solomon Is. Broadcasting Corp.	
1130	9895	Radio Netherlands	DD
1130	9445	China Radio Int.	CC
1200	6150	Radio Singapore Int.	
1200	11580	KFBS, Northern Marianas	CC
1200	11565	KWHR, Hawaii	
1200	17815	Radio France Int., via Ascension	
1200	15565	BBC, England	
1200	9545	VOA Relay, Philippines	CC
1200	9580	Radio Australia	
1200	11590	Voice of the Strait, China	CC
1200	9525	Radio Polonia, Poland	
1230	15260	Radio Sweden	
1230	11740	Radio Japan/NHK, via Singapore	JJ
1230	11500	Voice of Russia, via Tajikistan	Hindi
1230	7295	Voice of Malaysia	
1230	11655	Radio Rebelde, Cuba	
1230	11900	KSDA/Adventist World Radio, Guam	CC
1230	12130	KTWR/Trans World Radio, Guam	CC
1230	12020	Voice of Vietnam	
1230	9965	KHBN, Palau	CC
1230	13580	Radio Sweden	
1300	17575	RDP Int., Portugal	PP
1300	9760	VOA Relay, Philippines	
1300	9525	Voice of Indonesia	II
1300	11710	Voice of Korea, North Korea	
1330	21605	UAE Radio	AA
1400	9770	VOA Relay, Thailand	Mandarin
1400	12010	Radio Australia, via Singapore	Mandarin
1430	11740	Voice of America Relay, Northern Marianas	unid
1430	12000	Radio Nacional, Venezuela, via Cuba	SS
1500	15350	Voice of Turkey	TT
1500	9705	Radio Mexico Int.	SS
1500	13870	Radio Sawa, US, via Sri Lanka	AA
1500	13775	Radio Austria Int., via Canada	
1530	15455	Voice of Russia	GG
1530	15225	Adventist World Radio, via UAE	
1530	15570	Vatican Radio	
1530	15435	UAE Radio	AA
1530	15400	YLE/Radio Finland	Finnish
1600	11690	Radio Jordan	
1600	11650	VOIRI, Iran	
1600	11570	Radio Pakistan	
1630	12125	Far East Broadcasting, via South Africa	unid
1700	15265	Channel Africa, South Africa	
1730	15660	Radio Jamahiriya, Libya, via France	AA
1730	13765	Vatican Radio	
1730	15695	IBRA Radio, via Germany	unid
1830	17535	Kol Israel	HH
1900	17560	Radio Exterior de Espana, Spain	
1900	15190	Radio Pilipinas, Philippines	Tagalog
1900	15470	Radio Ndeke Luka, via England	FF
1900	13710	Bible Voice, via Germany	
1930	15150	Voice of Indonesia	FF
1930	15476	Radio Nacional Arcangel, Argentine Antarctica	SS
2000	15345	RTV Marocaine, Morocco	AA
2000	15505	Radio Kuwait	AA
2000	17800	Voice of Nigeria	
2000	15185	Radio Budapest, Hungary	HH
2000	9830	VOA Relay, Sao Tome	
2000	11720	VOA Relay, Morocco	FF
2000	17680	Voz Cristiana, Chile	SS
2000	9960	Voice of Armenia	
2030	11630	Voice of Russia	SS
2030	11635	Radio Jamahiriya, Libya, via France	EE/AA
2030	9680	Radio Thailand	
2030	17705	Radio Nacional, Venezuela, via Cuba	SS
2030	13610	Radio Damascus, Syria	
2030	12105	Adventist World Radio, via South Africa	unid
2030	11600	Radio Prague, Czech Republic	SS
2030	11820	BSKSA, Saudi Arabia	AA
2100	9445	All India Radio	
2100	7380	Voice of Biafra Int., via S. Africa (cland)	Sats
2100	11830	Radio Budapest, Hungary	
2100	15375	Radio Cairo, Egypt	
2100	17830	BBC, England, via Seychelles	
2100	17835	Radio Imperial, El Salvador	SS
2100	12080	VOA Relay, Botswana	unid
2130	17735	Radio Romania Int.	
2130	11905	Radio Tashkent, Uzbekistan	
2130	9880	Radio Sweden	
2200	9720	Deutsche Welle Relay, Sri Lanka	
2200	17860	Deutsche Welle Relay, Rwanda	GG
2230	9760	Cypress Bc. Corp.	Greek; wknds
2230	11635	Radio Vlaanderen Int., Belgium, via Bonaire	FF/Flemish
2300	4845	Radio Mauritanie, Mauritania	AA
2300	13605	All India Radio	
2300	15230	Radio Havana Cuba	PP
2300	15630	Voice of Greece	Greek
2300	13680	China Radio International	
2300	6190	Deutschlandfunk, Germany	GG
2300	13865	INBS., Iceland	Icelandic; USB
2300	9520	Radio Liberty, US, via Greece	RR
2330	9875	Radio Vilnius, Lithuania	
2330	11700	Radio Bulgaria	
2330	6973	Galei Zahal, Israel	HH

by Harold Ort, N2RLL



BK PRECISION
ELECTRONIC TEST INSTRUMENTS

Models* VSP6020, VSP2050, VSP4030, VSP12010
High Power Switching DC Power Supplies

Data Sheet

Models* VSP6020 (60VDC/20A)
VSP2050 (20VDC/50A)
VSP4030 (40VDC/30A)
VSP12010 (120VDC/10A)

New

Stackable & Rackable

New family of high-power, low-noise Switching DC power supplies.

The New VSP Power Supplies utilizes modern switch mode technology to produce high-power, low-noise switching supplies that cost around 25 percent less than linear supplies with the same power which offers as much as 1.2 kilowatts in a 19-inch rack mounted chassis that measures just 1U (1.75 inches) in height.

Among the many outstanding features of the new VSP DC Power Supplies are

- Precise output voltage control via
  - a. manual tuning utilizing front panel mounted ten-turn potentiometers and three-digit meters
  - b. Remote control from an RS-232 interface or GPIB interface (Add "GPIB" to model number)
  - c. Analog remote sensing automatically maintains desired voltage at load level of power cable.
- Provides 1.2 kilowatts at 20V, 40V, 60V and 120V output voltage
- Compact 1U (1.75 inch by 19 inch rack mountable cabinet
- Up to nine units can be cascaded, producing more than 10 Kilowatts of DC power.
- Front-to-back air flow allows full power operation without space between supplies.

Now you can have power without the noise

Specifications

models	VSP6020*	VSP2050*	VSP4030*	VSP12010*
Output Specification				
Power	1.2KW	1.2KW	1.2KW	1.2KW
Output Voltage	0-60V	0-20V	0-40V	0-120V
Output Current	0-20A	0-50A	0-30A	0-10A
Ripple rms	10mV	15mV	10mV	70mV
Input specifications				
Mains Input Range	95Vac to 264Vac			
Input Frequency	47 To 63 Hz			
Mechanical Specifications				
Weight (approx.)	13.7lbs (6.2 KG)			
Dimensions (WxHxD)	19" x 1.75" x 18" (483 x 44.5 x 457mm)			
Dimensions with rubber feet	19" x 2.13" x 20" (483 x 54 x 457mm)			

* = Specifications also apply to corresponding GPIB model (Add GPIB to the model number for a GPIB interface instead of a RS232 interface. Example: VSP6020GPIB)

B&K Precision's new high-power switching power supply is targeted for applications that require high DC voltages at very high current levels (1.2 kW at 60 volts).

B+K Precision's New DC Power Supplies

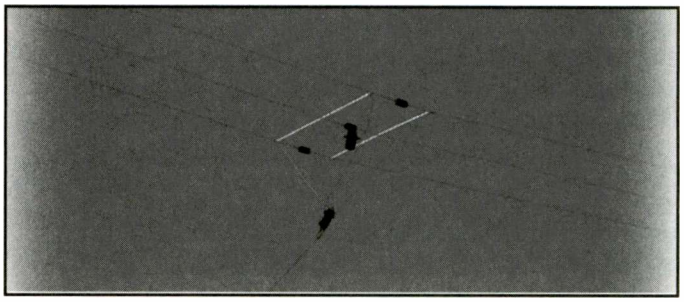
B+K Precision announced immediate availability of the first of a new family of high-power, low-noise DC power supplies. The Model VSP6020 High Power Switching DC Power Supply is compatible with most computers via a standard RS-232 serial port. The new unit uses modern switch mode technology to produce a high-power, low-noise switching supply that costs around 35 percent less than linear supplies with the same power, according to B+K Precision.

The unit is a 19-inch rack-mounted chassis that measures just 1.75 inches in height. It produces 1.2 kW of power, making it ideal for applications ranging from automatic test equipment to R&D labs and telecommunications. B&K reports that the power supply, "achieves an energy conversion efficiency of 80 percent, while keeping noise levels under 20 millivolts."

For more information on the new Model VSP6020 High Power Switching DC Power Supply, contact B&K Precision directly at 22820 Savi Ranch Parkway, Yorba Linda, CA 92887, or phone 714-921-9095. Their website is located at bkprecision.com.

Array Solutions Exclusive North American Distributor Of Bushcomm Antennas

Array Solutions and Bushcomm Pty Ltd. have announced that Array Solutions will be Bushcomm's exclusive distributor in the North American market, which includes Canada, Mexico, Central America, and the Caribbean. Bushcomm is a leading



The BBA-100 antenna covers 2 to 30 MHz without a tuner and is great for use as an all-band shortwave listening/DXing antenna!

manufacturer of broadband antennas for military, commercial, amateur, and public communication systems. It is an OEM to many of the leading radio companies that sell wideband antennas worldwide under a variety of brand names.

Jay Terleski, owner of Array Solutions said, "We are pleased to have been selected by Bushcomm to distribute these fine antennas in the [North American] marketplace. There has been a quality gap in what is being sold to this wideband market. These high quality antennas made from stainless steel and fiberglass set the new standards in quality and performance. The three-wire BBA series of wideband antenna is proven to have higher efficiency, which means a stronger signal to our customer."

Their BBA-100 HF Antenna covers 2 to 30 MHz without the need of a tuner, includes stainless steel wire and fittings, and uses UV resistant rods (*NOT* PVC pipe) and balun/load boxes. The antenna is rated at 250 watts PEP, and the input connector is a UHF socket. The Bushcomm release says, "Light but sturdy construction ensures low total mass and wind loading, making the BBA-100 ideal for any mounting situation whether between towers or a tree and the backyard shed."

Graham Robinson, president of Bushcomm Pty Ltd. commented that, "We have produced products to serve the military and commercial wideband markets worldwide, but we felt we were missing a good portion of the North American market by not selling directly into it. When we inquired with hams in Canada and the U.S. of whom should we look to in this market the answer was always Array Solutions." Terleski noted that, "There are several antennas to choose from all with VSWRs under 2.5:1."

Pop'Comm will be reviewing the BBA-100 soon, but in the meantime, we suggest you visit the Array Solutions website at www.arraysolutions.com for more information, or call them at 972-203-2008. They're located at 350 Gloria Road, Sunnyvale, TX 75182. Don't forget to tell Jay Terleski that you read about it in *Popular Communications*!

Alinco Introduces DJ-C7T Pocket HT "Second Generation" Credit Card-Size Dual-Band Transceiver

Alinco has introduced the new DJ-C7T 2m/70cm HT, a pocket-size transceiver that succeeds its popular Alinco DJ-C5. After leading the way in breakthrough miniature electronics technology with its revolutionary credit card-size transceivers, Alinco

Alinco's new DJ-C7T handheld amateur transceiver is loaded with features, including 200 memories and wideband receive.

has created a new pocket-size HT that's small in size but big in added memories and modes.

One of the most noticeable improvements over the DJ-C5 is the audio quality. With a completely redesigned internal speaker, the DJ-C7 delivers amazing audio quality that rivals many bigger radios. The new model also offers an SMA antenna port and a two-way antenna system that allows the use of an optional earphone cable to monitor FM broadcast reception while using the SMA antenna port for the helical antenna (included) or a choice of other optional antennas. The DJ-C7 can transmit up to 300-mW output with the powerful lithium-ion battery that is included with the radio. Using optional external power, it can transmit up to 500 mW-output.

The new DJ-C7T offers 200 memories, two-way antenna systems, wide band receive including FM broadcast and AM aircraft bands, auto repeater setting, VFO, memory and scan modes, and much more. There are 39 CTCSS encode and decode settings (decode included as a standard feature) and four tone bursts that make the unit usable for repeater operations in many parts of the world. The large display is easy to read and provides information to the user about a number of useful features. Alinco has added a split function and the ability to clone units by cable. Alinco DJ-C5T optional microphones/earphones are cross-compatible with the DJ-C7T.

For more information contact Alinco at www.alinco.com.

The W3FF Buddipole

The Buddipole, a dipole and a vertical antenna, is actually a versatile system for, as the news release says, "launching your signal." It comes complete with two 22-inch black anodized aluminum arms, two multi-band coils (40m–2m) with adjustable coil tap system, two stainless steel telescopic whips, center tee with 3/8-inch x 24 adapters, BNC/PL-259 coax connector assembly (includes RF beads) with 12 feet of coax, nylon carrying bag, black thermoplastic carrying case, and operating manual.

Cost of the antenna, which also covers 440 MHz, is $199. Contact the company at buddipole.com or phone 530-226-8446. You can also e-mail them at info@buddipole.com. Please tell them you read about the Buddipole in *Pop'Comm*. ■

The W3FF Buddipole is a versatile antenna system that costs $199 direct from sales@buddipole.com. The company also offers a 35 optional rotating arm kit that allows you to change the antenna's configuration in the field. →

by Gerry L. Dexter

WYFR Expands...Again, Plus Catching Switzerland On Shortwave One Last Time

Remember *The Andromeda Strain*, that early 1970s movie about a deadly microbe which rode a satellite back to earth, killing nearly everyone in the little town where it landed? When the scientists eventually pinpointed the bug and amplified it thousands of times, they could actually see the thing "hiccuping" every few seconds, each time growing larger and more even deadly.

Well, there's something akin to this happening on the shortwave bands! Lately Family Radio/WYFR, already "camping" on a great number of frequencies, has been expanding and spreading in quite a scary fashion. The latest hiccup has them being relayed from Minsk in Byelorussia, beaming to Western Europe in Spanish from 1900 to 2000 on **7350**.

Better get a move on if you want to log Swiss Radio International one last time. At the close of October SRI will end a shortwave life that dates back to the medium's earliest days. That will be a very sad occasion.

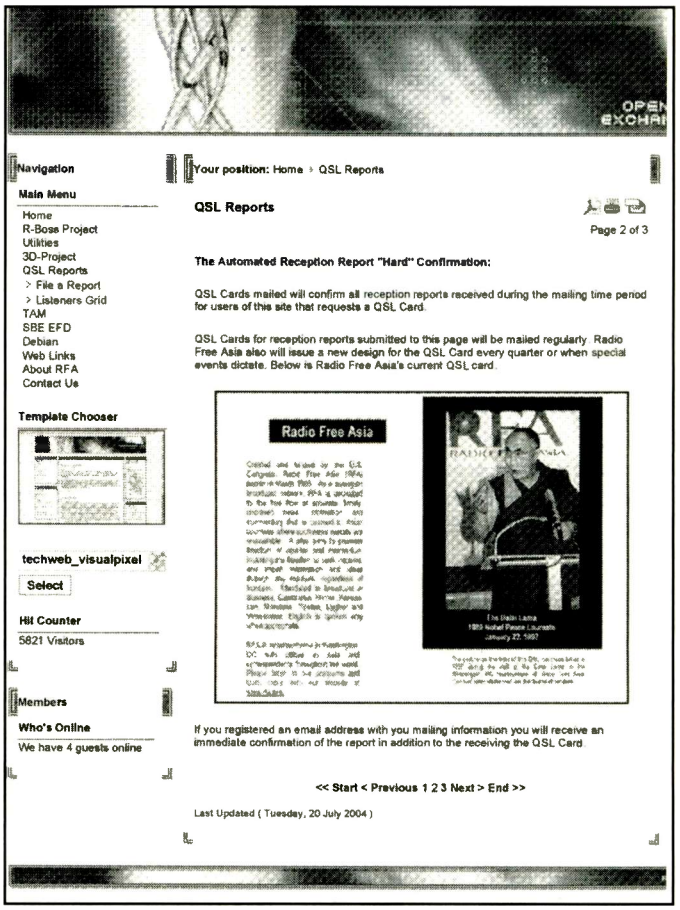
First there were rumors, then denials. Now it appears that the rumors are true. Another victim of modern European "thinking" is Sudwestrundfunk. The Southwest German Radio (**7265**) will discontinue shortwave operations at the end of this year.

It turns out the new AFN/AFRTS outlet on **9980** is located at the U.S. military facility at Grindavik, Iceland. The 9-MHz channel replaces 13855.

Another new service is the Radio Voice of New Sudan, which recently began broadcasting on **9310**. The station is based in Sudan's southern area, supposedly near a village called Narus, only a kilometer or so from the new-ish Radio Peace (**4750**). Initial broadcasts were just tests, but by now they should be on with some sort of regular schedule. The transmitter is reported to be a 50-kW unit, so given the right schedule, we should be able to hear this one reasonably well. There is some indication that this station is connected with the opposition Sudan Alliance Forces.

The above station has no connection with the still quite new Sudan Radio Service, which is an effort of the Education Development Center, a U.S. non-profit group which gets some of its support from the government's USAID program. Studios are in Nairobi, Kenya, but the broadcasts actually come from a Merlin transmitter site in the UK. The group maintains a website at www.sudanradio.org. The mailing address is P.O. Box 4392, 00100 GPO, Nairobi, Kenya.

Afghanistan continues to draw the interest of shortwave programmers. A new broadcast aimed at that country has come on the air. The program is "Internews," or Salaam Watandar, and is being aired in the Pashto and Dari languages, broadcasting from 0130 to 0300 on **11795** (via Al Dhabbaya, UAE) and 1330 to 1500 on **17700** (via Rampisham). Operated by The Internews Network, an organization promoting open media, democracy, conflict resolution, pluralism, and so on, it has projects in some 45 countries and is funded by a long list of groups as varied as the Ford Foundation, Corporation for Public Broadcasting, AOL-Time Warner, Carnegie, GE, the French Foreign Affairs Ministry, Microsoft, Rockefeller, and many others. It's based in California (P.O. Box 4448, Arcada, 95518).



A page from the Automated Reception Report section of the Radio Free Asia website.

Hearing The Coalition Forces?

Those Coalition Forces Broadcasts are still coming from 250-watt transmitters on ships working the area. The upper sideband broadcast on **15500** has been heard in Europe a couple of times. More than likely we'll have to wait until the broadcasts are relayed by the vastly higher-powered Merlin outlets before we have any chance at hearing them. Could be that is already happening. (Or not.)

Radio Free Asia Takes Groundbreaking Step!

Radio Free Asia, plagued by problems in issuing QSLs some months ago, has taken something of a groundbreaking step in

Abbreviations Used In This Month's Column

(p)	—	presumed
(t)	—	tentative
//	—	parallel
AA	—	Arabiv
AFN	—	Armed Forces Network
AFRTS	—	Armed Forces Radio TV Service
AIR	—	All India Radio
anmt(s)	—	announcement(s)
annor	—	announcer
AWR	—	Adventist World Radio
BSKSA	—	Broadcasting Service of the Kingdom of Saudi Arabia
CC	—	Chinese
co-chan	—	co-channel (same) frequency
comml	—	commercial
CRI	—	China Radio International
DD	—	Dutch
DJ	—	disc jockey
DW	—	Deutsche Welle/Voice of Germany
EE	—	English
f/by	—	followed by
FEBA	—	Far East Broadcasting Association
FEBC	—	Far East Broadcasting Company
FF	—	French
GBC	—	Ghana Broadcasting Corp.
GG	—	German
HH	—	Hebrew
HH	—	Hungarian
HOA	—	Horn of Africa
ID	—	identification
II	—	Italian; Indonesian
Int	—	International
IRRS	—	Italian Radio Relay Service
IS	—	interval signal
JJ	—	Japanese
KK	—	Korean
ISB	—	lower sideband
LV	—	La Voz
NBC	—	National Broadcasting Corporation (Papua New Guinea)
ORTB	—	Office deRadiodiffusion et Television du Benin
PBS	—	People's Broadcasting Station (China)
PP	—	Portuguese
PSA	—	public service announcement
QQ	—	Quechua
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 Communaute Francasie
s/off	—	sign off
s/on	—	sign on
SIBS	—	Solomon Is. Broadcasting Corp.
sked	—	schedule
SLBC	—	Sri Lanka Broadcasting Corp.
SS	—	Spanish
TC	—	time check
TOH	—	top of the hour
TT	—	Turkish
TWR	—	Trans World Radio
unid	—	unidentified
USB	—	upper sideband
UTE, ute	—	utility station
v	—	variable
vern	—	vernacular (local language)
VOA	—	Voice of America
VOIRI	—	Voice of Islamic Republic of Iran
ZBC	—	Zambian Broadcasting Corp.

that department. Listeners can now send reports on RFA transmissions through the RFA website and the recently instituted "Automated Reception Report" feature. You access the site (www.techweb.rfa.org), click on the "QSL Reports" button, then click on "Submit a Reception Report" button, which brings up a form you fill out with your reception information. Add your mailing info, submit the form, and you'll receive an immediate confirmation followed by the hardcopy QSL via regular mail. The only drawback in the system is that it can only check time, frequency, and broadcast language, not individual program items. We assume that the QSLs still do not identify transmission sites. Apparently some of RFA's transmission partners are nervous about being seen as involved with RFA, so the station plays along with the "secret" side of their operation, even though any DXers with access to such main reference sources as *Passport to World Band Radio*, and others know what sites are being used.

One of RFAs sister surrogate broadcasters, RFE/RL, is to move from its current headquarters in the former Federal Assembly building in the center of Prague to a new, and likely much more secure, building somewhere in or near the Czech capital. RFE/RL hopes to be in the new facility by the end of 2007, assuming Congress approves.

And, as long as we're on the subject, we're going to go out on a limb and predict a coming significant expansion of U.S. government sponsored programming for "touchy" areas around the world, either through increased broadcast hours or entirely new broadcast services.

The new U.S. International Broadcasting Bureau station in Kuwait is now in use for Radio Free Afghanistan broadcasts on **17605** from 1330 to1430 and on **11945** from 0230 to 0330. It's also being used for VOA transmissions as follows: 1430 to 1630 on **13690**, 1630 to 1730 on **11760**, 1730 to 1830 on **11730**, 1830 to 1930 on **11750**, 1930 to 2230 (in English) on **11835**, 2230 to 0030 (English) on **11935**, 0030 to 0230 on **11995**. Except where noted as English, all the rest of the VOA and Radio Free Afghanistan broadcasts are in Pashto or Dari.

Scotland's domestic station, Radio Six International, is now being heard on shortwave via WBCQ, The Planet, daily from 2300 to 0000 on **5105**. If you don't find it there, try **7415**.

Radio Netherlands is being carried on WRMI from 1200 to 1300 on **15725**, at least on a temporary basis. Radio Netherlands is not announcing this frequency but would welcome reports of reception there.

Your Shortwave Logs

Remember, your shortwave broadcast station logs are always welcome. But please be sure to double or triple space items, list them by country, and include your last name and state abbreviation after each log. Also badly needed are spare QSLs you don't need returned, station schedules, brochures, pennants, station

photos, and anything else you think would be of interest. And how about sending a photo of you at your listening post? Step up and get your 15 minutes of fame!

All right. Let's move the furniture and roll up the rugs. 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 specified the broadcast is assumed to be in English (EE). See the sidebar insert for explanations of other abbreviations used.

