

# POPULAR COMMUNICATIONS

## Proposed Bill Threatens Scanning—Will “Section 104” Become a Reality?

● **The Mystery of the Trunk Tracker—SOLVED!**

● **ACARS Decoders—What You Need to Know BEFORE You Buy**

● **“Lifeguard” Gordon West Saves Your Gear from Drowning!**

● **Product Spotlight Trio:**

★ **BayGen’s Freeplay AM/FM/SW Radio**

★ **Cutting Edge’s Power Port 149**

★ **RadioShack’s Digital SWR/RF Meter**



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...ns Confidential, featuring  
...logs; How I Got Started,  
...Pirate's Den ...



# Look To AOR For The Best Receivers



The introduction of the all new AR7030 shortwave receiver is geared to the discerning and dedicated listener. The AR7030 is the result of a combined project between AOR and a UK designer. The AR7030 represents the very latest and best design, featuring exceptionally strong signal handling and bristling with enhanced features, with coverage from 0 - 32MHz. The AR7030 has been targeted to handle strong signals that are of prime concern of European listeners. It offers greater than +35dBm IP3 (Intercept Point) and greater than 100dBm dynamic range. The DMOS FET QUAD first mixer with NCO drive DDS offers the ultimate performance. All this and great sensitivity better than 0.5µV for 10dB S/N in AM mode and better than 0.3µV for 10dB S/N in SSB. Selectivity too is razor sharp offering greater than 90dB @ 10kHz SSB and greater than 100dB @ 20kHz. No other receiver "in this class" nor indeed at considerably higher price can match the sheer performance excellence of the AR7030, RS232.

## AR5000 Cyberscan

*Test Results of the AR5000 vs. the competition show the AR5000 Superior in...*

- Widest Coverage 10kHz to 2600MHz\*
- 77 Functions front panel or RS232 controlled
- Sensitivity -Noise Figure -Dynamic Range
- Minimum detectable signal (MDS) -Superior IF Filtering
- 10.7MHz IF output levels and more

**Government Agencies and Serious Scanner Users also gave the AR5000 two thumbs up.**

- Fastest Scan Speed with or without a computer -Easier computer control (ASCII not CI-V) -Up to 4 antenna inputs (with opt. AS5000) all RS232 controlled -Cascade filters in 10.7 & 455 IF w/6 filters (opt. CW)
- AGC Fast, Slow, Off -Tuning steps 1Hz-1MHz -External 10MHz freq. std. input -Front facing speaker -Smaller, lighter and less power

## AR8000 - Worlds Most Popular Scanner 500kHz - 1900MHz\*

AOR incorporated newest technology to produce this amazing scanner, packed with features not found in other scanners.

### Features Like...

- High visibility dot matrix LCD readout, providing great detail including a signal strength bar meter, band-scope, 2 VFO's displayed simultaneously, Alpha numeric comments stored along with freq., mode, attn. and more -Computer control & cloning. Up/Down load freq., mode, step size and more with your computer or share your memories with a friend, (opt. cables req.) -1000 memories with 20 banks of 50 channels
- Step sizes 50Hz to 1MHz -Scan/Search speed up to 50 channels per second -Internal ferrite antenna below 2MHz

**\*AR8000B non restoreable cellular blocked, unblocked available for export-government & qualified users.**



AOR, LTD. 2-6-4 Misuji, Taiko-Ku, Tokyo 111 Japan (c) 1995 AOR, LTD.  
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## AR7030 Superior by Design

Here is what the Pros say...

- \*Larry Magne Passport To World Band Radio ★★★★★ Five Stars
- \*World Radio TV Handbook. Table top Receiver of 1997
- \*John Wilson noted U.K. Receiver guru —Shortwave Magazine 5/97 "AR7030 is at the leading edge of RF performance and will not be bettered for a long time."
- \*Radio Netherlands ★★★★★ Five Stars

## AR7030 'PLUS'

For those who want the "edge" this model has been designed for you. All aspects of performance have been carefully studied and specific performance enhancements makes this the ultimate receiver.

- Increased balance of the mixer for greatest IP2 & IP3
  - High tolerance 0.1% components in DDS ladder for low noise
  - Enhanced RF attenuator operation for minimal intermod
  - Higher spec wire antenna input transformer for minimal mixing products
  - Ceramic metal cased 4kHz, AM filter fitted as standard (typical bandwidths: 2.2kHz, 4.0kHz, 5.3kHz, 9.5kHz) -Features CPU fitted, 400 memories, multi timers & alpha tag
- The new AR7030 'PLUS' will be available form July '97 and is the best of the best**

**PLUS**  
PERFORMANCE

Price TBA



**PLUS**  
PERFORMANCE

## AR5000+3

All the same features PLUS...

- Noise Blanker -Auto freq. control -AM synchronous detector and a new 2x memory 2000Ch, 40 banks plus 40 search.

Price TBA

## AR3000A 100kHz-2036MHz\*

The Most Respected Scanner on the Market!!

Over 70,000 Sold!

Compact, low cost wide band multi-mode reception. Small size has allowed the AR3000A to be used in many applications from battery powered brief case to multi-receiver rack-mounted installation to air born EWA systems.

The AR3000A has proved itself as an easy to operate, rugged, low-cost and reliable contender for many requirements.

- Coverage: 100kHz-2036MHz\*
- Memory: 400 CH 4 banks
- Selectivity: 2.4, 12, 180 KHz
- Size: 5.4 x 3.15 x 7.9" . 2.4 lbs
- Sensitivity: NFM 2.5-1.800MHz .35NV
- Power: 13.8VDC<.5A AC Adapter included
- Modes: FM, FMW, AM, LSB, USB, CW
- Scan Speed: up to 50 CH/Sec.
- Antenna: BNC 50 Ω
- RS232 Control



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[www.elecdist.com](http://www.elecdist.com)

\* Cellular blocked; Unblocked OK to FCC approved users





# U.S. #1 RADIO OUTLET

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September '97



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Worlds Popular Scanner

.1-1900 MHz\*, All mode AM, FMN, FMW, LSB, USB, CW, 4 line back lite LCD readout, twin freq. display VFO 1 & 2, Alpha numeric text comments, Ferrite antenna below 2 MHz, RS232 control using low cost software **Truly the Scanner of Choice. Ask anyone that owns' one.**

AR8000B Cellular blocked. Unblocked available.\*



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- Wind chill (Lo)
- Wind Direction
- Wind speed
- Alarms for temperature, wind speed: wind chill, and time



**DAVIS**

#7425 **NOW \$159.95**

### AR7030 Nothing Like It



- 5 Star Rated
- IBS '97
- Radio Netherlands: Table Radio of The Year
- WRTVH97

For the novice & seasoned DXer. The AR7030 can't be beat!

• 0-32 MHz • All mode RS232 • High 3rd order intercept/dynamic range • Synchro AM detectable

**AR7030 \$1149**

NEW AR7030 **PLUS \$TBA**

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- Nothing in it's class! We'll tell you why!



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ICOM's Latest WideBand Receiver

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- 900 Memories
- CI-V-RS232

**EEB Modification**  
• 30kHz - I.F. Filter  
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• AGC On/Off



**\$1995**

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\* Cellular Blocked - no block ok for FCC Qualified users

- Prices subject to change
- Returns subject up to 28% restock fee
- Prices do not include shipping



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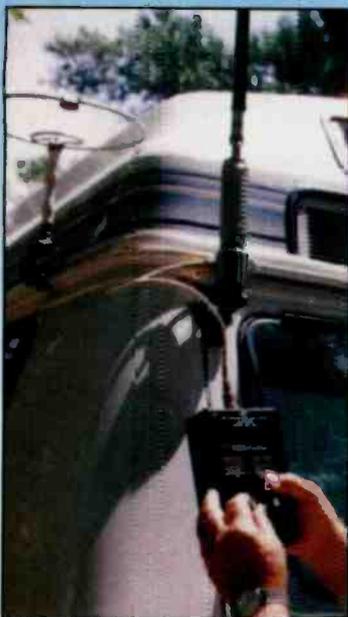
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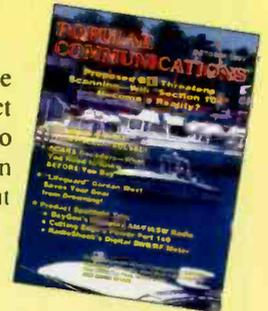


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**ON THE COVER:** A Sarasota, Florida Police Marine Patrol checks out local waterways. Always protect your gear from water, but remember that it doesn't have to be curtains for your radio if it falls overboard. Read Gordon West's "Radio Resources" column on page 22 to find out how to revive a drenched radio. (Photo by Larry Mulvehill.)



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Now all the questions you've ever had about the TrunkTracker scanner are answered!