ALASKA—KNLS, **11765** in CC at 1232. (Brossell, WI)

ALBANIA—Radio Tirana, **6115//7160** at 0230 with broadcast schedule, Albanian and international news. (Burrow, WA)

ARMENIA—Voice of Russia relay, **9965** in SS at 0240. (Brossell, WI)

ARGENTINA—Radio Nacional, **6060** with news in SS at 0959. (DeGennaro, NY) RAE, **11710** with talk in EE at 0230. (Linonis, PA) 0237 in SS. (Burrow, WA)

ASCENSION ISLAND—BBC Relay, **15400** with "Focus on Africa" heard at 1930. (Paradis, ME) **17830** heard at 1955. (MacKenzie, CA)

AUSTRALIA—Radio Australia, **6020** with news at 1059. **9560** with ID at 1115, news. **9580** with Inter-Pacific News at 1027, **9590** with news, interviews at 1030 and **9710** with news in Pidgin at 1036. (DeGennaro, NY) 6020 in Pidgin at 1015. Also 1230 but nearly covered by Vatican opening in Thai. (Barton, Mexico) 1305 with news and music. (Northrup, MO) 9560//9580//9590 with "Money Talk" at 1125. (Brossell, WI) 9590 at 1102 and **17795** at 2315. (Charlton, ON) **11880** with interview at 1830. (MacKenzie, CA) **9710** with talk at 0915. (Ziegner, MA) **15240** with Pacific Island news at 0300. (Linonis, PA) Voice International, **13685** to East Asia at 1110. Also **13770** at 1120. (DeGennaro, NY)

AUSTRIA—Radio Austria Int., **9870** at 0126 with "The Jenny Johnson Report." (Charlton, ON)

BELARUS—Radio Minsk, **7210** at 0218 with feature about crime in Belarus, ID at 0222. Closedown anmts and schedule recap, ID 0228, IS, and multilingual IDs at 0230. Then into Belarusian. (D'Angelo, PA)

BELGIUM—Radio Vlaanderen Int., **11635** via Bonaire in FF monitored at 2245. (Charlton, ON)

BOLIVIA—Radio Illimani, **6025** at 0220 with fast-talking SS, coverage of futbol match, jingles, ads, laser sound effects. Sign off ID at 0245 and off without anthem. (D'Angelo, PA)

BOTSWANA—VOA Relay, **12080** in FF at 1915. (Brossell, WI) **15580** with news at 1600. (Paradis, ME)

BRAZIL—Radio Educacao Rural, Campo Grande, **4754** in PP at 0925; ID 0927. (DeGennaro, NY) Radio Senado, Brasilia, **6190** with call-in program at 0925. (DeGennaro, NY) Radio Clube do Para, Belem, **4885** with PP talks and music at 0933. (DeGennaro, NY) Radio Difusora Roraima, Boa Vista, **4825** with PP talks at 0348. (DeGennaro, NY) A Voz do Sao Francisco, Petrolina, **4945** with futbol coverage at 0101. (DeGennaro, NY) Radio Brazil Central, Goiania, **4985** in PP with ID at 0400. (DeGennaro, NY) Radio Clube Paranaense, Curitiba, **6040** with futbol coverage in PP at 0020. (D'Angelo, PA) **11935** in PP at 1312. (Brossell, WI) Radio Guaruja Paulista, Marilia, **3235** at 0310 with PP vocals and talks by woman. //5045. (D'Angelo, PA) Radio Guiaba, Porto Alegre, **11785** at 0124 with PP talks, ID, light orchestral music, more talks, and ID. (D'Angelo, PA) Radio Anhanguera, Goiania, **4915** with futbol coverage in PP at 0053. (DeGennaro, NY) Radio Tupi, Curitiba, **9565** with preaching in presumed PP, choir, more talk to 0100 ID and another religious program. (D'Angelo, PA) Radio Nacional Amazonia, **11780** in PP at 1028. (DeGennaro, NY) 0129. (Charlton, ON) 0215. (Brossell, WI)

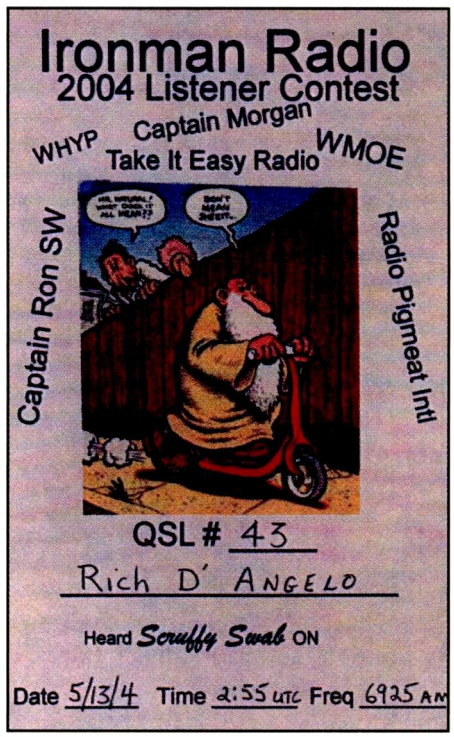
BULGARIA—Radio Bulgaria, **9700** at 2357 in Bulgarian; ID at 0000. (DeGennaro, NY) **9700** at 0000, **11700** at 2301 and 15700 at 1130, all in EE. (Charlton, ON) 9700//11700 at 0227 with e-mail address, Ids, and "Personality Spotlight." Also **11500** with Bulgarian sports, ID at 1750. (Burrow, WA) 11700 on reform in the Bulgarian government at 0210. (Brossell, WI)

CANADA—Radio Canada Int., **13655** with morning CBC programming at 1345. **17785** with news at 1900. (Barton, Mexico)

CHILE—Voz Cristiana, **5925** in SS with lengthy ID at 1000 including schedule and aims. Also **15375** with discussion of sports in Latin America at 0128. (DeGennaro, NY)

CHINA—China Radio Int., **6040** with "Real Time Beijing" at 1105. Also **9500** to East Asia with news at 1008, and **11750** via Canada at 1101. (DeGennaro, NY) **6145** via France at 2302, **13680** via Canada at 2310, and **13750** at 1544. (Charlton, ON) **11670** in EE at 1715; **//9570** and **11900**. (MacKenzie, CA) Hulunbei'er PBS, **3900** in CC at 1148 with woman and man DJs with intervals of disco-rock. (Foss, Philippines) CPBS, Xi'an, **11660** in CC at 1304. (Brossell, WI) China Music Jammer, **11590** over Radioo Free Asia via Armenia at 1307. And, at the same time, on **11875** over CBS, Taiwan and **11990** covering VOA via Russia. (Brossell, WI) **11700**, **//11740** at 1720. (MacKenzie, CA)

CLANDESTINES—Radio Marti, via Delano, **9565** in SS with ID, jingle, news at 2200. (Linonis, PA) **9805** with SS to Cuba at 1038. (DeGennaro, NY) Radio Free Syria (t) **13650** via Julich, at 1852 with Middle Eastern vocals to brief instrumental music before carrier was cut. No announcements heard; poor signal. (D'Angelo, PA) Radio Nacional de la RASD, via Algeria, **7460** in AA at 2100. (Ziegner, MA) Salaam Wantandar (Internews Radio) (p) **11795** at 0247 with talks to abrupt



Pirateer Iron Man Radio sent this color card to Rich D'Angelo.

close at 0300 with no ID. Heard again at 0151 to 0300 close with IDs, talks in Pashto until switch to Dari at 0215. Also on **17700** in Pashto and Dari from 1332 tune to 1415. **11795** possibly via UAE. Intended for Afghanistan. (D'Angelo, PA) Radio Farda, to Iran, **9775** in Farsi at 0238. (Brossell, WI)

COSTA RICA—University Network, **13750** at 2145. (Charlton, ON)

CROATIA—Voice of Croatia, **9925** via Germany, 2224 in EE. (Charlton, ON) 0214 mentioning e-mail address, ID, music. (Burrow, WA) 2336 with Croatian news. (DeGennaro, NY)

CUBA—Radio Havana Cuba, **11760** in FF at 2140. (Charlton, ON) **15230** in SS at 0140. Also **17705** in SS at 2245. (Barton, Mexico) Radio Rebelde, **5025** in SS at 0900. (Barton, Mexico) Radio Reloj, **12000** with time anmts, Ids, and news items from Cuba and South America. Off at 1055 and Radio Havana sign on at 1100. (DeGennaro, NY) *(Interesting! Reloj was a shortwave regular in pre-Castro times.—gld)*

CYPRUS—BBC Relay, **7165** in unid Asian language at 0250. (Brossell, WI) **9410** with UEFA football match live at 2000. (Paradis, ME)

CZECH REPUBLIC—Radio Prague, **7345** at 0002, **9415** at 2228 and **9440** at 0015, all in EE. (Charlton, ON) **9870** in presumed Czech at 0239. (Brossell, WI) **11600** with feature, ID, and addresses at 0353. (Burrow, WA) **11615** with interview on Czech politics at 1037. (DeGennaro, NY)

ECUADOR—HCJB, **11960** with drama in SS at 1205. (DeGennaro, NY) Radio

Federacion, Sucua, **4960** in SS at 1004. (DeGennaro, NY) Radio Quito, **4919** in SS at 0909. (Jeffery, NY)

EGYPT—Radio Cairo/Egyptian Radio, **9990** in AA at 1905. (Brossell, WI) EE at 2213. (Charlton, ON) **11855** at 0320 to 0327 close. (Burrow, WA) **12050** at 2130 in AA with music and possible phone interview. (Linonis, PA) 0153 in AA with music. (DeGennaro, NY)

ENGLAND—BBC, **9740** via Singapore to Asia and Australia at 1022. Also **9915** via Cyprus to Middle East and North Africa in AA at 2339. (DeGennaro, NY) **15565** with news, live tennis coverage from Wimbledon at 1630. (Paradis, ME) **17830** at 1832 and **21470** at 1538, both via Ascension. (Charlton, ON)

ERITREA—Voice of the Broad Masses, **7100** at 1611 with vocal and stringed instrumental music. (Foss, Philippines)

ETHIOPIA—Radio Ethiopia, **9560.3** at 1356 in listed Afar with music and talk. Into Arabic at top of hour. (Strawman, IA)

FINLAND—YLE/Radio Finland, **15400** at 1244 with apparent drama in Finnish. (Brossell, WI)

FRANCE—Radio France Int., **11600** via China in FF at 1225. (Brossell, WI) **11845** in FF to North Africa at 1037. (DeGennaro, NY)

FRENCH GUIANA—Radio France Int. Relay, **15515** in FF at 1150. (Charlton, ON)

GABON—Africa No. One, **9580** in FF at 2024. (DeGennaro, NY) 2130 to 2200 with African pops. (Linonis, PA) **15475** in FF at 1605. (Charlton, ON) 1700 in FF. (Paradis, ME) **17630** in FF at 1245. (Brossell, WI)

GERMANY—Deutsche Welle, **9900** via Irkutsk, Russia, in GG to SEA at 1048. (DeGennaro, NY) Sudwestrundfunk, **6030** in GG at 0400 with talks, pops, occasional ads. Poor to fair while Marti is off. (D'Angelo, PA) Deutschland Radio, **6005** at 2357 with light instl music, brief FF anmts by woman prior to three time pips at 0000, ID, news by man. (D'Angelo, PA) Bayerischer Rundfunk, **6085** with news and comments in GG at 0422. (DeGennaro, NY)

GREECE—Voice of Greece, **9420** in Greek at 2014 and 17705 via Delano in Greek at 1033. (DeGennaro, NY) **15630** in Greek at 1934. (Brossell, WI) 2030. (Charlton, ON) Radio Makedonias, **7450** in Greek at 2100 with news, Greek music. (Linonis, PA) 2234 with Greek vocals, man in Greek hosting, ID, and s/off anmts at 2350 f/by orchestral national anthem. (D'Angelo, PA)

GUAM—AFN/AFRTS, **5765 USB** at 1934. (Foss, Philippines) Trans World Radio, **9865** in CC at 1037. (Jeffery, NY) 1245 in CC. (Brossell, WI)

GUATEMALA—Radio Cultural Coatan, **4780** (t) at 1045 with children's choir, marimba. (Barton, Mexico) 0212 to 0230 close in SS with variety of vocals, man mentioned Coatan, sign off routine. (Paszkiewicz, WI) 0240 with man in SS giving ID and sign off anmts, light instl music, no anthem. Another evening on until 0256 close. (D'Angelo, PA) Radio Buenas Nuevas, **4800** at 1210 with children's choir, folk music. (Barton, Mexico) Tentative at 0215 in SS with possible radio drama. (Linonis, PA)

HAWAII—KWHR, **9930** with sermon at 1205. (Brossell, WI)

HUNGARY—Radio Budapest, **9590** on WWII atrocities. (Charlton, ON) **9790** with "Insight on Central Europe" heard at 0233. (Burrow, WA)

ICELAND—AFN/AFRTS, **9980 USB** at 0238 with sports features and info drop-ins where the commercials usually go. AP news at 0300. (D'Angelo, PA)

INDIA—All India Radio, Mumbai, **4840** at 0020 opening with Hindi music, Hindi talk, EE ID, and news at 0030. (D'Angelo, PA) AIR Thiruvananthapuram, **5010** at 0016 open with carrier, IS at 0018, Hindi vocal, ID at 0029:30, EE ID and news at 0035. (D'Angelo, PA) **9445** Bangalore, with news and features at 2100. (Paradis, ME) **10330** at 0115 with Indian music and talk in presumed Hindi. (Watts, KY) 0117. (Brossell, WI) **11715**, Delhi, in EE at 2222. (Charlton, ON) **17510**, Delhi, at 1010 with commentary, ID for the General Service of All India Radio. (Foss, Philippines)

INDONESIA—Voice of Indonesia, **9525** with woman in unid language at 1013. (DeGennaro, NY)

IRAN—VOIRI, **9635//11650** in EE at 1620. ID and schedule at 1625. (Burrow, WA) 9935 in Farsi at 2326. (DeGennaro, NY) 15190 in AA at 0955. (Ziegner, MA)

ISRAEL—Kol Israel, **7545** in EE at 0330. (Linonis, PA) **11585** with U.S. pops at 0120. (Brossell, WI) **11590** with news from Israel at 0400. (Burrow, WA) **15760** in HH at 0119. (DeGennaro, NY) **17535** in HH at 1826. (Charlton, ON) Galei Zahal, **6973** with music and talk in Hebrew at 0245. (Brossell, WI) **6974.5** at 0040 in HH. New frequency or just wandering? (D'Angelo, PA)

ITALY—RAI Int., **9605** with news, music at 1930. (Paradis, ME) **11800** in EE at 0124. (Charlton, ON) 0215 in II. (Brossell, WI) **11920** via Singapore in II at 1043. (DeGennaro, NY)

JORDAN—Radio Jordan, **9830** in AA at 1915. (Brossell, WI)

JAPAN—Radio Japan/NHK, **6120** via Canada at 1109. **9530** via French Guiana in JJ at 0918 and **9540** in SS at 1020. (DeGennaro, NY) **6145** via Canada at 0011, **11895** via French Guiana in JJ at 2227 and **15220** via Ascension in JJ at 2209. (Charlton, ON) **9605** at 1320 with jamming and WYFR QRM. (Strawman, IA) **11740** via Singapore in JJ at 1150. (Brossell, WI) **11895** via French Guiana at 2205; //**11910**, **13680**, **15220** and **17825**. (MacKenzie, CA)

KUWAIT—Radio Kuwait, **11675** with Koran at 0208. (Brossell, WI)

LITHUANIA—Radio Vilnius, **9875** at 2330 with ID, IS, program contents, news, and features. (Burrow, WA) 2344 with rock and blues. (DeGennaro, NY)

MALAYSIA—Radio Malaysia, **7295** at

1505 with news, "Midnight Madness" program starting at 1510. (Burrow, WA)

MALI—RTV Malienne, **4835** with FF conversation at 2312. (DeGennaro, NY)

MADAGASCAR—Radio Netherlands Relay, **9895** in SS at 0235. (Brossell, WI)

MAURITANIA—Radio Mauritanie, **4845** with AA talks or prayers at 2309. (DeGennaro, NY) **7245** with Koran heard at 0805. (Ziegner, MA)

MEXICO—Radio Educacion, **6185** with SS talks and music at 0950. (DeGennaro, NY) XERTA/Radio Transcontinental de America, **4810** at 0320 with SS talk, vocal, more talk. (D'Angelo, PA)

MOLDOVA—Voice of Russia relay, **7125** in RR at 0310. (Linonis, PA) **9665** in SS at 0001. (DeGennaro, NY) EE at 0150. (Brossell, WI)

MOROCCO—RTV Marocaine, **15345** in AA at 1920. (Brossell, WI) 2134 in AA. (Charlton, ON) Radio Medi Un, **9575** with talk and songs in AA at 0039. (DeGennaro, NY) VOA Relay, **15410** to Africa at 2030. (Paradis, ME)

NETHERLANDS—Radio Netherlands, **9795** via Singapore with Indonesian service at 1250. Splatter from Marti on **9805**. RN went off at 1257, Marti at 1259, leaving strong Cuban jammer on 9805. (Strawman, IA) **11655** in EE at 2020. (Charlton, ON) **11675** with interviews at 1115. (DeGennaro, NY)

NETHERLANDS ANTILLES—Radio Netherlands via Bonaire, **9785** with talk in EE at 1021. (Jeffery, NY) **17810** monitored at 2050. (Charlton, ON)

NEW ZEALAND—Radio New Zealand Int., **6095** with news, music, ID at 1305. (Northrup, MO) 1500 with time pips, news. (Barton, Mexico) **9885** with comedy show at 0930. (Ziegner, MA) 1031 with news, also **15720** at 0055. (Jeffery, NY) 1043 with interview. (DeGennaro, NY) 1209 with sports. (Brossell, WI) **15720** at 0100 to 0300; excellent signals with weather, sports, music. (Linonis, PA) 0249 with pop songs. (Charlton, ON) 0438 with movie review, music reviews, ID, and close to move to **9615** at 0500. (Burrow, WA)

NIGERIA—Voice of Nigeria, **7255** at 0537 with music, dead air, more music. (Burrow, WA) **17800** with poor audio in EE at 2041. (Charlton, ON)

NORTH KOREA—Voice of Korea, **6520** in KK at 1140. Also in FF at the same time on **11710**. (Brossell, WI) **9335** with feature at 1041 and anmt at 1045: "You've been listening of (sic) an account of rural villages being turned into a socialist fairyland." (Foss, Philippines) **9975//11735** music in praise of Kim Jung IL at 1637. (Burrow, WA) **11645//13760** in KK at 1707. (MacKenzie, CA) **11710** with impassioned talk by man at 1201. (Strawman, IA) KCBS, 11710//**11735** at 1225 with martial/patriotic music and talk in KK (Brossell, WI)

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

PAKISTAN—Radio Pakistan, **11570//15100** with news at 1610. Off abruptly at 1614. (Burrow, WA)

PALAU—KHBN/Voice of Hope, **9965** with songs in CC at 1228. (Brossell, WI)

PAPUA NEW GUINEA—Radio Western, Daru, **3305** with R&B and country with EE host at 1134. (Foss, Philippines) NBC, **4890** with island music at 1121. (Brossell, WI)

PARAGUAY—Radio Nacional, **9737** in SS with talk and commercials at 2353. (DeGennaro, NY)

PERU—Radio Tarma, Tarma, **4775** at 0235 with OA vocals, echo anmts, SS talk, ID at 0300. (Paszkiewicz, WI)

PHILIPPINES—Radio Pilipinas, **11720//15190//17720** at 1744 in Tagalog with news, sports, and station mentions. (Burrow, WA) 1825 with woman talk, songs. Mix of EE and Tagalog. (MacKenzie, CA) VOA Relay, **9760** at 1214. (Brossell, WI)

PIRATE—United Patriot Militia Bingo, **6925** at 0130 with parody on Steve Anderson, mentions of Jay Smilkstein, George Zeller, and John Arthur. (Linonis, PA) Captain Morgan, **6950** at 0244 with TV theme songs and bits of rock things. ID at 0302 and off at 0308. (D'Angelo, PA) WHYP (t) **6925** at 0037 with music and parodies. (Balint, OH) Undercover Radio, **6925 USB** at 0145 with classic rock, mentions of other pirate broadcasters. (Linonis, PA)

PORTUGAL—RDP International, **15295** in PP with ID at 0130, **21540** in PP to South America heard at 2022 and **21655** in PP to West Africa and South America at 2019. (DeGennaro, NY) 1900 in PP. (Paradis, ME)

ROMANIA—Radio Romania Int., **9590** at 2318, **11940** at 0118 and **15380** at 1840, all in EE. (Charlton, ON) **11820//15140** at 0433 with Romanian business, ID. (Burrow, WA)

RUSSIA—Voice of Russia, **12070** in RR to South America at 0149. (DeGennaro, NY) **15455** in FF at 1925. (Brossell, WI) **15490** with IS at 1230 and into Mongolian Service. (Strawman, IA) Radio Rossii, **12020** in RR at 0123. (Charlton, ON) Bible Voice Broadcasting Network, **12065** via Kharbarovsk at 1223 in listed Cantonese. (Strawman, IA) Radio Ezra relay, **17590** at 0922 in with mentions of Palestine and ID at 0927. Off with instrumental music at 0930. Very poor. (D'Angelo, PA)

RWANDA—Deutsche Welle Relay, **17860** in GG with talking and music interludes. Parallel **13810** unheard as it was occupied by very strong University Network. (MacKenzie, CA)

SAO TOME—VOA Relay, **15730** with solid gold hits at 1941. (Brossell, WI)

SAUDI ARABIA—BSKSA, **15380** with Koran recitations at 1248. (Brossell, WI) **17560** in AA at 1715. (Charlton, ON)

SERBIA & MONTENEGRO—International Radio of Serbia & Montenegro, **9580** in Serbia at 0034. Transmitters are in Bosnia. (DeGennaro, NY) 0441 with financial report, arts, music, ID, and schedule at 0456. (Burrow, WA)

SINGAPORE—Radio Singapore Int., **6185** at 1245 with Mandarin Service. (Strawman, IA) Mediacorp Radio, **6150** with news and program promos at 1503. (Burrow, WA) BBC Relay, **9740** at 1137. (Brossell, WI)

SLOVAKIA—Radio Slovakia, **5930** at 0110 with talk on comparative prices at McDonald's. (DeGennaro, NY)

SOLOMON ISLANDS—SIBC, **5020** with BBC news at 1122. (Brossell, WI)

SOUTH AFRICA—Channel Africa, **7210//9770** at 0500 with time pips, ID and news. (Burrow, WA) Radio Sondergrense, **3320** with pops at 0245. (Brossell, WI)

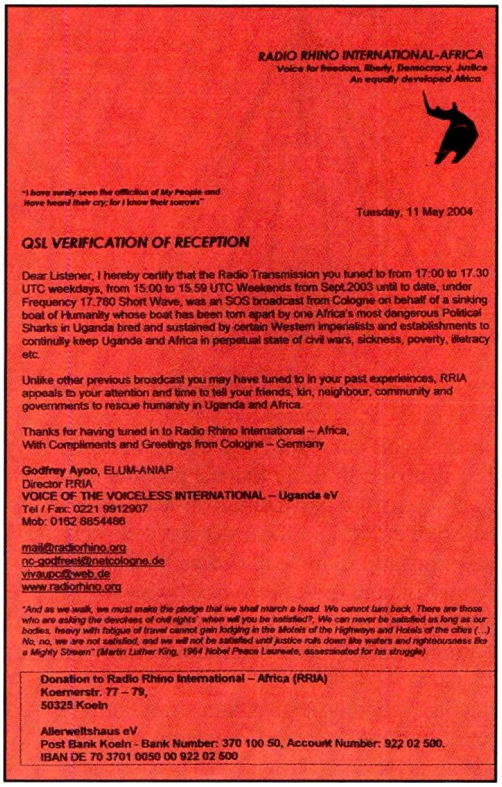
SOUTH KOREA—Radio Korea Int., **5975//9870** at 1642 with travelogue, "RKI Quiz Show" at 1654. (Burrow, WA) **9580** via Canada at 0234, //**15575**. ID at 0257 and off by 0259. (MacKenzie, CA) **9650**

This Month's Book Winner

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

Our book winner this month is **Robert Brossell**, Pewaukee, Wisconsin, who, despite an extremely rough schedule, never misses submitting logs to the "G.I.G." Bob gets a copy of the 2005 edition of *Passport to World Band Radio*, courtesy of Universal Radio, 6830 Americana Parkway, Reynoldsburg, OH 43068. That's the address you can use to request a copy of their giant catalog of shortwave radios and everything under the sun that goes with them. Or you can call Universal at 614-866-4267.

Black Mountain Radio sent Rich D'Angelo this color photo card.


RADIO RHINO INTERNATIONAL-AFRICA
Voice for freedom, liberty, Democracy, Justice
An equally developed Africa

"I have surely seen the affliction of My People and have heard their cry; for I know their sorrows"

Tuesday, 11 May 2004

QSL VERIFICATION OF RECEPTION

Dear Listener, I hereby certify that the Radio Transmission you tuned to from 17:00 to 17.30 UTC weekdays, from 15:00 to 15.59 UTC Weekends from Sept.2003 until to date, under Frequency 17.780 Short Wave, was an SOS broadcast from Cologne on behalf of a sinking boat of Humanity whose boat has been torn apart by one Africa's most dangerous Political Sharks in Uganda bred and sustained by certain Western imperialists and establishments to continully keep Uganda and Africa in perpetual state of civil wars, sickness, poverty, illetracy etc.

Unlike other previous broadcast you may have tuned to in your past experiences, RRIA appeals to your attention and time to tell your friends, kin, neighbour, community and governments to rescue humanity in Uganda and Africa.