By J.T. Ward

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By Alice Brannigan

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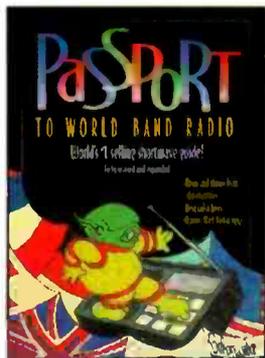
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# QUALITY COMMUNICATIONS EQUIPMENT SINCE 1942

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Universal Radio will include a **FREE** copy of the new *Passport To World Band Radio 1998* with your purchase of a new Sangean ATS-818 or ATS-818CS. Expires 12/1/97.

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## PASSPORT TO WORLD BAND RADIO 1998

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Order #1000 .... ~~\$49.95~~ **\$15.90**

## ATS-818CS & ATS-818



## COMMUNICATIONS RECEIVERS

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The new American made **Drake SW-2** features SSB, Sync. Det., 100 mems., keypad and optional remote (shown).



**In stock now!**

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## COMMUNICATIONS BOOKS

- **Passport To Worldband Radio '98** *Brand new!* Graphic presentation of all shortwave broadcast stations. Equipment reviews, too. **On sale!** #1000 **\$15.90 (+\$2)**
  - **Joe Carr's Receiving Antenna Handbook** Arguably the best book devoted to receiving antennas for longwave through shortwave. **On sale!** #3113 **\$17.90 (+\$2)**
  - **Pirate Radio** By A. Yoder *With audio CD!* Here is the incredible saga of America's underground illegal broadcasters (with CD). **On sale!** #3038 **\$26.90 (+\$2)**
  - **Worldwide Aeronautical Frequency Dir.** By R. Evans The definitive guide to commercial and military, HF and VHF-UHF aeronautical communications including ACARS. Second Edition. **On sale!** #0042 **\$17.90 (+\$2)**
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# Tuning In

AN EDITORIAL

BY HAROLD ORT, N2RLL, SSB-596

## Congressman Markey Sings, Part Deux

It seems there's never a dull moment on Capitol Hill. With all the goings-on around us from astronomical Medicare rip-offs, street crime, major drug deals, an out-of-this-world federal deficit, and scams of every imaginable description, I find it difficult to comprehend how our lawmakers in Washington find the time to be concerned about the scanning hobby.

If you were to mention the word "scanner" or "radio monitoring" to the person on the street, and if they aren't already involved in arm-chair monitoring of our nation's *public* airwaves, they'll likely take a few moments to hear you out, but politely go about their business. Too bad our nation's illustrious lawmakers won't do the same.

In what could only be described as a further erosion of our rights as ordinary citizens monitoring airwaves that, the last time I checked, were in the public domain, Representative Edward J. Markey (D-Mass.)—Web page <<http://www.house.gov/markey>>—has introduced H.R. 1964 that, in its present form will make it illegal to manufacture or sell scanners that receive certain business band frequencies. As most of us already realize it's currently illegal to sell, manufacture or import a scanner in the U.S. capable of receiving the approximate 25 MHz chunk of the spectrum—the cell-phone portion—that was essentially sold lock, stock and barrel to our Mr. Wheeler, chief of the Cellular Telecommunications Industry Association (CTIA). Remember them? They're the folks who sit on their behinds with the fat wallets who helped bring you the Electronic Communications Privacy Act of 1986 which prohibits monitoring cellular phone calls. It was the first time any private organization had successfully convinced the Washington powers-that-be that it was a good idea to

restrict citizen monitoring of a portion of our radio spectrum. A sad day, indeed—not just for hobbyists, but the rest of law-abiding America! He's the fellow who tap danced in his chair back in February when asked about why the cell industry hasn't bothered to dump analog for digital transmissions. The bottom line: it's easier to rubber-stamp a law making it illegal to listen than it is to do the right thing in the first place.

So what's done is done, and like they say, "there's no sense crying over spilled milk." Well, guess what? You and I didn't *spill* the milk, and we should be hopping mad that laws are being drafted and given serious consideration that will force us to wipe up the mess and stuff the paper towels in our shirt pocket afterward! If you're asking yourself what difference it matters if scanners can't be manufactured to receive certain business band frequencies, consider this: This law would make serious changes in the Communications Act of 1934 that extends the manufacturing, selling or importing prohibition to Commercial Mobile Radio Service frequencies. And if you think that the majority of public safety users are in the 866 to 869 MHz area, well, think again. There are a great number of licensees operating in the Specialized Mobile radio Service (SMR) frequencies 851 to 866 MHz and 935 to 940 MHz. Then there's the rest of the business band frequencies; several locations in the VHF-low portion of the spectrum, and interspersed throughout other areas of the VHF-high and UHF band that are similarly threatened by the proposed resolution.

At this writing the proposed legislation is in the House Commerce Committee, chaired by the Honorable Thomas J. Bliley, Jr. He can be reached at the U.S. House of Representatives, 2515 Rayburn House Office Building, Washington,

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*"I find it difficult to comprehend how our lawmakers in Washington find the time to be concerned about the scanning hobby."*

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Patent No. 5,471,408

## FEATURES

- Nearfield receiver, sweeps **30MHz-2GHz** in <1 second ( Cellular bands are blocked on all U.S. versions)
- Decodes **CTCSS**, **DCS**, and **DTMF**. Manually record tones into memory
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## SPECIFICATIONS

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Input 50 Ohm	-59dBm @ 100MHz -25dBm @ 1GHz
Display	2 line LCD
Power	Internal NiCad



CTCSS Decode



DCS Decode



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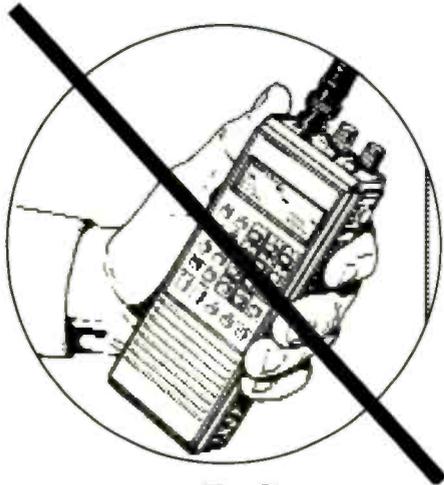
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## NO SCANNING ALLOWED

D.C. 20515. It should go without saying that the time to act is NOW before H.R. 1964 scoots through and gets passed. Only two portions of this bill are about

*“The bottom line: it’s easier to rubber-stamp a law making it illegal to listen than it is to do the right thing in the first place.”*

scanning. I’m told this one doesn’t need the Senate or President’s approval, so contact your elected representatives before it’s too late. Remember how we said back in May just after the hearings on Cellular Privacy that it’s not over ‘til Congressmen Markey and Tauzin sing? Well, they’re going for a second ovation hoping for a Grammy. If you don’t like the tune, drop them a line or give ‘em a call reminding them that there’s more urgent business biting at our nation’s heels than taking away citizens’ rights to monitor the public airwaves—a right that has far-reaching implications for neighborhood anti-crime groups, the news media, paid and volunteer ambulance groups and anyone who cares about pub-

lic safety. That’s right, Mr. Markey, *public safety*, not public suppression.

Perhaps the answer is loaning him and other lawmakers a scanner for the weekend so he might get a better-than-a-limo view of what’s going on out there, and then he, like other arm-chair monitors, will gain a better understanding of what our police, fire, medical and air traffic folks are experiencing every day. Maybe then he’d realize that the mere act of listening to radio communications—without divulging what’s heard to a third party—is not a crime.

### Pop’Comm Now Has a Web Page!

Be sure to check us out at <http://www.popcomm.com/> for what’s coming up in next month’s issue and much more! We’ve been online since mid-July thanks to the efforts of many people, especially our friend, *Pop’Comm* supporter, and computer guru, Damien Thorn of Digital City Communications, Inc. in California.

At the site you’re able to link directly to the entire *Pop’Comm* staff and other CQ Communications, Inc. publications and other interesting and helpful sites. It’s also a great way to send in your loggings, so why not check us out today!

*“We’ve been online since mid-July thanks to the efforts of many people . . .”*

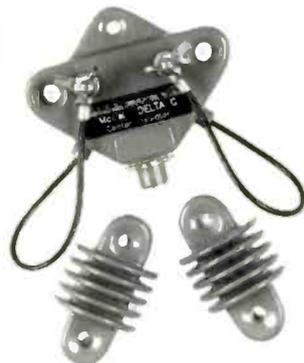
In the near future we plan on having late-breaking news posted on the Web page, as well as some “hot” confirmed VHF/UHF and HF frequencies. If you’ve got any suggestions for the *Pop’Comm* Web page, be sure to send them along. In the meantime let us know what you think about our addition to cyberspace.