Thanks for having tuned in to Radio Rhino International – Africa,
With Compliments and Greetings from Cologne – Germany

Godfrey Ayoo, ELUM-ANIAP
Director RRIA
VOICE OF THE VOICELESS INTERNATIONAL – Uganda eV
Tel / Fax: 0221 9912907
Mob: 0162 8854486

mail@radiorhino.org
nc-godfree6@netcologne.de
viyaupc@web.de
www.radiorhino.org

"And as we walk, we must make the pledge that we shall march a head. We cannot turn back. There are those who are asking the devotees of civil rights' when will you be satisfied?. We can never be satisfied as long as our bodies, heavy with fatigue of travel cannot gain lodging in the Motels of the Highways and Hotels of the cities (...) No, no, we are not satisfied, and we will not be satisfied until justice rolls down like waters and righteousness like a Mighty Stream" (Martin Luther King, 1964 Nobel Peace Laureate, assassinated for his struggle)

Donation to Radio Rhino International – Africa (RRIA)
Koernerstr. 77 – 79,
50325 Koeln

Allerweltshaus eV
Post Bank Koeln - Bank Number: 370 100 50, Account Number: 922 02 500.
IBAN DE 70 3701 0050 00 922 02 500

Radio Rhino International, based in Germany, broadcasts in opposition to the current Ugandan government and sent Rich D'Angelo this full-page reply.

via Canada in KK at 1121. (DeGennaro, NY) **15365** via Germany in AA monitored at 1923. (Brossell, WI)

SPAIN—Radio Exterior de Espana, **3350** via Costa Rica in SS at 0245. (Brossell, WI) **9535** in SS at 0043. (DeGennaro, NY) **15290** with a report on Gibraltar at 2033. (Chandler, ON) **21700** in SS at 1700. (Barton, Mexico) 1925 in SS. **//11815, 15110, 17850**. (MacKenzie, CA)

SRI LANKA—SLBC, **9770** at 0037 with continuous pops, time check at 0100, and ID: "On a Tuesday morning...time is now 6:30. Good day everybody. You are listening to the Sri Lanka Broadcasting Corporation." **//15748** was very poor. (D'Angelo, PA) VOA Relay, **12140** in unid Asian language at 0137. (Brossell, WI) **15545** in unid language at 1730. (Paradis, ME)

SUDAN—Radio Peace, **4750** at 0237 with "Spotlight" program. Nice ID and frequency anmt at 0244: "We are broadcasting on 4750 kHz in the 60-meter band. This is Radio Peace." After brief music, another ID, then another religious program in an African language, another ID at 0259 and another religious program in an African language. (D'Angelo, PA)

SYRIA—Radio Damascus, **13610** at 2012 with AA vocals, EE news. (Paszkiewicz, WI) 2219 in EE with Middle East music. (Charlton, ON)

SWITZERLAND—Swiss Radio Int., **9885** at 2320 ending II and into EE at 2330 noting the coming end of their broadcasting on shortwave, thanking listeners and giving website URL. More IDs monitored at 0040 and 0050 until carrier cut. (D'Angelo, PA) *(And nuts to them! gld)*

TAIWAN—Radio Taiwan Int., **5950//9680** via Florida opening at 0200. (Barton, Mexico) **11550** in unid Asian language at 1144. (Brossell, WI) **15600** via Florida at 2221 "Welcome to Radio Taiwan International." (Charlton, ON) CBS, **15395**, in CC at 1242. (Brossell, WI) **15465** in listed Cantonese at 1235 and way over the Chinese Jammer. (Strawman, IA)

TAJIKISTAN—Voice of Russia relay, **11500** to SE Asia at 1500. (Barton, Mexico) **11510** in SS at 0120. (Brossell, WI)

THAILAND—Radio Thailand, **5890** via Greenville, at 0030 with talk on health problems there, business news, promo for Thailand Export Mart. (Linonis, PA) 0031, (Charlton, ON) BBC Relay, **11945** in CC at 1240 with the China Music Jammer underneath. (Brossell, WI) VOA Relay, **11785** in CC at 1155. (Brossell, WI) **15290** at 2230 with news, features, "Coast to Coast." (Paradis, ME)

TURKEY—Voice of Turkey, **9460** in TT at 2137 and **9830** in EE at 2214. (Charlton, ON) **9460** in TT at 0140 and **15225** with "Turkish Press" at 1235. (Brossell, WI) **9785** in EE to Europe at 1900. (Paradis, ME) **15350** in TT at 1400. (Ziegner, MA)

TUNISIA—RTT Tunisienne, **12005** in AA at 0228 and **15450** in AA at 1250. (Brossell, WI)

UKRAINE—Radio Ukraine Int., **7240** in RR at 0330. (Linonis, PA) **7545** in presumed Ukrainian at 0131. (Charlton, ON) 0333 with news, "You are listening to Radio Ukraine International." (Brossell, WI)

UNITED ARAB EMIRATES—Emirates Radio, Dubai, **13675** in AA to Europe at 1107. (DeGennaro, NY) **15395** in AA at 1830. (Paradis, ME) 1925. (Brossell, WI) 2003 with non-stop Middle Eastern vocals to close at 2026. (D'Angelo, PA)

UNITED STATES—KTBN, **7505** still here with religious fare, ID at 0200. The doom and gloom announcement about the station being in danger of going off the air for lack of response was noted at 0230. (D'Angelo, PA) Radio Six Int., via WBCQ-**7415**, special broadcast to North America from this Scottish station with mix of music on the "Tony Currie Wireless Show" f/by news at 0100. They read a few e-mails on the air including mine. (D'Angelo, PA) *(This is supposed to be on the air daily at 2300 now.—gld)* La Voz de la Restauracion, 1775 (ex KVOH/Voice of Hope) with religious programming to ID at 1700. (D'Angelo, PA)

VATICAN—Vatican Radio, **9605** at 0029 in PP to Brazil. (DeGennaro, NY) **11625** with African songs and station IS at 2028. (Charlton, ON) 11910 at 0226 with SS ID, IS and off at 0229. (Brossell, WI)

VENEZUELA—Radio Amazonas, Puerto Ayacucho, **4939.7** in SS at 0057. (DeGennaro, NY) Observatorio Naval Capital, Caracas, **5000** at 0404 with time signal anmts in SS.. (DeGennaro, NY) Radio Nacional, **13680** via Cuba heard in SS after CRI closes at 2355. (Barton, AZ)

VIETNAM—Voice of Vietnam, **5035** Xuan Mai, at 1233 with acappela vocals, folk songs, woman anncr in VV. (Foss, Philippines) **9550//13740** at 1616 with mailbag program, ID, addresses, and schedule. (Burrow, WA) **9839.9** in Cantonese at 1155. (Strawman, IA)

ZAMBIA—ZNBC/Radio Zambia, **4910** at 0353 in vernacular. (DeGennaro, NY)

ZANZIBAR—Radio Tanzania, Zanzibar, **6015** very tentative, at 0303. Heard only snatches of AA vocals fading in and out. (D'Angelo, PA)

ZIMBABWE—Radio Zimbabwe/ZBC, **3306** with hi-life music at 0250. (Brossell, WI) Man in vernacular hosting program of African vocals, IDs at 0300 and 0307. Poor to fair but steadily improving. (D'Angelo, PA)

And once again order is restored! Raise up a mighty cheer for the following folks who supplied the goodies this time: Bruce R. Burrow, Snoqualmie, WA; Jerry Strawman, Des Moines, IA; Robert Charlton, Windsor, ON; Stewart MacKenzie, Huntington Beach, CA; Robert Brossell, Pewaukee, WI; Dave Jeffery, Niagara Falls, NY; Rick Barton, Phoenix, AZ (vacationing in Mexico), Tricia Ziegner, Westford, MA; Marty Foss, Philippines; Mark Northrup, Gladstone, MO; Rich D'Angelo, Wyomissing, PA; Jack Linonis, Hermitage, PA; Ray Paradis, Pittsfield, ME; R.C. Watts, Louisville, KY; and Sheryl Paszkiewicz, Manitowoc, WI. Thanks to each one of you! ■

by Rich Arland, K7SZ, richard.arland@verizon.net

Being Prepared: VHF/UHF Antenna Basics

Just recently the Department of Homeland Security (DHS) head guru, Tom Ridge, raised to Orange the terror alert status for New York City, Washington, D.C., and several other specific areas of the U.S. in the wake of some very specific terror targeting information gathered from recently captured Al Qaeda operatives. This type of specific information and subsequent selective elevation of the alert status has been a long time coming, but it certainly is a welcome change in policy and procedure.

Virtually nothing has changed since 9/11. We are still at war with a very smart, illusive, and extremely cunning adversary. As I have stated before, this is a "shadow war" waged on many levels. While the military and intelligence units assigned to combat terrorism are professionally trained to do specific tasks, it still remains the job of the ordinary civilian to be alert and report any suspicious activities to the proper authorities. The pros can't be everywhere, and that's where all of us come in to play. We can be the extra sets of eyes and ears that can provide much needed intelligence in this worldwide war on terror.

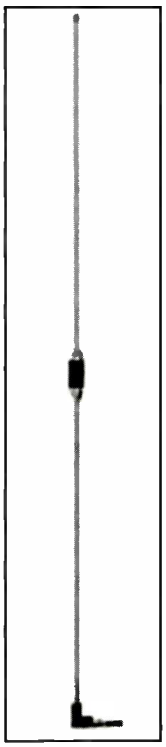
Owning and using a scanner—or several scanners—can give the average American the ability to help local law enforcement. Knowing what is going on in and around your community makes you an aware citizen. Your input on an emerging situation can provide much needed help to law enforcement and possibly even help apprehend a suspect, which, in turn, allows these same law enforcement professionals to devote their time to more important matters.

Several months ago I related two occasions where I was personally involved in helping the Wilkes-Barre (Pennsylvania) police locate and detain subjects via information gained by listening to my scanners. I am sure that I am not alone in my efforts. Therefore, it behooves all of us to not only procure and use a scanner (or two) but to ensure that our antennas are up to the task of monitoring the frequencies needed to maintain an increased level of awareness in and around our communities. That's why this month we will be dealing with VHF/UHF antennas for your home listening post.

In this installment of "Homeland Security" we will investigate some commercially manufactured antennas for the VHF/UHF spectrum, give you some ideas on where to find the information to build/modify VHF/UHF antennas, and we'll end our column with a really neat little portable power unit from the HF Pack website (www.hfpac.com).

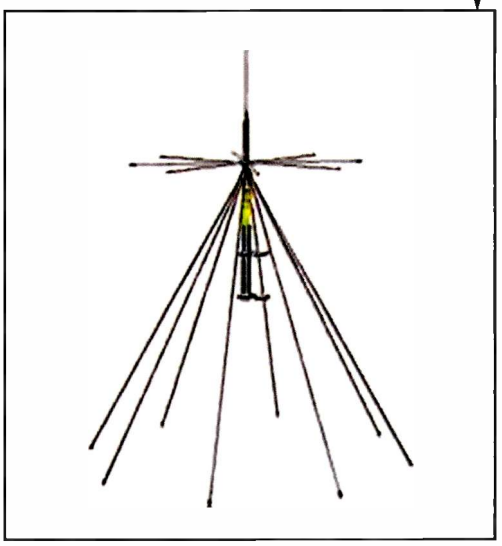
Some VHF/UHF Basics

One topic we need to discuss before proceeding further is the propagation effects encountered when one ventures into the world of VHF/UHF communications. Unlike HF communications, which can take advantage of the refracting layers of the upper levels of the ionosphere, VHF/UHF communication is primarily accomplished via line of sight (LOS). Signals at these frequencies behave very similarly to a beam of light from a flashlight. In other words, if you can "see" the other station's antenna, you can "talk" to that station. This was the popular theory that held sway until extensive experimentation was undertaken, mainly by ham radio operators, in the early days of VHF communications. These experiments revealed that VHF/UHF radiowaves are scattered and/or bent to some degree by the lower levels of the Earth's atmosphere in several ways and that reliable communications could be established and maintained well beyond the typical LOS path.



RadioShack's indoor back-of-scanner antenna sells for only $11.39 and might be just what you're looking for if you only need local reception and can't put up an outside antenna.

The RadioShack Discone Antenna sells for $69.99.



The curvature of the Earth, along with lower atmospheric anomalies, must be figured into the equation, resulting in a reliable communications path that extends typically 15 percent over the normal geometric path. The reason for this is that, under normal conditions, the atmosphere near the Earth causes VHF/UHF radiowaves to bend into an arc closely following the curvature of the Earth. The end result is that the VHF/UHF radiowaves hug the Earth, allowing reliable communications well beyond the straight line path. This effect is described as the *radio horizon*, which is directly related to antenna height and *NOT* transmitter power. In other words, the higher you can erect your VHF/UHF antenna, the farther you will be able to communicate, or in the case of the serious scannist, the farther you will be able to hear.

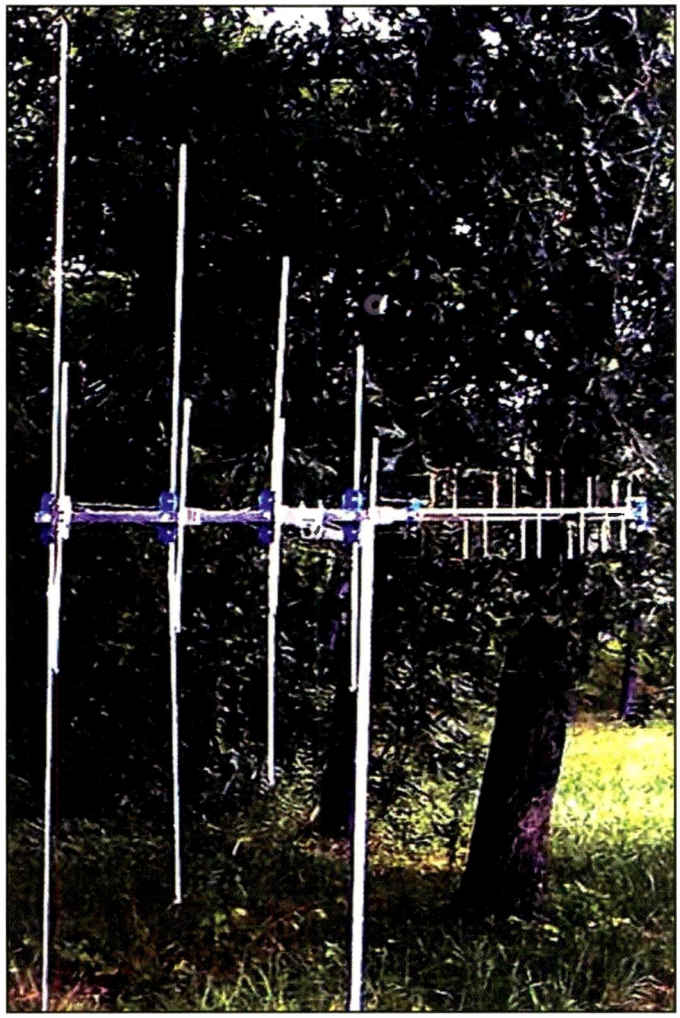
The first antennas we'll look at are commercial offerings designed to "plug-and-play." With all the family activities and hobbies that many of us have crowded into our "free" time, it's often much easier to purchase a commercially built antenna and erect it rather than doing the research necessary to design and/or

modify an antenna for a specific use. With that in mind, let's take a look at some ready-to-erect commercial scanner antennas from a couple of manufacturers.

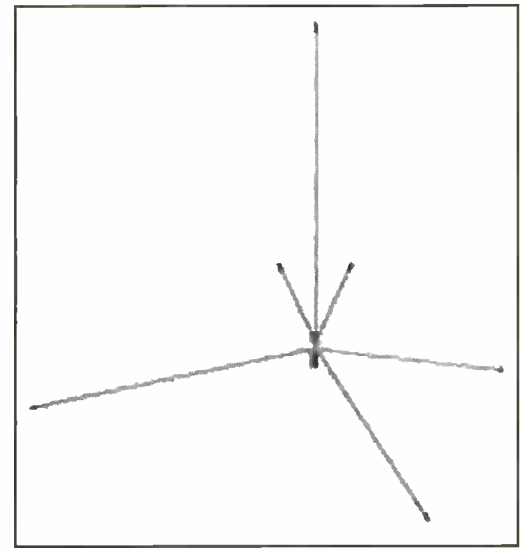
Two From Grove Enterprises

Grove Enterprises, Inc. (www.groveenterprises.com), offers two scanning antennas that will definitely improve your existing antenna farm. Their Scantenna made by Antennacraft, is an omni-directional scanner antenna covering from 25 MHz to 1.3 GHz. This covers the 10-, 2-, 1-3/4 -meter, and 70-centimeter ham bands, in addition to the 11-meter CB band, civilian and military aircraft bands, maritime, public safety, and personal communications bands (FRS & GMRS). In short, this antenna covers the gamut of signals from just below the low-band VHF spectrum into the lower gigahertz range, which is a lot of territory.

Instead of a ground plane, this antenna uses a cluster of dipoles at a central feed point (dimensions: 7.5 feet high by 4.5 feet wide). You don't need the ground radials, as depicted in a typical ground plane counterpoise, provided you have the "other half of the dipole antenna" available for proper impedance matching. While the antenna looks a little strange, it is designed to provide good reception over an exceptionally wide range of frequencies. Performance is in keeping with other wideband omni antennas covering similar frequency bands.



Grove Enterprise's Scanner Beam II also doubles as a ham antenna!



The RadioShack Scanner Antenna covers 108 MHz to 1.3 GHz for only $23.99!

Since the humble omni-directional antenna is the workhorse of the VHF ham and scannist, the Scantenna is a very good choice for your primary externally mounted base station antenna. It uses a TV-type "F" connector for the coaxial cable at the antenna feedpoint. Grove now offers 50 feet of coaxial cable terminated in the proper connectors at a package price of only $49.95 MSRP, which includes the Scantenna! If you're in need of an external main station antenna to round out your monitoring post, the Scantenna is an inexpensive solution that deserves a serious look.

The second offering from Grove is the Grove Scanner Beam Antenna II, a third generation design of the company's popular directional scanner antenna. This scanning antenna is rather unique in that it covers 30- to 50-MHz low band VHF along with 6 meters (50 to 54 MHz) and FM broadcast band (88 to 108 MHz) as an omni-directional antenna. This antenna becomes directive at frequencies above 100 MHz. The Scanner Beam covers all the way up to 1 GHz, which includes the 2-meter, 3/4-meter and 70-centimeter ham bands, the VHF/UHF TV frequencies, military and civilian aircraft frequencies, low- and high-band VHF/UHF public service frequencies, and microwave mobile frequencies. In addition, the Grove Scanner Beam Antenna II can *transmit* on 6 and 2 meters, 3/4 meters, and 70 centimeters using no more than 25 watts of RF output power. This is great news for the ham radio operator needing a double duty antenna for VHF plus.

Since this antenna is directional, some thought must be given as to turning it once it is erected. The folks at Grove Enterprises suggest using an inexpensive TV rotor, such as found at RadioShack. These low-end rotors and control boxes can also normally be found for under $25 at hamfest flea markets. The Grove Scanner Beam Antenna II has a boom length of 60 inches, and the longest element is 96 inches; total weight is 3.5 pounds. This antenna exhibits unity gain (0 dB) from 30 to 50 MHz, 4- to 6-dB gain between 100 and 200 MHz, 6- to 8-dB gain from 400 to 500 MHz, and 10- to 12-dB gain from 800 MHz up to 960 MHz. Wind load is estimated at around 1 square feet or less, which lends itself nicely to using a TV rotor. Priced at $64.94 MSRP, the Grove Scanner Beam Antenna II offers the serious scannist and ham radio operator a very useful wideband anten-

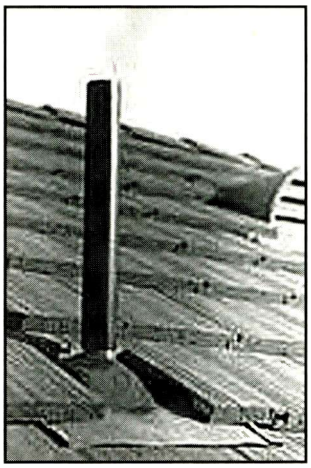
na. In addition, Grove provides information on stacking two of these antennas for increased gain and directivity.

Before you buy, though, there is an important consideration to take into account. One problem in using directional antennas stems from their very directionality. No, I'm not engaging it radio double-speak. While it is true that directional gain antennas provide increased reception in one direction, they also *attenuate* (reduce) the amount of signal from other directions. In certain instances this can be a good thing; however, the serious scannist often needs to hear things from different areas of the locality, meaning that a directional gain antenna can be more of a hindrance. Therefore, before you decide to run out and spend some hard-earned money on a directional VHF/UHF antenna for your monitoring post, decide whether or not you *really* need the gain and directivity. Quite possibly what you really need is a good omni-directional antenna mounted well above ground. Just a thought.

RadioShack VHF/UHF Scanner Antennas

RadioShack (radioshack.com) has three offerings that can improve your scanner's performance dramatically. The first, the Scanner/Ham Omni-Discone antenna (RadioShack Model 20-043) covers from 25 MHz to 1.3 GHz. A discone is a rather weird looking antenna that offers tremendous bandwidth with unity gain across a wide range of frequencies. This model is very similar to the discone antenna I use at K7SZ. It's 44 inches tall and accepts a mast up to 1.5 inches in diameter. The frequency range covers the following amateur bands: 50, 144, 220, 440, 902, and 1296 MHz. Transmitter power is limited to 25 watts of RF output. In short, this antenna can perform double duty, providing you with a great wide-band scanner antenna and extensive VHF-plus ham band coverage at the same time. The model 20-043 costs $69.99, so it's not an inexpensive antenna, but the versatility of this discone omni certainly makes up for the increased cost. If you need one external antenna to do double duty, this antenna deserves special consideration.

The company's VHF-Hi/UHF Scanner Antenna (RadioShack Model 20-176) is a steal of a deal at only $23.99. Coverage ranges from 108 MHz up to 1.36 GHz, with peak performance between 152 and 470 MHz. This antenna is relatively low-profile "stealth" antenna, so it won't attract any undue attention from the neighbors. Fed with a short length of RG-8X, this antenna will definitely improve your scanner performance while not breaking the bank or arousing the ire of your neighbors.



Ventenna offers several models of their popular Ventenna, which is a must for anyone needing a low-profile antenna that won't raise the ire of neighbors.

Finally, if you can't erect an external antenna, why not try out the Indoor Scan Antenna (RadioShack Model 20-161). This is a whip element that extends to 40 inches and attaches to the back of your scanner for inside use. The whip, which uses a center-loaded coil, has a total operating range from 30 to 512 MHz and plugs directly into the back of your scanner via a "Motorola"-type plug. If your scanner (like mine) uses a BNC connector, be sure to ask your RadioShack sales associate for the appropriate adaptor to interface with your scanner. At a cost of only $11.39, the model 20-161 might be the solution to your scanning antenna problems. It would be a welcome addition to portable scanning operations while on the road with business trips or family vacations.

And Now For Something Completely Different...

For those of you who are "condo-challenged" and need some kind of stealth antenna, the Ventenna Corporation (www.ventenna.com) markets a nifty little device that looks exactly like an extended roof vent for a bathroom. Called the "Ventenna" (an adaptation of Vent-Antenna), this little device is utilized by various intelligence agencies like the CIA and NSA when an external VHF/UHF antenna installation is required but must be extremely low profile. I have used one of these Ventennas for 2-meter operation over an extended period and can attest that they are very effective.

Ventenna manufactures seven models for the radio hobbyist that cover 144 to 1290 MHz. There are also three commercial models that cover 140 through 1500 MHz. Go to their website and check out their offerings, and be prepared for a nice surprise. The prices for most of these antennas are between $64 and $100 which is a *LOT* of antenna for a very inexpensive price. While the models are cut for various portions of the VHF/UHF spectrum, not all of them offer the ability to transmit RF. However, if you need a really low-profile antenna, the Ventenna line is a sure winner.

Some Final Thoughts On VHF-Plus Antennas

Most ham radio operators like to build things, with antennas being at the top of the list. Not only does this save money (something everybody likes to do), it also expands the frugal radio amateur's knowledge of this intriguing hobby we call radio. However, let's not limit this to hams. Scannists and SWLs can also benefit from homebrewing their own antennas to fit their specific needs. Various ham radio periodicals have articles on building VHF-plus antennas. The ARRL's *Antenna Book* is the "bible" on everything to do with antenna design, theory of operation, and construction. In addition, the ARRL and CQ Communications offer books on antenna design and construction. So, if you have a mind to, why not take advantage of some of this information and "roll your own" VHF/UHF antennas.

For instance, in the June 1999 *QST* there was an article describing how to reconfigure a RadioShack FM Broadcast antenna into a 5-element 2-meter beam for amateur radio use. There is nothing wrong with taking this article and, using some simple formulas contained in the ARRL *Antenna Book*, rescaling this antenna for the VHF aircraft band (108 to 136 MHz) or for the high-band VHF Public Service frequencies (136 to 174 MHz). The stock RadioShack FM antennas cost around $20, so what do you really have to lose? Give it a try and let me know your results.

Finally, as you will undoubtedly notice, once you have an adequate exter-

nal antenna hooked to your scanner, there will be a definite increase in intermodulation "interference" (those strange honking/beeping signals that blot out things you are trying to listen to). My personal intermod favorites are paging transmitters. It seems in my area there are at least two paging transmitters that get into my Uniden BC-895XLT and BC-7 scanners on a regular basis. Not only is this annoying, it always seems to happen when something really interesting is developing on the air.

This susceptibility to intermod "interference" varies between scanner models and manufacturers. Reception problems on many extreme wideband receivers are the result of internally generated signals (birdies), coupled with unwanted emissions from a multitude of radio services. It is beyond the scope of this column to delve into the whys and wherefores of intermod interference, suffice it to say we all have to live with it. However, there is a solution! PAR Antennas (www.parelectronics.com) offers several intermod filters designed to greatly reduce or completely eliminate these annoying transmissions. I haven't procured one yet, but rest assured that I will and a full report of my findings will appear in this column. Wander on over to the PAR Electronics website and scope out these filters. They may be just want you need to clean up your signals.

"As emergency communicators the biggest thing we're constantly concerned about is power."

Portable Power

As emergency communicators the biggest thing we're constantly concerned about is power—power for our gear, computers, lighting, etc. Even concerned citizens who want to stay abreast of rapidly unfolding developments during emergencies need to be cognizant of their power budget. Remember the Great Blackout of the Northeast last year? When the lights go out, you're left to your own devices to provide emergency power for your monitoring/transmitting and computer gear.

The folks at HF Pack (www.hfpac.com) offer a unique solution to the problem of portable power. Their nifty little kit, called the HF Packer Power-Pak, can provide many hours of 12-VDC power during emergencies. The kit is offered in several variations, with and with out a case and/or battery, to accommodate a variety of budgets. The size of the completed unit is 8.5 x 5.5 x 3.5 inches and it weighs in at around 7 pounds with a 7 amp/hour sealed lead acid (SLA) battery enclosed in the case. The electronics and the battery are accessed via the louvered side panel, which has the additional safety feature of not allowing hydrogen gas accumulation should a malfunction overcharge occur.

The external case is made of steel and features attractive silk screening over a powder-coated black finish. Powder-coating offers an unusually durable finish that resists the marring and scratching that regularly occurs with portable equipment. The DC output is terminated in Anderson Power Pole connectors, which are now the defacto standard for ARES/RACES communications equipment. The case has a small handle on the top for portability. LEDs on the top also monitor charge condition of the internal SLA battery. A "wall-wart" plug-in charger furnishes DC to charge the internal battery and will not over charge the SLA unit due to the internal circuitry of the charger. A low-noise charging circuit allows simultaneous charging and operating.

Having built the HF Packer Amp last year (a 160- to 10-meter 40-watt RF amplifier for use with the Yaesu FT-817 and similar QRP radios), I can attest to the thorough instructions and outstanding support for their projects offered by Virgil, K5OOR, at the HF Pack site. If you are in need of some portable power that can bail you out of a sticky situation, I would highly recommend wandering over to the HF Pack website and checking out the HF Packer Power-Pak in the HF Projects section.