And while we’re on the subject of asking for your comments, suggestions and loggings, let’s remember a simple fact: Your loggings, photos (like the one we ran of ‘ol Trevor Fletcher back in August), “How I Got Started” submissions and letters are what make our magazine stand out as something special in the hobby community. So when we ask for your letters, photos and QSL cards it isn’t to keep the folks in the mailroom busy, it’s our way of showing other readers the faces and personal side of our exciting monitoring hobby!

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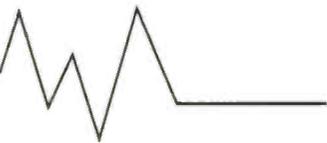
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# Pop'Comm P.O.



## LETTERS TO THE EDITOR

Each month we select representative reader letters for our Pop'Comm P.O. 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 Pop'Comm P.O. Please address letters to: Harold Ort, N2RLL, SSB-596, Editor, *Popular Communications*, 76 North Broadway, Hicksville, NY 11801-2909, or send e-mail via the Internet to <popularcom@aol.com>.

### Let the Experience Be the Motivation

Dear Editor:

The debate regarding the current code requirements, the elimination of the Novice class license, and "Little Leo" have become major concerns for many amateurs. I have been giving this much thought and feel that there is a way to address all of these issues while satisfying many of the concerns I have heard expressed by others.

The code is presently a huge step up on the ladder for many hams, particularly the step from 5 to 13 wpm. I only recently made that step, and can relate to the frustration I keep hearing voiced. In no way do I wish to eliminate or relax the present requirements, but only move the rungs a little closer on the ladder to make it a much less frustrating climb for many hams trying to upgrade. I would suggest the following changes.

1. Extend the 10 meter SSB 28.300-28.500 privileges to the Technician No-Code class license. This would let them experience HF and motivate many of them to upgrade. Rather than just hearing the rest of us talk about it, let the experience be the motivation.

2. Extend a portion of the 17 meter band to the Technician-Plus class license. For example, 18.068-18.089 CW and 18.139-18.168 phone. This band is new and sparsely populated. Let's promote some use of it before it becomes someone else's new band. This band offers almost identical propagation as the 20 meter band. Let these hams experience

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*"This one approach would get us all a little closer to meeting the same goals while promoting and preserving amateur radio as a whole."*

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some of that. Again, let the experience be the motivation.

3. Let's not eliminate a class of license, but move and redefine it. Currently there is a jump of 8 wpm in the code requirement between Technician-Plus and General Class license. This is more than a lot of hams seem to be able to overcome. Maybe we should split the difference with them. Let's place a rung in the ladder to ease the climb. I can also attest to that barrier at 10 wpm that many stumble over or get stuck at overcoming. Let those who can pass a 9 wpm code test and the General theory test have half the current General privileges minus the 20 and 40 meter bands. This would give more hams privileges on the 12 and 15 meter bands—which are also under-populated. We need to use these before we lose them. Instead of eliminating the Novice class, we could place it here by name only (no grandfather clause applied).

In my view, no changes need to be made to the General, Advanced, or Extra class testing. These privileges should be reserved for those able to complete the requirements already in place.

This one approach would get us all a little closer to meeting the same goals while promoting and preserving amateur radio as a whole. It would create a better incentive licensing program to give them an example of what the next class up can be like—not just our description of it, make upgrading more incremental instead of overcoming such large barriers and facilitate the growth of our fellow hams, and would preserve the code proficiency requirement for higher class licenses as a clear majority of hams feel it should be—including myself. If I want it, I will earn it!

This approach would also more evenly populate the bands and encourage their use in the face of the threat of losing them to commercial enterprises.

I can't help but feel that there must be a way to preserve both the hobby and the bands while making amateur radio a little better for all who share in its interest.

Jack Lingner, KC5OFI  
Houston, TX

### A Little Lemonade

Dear Editor:

Were you reading my mind? I was just getting ready to write to you about how I got "ripped-off" from USSN, and then I received your May issue with the explanatory wrapper.

Back in September, USSN sent me their renewal form. I sent it back in October along with my payment for a one-year renewal. I never received another copy or heard from them.

After reading a story about their demise, I pretty much felt that I had thrown away almost \$30 and that I was just another "chump" that they took advantage of. Let's be honest, to send out subscription renewals in September, and close up shop in October doesn't look very respectable.

What *Popular Communications* did is most commendable. You turned lemons into lemonade! Your fulfilling of their subscription responsibility is most generous and definitely welcomed. This is certainly a breath of fresh air in today's world of doing business.