Till Next Time

That's a wrap for this month. Join us again next month for more info on how to keep on top of the current events that affect our world and our personal security. Don't forget, I'm always looking for your articles and photos on how you maintain your monitoring post and comm station during the heightened security times in which we live. Send them to me at richard.arland@verizon.net. Until next time remember: Preparedness is NOT optional! ■

by Steve Douglass, webbfeat@1s.net

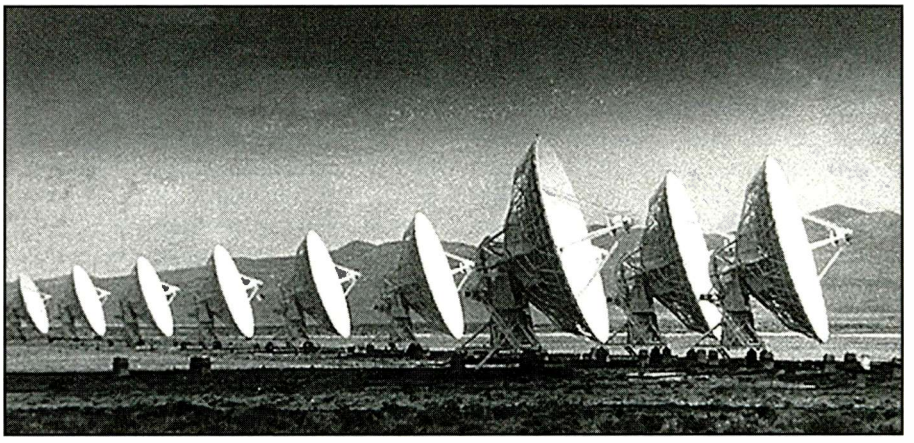
The Ultimate Intercept—Part I, And Hard Lessons Learned

Cooler fall weather brings out the daydreamer in me. On most any crisp autumn day you can find me cruising through my neighborhood on my bicycle, enjoying the wonderful fall air, the spectacular changing foliage, and life in general. On those occasions I can't help but let my mind wander a bit as I ponder life, love (and, of course), radio monitoring.

Not only is cycling a fun way to stay in shape, it also gives me the opportunity to clear my noggin of pressing duties and enables me to access the creative part of my brain, which comes in handy when writing this column. Some of my best ideas have been born of long, leisurely bike rides. For example, just last week as I cruised through the neighborhood, I began pondering an interesting question: *Just what would be the ultimate monitoring catch?*

What do you think? Maybe the President of The United States talking on an un-encrypted line from Air Force One? Or maybe a spy transmitting in the blind outside a terrorist camp? Or how about radio transmissions revealing the existence of a super-secret stealth spy plane? Those would be cool intercepts to be sure, but in my imagination the ultimate interception would be the communications from beings *not of this world!*

Now before you think this author has gone all "UFOie," let me state for the record that I don't believe that this planet has ever been visited by extraterrestrial beings, for several reasons. First and foremost being that the distances involved in intergalactic travel are too great to permit face-to-face contact (despite what you see on *Star Trek*), and the physics and the limits of space technology (as of this writing) make interstellar travel all but impossible. Some may argue that other civilizations may have advanced enough in their technological prowess to have bridged the wide gulf that is the universe, but until someone can show me hard-edged physical proof (and not just anecdotal tales or blurry photographs) that can stand up to intense scientific scrutiny, my thinking is, *it just isn't so.*



Radio telescopes of the Very Large Array in New Mexico keep an ear to the heavens, listening for the radio sounds of the universe. (Photo by Steve Douglass)

That doesn't mean I believe we are alone in the universe. Scientists agree that it is *very* possible that the conditions that allowed intelligent life to evolve on this planet could (and most likely did) occur on other planets. Although the very exacting conditions that have to be in place before life (let alone intelligent life) can arise are extremely rare in the universe, space is so huge that even if the chances are one in a billion that a planet harbors intelligent beings, then by the laws of mathematical probability there must be millions of civilizations scattered throughout the heavens.

But unfortunately today there is only one way to get proof, and right now that is through radio. Since it seems logical that intelligent beings would, in the course of their history, discover radio technology, it also seems likely that some of these radio transmissions have leaked into space, as ours have for years. That's why dedicated radio astronomers are now using million-channel receivers tied to super-sensitive antenna arrays, listening for the signs of intelligent life in the universe. Although some radio astronomers think using radio telescopes to listen for E.T. to call is a waste of expensive and important scientific resources, SETI (Search for Extraterrestrial Intelligence) scientists are convinced that the technological historical and sociologic impact of discovering intelligent life elsewhere in the universe would be so profound that to not attempt it would be the real waste. Despite what many may think, the search for extraterrestrial intelligence is a legitimate science and not tied to lunatic-fringe pseudo science or UFOs. Although the chances are slim that we will answer the E.T. question in our lifetime, maybe someday our descendants will know for sure if there is anyone else out there.

The Drake Equation

With all the billions of stars in the heavens, how do SETI scientists calculate where intelligent life might be hiding? For years SETI researchers have used the formula

N = R fp ne fl fi fc L

as the basis for calculating the odds of detecting intelligent extraterrestrial life in a given solar system. Although this equation might look like alphabet soup to most of us, it is relatively simple. The equation is the work of Frank Drake, a professor of astronomy at the University of California, Santa Cruz, and former president of the prestigious Astronomical

Society of the Pacific and the SETI institute. To those of us who had trouble with high school algebra, the equation may look a bit intimidating, but on close examination it is simple to understand. Basically it's just a common sense series of questions that if answered would make the daunting search for extraterrestrial intelligence all that much easier. Let's take a look at the parts.

N (number of intelligent extraterrestrial civilizations)

The N in the equation stands for the number of detectable (by radio astronomy means) extraterrestrial civilizations in space. N is an unknown number since no galactic census exists.

R (number of yellow stars)

R equals the rate of the formation of yellow stars (like our sun) and their number in the universe. Scientists estimate stars like our own are not uncommon and they are the best type of stars to foster life-sustaining (stable) radiation. We can see many stable yellow stars with optical telescopes. These stars would be a great starting (or aiming) point for SETI radio telescopes.

fp (the fraction of stars that have planets around them)

Many of these stars should have planets revolving around them. Although the odds are small, some of these planets might be located in just the right temperature (orbital) plane where it is neither not too hot nor too cold for life to exist. There are so many yellow stars that some are bound to be able to support life. We can compare it to standing in the freezing cold next to a blazing campfire. Anyone who has ever been camping knows there is a zone where the temperature is just right. In space, this zone is incredibly narrow. A planet just a few million miles out of this orbit either freezes or barbecues.

ne (planets hospitable to life)

Planets hospitable to life are much more common than planets actually having life. There may be many lifeless planets riding in the temperate zone. Our moon is essentially in the same orbit as Earth, yet it can't support life for many reasons, chief among them not having enough gravity to capture and hold oxygen.

fl (planets supporting life)

Even if we have an Earth-like planet teeming with life, we (humans) would never have any hope of detecting it. It could be that the life on the planet is composed of microbes or other lower life forms incapable of constructing civilizations. SETI is a search for *intelligent* life and not just life itself. Planets inhabited by even slightly higher life forms (such as mammals and reptiles) would still be undetectable by human means. To even our closest relative, the chimpanzee, civilization is an incomprehensible concept.

fi (existence of intelligent life)

In our equation we find the symbol "fi" representing the existence of intelligent life in the galaxy, which unfortunately has an even smaller chance of forming in a solar system. Intelligent species need time and the right conditions to form. This can mean millions of years of development, without interruption by species-eradicating diseases and natural and self-inflicted technological disasters, such as nuclear war. But for the sake of our argument, let's say that hidden inside a remote solar system somewhere is a planet populated by intelligent beings. There are still other factors involved in our ability to detect them.

fc (do they have radio?)

The intelligent creatures on our target planet may have constructed an elaborate civilization rivaling any built by man. But before we could have any hope of eavesdropping on them, they would have to have mastered at least one discovery. In our equation "fc "represents intelligent civilizations capable of interstellar communications. In other words, they would have to have discovered radio. The only way any extraterrestrial civilization could ever discover our presence on Earth would be to detect the billions of everyday radio transmissions leaking out into the universe. Since Marconi invented the radio, humans have unintentionally broadcast their presence into the heavens. Ironically, it might be that reruns of *Leave It to Beaver* could be proof to an extraterrestrial civilization that intelligent life exists on Earth. In turn, it may also be that the interception of an extraterrestrial broadcast transmission might be the final proof that we are not alone.

L (survival of the species)

There is one remaining factor in the Drake equation that we need to consider in the search for extraterrestrial intelligence. It is represented by the last character in our equation. The "L" stands for the length of time that a civilization capable of interstellar radio communication remains detectable. Intelligent humans have inhabited this planet for millions of years, yet it has only been for a relatively short time that we have been capable of radio communication. In relation to how long humans have existed, the time we have been radio-capable is a mere *half* a blink of an eye. Even if by chance the number of extraterrestrial civilizations capable of interstellar communications in the galaxy is large, the chances that we (humans) would be pointing an antenna at the right planet at the exact time they were radio-active are very slim indeed. It is possible that millions of intelligent societies have sprung up throughout the heavens, becoming radio capable and yet for some reason existed for only a brief moment in time. Maybe they destroyed themselves in a nuclear holocaust or were wiped out in some natural cataclysm before they could radio their presence.

Unfortunately many scientists theorize that the invention of radio usually heralds the mastering of the atom (as in atomic weapons). The chances of any society surviving a nuclear age may be slim. So far humans have survived, but only time will tell if we will be able to keep these world-killing weapons leashed.

As a broad analogy, I'm sure many of us can remember the fun of chasing fireflies on summer nights. The preferred technique for catching lightning bugs was to stare into the darkness waiting for one to flicker, then running to the spot before the firefly flew away. Sometimes the firefly would be in relatively the same place when we got there, at other times it would have flown away, making capture impossible. Searching for extraterrestrial intelligence must be a lot like chasing fireflies, yet immensely more difficult. Millions of intelligent societies must have "blinked" on and off without anyone ever knowing of their existence. Will Earth share that same fate?

The recent discovery of microbes embedded in rocks from Mars found in Antarctica offers new hope to SETI astronomers, giving them an answer to one of the questions in the Drake equation. It is possible that life in the universe may be more common than we at first believed. If so, our chances of intercepting a signal may have increased...or have they?

The Digital Factor

Alas, there is a new wrinkle to this equation that Drake never thought of. The window in which one can detect an intel-

ligent civilization sending radio waves into space is a made even more narrow by the acquisition of new technology. Not only does our hypothetical extraterrestrial civilization have to have managed not to destroy itself as it struggles to survive its own technological adolescence while somehow surviving (and thriving) in a chaotic universe filled with planet-killing comets, but to be heard it must not have advanced *too* far! Making the task of intercepting an extraterrestrial radio signal even more difficult is the inevitable technological evolutionary step of a civilization going from an analog-based technology to a digital one. Once a civilization becomes 100 percent digital, chances of intercepting its very brief, narrow-band radio transmissions become almost infinitesimal.

In light of this, our only chance of receiving any E.T. DX would be broadbanded, *very* powerful signals *intended* for reception. Let's hope that somewhere in the universe intelligent beings have evolved and survived long enough to *radio-shout* into the stars the proof of their existence. Since Earth technology is also evolving from the analog to the digital, the window of opportunity for humankind's weak signals to be snatched out of the electromagnetically noisy universe by an extraterrestrial civilization is also closing rapidly. Maybe what's needed is a project that will shout our existence into the universe before we go the way of the dodo?

Results?

Because the universe is so vast, searching for SETI signals among the billions of stars has been a hit and miss affair, so far with only tantalizing, but not convincing, hits. Therefore, chances that a SETI antenna would be pointed at the right star system at right time to receive a flicker-brief extraterrestrial transmission are extremely small, almost beyond calculation. But, since the proof of intelligent life would have profound impact on all mankind, the hunt for the ultimate intercept continues.

SETI searches can be compared to searching every beach of the world for one certain granule of sand before the tide can sweep it away. Hope continues that, despite the great odds against it, someday in the future SETI scientists will point their antennas in the right direction at the right time and tap into a galactic Internet. But for now, searching the universe for intelligent life is a lot like knowing where a firefly will be the next time it blinks. Luckily, though, that task will only become easier through evolving information about our universe, advancement in radio technology, and the intelligent deduction and dedication of SETI scientists.

Although it may now seem impossible, with the odds stacked heavily in the failure column, humans throughout history have exhibited the unique capacity to ignore the odds and carry on with seemingly impossible quests. At some point in time, going to the moon or taming the atom also seemed like impossibilities, but as we all know, on hot summer nights from time to time, kids still somehow manage to catch fireflies.

Right here next month, we'll take a look at the technical aspects of SETI and show you how you can participate in your own SETI project. But now, let's move on to more worldly utility monitoring!

9/11 And Beyond

As of this writing, I am about halfway through the *9/11 Commission Report*. I must say that everyone should read this amazing book. This is the definitive, true account (despite what wacko conspiracy theorists think) of what happened on that tragic day in September. Not only is it an amazingly good read, describing in great detail the second by second timeline of the attack, it also explains who the terrorists were, what motivated them, and how we can prepare and prevent future assaults on our country. For communications monitors, it also provides insight into the massive communications failures that occurred. Everything from police, fire, and rescue communications to cellular, government, military, and aviation channels suffered mass over-loads and eventual breakdowns that exacerbated the disaster.

There is an also amazing amount of information concerning the inner workings of the FBI, CIA, and other intelligence agencies, as well as an informative look of what happened inside the highest government offices before, during, and after the attack. Particularly interesting for UTE monitors is the account of what happened when the President learned of the attack, what happened aboard Air Force One, and also the scramble deep inside NORAD to get information from the FAA, and other sources, in an attempt to decide what course of action to take against an enemy armed with huge, fully fueled human-guided-missiles packed with innocent civilians.

After reading this report it becomes clear that we can't let our guard down for a second. It's not a matter of *if* but *when* the next attack will come. These terrorists hate America and all it stands for with a deep passion. They have perverted and twisted their religion to justify their evil intentions. To quote the *9/11 Commission Report*: "We learned about an enemy who is sophisticated, patient, disciplined and lethal. The enemy rallies broad support in the Arab and Muslim world by demanding redress of political grievances, but its hostility towards and our values is limitless. Its purpose is to rid the world of religious and political pluralism, the plebiscite and equal rights for women. It makes no distinction between military and civilian targets. Collateral damage is not in its lexicon."

Therefore it is imperative that radio-monitoring hobbyists keep a sharp ear to their receivers. When the attack comes, what we monitor will become very important. As is detailed in the *Report*, during a disaster, information becomes the most important, and yet hardest, asset to obtain. As an example, after the first aircraft hit the WTC North tower, the President was notified by his staff of a report that a twin-engine plane had hit one of the towers. No one suspected terrorism, with most thinking it must have been a tragic accident. But anyone monitoring the FAA ATC frequencies in the area would have been aware that something extraordinary was happening. For instance, at 8:24 AM (EDT) terrorists on American Flight 11, thinking they were using the hijacked aircraft's public address system, mistakenly radioed over VHF civil aviation frequencies, "We have some planes. Just stay quiet and you'll be okay. We are returning to the airport." Another transmission came seconds later, "Nobody move. Everything will be okay. If you try to make any moves you'll endanger yourself and the airplane. Just stay quiet." Another example involved United Airline's Flight 175, the second aircraft hijacked. Before the hijacking occurred, however, the pilots radioed the New York Center with a transmission that any aero-monitor could have intercepted: "UAL 175: Ah, we heard a suspicious transmission on our departure out of Boston...ah...someone...ah...it sounded like someone keyed the mikes and said...ah...everyone stay in your seats." Beginning at 8:51 AM EDT, a New York Center controller

noticed an unauthorized transponder change from UAL 175 and *repeatedly* (over VHF channels) tried to contact the aircraft but had no success. Another commercial aircraft radioed New York Center about "radio reports of a commuter plane hitting the World Trade Center."

At this point it would have been clear to anyone monitoring civilian VHF aircraft frequencies that a terrorist attack was underway. Incredibly, most federal agencies would only learn of the attack much later, and not through official communications channels, but by watching reports on CNN! In this case, monitoring hobbyists (if any were listening in at the time and I haven't seen any reports that any had monitored these transmissions) could have been more informed on what was going on then the President of the United States and most people in the military, CIA, NSA, or NORAD! So before the next attack happens—and it will—monitors need to sharpen their monitoring skills, improve and expand their monitoring coverage, enhance and organize their monitoring equipment, and document or record everything of importance. The following list of monitoring-related priorities should help get you thinking about what needs to be done—now!

Terrorist/Disaster Preparedness List

Improve Existing Monitoring Capabilities: Do everything you can to make physical improvements to your monitoring system such as replacing aging leaky coaxial cables, repair, purchasing or building new antenna systems and finding ways to improve output audio.

Increase Your Monitoring Coverage: Think about expanding what you monitor. Try not to focus on just one aspect of monitoring, such as only aviation. Consider buying additional receivers so you can dedicate each receiver to a communications genre type. For example, use one receiver for public safety monitoring and one for military, etc.

Acquire as Much Frequency Data as Possible: Use the search functions on your receivers to discover active channels in your area. Do frequency research on the Internet, purchase commercial frequency databases, and trade information with other monitors. Try to build a complete map of all the active frequencies (and who uses them) and continually keep it updated. Search out and identify *ALL* users of the radio spectrum in your community, from shortwave to microwave, including users you would never monitor on a daily basis, such as business users, GMRS, utilities, news media, construction, transportation, public and private schools, and railroads. Update these lists periodically and keep them current. Since you never know what target terrorists might strike, it's a good idea to have even mundane communications frequency listings at your fingertips.

Document your Findings: Purchase recording equipment, such as digital or standard cassettes, to capture your intercepts. In the event of an attack your recordings could provide valuable insight. You might consider buying a device, such as a NITELOGGER, a Capri ScanRecord, or a VOX-operated recorder, that lets you only record when the scanner is active. Record during the night and review your tapes everyday. This is a great way to compress your monitoring time from hours to minutes.

Keep Written Logs: It's equally important to make notations of stations, modes, and callsigns used. Be sure to make hardcopy prints of all your accumulated data, frequency, and information lists so you'll have some kind of record that you can access away from your computer.

Emergency Power Considerations: What if the electrical power is knocked out due to a terrorist attack or natural disaster? All that data you accumulated would be inaccessible trapped in a dead computer and your receivers will be totally. Useless. Consider buying a UPS (Uninterruptible Power Supply) for your computer. A reliable alternate power supplies for your receivers such as 12-volt rechargeable gel cell or standard rechargeable batteries (kept at the ready) will keep you in the know when everyone else is in the dark.

Consider Alternate Sources of Information: I have no less than three television sets in my monitoring shack so I can watch all the major networks at once. During a terrorist attack you'll find press reports a valuable source of additional information. Also, it pays to purchase a good standard AM/FM broadcast band receiver and keep it connected to a good outside antenna. You'd be surprised at how much info was broadcast on normal talk radio stations during the 9/11 attacks. AM stations can be very helpful in getting information on events that happen within a radius of a couple hundred miles (and further at night) when most VHF/UHF public safety communications are out of range of your receivers.

Shortwave broadcasters can be a great source on international news, but be aware that their newscasts are usually politically biased. When atmospheric noise is a factor, you can listen in on many local, state, national, and international stations on the Internet.

Collect Additional (Radio- and Non-Radio-Related) Data: Obtain some good maps of your listening area, including, aviation, topographic, and standard street maps. Satellite images are also very helpful. Point your browser to www.digitalglobe.com for some excellent samples. Consider buying mapping programs for your PC. Improve your radio-related library and purchase books on monitoring techniques, radio-electronics, antenna construction, and the like. Other books you might consider for your library include aircraft spotting guides, books about government intelligence agencies (such as James Bamford's excellent works *The Puzzle Palace* and *Body of Secrets*), books on terrorism, and, of course, the *9/11 Commission Report*.

Network!: Join Internet radio monitoring hobbyist e-mail newsgroups to share your information. A great place to start is www.QTH.net. There you'll find dozens of groups with thousands of monitors who share frequency lists, near real-time monitoring news, and technical tips.

Report: If you intercept something of a suspicious nature, don't hesitate to notify the proper authorities. But before you do, be *certain* you know what you have monitored isn't bogus. Just because you heard someone on an FRS frequency shouting "death to America," it might not be anything other than someone playing around. Real terrorists are very aware that their cell and satellite phones and HF communications can be intercepted, so it's very unlikely you'll ever hear anything in the clear (unless its disinformation), and you'll just end up looking like an overzealous CIA wannabe. However, if you intercept anything remotely like what was detailed in the *9/11 Commission Report* notify the authorities immediately. You could be saving lives.

Let's pray that day never comes, but just in case, we should follow the Boy Scout's motto and *be prepared*. Let's hope for the best and prepare for the worst.

Speaking Of Terror Tapes...

How important your intercepts could be is clearly illustrated by the recent admission by the FAA that an hour-long audiotape account of six air traffic controllers who were communicating with two of the hijacked aircraft on 9/11 has been destroyed. Managers at the FAA New York Air Route Traffic Control Center directed controllers make the tape to provide information for investigators examining the events as they were experienced by the ATC controllers involved. But, according to a report by the Transportation Department's Inspector General (asked to review the FAA's responsiveness to the 9/11 Commission's request for documentation), the tape was destroyed by a center manager. According to FAA managers, the tape was only made to provide interim information until written statements could be prepared and was not transcribed or duplicated, nor was its existence disclosed to anyone, nor was it listened to before it was destroyed.

The Inspector General's report said the controller's union local president had been consulted before the tape was made and agreed to the recording only under the understanding it would be destroyed after a written account had been prepared. The tape was made at approximately 11:40 a.m. on September 11 as center controllers and managers were reviewing what had just occurred. According to the Inspector General, "We have no indication there was anything on the tape that lead anyone to conclude they had something to hide or that controllers did not properly carry out their duties."

Terrorists Or Pranksters?

John Tomlinson, KA5QYR, of Blackwell, Texas, writes us with this interesting intercept. You decide if it's the product of pranksters or of evil minds plotting against the United States. Send comments to webbfeat@1s.net.

I thought I would share something with you that I have only told a couple of people about.

It was around three years ago and I really don't remember if it was before or after 9/11. As usual I went out to my ham shack while my wife was getting ready to go to work. I went to the 30-meter ham band to try for some DX. Tuning through the band I ran into a medium signal and stopped to see what it was. At first I had to do a double take when I began to copy in CW (at around 18 wpm) the words "American (expletive deleted) kill them all off! There was no callsign and the insulting phrase was all they sent. It had a regular pattern and they would transmit this phrase about every 90 seconds. After copying about four transmissions I went on and figured it was just a prankster. I never heard of any other hams speak of it to this day . I have always wondered where it came from but it was between, I believe, 10.115 and 10.120 MHz. I use a Gap Titan vertical so was not able to get a bearing. Time of intercept was 6:00 AM CST.

Anyway I thought I would share this with you. I'm definitely not a glory seeker but maybe you or your readers have heard something about it

Readers Logs

I want to remind you that you can send in your MILCOM loggings above 30 MHz, including UHF aero band catches. Just do so in the format below. As always, thanks to our ever-faithful UTE monitors who submit their logs every month. This month the logs are kind of skimpy, so I'm putting the word out to you regulars and beginning contributors to get on the stick and send those logs in!

0000: (Frequency MHz): STATION, Anytown, USA, summary of traffic heard, MODE at 0000Z. (monitor/location)

5696: Rescue 1717 w/pos and ops rpt to CAMSLANT Chesapeake. (DS2 WI)

6694.0: Halifax Military: 0055 USB w/Canforce Rescue 908 (unidentified-not heard) in pp w/Rescue Coordination Center (RCC) who advises that vessel is at 4402N/5627W and will continue proceeding north until it reaches the harbor. (RP)

7849.0: CORE7 (Commander, Military Region 7, Venezuelan Army): 2323 USB/ALE TO CGGN (HQs, Venezuelan National Guard). (RP)

8012.0: 043SERCAP (Southeast Region, Civil Air Patrol): 2054 USB/ALE TO 022NHQCAP Civil Air Patrol, Nat'l Ops Center, Maxwell AFB AL). (RP)

8012.0: 043MERCAP (Middle East Region, Civil Air Patrol): 2132 USB/ALE sounding. (RP)

8037.0: CPSNY (Nat'l Guard Bureau, Cooperstown, NY): 1347 USB/ALE sounding. (RP)

8047.0: HQ703N (probably Nat'l Guard Readiness Center, Arlington, VA): 1034 USB/ALE TO R010IN (Nat'l Guard unit, Rhode Island). (RP)

8047.0: HQ703N (probably Nat'l Guard Readiness Center, Arlington, VA): 1022 USB/ALE TO V010TN (Nat'l Guard unit, Vermont). (RP)

8047.0: HQ703N (probably Nat'l Guard Readiness Center, Arlington, VA): 1008 USB/ALE TO M010AN (Nat'l Guard unit, Massachusetts). Also noted on 10816.5. (RP)

8047.0: HQ7 (probably Nat'l Guard Readiness Center, Arlington, VA): 1201 USB/ALE TO W030VH (Nat'l Guard unit, West Virginia). (RP)

8047.0: HQ7 (probably Nat'l Guard Readiness Center, Arlington, VA): 1231 USB/ALE TO K040YN (Nat'l Guard unit, Kentucky). (RP)

8047.0: HQ7 (probably Nat'l Guard Readiness Center, Arlington, VA): 1628 USB/ALE TO H090IN (Nat'l Guard unit, Hawaii). (RP)

8047.0: HQ703N (probably Nat'l Guard Readiness Center, Arlington, VA): 0935 USB/ALE TO M010EN (Nat'l Guard unit, Maine). (RP)

8047.0: HQ703N (probably Nat'l Guard Readiness Center, Arlington, VA): 1724 USB/ALE TO A100KN (Nat'l Guard unit, Alaska). (RP)

8060.0 SCLC222M (Communications Logistics Center, 222nd Motorized Inf Bn, Venezuelan Army): 0310 USB/ALE TO CLC22M (Communications Logistics Center, 22nd Inf Bde). Also noted on 10600.0. (RP)

8068.0: FDI22 (French Air Force, Narbonne): 2350 CW. (RP)

8983: CG 2131 w/pos and ops rpt to CAMSLANT Chesapeake. (DS2 WI)

8171.5: T2Z238 2/238th Avn, Indiana Nat'l Guard Shelbyville IN): 0132 USB/ALE sounding. (RP)

8180.0: DD1 (Israeli Air Force): 2350 USB/ALE sounding. (RP)

9035.0 O/M (SS): 2321 USB w/flight 003 (O/M SS) w/position report and flight route. Probable Avianca LDOC. (RP)

9047.0: JNRCAP (Civil Air Patrol, Roosevelt Roads, Puerto Rico): 2103 USB/ALE sounding. Also noted sounding on 11402.0 and 12081.0. (RP)

9081.5: (1/137th Avn, OHNG, Rickenbacker OH) 1623 USB/ALE sounding. (RP)

9295.0 RCHNY (Nat'l Guard Bureau, Rochester NY): 1746 USB/ALE sounding. (RP)

9295.0: KFMHNG (Nat'l Guard Bureau, Otis ANGB Mass): 1306 USB/ALE sounding. Also noted sounding on 07650.0; 08181.5 and 10818.0. (RP)

10075.0: Houston Radio: 0108 USB w/flight 36 (identifier missed-either Air Transport International (ATN) DC-8 N782AL or Arrow Air (APW) DC-8 N906R) who asks relay of info that they departed San Juan Puerto Rico and are headed for Quayaquil and have maintenance problem. Also w/SELCAL check (DL-JK). (RP)

10670.5: CGOOPS (probably National Guard, Cargo Ops?): 0124 USB/ALE sounding. Also sounding on 11439.5. (RP)

11232: CANFORCE 2793 rcving SELCAL check from TRENTON Military 1443Z. (DS2 WI)

1232: RAZOR 05 trying to get wx rpt for Robbins AFB via TRENTON Military 1605Z. (DS2 WI)

11232: RAZOR 22 trying pp to PEACHTREE via TRENTON Military but getting busy signal. (DS2 WI)

11232: RAZOR 05 w/pp to PEACHTREE via TRENTON Military 1530Z. (DS2 WI)

11402.0: MCCCAP (Civil Air Patrol, McClellan AFB): 0027 USB/ALE sounding. Also sounding on 08012.0; 12081.0; 14357.0 and 19814.0. (RP)

11439.5: (2/238th Avn, INNG, Shelbyville IN) 1255 USB/ALE sounding. (RP)

11494.0: Panther (DEA/OPBAT, Bahamas): 0103 USB w/61A (Army helo deployed to OPBAT—not heard) who reports position as 228nms on bearing of 122 degrees from checkpoint Yankee 6. (RP)

13927.0: AFA1RE (Air Force MARS): 0117 USB w/Sentry 60 (E-3B AWACS, Tinker AFB) w/morale pp. AFA1RE also w/AFA1EN w/pp procedure-related chat. (RP)

14357.0: ADWCAP (Civil Air Patrol, Andrews AFB): 0022 USB/ALE sounding. Also noted sounding on 06806.0; 08012.0; and 11402.0. (RP)

14653.0: A090ZN (Nat'l Guard, Arizona): 0344 USB/ALE TO G090UN (Nat'l Guard, Guam). Also noted on 16338.5 & 20906.0. (RP)

16144.5: RUH963 (UH-60 1/228th Avn Bn, Soto Cano AB Honduras): 1448 USB/ALE TO SKYWAT (Skywatch-Army Flight Following Service (AFFS), Soto Cano AB, Honduras. (RP)

16338.5: HQ703N (probably Nat'l Guard Readiness Center, Arlington, VA): 1146 USB/ALE TO V030AN (Nat'l Guard unit, Virginia). Also noted on 8047.0. (RP)

163385: 00 F040LN (Nat'l Guard unit, Florida): 1254 USB/ALE TO HQ703N (probably Nat'l Guard Readiness Center, Arlington, VA). (RP)

20906.0: A090ZN (Nat'l Guard, Arizona): 0326 USB/ALE TO H090IN (Nat'l Guard, Hawaii). Also noted on 10816.5; 14653.0; and 16338.5. (RP)

This month's contributors are Dwight Simpson (DS2 WI) and Ron Perron (RP).

by Peter J. Bertini, radioconnection@juno.com

Building An FM Crystal Receiver!

Our earlier crystal receiver projects proved popular, so here's another crystal receiver with an odd twist: it's intended to intercept stations on the 88- to 108-MHz FM band! With some modification, it'll also copy nearby VHF AM aviation band traffic, just the ticket for eavesdropping while watching the activity at your local airfield! FM crystal receiver projects aren't new; this project is based on material from an article that ran back in the 1950s, but with some modern refinements to improve performance. Most of the parts you'll need to build this project can be found in your junkbox, but I'll also provide some mail-order sources for those of you who don't have goodies hoarded away!

Monitoring FM signals is more challenging than tuning in your local AM stations with a simple crystal set. There are two reasons: AM signals are readily detected by a crystal-diode detector, and a simple longwire antenna will usually suffice in providing enough signal level so you can hear at least a few of the local stations. FM is a different animal. A crystal detector recovers both a DC and audio signal from an AM carrier, a simple diode detector will only produce a DC signal component when monitoring a FM signal. Since there are no AM sidebands to mix with the carrier in the detector, none of the audible information is recovered.

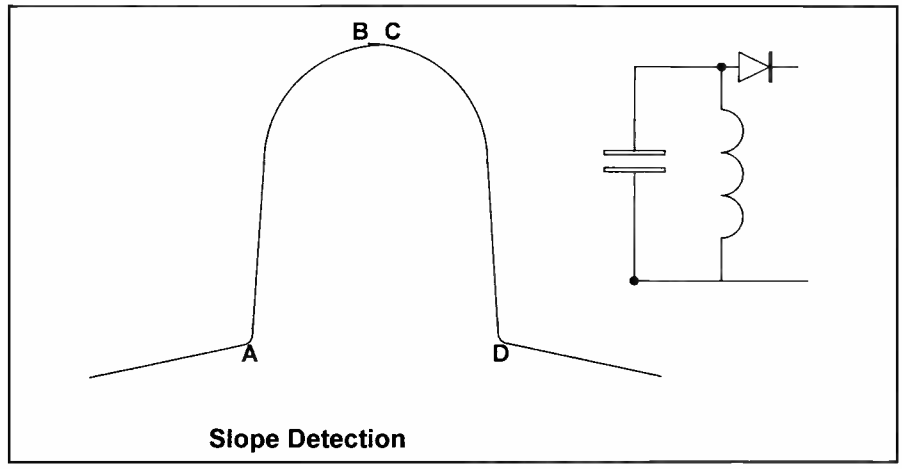


Figure 1. Here's a representative tuning curve for an LC tuned circuit as found in our FM Crystal Set. Slope detection occurs when the FM carrier straddles either side of the tuning curve between points A and B or C and D. An AM carrier would be centered between points B and C for best AM detection.

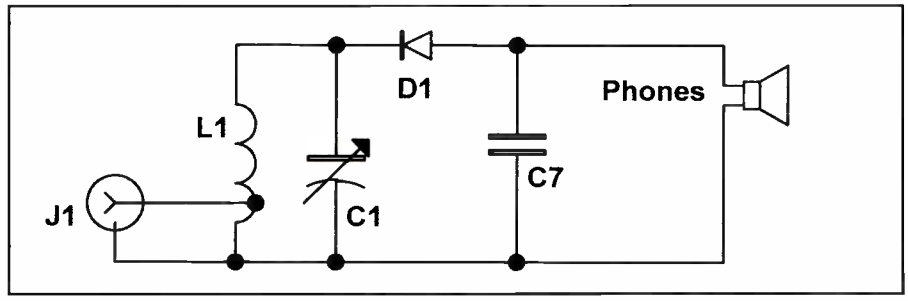


Figure 2. Here's the schematic for the simple and basic FM crystal receiver. FM performance is about 20 dB down from AM signals in the same tuning range. It makes a good companion at the local airfield to monitor AM aircraft and tower traffic in the 120-MHz region.

Slope Detection

So, how's it possible to make a working FM crystal radio? Good question. The answer lies in using a technique called "Slope Detection." FM is simply a carrier being shifted in frequency at an audible rate. The rate of shift corresponds to the frequency of the audio signal while the excursion, or carrier deviation, represents the audio signal level, or amplitude. U.S. FM broadcasters are allowed a deviation of ± 75 kHz, or 150 kHz total. This means we can hear FM signals on a simple crystal radio, providing the tuned circuit has enough Q for the recovered audio to be great enough to drive a pair of headphones. Whereas a crystal detector will detect AM signals without tuned circuits, the FM set relies on a very sharply tuned high-Q circuit to work. If we tune the FM station so it falls on either side of the slope, the modulated FM carrier will be converted to AM since its signal amplitude will vary depending on where it falls on the tuning slope at any given instant.

Many early 2-meter amateur FM repeater operators used AM transceivers, modified with simple external FM modulators, while using slope detection to hear the FM repeaters. Most of these early AM receivers were 15 or 30 kHz wide; the IF bandpass curves easily recovered the ± 5-kHz FM deviation! The trick was to tune to one side of the signal or the other, carefully centering the FM carrier on the center of the tuning skirt, not dead on at the peak! In short: The steeper the slope, the greater the recovered audio for a given deviation.

Figure 1 illustrates how slope detection works. The curve on the drawing represents a typical, but not exact, representation of how a tuned circuit responds as it is tuned across a carrier. Points A and D denote the bandwidth of the tuned LC circuit. The areas between points A and B and C and D represent the slopes of the tuning curve. Ideally, an AM signal would be tuned so its carrier is at the apex, or center, of the tuning curve. If we center the carrier frequency of the FM transmitter to the same spot, the carrier will swing over both slopes, and any recovered audio would be canceled. Instead, the "sweet spot" is where the FM carrier falls near the midpoint of the slope between A and B, or likewise on the slope of the curve between points C and D. The AM detector output will then swing in correspondence with the aural information carried on the FM carrier.

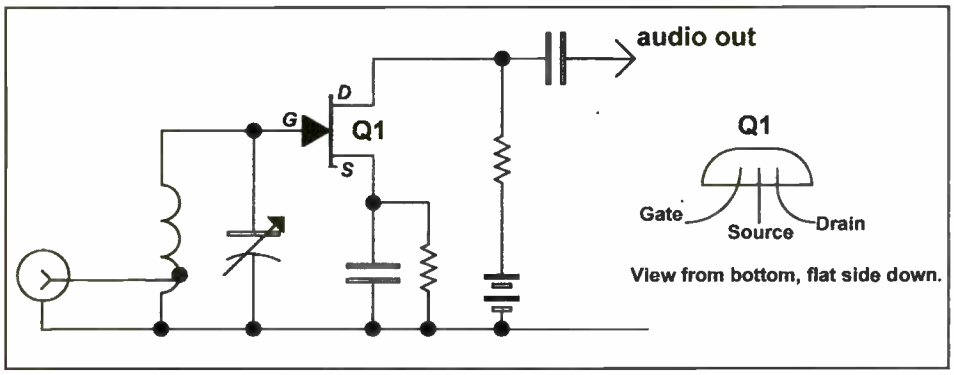


Figure 3. The infinite-impedance detector offers several advantages over a germanium diode detector. It has gain, doesn't load the tuned circuit, and it features better weak-signal detection.

Ideally, for maximum audio recovery, the FM deviation will "sweep" over the largest area of one side of the slope as is possible. It's hard to match the tuning curve to the FM deviation, and also any non-linearity in the slope along the rise or fall on the curve (a straight line, like a saw tooth, is ideal) will cause distortion. Too wide a slope and the FM deviation will fall on a very small area on the slope, giving very poor recovered audio. Too much deviation, where the carrier swings beyond the cutoff and into the opposing slope, yields large amounts of distortion on the recovered audio. In practice, these sets do work, but don't expect anything approaching high-fidelity reception!

The Simplest Receiver

There are several key elements needed for this project to work, most importantly, having a very strong local FM station or two or listen to. Most urban locations are so blessed. You'll also probably need a good outdoor FM or TV antenna to capture enough signal for the set to work, and it's a big plus if your system includes an inline VHF/FM preamplifier.

Let's get started by looking at **Figure 2**, the starting point for our project. It closely resembles the primitive FM crystal set projects shown in those early magazines. The heart of the receiver is the high-quality tuning capacitor and inductor. The tuning capacitor can be salvaged from an old FM tuner or converter, if need be. The tuning capacitor (C1 in the drawings) is a 35-pF capacitor with a built in 3:1 vernier dial reduction, and was salvaged from my junkbox. Any capacitor with a maximum capacity of 25 to 45 pF will work.

The set tunes rather broadly, thus the vernier tuning isn't a necessity, but it is nice to have. One source for the cap is Fair

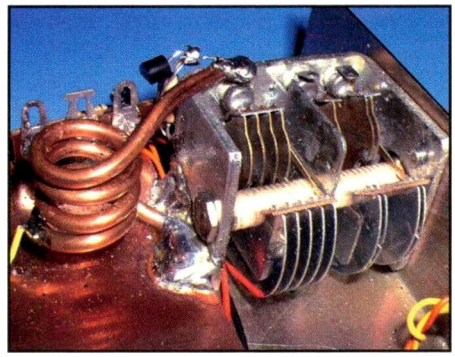


Photo A. The tuning capacitor and coil form the heart of the crystal set. The Q of these parts determines the tuning slope, and ultimately audio recovery on FM signals. The capacitor should be the best quality available. Often military surplus capacitors with ceramic insulation are available on the surplus market or at hamfests. If you can find one, use it. The tap point for the antenna is visible. Use a short lead between the tap and J1 connector.

Radio; its 3G-25 variable cap has a vernier drive and three sections with 4-25, 4-20, and 3-17 pF. Two of these sections could be paralleled to yield a larger tuning range. The inductor (L1 in all drawings) is wound from a length of #8 copper ground wire, available from any hardware store. You can substitute a smaller gauge if necessary. The circuit Q could be improved by silver-plating the coil—if you have a means to do so try it. Otherwise, I suggest polishing the copper to a sheen, followed by applying a coat of clear Krylon to prevent tarnishing. The coil consists of six turns; I used a half-inch wood dowel as a form to wind the coil. The antenna tap is made at one-half turn above ground on the coil. **Photo A** shows the tap point and also the tuning capacitor. **Table 1** lists the parts values and sources for all the components used in three versions of the receiver shown in this month's column.

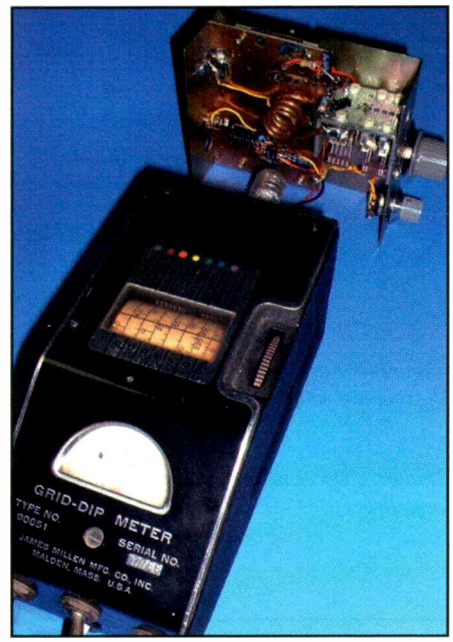


Photo B. Here's the Millen Grid Dip Meter in action! When tuned to the resonant frequency of the capacitor and coil, the meter on the Millen will dip to a lower value. Fifty or 60 years ago, every ham owned one of these useful pieces of test equipment. That was a time when hams built their own gear. Now using one has become an archaic art.

I know finding parts can be difficult. I listed a few resources in **Table 1**, including one for a basic kit, sans headphones, for building the basic FM crystal set. This five-dollar postpaid kit can serve as the nucleus for the more advanced versions shown here as well.

Checking The Tuning Range

A grid-dip meter is the easiest way to check the tuning range of your coil and tuning capacitor combination. A ham friend who is also a builder is a likely candidate to have one of these units in his workshop. **Photo B** shows my venerable James Miller *'dipper* being used to check that my set will tune the entire FM band. These devices are variable oscillators with calibrated tuning ranges. A set of companion plug-in coils allows covering from the broadcast band up through 300 MHz. When the *'dipper's* coil is held near a tuned circuit, and the grid dipper is tuned to that frequency, the grid current in the *'dipper* will drop (or "dip"), as shown on the *'dipper's* built-in meter.

Alternately, a signal generator would also do for checking the tuning range. Compressing or expanding the coil slightly will shift the range: squeezing the coil will allow lower frequency tuning, while

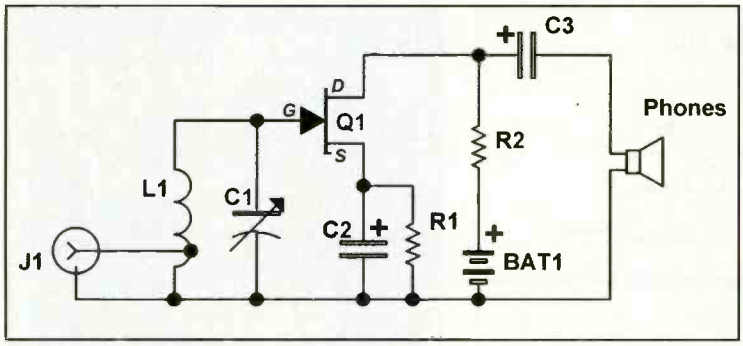


Figure 4. Adding the infinite-impedance detector to the basic FM crystal receiver might make the difference between hearing a station or not!

Photo C. The leads for the infinite-impedance detector should be kept short and direct for VHF. The J-FET leads and associated parts are mounted to the capacitor terminals and frame. ⟶

Table 1. Parts List And Recommended Suppliers

L1	#8 copper wire, see text
C1	variable capacitor, 5 to 50 pF max. with knob
D1	1N34A germanium diode, or equivalent
J1	RCA phono jack or suitable RF connector for antenna
C2	10 µfd @ 16 volts electrolytic
C3	10 µfd @16 volts electrolytic
C4	10 µfd @ 16 volts electrolytic
C5	0.1-mfd ceramic capacitor @ 16 volts
C6	220 to 470 µfd @ 16 volts electrolytic
C7	500-pF ceramic disc or silver mica capacitor
R1	47k-ohm 1/4-watt resistor
R2	47k-ohm 1/4-watt resistor
R3	10k-ohm variable potentiometer, audio taper/with knob
BAT1	9-volt transistor battery with battery clip
Phones	2000-ohm vintage headset or crystal earpiece
Speaker	8-ohm speaker in enclosure
Q1	J-FET, type J-310
U1	LM-386 DIP package 8-pin audio IC

Resources

• Dan's Small Parts, PO Box 3634, Missoula, MO 59806-3634, (406) 258-2782, www.danssmallpartsandkits.net

This is an excellent resource for all components (ICs, FETs, small parts, and variable caps). Dan's features low prices and is set up to deal with home experimenters. Dan's offers an online catalog and ordering system. Minimum order might apply, check with seller.

• Bill Turner, 1117 Pike Street, St. Charles, MO 63301, (636) 949-2210, www.dialcover.com

Bill offers a kit and copy of the original vintage magazine article for the FM Crystal receiver for $5 postpaid. No frills or headphones, just the basic parts. No minimum order.

• Fair Radio Sales, 2935 St. Johns Road, PO Box 1105, Lima, OH, (419) 227-6573, www.fairradio.com

Surplus stalwart Fair Radio has a nice three-section variable (catalog #3G-25) that will work well. Price is $6. They also offer some high-Q ceramic military versions, but these are more expensive. Minimum orders might apply, check with seller.

expanding the coil will increase the higher end of the tuning range. A 40-pF variable capacitor should tune from 80 MHz through at least 130 MHz into the aircraft band. At worst, you may have to wind a new coil with a turn added or removed before you're able to tune the desired range. Adding a full or partial turn will lower the frequency. **Photo B** shows my Millen dip meter in action.

Improving The Detector

Crystal diodes make poor detectors. Germanium diode detectors don't work well on weak signals; for a weak enough signal they act more like resistors than diodes. **Figure 3** shows a circuit for a neat device called an Infinite Impedance Detector. This detector offers some gain and doesn't load the tuned circuit as much as a diode detector would; hence the Q and selectivity are also improved. The J-FET gate adds some capacity to the tuned circuit, and this can reduce the high-frequency tuning by several MHz.

Photo C shows how the J-FET and associated parts for the infinite-impedance detector are mounted using short leads. The gate is tied directly to the tuning capacitor stator terminal, and the FET's *source* lead bypass caps and biasing resistor are tied directly to the capacitor frame for good VHF performance.

Figure 4 shows how the infinite-impedance detector is incorporated in the FM crystal receiver. Parts values are given in **Table 1**. The detector will drive a pair of vintage high-impedance headphones (2000 ohms or better) directly. I use a pair of military sound-powered headphones with a matching transformer. Adding the

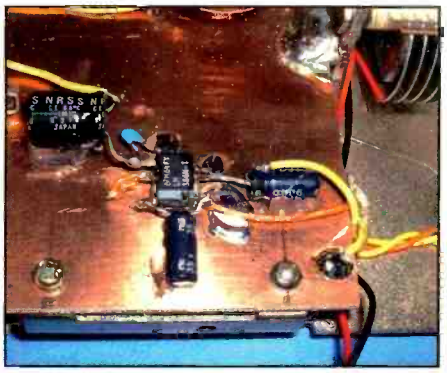


Photo D. The audio amp IC is mounted using "dead bug" construction techniques. The larger parts are glued to the pc board to alleviate stress on the IC leads.

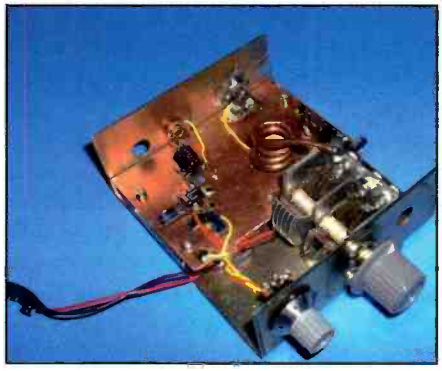


Photo E. Here's a top view of the completed receiver. Ugly, but it works—and it was intended as an experimental prototype to begin with.

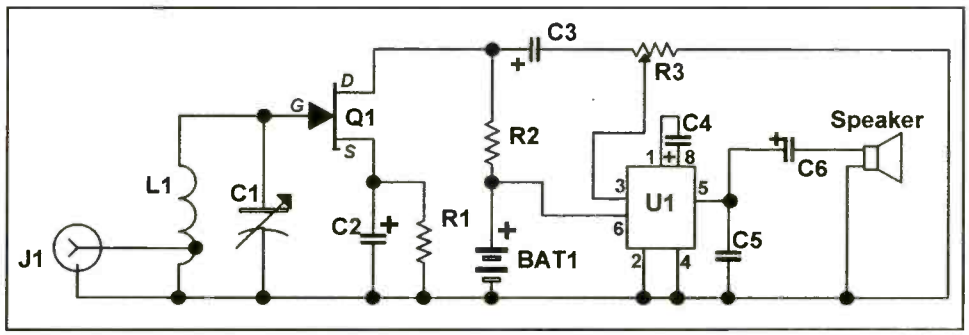


Figure 5. Adding the high-gain audio stage gives loudspeaker volume on strong stations.

Photo F. This is my 6S321 Stars-and-Bars Zenith! Sorry for the mix up! As you can see, this cabinet needs a bit of work. I'd started scraping the old lacquer off the top when the photo was taken. Chemical strippers risk damaging the photo-etched lacquered patterns on the front, which I intend to restore and save.

infinite-impedance detector allowed me to hear some FM stations from my rural home when using some high-gain tower-mounted VHF antennas.

You might want to try this detector on your AM BCB crystal sets; it makes a big improvement!

Adding An Audio Amplifier

Figure 5 shows the final phase of the FM crystal receiver. A small 8-pin LM-386 audio IC gives enough gain for loudspeaker level volume, or to drive more contemporary low-impedance headphones. I mounted the IC and supporting parts "dead bug" fashion on the pc board. If you're not familiar with this breadboarding technique, the parts are soldered directly to the copper side of an unetched pc board for ground, and are self-supporting or glued in place as needed. (ICs were sometimes mounted on their backs, looking like little dead bugs; hence the name.)

It's not very pretty, as shown in **Photo D**, but it works and is good for quickly prototyping circuits on the fly. I think some builders call this technique *Ugly Board* construction. Hot glue assisted in mounting and supporting the IC and larger components to the board. **Photo E** shows an overall view of the entire receiver. Again, it isn't pretty, since I considered this to be an experimental project. An off/on switch is needed to preserve battery life.

An Apology

Our opening photograph in the July 2004 issue purportedly showed the deplorable condition of my Zenith 6S321 cabinet. What accidentally got forwarded for publication was a photo of a nicely restored example from the webpages of Mike Urban's Internet site at www.urban-antiqueradio.com. I had saved his photo as an example to follow when restoring my Zenith. Hopefully **Photo F** is the correct photo. Anyway, visit Mike's website to see some nicely restored radios in his collection, and to check out a few he's offering for sale.

Well, that's it for this month. If you build one of these sets, I'd like to hear about it, and photos would be great! Let me hear about your other projects, as well. Until next month, keep those soldering irons warm and those letters coming in! ■

by Bill Hoefer, flacap388@hotmail.com

Three Years Later...

As you receive this issue of *Pop'Comm* we're just past the the third anniversary of the attacks of September 11, 2001, in New York, Washington, D.C., and Pennsylvania. I think it would be appropriate to list many of the frequencies of John F. Kennedy International (JFK) and adjacent airports as many people are still interested in listening to the aircraft frequencies, possibly even as a way of paying their respects.

As many of you know if you've read my column over the years, I give recommendations about enroute maps and other FAA books to aid in your listening to aviation activity. This month I'm including some maps of the JFK area.

The maps that include mainly airways in black on white are used by instrument-rated pilots (see **Figure 1**). The map with airways starting in "J," such as J222 just west of JFK, is high altitude chart H-10. This shows that the aircraft are not landing in the New York area, but are traveling "at altitude," at or above 18,000 feet. As stated in an earlier "Plane Sense" column, you will hear these altitudes as "flight levels." For example, an aircraft flying at 27,000 feet (all altitudes are considered above mean sea level, or MSL) would be described as flying at flight level 270. All aircraft flying between 18,000 and 60,000 (flight levels 180 and 600) are under full instrument control of air traffic controllers at all times. In the not too distant future many of the jet airways will be eliminated or supplemented by a new navigation system that I will explain in a future column.

Glossary

ICAO (International Civil Aviation Organization)—Headquartered in Montreal, Canada, this agency of the United Nations develops the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth.

VFR (Visual Flight Rules)—Refers to a set of regulations that a pilot may operate under when weather conditions meet certain minimum requirements. They are designed to provide sufficient visibility so that other aircraft can be seen and avoided.

VORTAC—The VOR system is the backbone of air navigation in the United States and most other countries. It is comprised of usually round buildings, about 30 feet in diameter, with a cone sticking out of the top. Many are painted in a red and white checkerboard pattern. VOR is an acronym for Very high frequency Omni Range. VORTAC is the same with TAC standing for TACAN, a military designation for its distance information on a VOR signal.

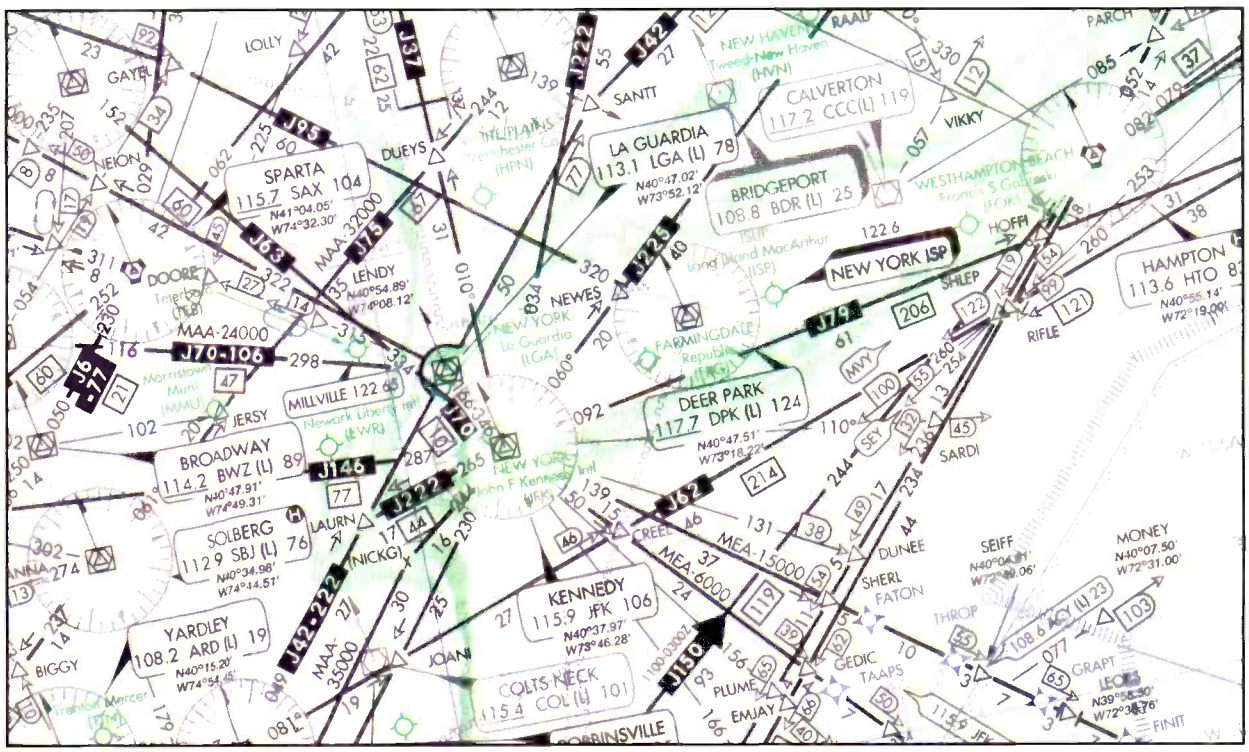


Figure 1. Air maps that include mainly airways in black on white are used by instrument-rated pilots.

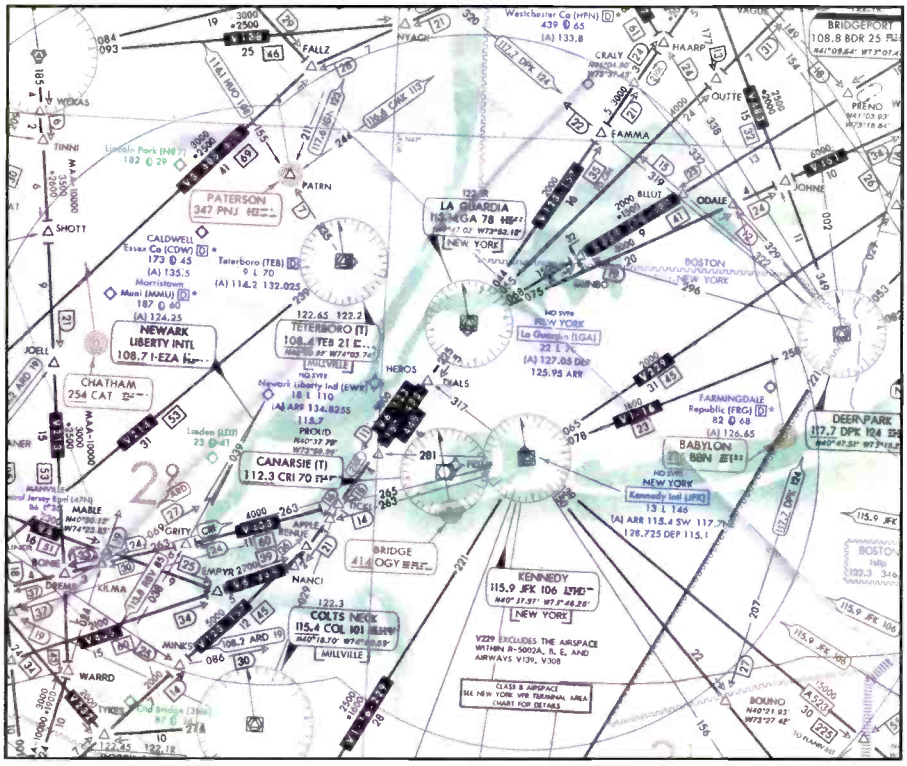


Figure 2. With the airways starting in "V," this is a low-altitude map. This map is L-28, covering much of the northeast seaboard.

You may notice on the sample upper level map that the number of one of the airways (J150) is presented in a box with an arrow pointing northeast, toward the Hampton (HTO) VORTAC. On airways such as this all aircraft are traveling in one direction, regardless of altitude. Basically it's a one-way street in the sky.

The next map (see **Figure 2**), with the airways starting in "V," is a low-altitude map. This map is referred to as L-28 and covers much of the northeast seaboard. While the "H," or high-altitude, maps cover the area that is used primarily by airliners, business jets, and military fighters/bombers/refuelers/cargo/spyplanes, these low-altitude charts cover those aircraft flying from the surface to 17,999 feet. Since instrument pilots fly normally at hard cardinal altitudes (3,000/8,000/17,000, etc.), this map is only really good up to 17,000 feet, again above MSL. Airways on these low-altitude charts are pronounced with the ICAO (see "Glossary") phraseology of Victor. Thus the route on the map as "V-3" is identified phonetically as "Victor Three" when control instructions are given to pilots.

The third map (see **Figure 3**) is part of the VFR Terminal Area Chart for New York City. The sample shows the immediate JFK, La Guardia (LGA), and Newark (EWR) areas with runway layouts, some frequencies, and locations of airports you may not know of, such as the Jamaica Bay private sea plane base located about seven miles southeast of JFK. Also on the maps are little magenta flags (looking like flags on a golf course green). Next to the flags are their identifications, such as Lincoln Terrace Park, Ridgewood Res, and Baisley Pond, all adjacent to JFK. These are visual reporting points. A helicopter enroute, say from JFK to the MONY building,

New York Area Airport Frequencies

John F Kennedy International (JFK)

ATIS	128.725/117.7/115.4/115.1
CD	135.05
FSS	122.1R/115.9
GATE CTRL	125.05
GC	121.9/121.65
LC	119.1/123.9
UNICOM	122.95
APCH	127.4/134.35/132.4/126.8/123.7
DEP	135.9/134.35/124.75/123.7
VOR/KENNEDY	115.9
VOR/CANARSIE	112.3

La Guardia International (LGA)

ATIS	127.05/125.95
CD	135.2/121.875 (Helicopters)
FSS	122.1R/113.1T
GC	121.7/121.85
LC	118.7
PRE-TAXI	135.2
APCH	120.8/132.7/128.8
DEP	120.4/124.45/127.05
VOR	113.1

New York Skyports SPB (6N7)

CTAF	122.9

Pan Am Metroport Heliport (6N4)

CTAF	123.075

Port Authority-Downtown-Manhattan/ Wall Street Heliport (JRB)

AWOS-3	128.175
CTAF	123.05

West 30th St Heliport (JRA)

CTAF	123.05

Newark Liberty International (EWR)

ATIS	115.7/134.825
CD/PRE-TAXI	118.85
GATE HOLD	132.45
GC	121.8/126.15
LC	118.3/134.05
New York APCH	132.8/1283.55/127.6/132.7
New York DEP	119.2

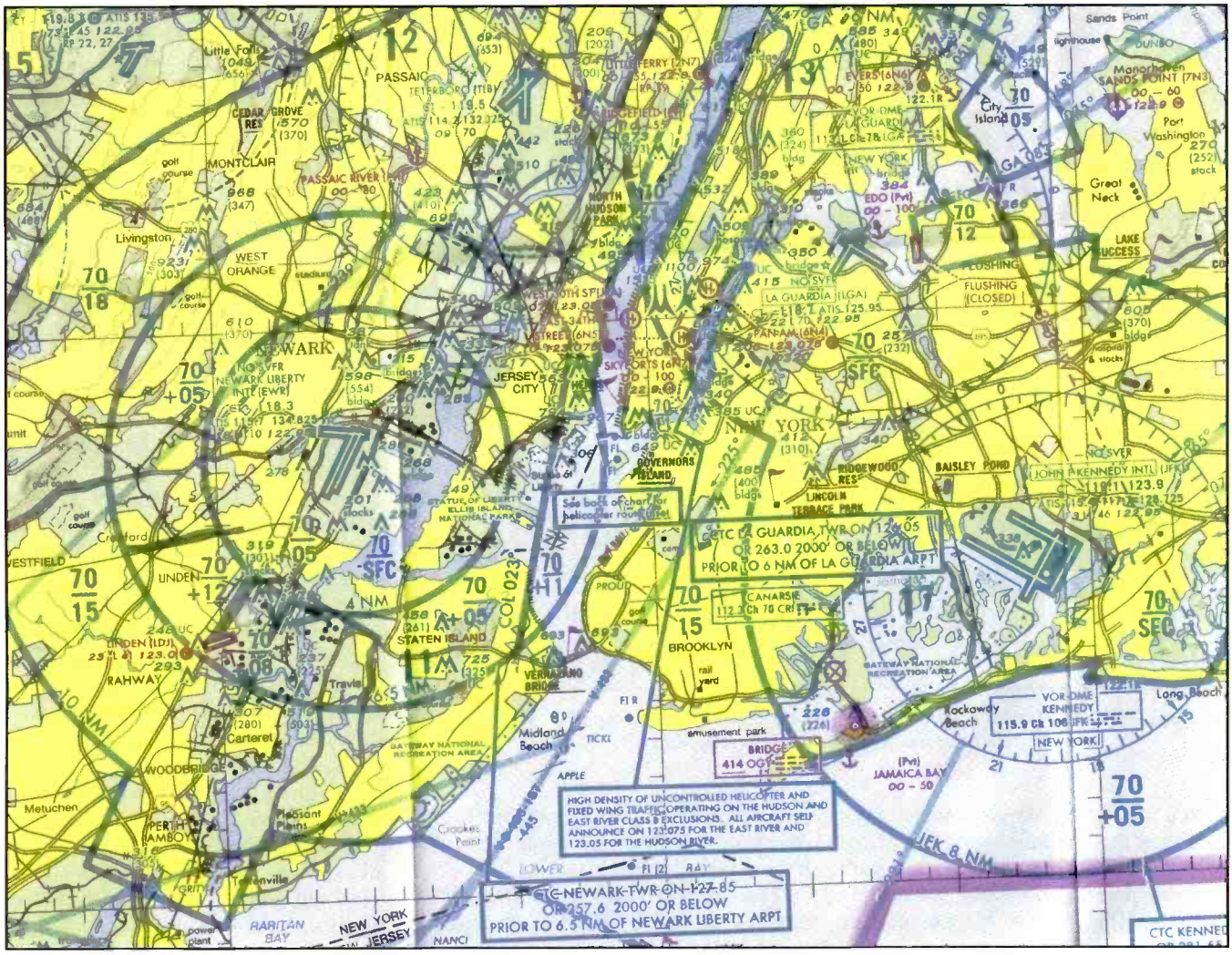


Figure 3. This map is part of the VFR Terminal Area Chart for New York City. It shows the immediate JFK, La Guardia (LGA), and Newark (EWR) areas.

may report over Lincoln Terrace Park that he's flying right over that point. Tower controllers may even instruct VFR pilots to cross over these points to separate them from other aircraft in the area. (Those of you in the New York area, including fearless editor Harold, may know that you *can't* fly from JFK to MONY and cross Lincoln Terrace. I'm just using this as an example.)

Now that you've seen the map samples, let's get on to the listing of the New York frequencies. This listing is not exhaustive, but for those fortunate to be near JFK, LGA, EWR, etc., or traveling to the metro-New York area, this list is a good start.

Do you have any aviation or frequency questions? Send them to me at *Popular Communicaitons*, and in the coming months perhaps you'll see your question or photo in your favorite radio magazine! See y'all soon. ■

By R.B. Sturtevant, KD7KTS

Thanks to Terry Schieler, WØFM in St. Louis, Missouri, who reminded us that Owen Garriott, W5LFL, sent greetings from space to over 350 amateurs between October 28 and December 8, 1983, from STS-9/Space Shuttle *Columbia*. He used a modified Motorola MX-300 at 4.5 watts and reached 23 countries. He was the *REAL* first amateur in space. 73, and thanks for the reminder Terry!

Q. Everyone knows that five words per minute is the current minimum for FCC amateur licenses. What is the fastest anyone has ever sent or received CW code?

A. In July 1939 at a Hamfest in Ashville, North Carolina, T.R. McElroy set a world record of 75.2 words per minute received. Corrected for today's 25-dot word standard that would be 72.2 wpm, which is still pretty fast. His record is still unbroken. "Mac" McElroy had already established himself as the world champion professional telegraphist, both in sending and receiving, but this was his record. During one contest McElroy heard the message start, and then lit a cigarette. He smoked the cigarette and then started to type. His copy was perfect from the beginning, but he was still typing when the message being sent had ended. McElroy started his career as a Western Union messenger at age 14. By 21 he was breaking records both in sending and receiving messages. In 1934, he began manufacturing and demonstrating his own line of keys, which are still highly collectable, under the trade name "Mac-Key." By 1941 he was selling semi-automatic and other variations of straight keys, code practice oscillators, and inked tape keyers. He made millions supplying the military during World War II, but lost much of it after the war. He died in 1963 at age 59.

Q. Since SOS is no longer the International Distress Signal we are supposed to say "May Day." What does the First of May have to do with "HELP!!!"?

A. MAYDAY doesn't have anything to do with any day in May. It is an anglicization of "m'aidez," which is French for "help me" which is a pretty good thing to say when your plane is going down! Another French word you might need to know at that time is *MERDE*! In English it is expressed by a four letter word beginning with S and ending with T. It is the most common last word heard on an aircraft's "black box" voice cockpit recorder.

Q. What ever happened to that big spy base the Soviets built in Cuba?

A. The Russian Signal Intelligence base built near Lourdes, Cuba, just south of Jose Marti Airport, covered 28 square miles and employed 1,000 to 1,500 Soviet engineers, technicians, and military personnel. It was the most productive spy base the Soviets ever built and supplied them with 75 percent of their strategic intelligence by 1994. Built after the Cuban Missile Crisis in 1962, the base specialized in telephone espionage and could copy all of America's communications satellites and many international ones. In a 2000 visit there, Russian President Vladimir Putin said to the staff, "The results of your labors are important, not only to the military command but also to the political management of Russia." Because of pressure from the first Bush administration, Putin announced the closure of the base in 2001. Against Castro's protests, all Russian equipment and personnel were gone by August 2002.

Q. In all the World War II movies, we see the underground asking the Allies to supply them with radios for communications with forces outside their countries. Did the members of the resistance build any of their own sets?

A. They often did, particularly in Norway. When Norway was invaded in April 1940, it happened so fast there was no time to prepare. Loyal Norwegians quickly formed resistance groups all over the country. The Norwegian Government in exile designated MILORG (short for Military Organization) to coordinate all resistance units. There were already a few British Type 3 Mark II radios in the country to keep MILORG in touch with London, but they needed some way keep in touch with the various military districts where 40,000 troops were waiting for orders. Salvo Staubo, founder of Hovding Radiofabrikk in Oslo, came up with the answer. In September 1941, Arne Hannevold, LA5K, a Hovding employee, began designing a transmitter, nicknamed "Olga." In January 1943, Staubo hand-wound the radio's coils in his kitchen. Power transformers, tuning capacitors, and IFs were assembled in Staubo's factory, camouflaged as standard parts for other products. Transmitters and power supplies were assembled in a cellar near Oslo, where final assembly also took place. Hannevold conducted final testing in the factory. By March 1943, Staubo was ready to go into mass production. Some of Olga's parts were parachuted in from England after December 1944. The Nazi's ordered Hovding to recondition 1,000 confiscated Norwegian radios a month before shipment to Germany. Some of Olga's parts were "borrowed" from this project. In addition to Olga, Staubo also manufactured Lisbeth, an illegal battery-powered receiver. There were 100 Olga units and 250 Lisbeths produced. It was the largest case of underground organizations mass-producing their own communications equipment. (Thanks to Erling Langemyr, LA3BI, for help with this piece).

Looking Back...

Five years ago in *Pop'Comm*

It was a "tinderbox" then and it still is; that's the Middle East, of course. Gerry Dexter's article titled "Tune In The Arab World" had it all—frequencies and broadcast times, addresses, and even QSLs from Algeria to the United Arab Emirates. Some things never change! Former *Pop'Comm* columnist Eric Force had a column called "Radio & The Internet" that included surfing tips and URLs to find almost anything radio. And, on shortwave, the VOA was testing its "new" relay on Sri Lanka with four 500-kW transmitters!

Ten years ago in *Pop'Comm*

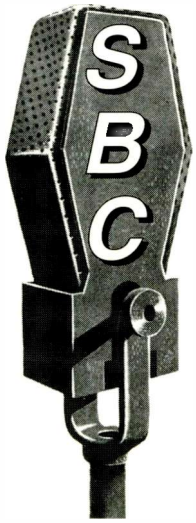
An exciting new product back in 1994 was the Trident handheld receiver that covered 100 kHz to2.060 GHz. It scanned at 25 channels per second and boasted 1,000 user-programmable memories. It carried a hefty price tag for 1994: $799. On the shortwave scene, Jeff White and his Radio Miami International had just begun broadcasting on a regular basis.

Twenty years ago in *Pop'Comm*

We still struggle with the "right to listen" as we did back in November 1984, when the cover story was "Police Radio: It's Great To Listen In, But Is It Legal?" The cover photo was of a Middletown, New York, police officer preparing to cuff a perp while another officer held a revolver and a "brick" HT that was larger, and perhaps heavier, than his weapon! A full-page ad from Scanner World in Albany, New York, advertised a "special" price on the Regency D310 desktop scanner, which featured 30 programmable channels and "No Crystals Required." Longtime *Pop'Comm* writer, Gordon West, WB6NOA's article "More Than You Ever Wanted To Know About Cellular Mobile Telephones" was an eye-opener, but remember it was 1984. His closing tip in the article, "Before you begin shopping for cellular radiotelephone equipment, be sure to find out the progress of cellular radio in your area! It may still be a year off!"

by Shannon Huniwell, melodyfm@dreamscape.com

FM's Secret Service: Storecasting, Transit Radio, Multiplexing, And Facsimile



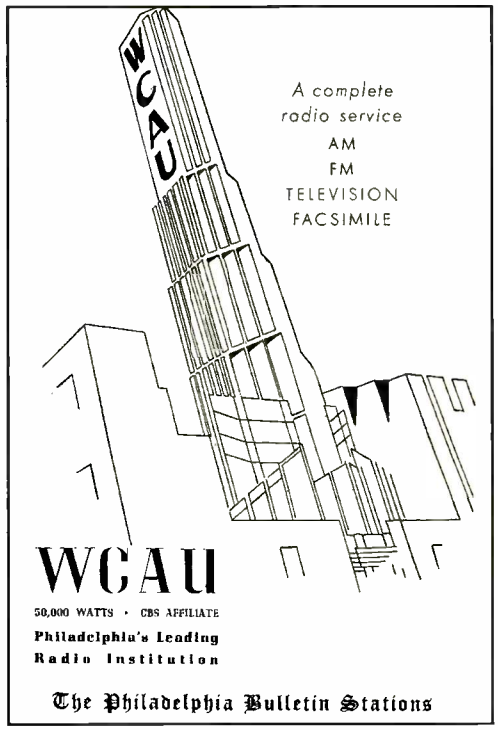
"It was strange stuff!" a *Pop'Comm* subscriber declared. His e-mail described the odd, in-store radio reception he recalled hearing while suffering through back-to-school clothes shopping as a kid. He continued,

Must have been the late summer of 1955 when my mom dragged me and my equally bored brother to various clothing shops and shoe stores in our hometown of Cranford, New Jersey. There was a tiny storefront called something like, *Gentleman's Corner*, which we didn't mind quite as much as the other places, mainly because it was air-conditioned and had music playing. In fact, I recognized the songs as being the same as the ones coming from my folks' big FM/AM/phono console running softly during dinner. My dad always tuned it to some New York City station that ran long segments of "beautiful music" records, announced the selections, gave a station ID, a commercial or public service message, maybe a little news or weather, and then went back to music. The weird thing is why after a few songs on the store's radio, everything went dead for a couple of minutes before the music suddenly re-started through a ceiling speaker?

The Answer To The Mystery Is...Simplex

It seems a stretch to think of broadcast FM as a failed band, but in the early 1950s most industry bets were against frequency modulation ever doing much except losing money, albeit without static. Audiences for the obviously clearer (than AM) aural medium could ostensibly be counted on one hand. During the spectacular major-league baseball summer of 1949, Nathan Strauss, owner of New York's WMCA-FM deliberately cut off play-by-play in mid-inning so as to annoy listeners enough for them to—hopefully—respond in droves. Only a pair of complaint letters trickled in. When he couldn't even find a willing party to take over WMCA-FM for free, Strauss vowed to shut it down. Shortly before this was to happen, though, officials of a cross-town foreign language station decided to pay about $7,500 to claim the 92.3-megacycle facility.

Changing the calls to WHOM-FM, they ran a "storecasting" format from nine in the morning until nine at night. Designed to generate revenue via subscription fees paid by stores wanting music (and customized information/sales suggestions) for customers to shop by, this programming was dubbed "Melodies-to-Market," and featured what is generically termed "elevator music" or easy-listening background songs bridged by commercial announcements (a la "attention K-Mart shoppers...") specific to supermarkets in the New York/New Jersey area. These stores leased from WHOM-FM special FM radios capable of detecting sub-audible tones that would, in the case of the WHOM-FM operation, jump the volume whenever those commercials were run. "Simplexing" was the term for such FM transmission and could also be rigged to signal the subscriber's rented receiver to silence the non-music portion of an FM station's programming. That's what was making the talking disappear from the aforementioned New Jersey clothing store radio. By leasing businesses special radios with relays that simply clicked-out speech content, any 1950s garden-variety, nearly wall-to-wall "good music" FM outlet could supplement its meager revenue from regular ads and information heard only by the general at-home broadcast audience. More than a few old-time radio professionals would agree, however, that the involuntary, or "in-store," listenership was considerably larger.



It may have been last on the list, but facsimile was included in the boast that the WCAU stations provided Philadelphia's "complete radio service." When this 1948 ad was current, the WCAU-AM/FM/TV stations' owners made most of their money via the co-owned Philadelphia Bulletin. *They hoped that using WCAU-FM (formerly the WPEN-FM facility) to fax newspapers or updated print information to subscribers was a way to save on the ever-increasing paper and distribution costs, plus more closely tie together broadcast and traditional journalism/advertising sales.*

And, speaking of captive audiences, something that the FCC briefly authorized and called "transit radio" allowed a handful of big-city FMs to inject mood music into subscribing bus companies' vehicles, and then, via receiver relays, pump-up the decibel level of commercials. It turned metropolitan buses into unbearable boom boxes. So many complaints were registered that politicians urged transit companies and the FCC to end what many believed to be a classic invasion of privacy. Frequency modulation's well-being was no match for the Bill of Rights.

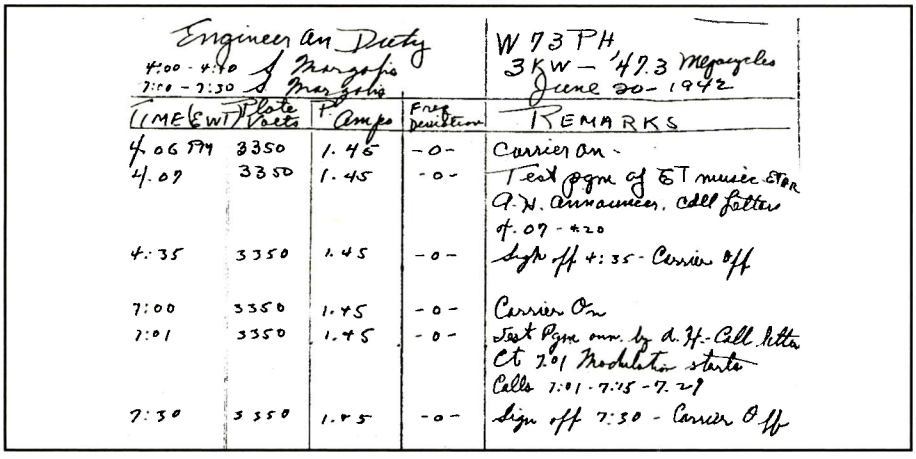
In the FCC's Twentieth Annual Report, the Commission hinted at the dubious fiscal state of FM's commercial landscape, circa 1954, and admitted that the jury was still out on efforts to make it solvent, saying,

As a means of obtaining additional revenue, various commercial FM stations are engaging in supplemental services known as "func-

This early 1950s letterhead mentioned WPEN-FM, but focused on WPEN-AM as the favored sister. Note the "5,000 watts" mention for the AM, though WPEN-FM's 20-kW gets no praise. The stationery was the first at WPEN-AM/FM's then-new address in the former Philco building. Embedded in the sidewalk at the front entrance was a multi-colored marble logo emblazoned with sparks and the WPEN callsign. It'd be interesting to see if it's still there.

tional music," "Storecasting," and "transit radio." In the functional music operation, an FM licensee undertakes to supply background music programs to commercial establishments having special receiving apparatus which, when activated by a supersonic signal, eliminates the spoken material. In "storecasting" and transit radio, the programming is designed to reach store customers and transit passengers in public vehicles, respectively, with the supersonic signal employed to increase the sound level of the spoken word. These specialized operations are under Commission study in connection with the overall [bleak] FM situation. Determination is required as to several legal and policy questions—whether such operations are "Broadcasting" within the meaning of the Communications Act, whether they meet the Commission's rules, and whether they are in the public interest.

In early summer 1955, the FCC's study prompted it to hesitantly approve "functional music" operations for any FM station that wanted to try making some extra dough by signing up subscribers and/or leasing them special receivers to either eliminate the talk or boost the volume when the commercials came on. Regulators did not permit round-the-clock simplexing, though, as they didn't want FM operators to exclusively cater to a subscriber base and ignore "regular" listeners (and potential FM audiences) who might understandably be bored silly by background music and/or messages intended only for in-store listening. When WHOM-FM's simplexing ended each evening at nine, the station hoped to earn points with the FCC by switching to an all-Chinese format aimed at a "general" at-home Asian audience. Other such broadcasters aired rather benign low-budget interview programs, show tunes, or taped public affairs from any outside source that would provide such fare pro bono. Arguably, even the least sophisticated listeners ascertained that functional music operations and their off-hours mish-mash didn't make for very good "regular" radio. Consequently, the Commission decreed that simplexing should stop by July 1957, but a group of stations enjoying a measure of success with the method held off this FCC order for about seven years.



Engineer on Duty
4:00 - 4:30 J. Margolis
7:00 - 7:30 J. Margolis

W73PH
3KW — 47.3 Megacycles
June 20 - 1942

TIME E.W.T.	Plate Volts	P. Amps	Freq. Deviation	REMARKS
4.06 PM	3350	1.45	-0-	Carrier on -
4.07	3350	1.45	-0-	Test pgm of ET music etc. A.N. announces. Call letter 4.07 - 4.20
4:35	3350	1.45	-0-	Sign off 4:35 - Carrier off
7:00	3350	1.45	-0-	Carrier On
7:01	3350	1.45	-0-	Test Pgm ann. by A.N. - Call letter Ct 7.01 Modulation starts Calls 7:01 - 7:15 - 7:29
7:30	3350	1.45	-0-	Sign off 7:30 - Carrier Off

Here are some rare radio scribbles! It's a simple hand-written log sheet from a June 20, 1942, test of W73PH. The pioneer Philly FM ran 3,000 watts at 47.3 megacycles, and that afternoon took to the air for testing purposes. Looks like the station signed on at 4:06, broadcast a live ID at 4:07 and 4:20, while airing music via an "electrical transcription" (ET), then left the scene at 4:35. We can safely assume that the ET might have been a 78-rpm disc and a bit too scratchy to really make good use of FM's wide frequency response. Note that a second 6/20/42 test was conducted later that evening. Official W73PH operation/programming began on June 22.

WPEN-FM, Your "Musitone" Subscriber Station

One of the most vocal simplex supporters was the management of WPEN-FM. Owners of this Philadelphia facility told the Commission that without income from simplex storecasting it would probably have to take the station dark. The pioneer FM ran storecasts for a subsidiary business named "Musitone." Most engineers at WPEN (no matter whether assigned to AM and FM) had to be able to service the special FM receivers placed in various Delaware Valley establishments. In the station's 2212 Walnut Street cellar, an ailing legion of these units was still stacked on a big workbench long after WPEN-FM had been out of the simplex game and was re-christened WMGK-FM. But that's getting ahead of the story I uncovered with the help of a *Broadcast Pro-File* station history obtained from their informative new catalog. (Get one by writing to 28243 Royal Road, Castaic, CA 91384-3028.)

W73PH, A Pioneer On FM Row

It was Arde Bulova, maker of all those famous watches, who got his Philly-based William Penn Broadcasting Company into the FM business. In 1941 he'd asked the FCC to give his 5,000-watt WPEN a frequency modulation sister. Commission approval took place early the next year and Bulova ordered his engineers to get the new FM on the air before World War II material shortages barred construction. This was during FM's original—or low—band era, so Bulova's facility got the nod to use 47.3 megacycles with enough power to cover some 9,300 square miles from a Center City Philadelphia tower.

Under the Commission's early commercial FM callsign rules, stations were typically named for their general venue east (W) or west (K) of the Mississippi River, the last whole number and decimal of their dial position in the 42- to 50-megacycle band, and an identifying letter

When WMGK-FM stopped simulcasting oldies-formatted WPEN and debuted the "MaGiK Music" format, this tiny Gates Producer board served as the pioneer soft-rock outlet's main console. The station quickly gained a following, and the little board was fast retired in favor of a state-of-the-art McCurdy-brand rig that impressed DJs quipped looked like something from a Star Wars *spaceship.*

or two designation for the city of license. Consequently, Bulova's **PH**iladelphia FM on 4**7.3** megs got dubbed W73PH.

Following relatively quick construction and some testing, W73PH officially hit the City of Brotherly Love's airwaves on June 22, 1942. Admittedly, neither the station's debut nor its programming made headlines, as W73PH broadcasts consisted mainly of simulcasting WPEN for a couple of hours nightly. Probably few local radio listeners even noticed the outlet's November 1, 1943, call letter change to WPEN-FM, when the FCC realized that the old number/letter system was potentially confusing and too cumbersome to accommodate all of the planned FMs, some of which would be in communities bearing the identical name (such as Philadelphia, Mississippi) and same first initial(s) as existing stations.

For $620,000, Bulova sold WPEN-AM/FM to *The Philadelphia Evening Bulletin* newspaper in 1944. In 1946, the paper silenced its FM's low-band transmitter and fired up a new unit on their newly FCC-assigned dial position of 99.5 megacycles. Somewhere in the mix around this time, the *Bulletin* secured a coveted television construction permit. Before WPEN-TV ever began its anticipated telecasts on Channel 10, however, the newspaper upgraded its AM property through the acquisition of 50,000-watt flamethrower WCAU, renamed its video permit WCAU-TV, and quickly spun off the WPEN radio stations to the local Sun Ray Drug Store chain. Interestingly, though, the $800, 000 WPEN deal stipulated that WPEN-FM would need to trade frequencies with the admittedly technically inferior WCAU-FM 102.9 facility. The newspaper wanted to keep WPEN-FM's lower dial position and better equipped WPEN-FM 99.5 broadcast gear, as it was enthusiastically getting into FM facsimile *Bulletin* transmission (a topic we'll soon cover).

The frequency/facility/call swap—a common occurrence in today's radio climate, but rather rare then—took place in 1948. Two years later, WPEN-FM's 20-kW signal (at 102.9) was largely an AM simulcast. New, however, was a move from 1528 Walnut Street to fancier digs in the former Philco building at 2212 Walnut. There, Sun Ray opened a drug store/soda fountain on the main floor, while revamping the rest of the real estate to accommodate a WPEN-AM/FM master control, five on-air studios, and spacious offices. The most interesting feature of the remodeling was an auditorium/studio that one could enter through the drug store, where kids from nearby row homes got invited to dance to records being spun on the air and see visiting artists lip-syncing their latest hits. This WPEN-AM/FM show was the genesis of *American Bandstand*, later taken by WPEN DJ, Bob Horn, to cross-town rival WFIL and WFIL-TV.

No doubt, even WPEN-FM's drug store ownership recognized that an AM simulcast would not make the frequency modulation facility profitable. As a result, after learning of the money to be made with a big city FM that engaged in simplexing "functional music" or "storecasting," the Sun Ray folks jumped on the Subsidiary Communications Authorization (an FCC rule allowing for the store-targeted programming) and snagged the Commissions first official SCA go-ahead on October 12, 1955. Reportedly, WPEN-FM and other frequency modulators were already simplexing under special "experimental" authority.

To give WPEN-FM more punch for reaching functional music subscribers beyond the main Philly suburbs, by 1958, Sun Ray relocated the transmitter site to the top floor of an upscale apartment building on Rittenhouse Square downtown. Walking into the "shack," one was greeted by glowing tubes from long, tall gray equipment cabinets that comprised a huge Westinghouse transmitter. On this rig's center door was a Westinghouse logo and matching metal emblem that read, "WPEN-FM." The apartment house was crowned with a massive self-supporting tower bolted to the building's internal superstructure. One night, a WPEN-FM tech forcefully hit a tower leg with a large wrench. He was trying to knock some antenna line fitting back into place, but woke up half the residents instead.

Sun Ray divested itself of broadcast interests in 1969. WPEN-FM program logs written not long thereafter show a 30-percent duplication of WPEN-AM, with the balance devoted to separate programming consisting of "middle-of-the-road" music in stereo. In 1970, the new owners took their FM station to "full Class 'B' power" of 50 kW. Both the AM and FM limped along in the ratings until being silenced by Greater Media, Incorporated, which bought the stations (for $4.3 million) early in 1975. Greater Media took them dark while selecting more effective formats. The eventual debut surrounded a golden oldies simulcast. This was short-lived, however, because WPEN-FM's calls were quickly flipped to WMGK-FM, denoting a soft rock offering under the slogan "MaGiK Music, MaGiK 103."

Under the direction of respected programmer Julian Breen, this represented one of the first meticulously researched "mellow favorites" formats, and the service marked use of the "magic" identifier. Though started with little more than a four-channel Gates Producer control board, a mic, a cart machine, and a couple of turntables (in an erstwhile WPEN-AM studio covered with brownish-gold carpeting), WMGK-FM rapidly filled an audience niche in homes, offices, and an increasing number of FM radio-equipped cars throughout the Philadelphia market.

By airing mellow tunes by the likes of James Taylor, the Carpenters, the Beatles, and a host of other pleasant-on-the-ears artists' records (that Breen and his associates hand-picked), "MaGiK" offered a welcome compromise between fast beat Top-40 and sleepy beautiful music. By 1978, WMGK-FM and sister WPEN moved to a new office building in Bala Cynwyd, Pennsylvania, just a few hundred yards from the Philly city line.

Sometime during the fall of 1977 at a minute before noon, WMGK-FM morning personality Peter Davis smiled for his wife, who took the snapshot, while anticipating being taken out to lunch at a nice Philadelphia restaurant. For several years, "MaGiK" DJs were scheduled to do six-hour shifts. Davis recalls using most of his energy on the 6 to 9 a.m. segment, and then from 9 until noon only going on microphone between 12-minute music "sets" and doing a minute or two of commercials. The hanging monitor speakers didn't entirely mute when the mic was keyed open. Instead, their volume dropped and took on more base, so there'd be no feedback and no need for headphones. WMGK-FM programmers felt this would make the on-air talent feel and sound relaxed, as opposed to hyped-up by blaring headphones as was desired in Top-40 radio. That big portable radio to Davis's right was used to dial in Philly news and information station KYW 1060-AM.

Transmission was relocated, too, from that downtown apartment house to a tall stick on Domino Lane.

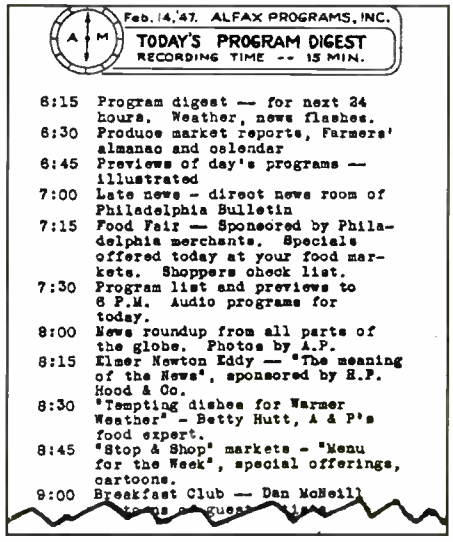
Why That Name For A Street With A Tower Farm?

Peter Davis was recruited by Breen in the fall of 1977 to do mornings at WMGK-FM. As the signal's move to Domino Lane was the talk of the station, he asked about the small thoroughfare's moniker. "Well, it's obvious," an engineer smiled about the area in which most all of Philadelphia's FM and TV transmitting towers were lined up. He held up his two index fingers and rapidly tipping both sideways quipped, "You see, if one goes over, they'll all go—just like Dominos!"

During the last day at the old WPEN 2212 Walnut Street location, a fellow Greater Media employee and radio memorabilia buff rushed into the WMGK-FM studio and wildly motioned to Davis. Nearly breathless, the co-worker exclaimed that guys from a clean-out/disposal firm were tossing stuff from the cellar into dumpsters in preparation of the station soon vacating the building. Davis had 10 minutes left before the next air-personality arrived, and he recalls that the clock seemed to stop as he pictured valuable broadcast history getting trashed every second.

Finally, his replacement DJ sauntered into the air studio. Davis admits to practically bowling over the unsuspecting colleague, bounding down several flights of stairs before coming to a dead stop in front of a three-foot pile of "Musitone storecast" receivers slated for imminent disposal. He grabbed several of the most complete looking examples, stacked them in a dingy corner where the WMGK-FM announcer remembers "starting a collection of vintage radio items in the supermarket sweep game show style!" His buddy had already amassed some sizeable boxes of goodies, though there were still enough treasures left for both to go home with RCA ribbon microphones, WPEN mic flags, microphones stands/booms, the Western Electric Model 202 telephone from WPEN's Bandstand Studio, a miniature WPEN billboard, electrical transcription discs, 1950s *Coca-Cola* glasses from the soda fountain days, book matches with WPEN advertising on the cover, cartons of promotional combs printed with the boast, "WPEN, the station that's hard to *part* with," and much more. Davis shrugs that there was simply too much stuff to squeeze in the car.

He and his buddy each made four or five trips from the basement to a nearby *Sunoco* gas station where they rented parking spaces. "The clean out crew started telling us to finish up," he laments, "because their dumpsters were going in a few minutes. The last time we ripped down those cellar stairs for just one more load, the foreman shook his finger, 'It's too late boys, we gotta go.' His men had scooped the remaining inventory out of the most remote section of that basement,



Feb. 14, '47. ALFAX PROGRAMS, INC.
TODAY'S PROGRAM DIGEST
RECORDING TIME -- 15 MIN.

8:15 Program digest — for next 24 hours. Weather, news flashes.
8:30 Produce market reports, Farmers' almanac and calendar
8:45 Previews of day's programs — illustrated
7:00 Late news - direct news room of Philadelphia Bulletin
7:15 Food Fair — Sponsored by Philadelphia merchants. Specials offered today at your food markets. Shoppers check list.
7:30 Program list and previews to 8 P.M. Audio programs for today.
8:00 News roundup from all parts of the globe. Photos by A.P.
8:15 Elmer Newton Eddy — "The meaning of the News", sponsored by H.P. Hood & Co.
8:30 "Tempting dishes for Warmer Weather" - Betty Hutt, A & P's food expert.
8:45 "Stop & Shop" markets - "Menu for the Week", special offerings, cartoons.
9:00 Breakfast Club — Dan McNeill

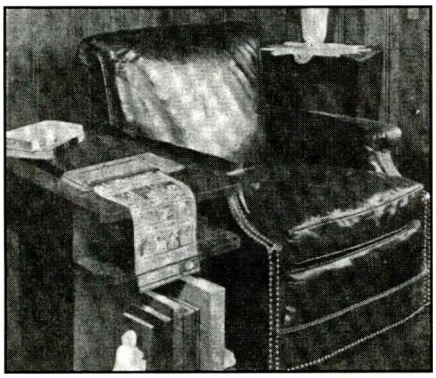
Taken from a 4.1-inch (paper width) FM facsimile receiver made by the Alden Company, here's a sample of what the Philadelphia Bulletin*'s WPEN-FM (in its 99.5-mc version) was FM faxing to the tiny number of operating facsimile receivers on February 14, 1947. It's a basic log promoting printed material and radio programs slated to be transmitted that day. Likely sent over the air in the predawn hours, just this little strip took 15-minutes to scroll off Alden's basic fax receiver.*

chucked it in a back alley dumpster, and were directing a truck inching its way to pick it up." Davis noticed a lone red and silver "Musitone" ID tag that had fallen onto one of the stairs. "The end of an era," his friend mused while surveying the vacant cavern. "The end of a radio era," Davis pensively nodded, and reverently slipped the little tag into his shirt pocket.

Unobtrusively Multiplexing For Dollars

Shiniest of the "Musitone" stash was a McMartin-brand receiver from the mid-1960s, the tail end of WPEN-FM's subscriber background music foray. Davis brought it to WMGK-FM's new studios so that a veteran PEN engineer could take a look. The tech verified that it was one of a fleet of "Musitone's" first multiplex receivers, purchased shortly after the FCC made a final decree that FM stations could no longer storecast with the "simplex" method. As described in Don Erickson's wonderful 1973 book, *Armstrong's Fight for FM Broadcasting*,

> ...in the multiplex operation, a station transmits programs by a special means of the same FM carrier wave (piggybacked) used for FM broadcasting, but the programs cannot be received on ordinary FM receivers. Subscribers [paying to have background



The Alden fax firm stated that its 1947 "18-inch Master Recorder can be used for viewing by a large number of persons in public places. It can [also] be built as a home utility model using less space and placed against a wall. It is manufactured in two designs. One reproduces with a paper speed of 3 inches per minute. The other model enlarges copy three times with a paper feed of 9 inches per minute which means the size of a newspaper page in less than three minutes." Hearing these claims, one can understand why many newspaper companies enthusiastically built FM outlets with facsimile facilities in the late 1940s.

music piped into their store] are furnished with special multiplex receiving equipment and the programming can be entirely different from the "regular" programming on the station. There are no restrictions to the amount of time a station engages in multiplexing programs, since multiplexing (a channel of which sends half of one's stereo signal) and regular FM transmissions can be carried on simultaneously.

The old-time WPEN engineer said his old bosses tried stonewalling the Commission's move from "simplexing" to multiplexing, because they claimed multiplexing didn't have all of the bugs worked out of it and would likely leak "cross-talk" into a station's main FM signal. "Mostly, though," he chuckled, "they just didn't want to buy new receivers needed to convert to multiplex Subsidiary Communications Authorization mode. Of course, once they did," the tech said, "WPEN-FM could finally play some decent programming [completely aimed at the regular radio audience] on its main channel. At home, they didn't have to be exposed to the background "Musitone" music anymore."

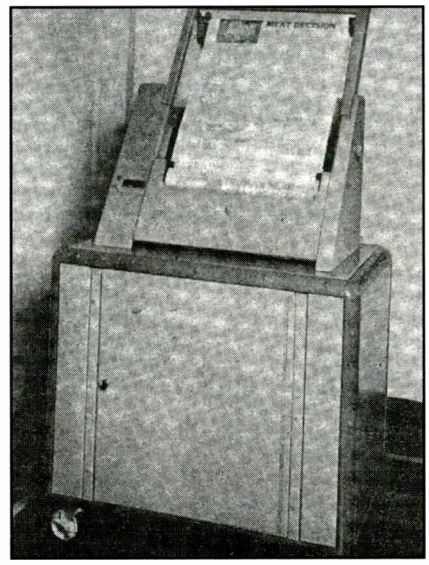
In the days before widespread satellite programming delivery (pre-1985), Subsidiary Communications Authorization, or SCA, was the way to reach specialized audiences. While "Musitone" fare—and its better-known competitor, Muzak—made use of most SCA operations, niche formats, such as foreign language, news for doctors, and reading for the blind, occupied the bandwidth. Today's most common SCA use is arguably the reading services for visually impaired folks. Arcane FCC rules make it illegal to broadcast such programming unless authorized (by direct subscription or documented permission) to do so. That makes SCA a mysterious audio world unknown to the average person. Check out the website http://www.anarc.org/wtfda_web_links.htm and click on the FM Atlas link to find fascinating SCA details and info about SCA-equipped FM radios.

Wireless Facsimile, FM's Fallen Forties' Hero

"Is this a good find?" asked another *Pop'Comm* e-mailer to my melodyfm@dreamscape.com Web address. It's "some sort of radio end table I paid $27 for at a hamfest," he stated. The picture attachment reminded me of something I saw in the 1947 *Broadcasting Yearbook*—a machine to receive and print facsimile (or fax) via an FM station's signal. Lead proponents of this way to make money with early post-World War II FM, at a time when listeners were scarce, were owners of newspapers like *The Philadelphia Bulletin*. Remember that they wanted the best FM facility of the bunch when making the WPEN/WCAU transaction? That's because FM fax figured into their plans. In fact, by 1947 the paper was already transmitting printed programming, such as pictures, news headlines, consumer information, and feature stories, to the handful of FM facsimile receivers in a few public places and upscale private homes.

Newspaper-owned stations using the simplex method did much of the FM faxing, thus necessitating that facsimile transmission aired only when regular broadcasts were not being run. For the most part, this made for a minimally, or at least modestly, programmed station the real purpose of which was to transmit facsimile (totally unintelligible to the regular listener) during late night and early morning hours.

The newspapers hoped that people would warm to the idea of reading their news delivered by FM facsimile overnight. The futuristic promise of someday being able to save tons of money by no longer having to print and distribute papers drove FM fax's development. But, just like 1980s AM stereo, the almost universal public rejection of the technology killed it in short order. Understandably, the high cost of consumer FM



Brockton, Massachusetts-based Alden Products Company, a leading maker of FM facsimile receivers, predicted hundreds of thousands of consumers would quickly embrace wireless fax technology as embodied in the "Chairside FM Facsimile Recorder." A complex electro-mechanical combo of radio chassis, tubes, electric motors, rollers, print heads, and other tempermental components, these were equipped with a requisite FM radio (if desired, AM was also available), printer, paper storage, and bookcase. The one our Pop'Comm *reader found at his local hamfest was the economy version rigged for 4.1-inch-wide printer paper. Both could "receive copy at the rate of 3.43-inches a minute with a definition of 105 lines [of resolution]." TV then and now (until HDTV increased definition dramatically) has 525 lines. No matter the clarity, FM facsimile hardly made a blip on the public's "must have" radar.*

fax receivers, special paper, and the wait for content to roll off the printer made this innovation seem dubious. Besides, the public was then geared to spending its money and time on something with a more interesting sound than that featured on most 1940s FM stations, and better pictures than those getting faxed—television! Compared to the much anticipated and quickly accepted Truman-era TV, everything else in consumer electronics looked like pretty strange stuff.

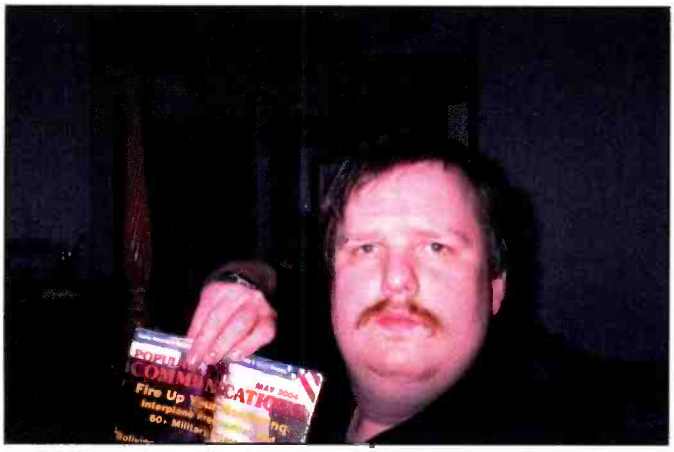
Do You Have A Radio Mystery?

And, so ends another day of broadcast history at *Pop'Comm*. Do you have any old-time radio stories you'd like to share with our readers? How about something you'd like me to investigate from radio's or TV's golden years? Contact me directly at melodyfm@dreamscape.com. ■

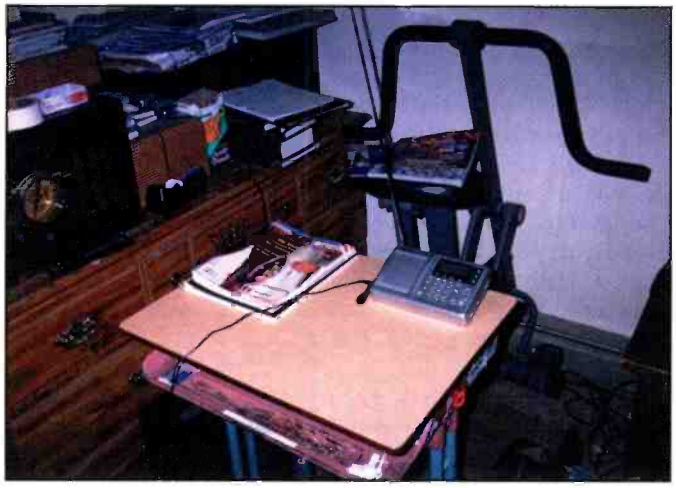
Congratulations To Matthew Little Of Morganton, North Carolina!

Pop'Comm reader Matthew Little tells us,

While I've been interested in radio for a couple of years, it wasn't until the tragic events of September 11, 2001, that I became interested in shortwave radio. About five or six weeks after 9/11, I was doing one of the more mundane things in life—going through some bills—when after opening one, I noticed an ad for a Grundig Mini World 100-PE shortwave radio. I ordered one, got it about two to three weeks later, and got hooked by the DX bug. Even though it's now got an awkwardly bent antenna and eats up batteries (AA) left and right, it's still good. I currently own that (which I keep at work) plus two other SW radios: a RadioShack DX-396 and a Grundig Yacht Boy 400-PE w/SSB. I'm planning to add a Satellite 800 (from Grundig) within the next couple of months so I can start listening to ham and utility broadcasts as well. I also use a Grundig Mini World 100 and Bell & Howell SW at work.



Here's Matthew Little at his listening post in North Carolina.



Looks like Matthew's mini gym doubles as a work station and monitoring table when he's not exercising!

Popular Communications invites you to submit, in about 300 words, how you got started in the communications hobby. Entries should be typewritten, or otherwise easily readable. If possible, your photo should be included.

Each month, we'll select one entry and publish it here. All submissions become the property of *Popular Communications,* and none will be acknowledged or returned. Entries will be selected taking into consideration the story they relate, and if it is especially interesting, unusual or even humorous. We reserve the right to edit all submitted material for length, grammar, and style.

The person whose entry is selected will receive a one-year gift subscription (or one-year subscription extension) to *Popular Communications*. Address all entries to: "V.I.P. Spotlight," *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801 or e-mail your entry to popularcom@aol.com

by Kirk Kleinschmidt, NTØZ

Ham Radio Awards: The Challenge Is Yours!

As I write this month's column, we're right in the middle of the Summer Olympics—and, wow, is the excitement building! Now, I know that the Olympics is a strict form of competition that's probably more closely mirrored in ham radio by on-air contest participation. But that being said, the feelings of pride, accomplishment, hard work paying off, camaraderie, and so on carry over to another ham radio pastime that represents competition, growth, and achievement on a more personal scale. That is pursuing the multitude of amateur radio awards that are out there just waiting for your qualifying application.

"Described by Old-Timers as 'chasing paper' or 'the great wallpaper chase,' the quest for ham radio operating awards and certificates (to pin on your shack walls, of course) captures the attention and efforts of almost every ham at one point or another."

Described by Old-Timers as "chasing paper" or "the great wallpaper chase," the quest for ham radio operating awards and certificates (to pin on your shack walls, of course) captures the attention and efforts of almost every ham at one point or another. Some make it a lifelong journey. So, whether you're after one specific award, or you're aiming to cover every inch of available wall space, the sheer number of available awards will keep you tuning the bands for quite some time.

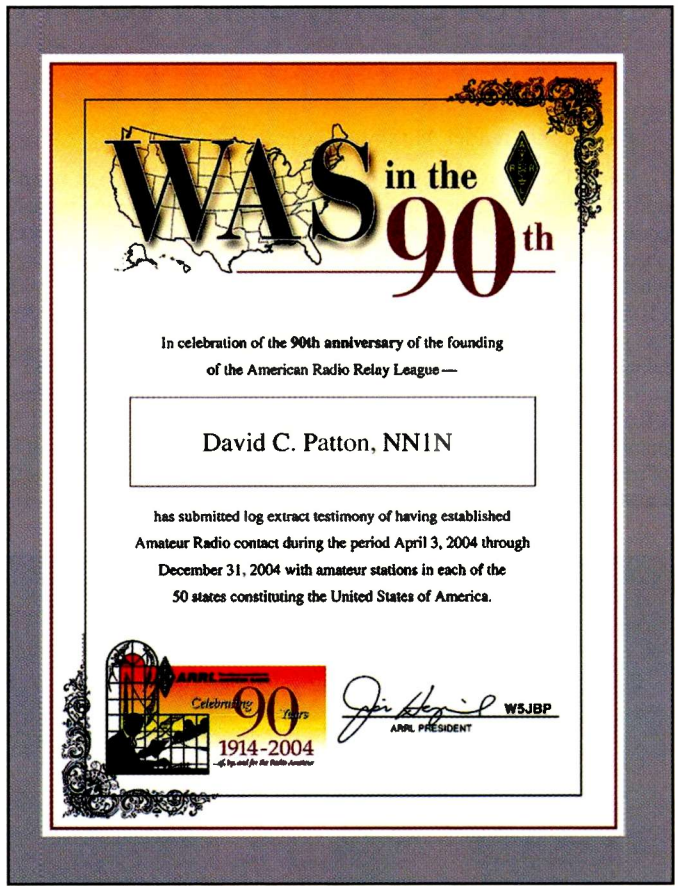
Because the solar cycle is on its way into the doldrums, some awards will be more difficult (or even impossible) to achieve, while others will be a bit easier. Just be sure to choose awards that *can* be achieved under the present conditions. That is, if HF propagation stinks at your QTH, move to the Caribbean or the Azores, or get on 6 or 2 meters and work grid squares, etc.

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

You can spend as much time as you like in the chase because you're really competing only with yourself. There are hundreds of awards and certificates to work toward, some easy, some almost impossible. Set your sights on one or two that make sense and go for them with gusto. In this month's column we'll examine several of the most popular awards, show you how to apply for them, and how get more information about them.

Worked All Continents

Worked All Continents (WAC) is a beginning DXer's first achievement award. It's given by the International Amateur Radio Union (IARU) for confirmed contacts with hams in the six continental regions of the world: Africa, North America, South America, Asia, Europe, and Oceania (the South Pacific, including Australia, New Zealand, and Hawaii). Endorsements are available for different bands and modes.



Time is running out for those of you who want your own copy of the ARRL's 90th anniversary WAS award, which wraps up on December 31, 2004. If you're still lagging behind on state totals, be sure to spend the appropriate weekends working the November Sweepstakes contest, which is held on the first and third full weekends each November, for CW and SSB, respectively. Even if you don't enter the contest formally, you should be able to work all 50 states in one or both contest periods!

This award can easily be earned by beginners, but you'll need HF privileges to do it (unless you wait a few years for the next solar peak, when it may be possible on 6 meters, or you work the stations via satellite or through internet-linked repeaters). Once the basic award is under your belt you can start on the Five-Band WAC award and the Six-Band WAC endorsement. For complete rules and an application form, point your Web browser to www.arrl.org/awards. To participate, ARRL membership is required for U.S. hams.

Worked All States

The Worked All States (WAS) award means just what it says: you get it for working and confirming contacts with hams in all 50 states. Aside from the basic certificate for any combination of bands/modes, specialty certificates are issued for a variety of

different bands and modes, such as satellite, 160 meters, SSTV, RTTY, and each VHF band. Available endorsements include SSB, CW, Novice, QRP, Packet, EME, and any single band except 30 meters. Your QSL cards are checked locally by a volunteer ARRL HF Awards Manager affiliated with an ARRL Special Service Club (although QSL cards can be checked at HQ, absent an awards manager). For a complete list of WAS rules, point your Web browser to www.arrl.org/awards.

To encourage increased activity and station improvement throughout the bands, the Five-Band WAS (5BWAS) certificate (and plaque) is available for working all states on five amateur bands (except 10/18/24 MHz). Once you've gotten your WAS or 5BWAS award, you can announce it to the world with a WAS or 5BWAS pin!

The DX Century Club

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

There are presently more than 300 entities on the official "ARRL DXCC Countries List," which is available from the ARRL website at www.arrl.org/awards/dxcc/list_1a0.html. There you'll also find a complete list of rules and DXCC award endorsements. ARRL membership is required for U.S. hams.

Even with an uncooperative solar situation, many amateur DX contest competitors work DXCC in one day, so you should be able to finish working your DXCC contacts in several months of mostly casual operating.

Other Awards

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

Another popular awards program is managed by *CQ* magazine. For more information, point your Web browser to www.cq-amateur-radio.com/awards.html. For a huge list of awards worldwide (and related Web links), look up AC6V's ham radio awards page at www.ac6v.com/hamawards.htm. Not to be outdone, Ted Melinosky, K1BV, has published *The K1BV DX Awards Directory* since 1987 (the hefty 2004 version lists info on 3,227 awards!). Dig through the electronic version at www.dxawards.com/book.html.

Once you've finished qualifying for all of the awards listed in these resources you'll be at least 317 years old! (There are *tons* of awards, if you get my drift!) So get cracking!

Let Me Hear From You!

In the meantime, I encourage you to send your questions, comments, and QSLs to me right here *at Popular Communications*, "Ham Discoveries," 25 Newbridge Rd., Hicksville, NY 11801. See you next month! ■

9-1-1. Public safety's ability to deal with the needs of the public may indeed diminish proportionately to the rapid expansion of VoIP technology. APCO International has taken a strong position against this and has advocated to Congress to authorize the FCC to regulate VoIP E9-1-1.

"Public safety has worked tirelessly to ensure that the FCC is the regulatory body of E9-1-1," APCO International President Vincent Stile said. "It is imperative that the FCC's hands are not tied by any legislative initiatives that try to restrict regulation of VoIP. Any legislation to protect VoIP from regulation needs to be separated from E9-1-1." To that end, APCO International urges the public safety communications community to contact their elected officials to let them know that public safety does not support "voluntary" standards for VoIP E9-1-1. Members of the public safety communications community are encouraged to write, call, and visit the offices of their elected officials and urge them to authorize the FCC to regulate VoIP E9-1-1.

For more information on this Call to Action, visit www.apcointl.org/about/gov/alerts/voipaction.htm.

World Of Radio Via British Telephone

Following the recent announcement that WOR is now heard via ACB Radio Mainstream, it is worth pointing out that ACB Radio is available via telephone for listeners in the UK by dialing the local rate number of 0845 3330855 and selecting Option 1. This service is powered by honeanything.com. There's a different number mentioned on the opening announcement when you dial the 0845 3330855 number, so don't be confused and think you have misdialed. All four of ACB Radio's streams are available via this telephone service, and it's available only in the UK.

African Union Launches Radio Broadcast From Addis Ababa, Ethiopia

The Commission of the African Union (AU) has launched its first-ever live radio broadcast from the AU headquarters in Addis Ababa, Ethiopia. The launch came two days before the Third African Union summit in July in Addis Ababa. African Union Commission chairperson, Professor Alpha Oumar Konaré, heads the station management, which include top journalists and technicians. Broadcasts run from 8 p.m. to 12 a.m. East African local time daily on shortwave frequencies 7165 kHz and 9560 kHz. Programs are aired in Amharic, Arabic, English, and French. The station is expected to provide additional platforms for discussing and disseminating issues affecting the African continent on poverty, health, conflicts, and culture, among others.

BBC Radio Service Suffers Declining Listenership In India

It is cementing its position as the world's leading international radio broadcaster. However, in India as in other countries, BBC World Service is grappling with a major decline in its listenership. In a recent report, it admitted to having suffered major setbacks in India over the past year. It claims a weekly global audience estimate of 146 million. Besides India, BBC World Service also experienced significant losses in Western Europe, Saudi Arabia, Bangladesh, and Russia. Meanwhile, the 146 million figure equates to at least 50 percent more listeners than any comparable international radio broadcaster. The bad news is that the figure represents a four million drop from last year's figure of 150 million. This has been partially offset by a big rise in listening through FM.

BBC World Service's acting director Nigel Chapman noted that shortwave listening is in long-term decline, saying, "Audiences demand better audibility. It is sometimes difficult to find suitable FM partners in some countries or to overcome regulatory obstacles, like bans on international news broadcasting on local FMs, in others." BBC World Service is now available on FM in 139 capital cities. On a bright note it added that independent surveys conducted in top markets also showed that it remained the most trusted and objective international broadcaster when compared to its main radio competitors in each market. The survey was done in 16 markets including the United States, Egypt, Indonesia, Nigeria, Pakistan, and Russia. In Afghanistan's capital Kabul, BBC World Service claims to enjoy a 60 percent weekly reach. In Iraq, the launch of FM broadcasts in Baghdad, Basra, and other major cities helped to secure a weekly audience of 1.8 million. Nearly half of its total audience comes from Africa and the Middle East.

Voice Of Russia Announces Its Plans For DRM Expansion

At the Digital Radio Mondiale (DRM) consortium's first-ever board meetings in Russia, held recently, Voice of Russia announced the successful implementation and planned expansion of its DRM broadcasts on shortwave and mediumwave. Russian Prime Minister Mikhail Fradkov recently signed an order allowing for Voice of Russia's DRM progress. The consortium held its quarterly meetings at the headquarters of the Russian Television and Radio Network (RTRN) and Voice of Russia in Moscow. Voice of Russia has been a DRM member since 1998.

Voice of Russia currently transmits DRM broadcasts in Russian, English, German, and French toward Europe, using a shortwave transmitter in Taldom, Russia, operated by RTRN's Moscow Regional Center, and a mediumwave transmitter on 603 kHz in Zehlendorf, Germany, operated by DRM member T-Systems International Media&Broadcast. The mediumwave transmitter, made by DRM member TELEFUNKEN, has been modified to operate in Single Channel Simulcast Mode, which means that Voice of Russia's broadcasts can be sent in both analog and DRM formats. The Taldom broadcasts can be heard within parts of Russia. Further details are at the website at http://www.radiostation.ru/drm/start.html.

Voice of Russia will expand its reach within and beyond Europe in the near future, using additional transmitters that have been adapted for DRM. This network includes a second shortwave transmitter operated by the Moscow Regional Center, a shortwave transmitter in Irkutsk, a shortwave transmitter in Khabarovsk, and a T-Systems International mediumwave transmitter, built by Telefunken, in Wachenbrunn, Germany.

France: Survey Reveals Decline In Radio Listening

The latest figures released by Mediametrie, the French radio and television audience research organization, show a

decline in radio listening in the period from April to June 2004. The telephone-based survey of 75,000 individuals over the age of 13 revealed a 2-percent drop in weekday radio listening compared with the previous January to March survey, and a 1-percent drop year-to-year. Weekend radio listening is down 4 percent from the same period in 2003.

Music radio, however, has generally managed to maintain its audiences, with audience share increasing since the previous survey, particularly on weekends. Despite its decline in audience share, privately owned RTL (Radio France) remains the most listened to radio station in France, ahead of France Inter and music stations NRJ and Nostalgie, said the Mediametrie survey.

AIR To Go Slow On Digital Ventures

Public broadcaster Prasar Bharati's digital projects are in a go-slow mode. In some cases, digital projects of Doordarshan (DD) and All India Radio (AIR) may have to be shelved completely, Prasar Bharati sources indicated. The reason is the high cost of receiver systems and poor acceptance among consumers. Besides putting the digital plans on the slow track, Prasar Bharati is reviewing its Tenth Plan (2002–07) ventures. The objective is to place a greater thrust on revenue-generating projects and phase out the rest.

Although DD's Ku Band would be launched soon as it has Cabinet approval, other digital ventures are likely to suffer. The Indian government has already put on hold expansion of DD's ambitious Digital Terrestrial Transmission (DTT) project. It was launched in the main cities a couple of years ago, but there's been no response from consumers so far. Digital radio plans are also on the backburner. Expensive receiver sets and poor consumer response are believed to be the main reasons behind the new direction. Digital Radio Mondiale (DRM), digital service for shortwave and mediumwave frequencies is also on hold. The DRM venture hasn't been approved yet, and indications are that it may not be. In both cases, the receivers cost from $200 to $400 on the overseas markets. ■

readers' market

Advertising Rates for Readers' Mart: Non-commercial ads are 30 cents per word, including abbreviations and addresses; minimum charge $6.00 per issue. Ads from firms offering commercial products or services are $1.00 per word; minimum charge $20.00 per issue. Boldface words are $1.20 each (specify which words). Leading key words set in all caps at no additional charge. All ads *must be prepaid in full* at time of insertion; a 5% discount is offered for prepaid 6 time insertions. All ads must be typewritten double spaced.

Approval: All ad copy is subject to Publisher's approval and may be modified to eliminate references to equipment and practices which are either illegal or otherwise not within the spirit or coverage scope of the magazine.

Closing Date: The 10th day in the third month preceding date of publication. Because the advertisers and equipment contained in Readers' Market have not been investigated, the Publisher of *Popular Communications* cannot vouch for the merchandise listed therein. Direct all correspondence and ad copy to: Attention: Classified Dept., PC Readers' Market, 25 Newbridge Rd., Hicksville, NY 11801.

by Bill Price, N3AVY

Film At Eleven

I've just gotten a digital camera, and I can't wait to write one of those "how-to" articles that have been lurking in the back of my mind. I'd also like you to see pictures of some of my disastrous mistakes in circuit wiring and pictures of some of the high places where I precariously dangle with my safety harness stretched to the limit (yes, these and many more photographs may be yours just for the reading, if I can convince Harold—"Who's gonna pay for all that colored ink?"—Ort to allow me to add some color pics to "The Loose Connection" each month. There may even be a secret snapshot of Norm (I'll have to put one of those black rectangles over his eyes, lest someone recognize him), and perhaps he's got a shot of good old Chump, his loyal spaniel.

I'll never produce a quality how-to column as well as Peter B., but if Harold will just give me a chance, I'm sure I can dazzle many of you with some tips on "Making Friends With Wasps While on a Ladder," "How to Test the Maximum Load Limit of Your Climbing Belt," and "Rooftop/Treetop Installations for the Faint-of-Heart." Even though I never got pictures of some of the outlandish tower and rooftop episodes with Norm and Chump, all I have to do is head north, find Norm, and volunteer for an antenna project and I'll get enough great pictures for Harold to publish a special "All Norm" edition.

Seriously, though, pictures of some of my projects will make a lot of you feel pretty good about *your* soldering skills. For instance, I've always felt that a few ounces of solder give a stronger joint, and now I can share my techniques. Also, I'll be able to show you (instead of just telling you) about some of the exciting duties of my exciting HPJIE.*

I might have to drive a few hours to illustrate the great memories of my friend Norm and his adventures (the old Chevy station wagon may be gone, but I can surely get a picture of where Chump drove it into the lake while his leash was fastened to the gearshift lever). I'd like so much to travel to those places where Norm and I soldered in a freezing New England wind, or stealthily installed a huge vertical antenna in the attic of an apartment building, moved a 700-pound transmitter into his apartment, rebuilt his bus, or pulled off hundreds of other acts of insanity—just so that I could share them with all of you. If I'd only known back then that I'd be writing about them, I'd have taken pictures of the events as they happened.

Transcripts of our "meetings," during which we planned such things, would make for good reading and just might find their way onto this page some day. And, maybe, just maybe, I'd be able to find and reproduce some of the notes and drawings, so long as all of you agree not to have me committed to a secure facility after reading them.

The best completely irrational plan that I ever discussed with Norm was his idea for an articulated Chevy station wagon. Norm had a special love for an enormous Chevy wagon. I think it was a '78 or '79, but it was huge. He immediately got a second one, because he liked the first one so much, but he didn't want to register and insure both of them—he couldn't fathom why it cost more for him to insure two cars when he could only drive one at a time.

"Rather than give him the answer I'd give anyone else, for some reason I was compelled to say, 'Well, it'd be difficult, but it could be done."

Shortly thereafter, we were in a big city—could have been Philadelphia or New York—and he saw his first articulated bus. That's a bus that's really two buses joined together with a big hinge in the middle and an accordion pleated rubber "bellows" around the area where they're joined together.

"Old man," he said (he really called me that), "that's what I want to do with the two station wagons! Do you think we can do it?"

Rather than give him the answer I'd give anyone else, for some reason I was compelled to say, "Well, it'd be difficult, but it could be done." In fact, I'd said things like that to him many times in the past when my words should have been, "Are you out of your mind?" I still don't know why I encouraged him, but there I was, sitting in a cheap diner with one of those yellow legal pads he always had with him, showing him how it could actually be done. He even had me looking for sources of giant rubber accordion pleats for the middle before I told him the cost would be prohibitive, and the state would probably not license or inspect his behemoth accordion-car.

To this day, I still mull over the means to fabricate the pivot point, the drive mechanism, and the accordion pleats. And in which one he would put all the radio gear. I can clearly see him driving this thing down a country road, swaying around all the turns with Chump at his side.

I've been on so many unusual radio road trips with Norm it isn't funny. Actually you probably would laugh, but I don't have photos to prove the antics. (Norm has photocopies of a few tickets and I've certainly walked more than a few miles to the nearest radio shop for a replacement antenna that came off after taking out a few lights at that Pennsylvania gas station, though.) Yes, it's been one heck of an adventure, and much to the surprise of our families—and the cops—we're still in touch.

Maybe that's why we were such good friends. I hope all of you have your "Norm."

**High-Paying Job In Electronics*

AOR SDU5600 Spectrum Display Unit

Spectrum Display Just Got More Interesting!

The AOR SDU5600 is the "next generation" in spectrum display units. Using a five-inch TFT color display, DSP and FFT (Fast Fourier Transform), faster sampling rates and color imaging, the SDU5600 opens the door to new possibilities and applications.

Enjoy full control of compatible AOR receivers. The 10.7 MHz input may be compatible with receivers from other manufacturers as well. PC control is also present, as is highly accurate frequency management.

With sampling at up to six times per second, you're quickly aware of new active frequencies. The "waterfall display" function is a new convenience, along with a host of menu driven selections and features.

AOR SDU5600

- High resolution 5 inch color TFT display
- Built-in "waterfall" display function
- Now features FFT signal analysis
- DSP
- Uses 10.7 MHz IF input frequency
- Wide input level range: 0 ~ -90 dBm
- High dynamic range, 60 dB
- Fully interactive with AOR AR5000 models, AR8600, AR-ONE
- 10 MHz bandwidth (± 5 MHz from center frequency)
- Samples up to 6x per second
- Four frequency resolutions: 4, 32, 64, 128 KHz
- Image output to your PC
- Bus signal can be saved to memory
- Graphic display and statistical (text) data
- Menu driven operation
- Two RS-232C ports for receiver and computer control
- Easy to operate

AOR™
Authority On Radio Communications

AOR U.S.A., Inc.
20655 S. Western Ave., Suite 112, Torrance, CA 90501, USA
Tel: 310-787-8615 Fax: 310-787-8619
info@aorusa.com http://www.aorusa.com

The Serious Choice in Advanced Technology Receivers™

New!

IC-R20
Dual watch & audio record!

150 kHz – 3.3 GHz* • AM, FM, WFM, USB, LSB, CW • 1250 Alphanumeric Memories • CTCSS/DTCS Decode • Dual Watch • Audio Recorder • Weather Alert • Dynamic Memory Scan • Icom's Hot 100 Preprogrammed TV & Shortwave Channels • Lithium Ion Power

IC-R10
Advanced performance!

500 kHz – 1.3 GHz* • AM, FM, WFM, USB, LSB, CW • 1000 Alphanumeric Memories • Attenuator • Backlit Display & Key Pad • Voice Scan Control • 7 Different Scan Modes • Beginner Mode • Band Scope • AA Ni-Cds & Charger

IC-R3
See & hear all the action!

500 kHz – 2.45 GHz* • AM, FM, WFM, AM-TV, FM-TV • 450 Alphanumeric Memories • CTCSS with Tone Scan • 4 Level Attenuator • Antenna with BNC Connector • 2" Color TFT Display with Video and Audio Output Jacks • Lithium Ion Power

IC-R5
Compact performance!

150 kHz – 1.3 GHz* • AM, FM, WFM • 1250 Alphanumeric Memories • CTCSS/DTCS Decode • Weather Alert • Dynamic Memory Scan • Icom's Hot 100 Preprogrammed TV & Shortwave Channels • Weather Resistant • AA Ni-Cds & Charger

Give & Receive This Holiday Season!

IC-R75
Pull out the weak signals!

30 kHz - 60.0 MHz* • AM, FM, S-AM, USB, LSB, CW, RTTY • 101 Alphanumeric Memory Channels • Twin Passband Tuning (PBT) • Synchronous AM Detection (S-AM) • Optional DSP with Noise Reduction Auto Notch Filter • Triple Conversion • Up to Two Optional Filters • Front Mounted Speaker • Large Display • Well Spaced Keys and Dials • PC Remote Control with Optional Icom RSR75 Software for Windows® • And Many Other Features

Free DSP! *1

PC programmable

All Icom receivers are PC programmable. See your dealer for details.

AMATEUR | AVIONIC | LAND MOBILE | MARINE | RECEIVER | WWW.ICOMAMERICA.COM

ICOM®

*Cellular frequencies blocked on US versions. *1 US versions only. 7020