I have been a long time subscriber to *Pop'Comm*, and will continue to be. You have certainly cemented a reader/publisher relationship with your subscription extension of your magazine to the past *U.S. Scanner News* subscribers. Bravo!

Joseph Bial  
Ohio

### All's Well in Welches

Dear Editor:

The first two letters in the August issue were right on! I was a subscriber to USSN, then all of a sudden it didn't arrive anymore. I tried to communicate with them but didn't receive an answer. Then after many months, *Popular Communications* arrived. What a surprise! What

a magazine! I read it cover-to-cover and enjoy it very much. The second letter "Oh Boyd" was exceptionally well written. I thoroughly agree with him and even wrote him a letter telling him so. Keep up the good work.

Jerry Sabel, N7BJ  
Welches, OR

## Hearing it ALL

Dear Editor:

Enough said about cellular privacy and monitoring laws, and scanners with missing frequencies. To all of us radio hobbyists and DXers, has there been enough said about cellular phone privacy? All of us know cellular phones are cellular radios! And telephone (radiophone) monitoring has been around for years, long before cell phones came into play. Cell privacy is a big laugh! The whole idea being into radio DXing and monitoring is to hear everything, not just DXing or monitoring radio stations, listening to police and fire departments.

All radio magazines should stop printing anything about radiophones as well as for monitoring laws and the ECPA.

As for radio scanner manufacturers: Stop making scanners with missing frequencies! Some frequencies in the 800 MHz area are missing! Even the basic scanner has some of the 800 band missing. It is so dumb that you have to add radio converters to get these frequencies. Make the radio the way it should be made.

K.J.  
Hawaii

Dear K.J.:

I'm sure most readers—myself included—are tired of hearing about the ECPA and anti-monitoring laws. But until laws penned by doofuses that don't know a scanner from a sack of potatoes, are reworded to make the criminal use of intercepted comms illegal, not the mere listening to our public airwaves, whatever the frequency, I won't give it a rest! It's my personal hope that folks like Thomas Wheeler at the CTIA and his cronies in D.C. and the cell industry get their act together and ENCRYPT cellular comms. Therein lies the crux of the problem; it's the industry's responsibility to encode transmissions so they can't be monitored. Then, and only then will this become a non-issue for everyone.

As we go to press, we're hearing more and more about the FCC tightening the noose around scanner manufacturers to make their equipment less susceptible to

intermod; probably a step in the right direction. After all, getting rid of cellular intermod will also hopefully get rid of those awful paging transmitters heard all over the band where they don't belong!

Of course the reason scanners sold today don't have the cell portion of the 800 MHz band included is because of the addendum to the ECPA. When I hear folks like Mr. Wheeler talk about extending the listening restriction to *all* scanner frequencies, I immediately think the next step could be restrictions on when I can use my ham or CB transceiver and which network TV newscast is "permissible" to watch on Tuesday evenings.

## Tom's Band of RF Pirates?

Dear Editor:

I don't listen to cell phone calls and can't speak for every member of the monitoring hobby, but I will tell you this: I have absolutely HAD IT with Thomas Wheeler and his merry band of RF pirates! YES, we need to initiate a neighborhood fight-back program, and if the ARRL might be able to help, let's talk with them!

Here are a few other ideas:

1. BOYCOTT! It is unconscionable that any serious radio hobbyist would buy or use a cell phone. Period! It is outrageous to reward the people who spit in our faces by giving them our business. If there's not enough of us to make an economic impact, then just do it as a matter of principle.

2. We should push for laws that would make using a cell phone while driving illegal. This *would* impact the industry by cutting into their "air time" profits. Maybe if the CTIA learned that fed-up radio hobbyists were behind the effort, they might back off a little. Not to mention the added benefit of getting all those careening idiots off our roads!

3. We need to write letters to the editors of media outlets that run scare stories about scanners and set the record straight. Plus tell the secret the CTIA doesn't want the public to hear: You don't need a scanner to hear all sorts of cellular calls. Not near enough is made of this fact. Make it a household knowledge about common TV sets with UHF channel 83 being "cellular capable."

We could then get scanners out of the spotlight for a change, bust the myth of cellular "privacy" and expose the big flaw in the CTIA's line—namely that eventually one would have to ban every type of

radio receiver that might get too close to a cell site. And what police agency would be responsible for checking between the K-Tel records and the kids' clothes rack at garage sales to look for old TV sets that can tune all the way up to channel 83?

Thanks to you and *Pop'Comm* for keeping us informed!

Rick Barton  
Arizona

## Bryon Turns Up the Volume and Stings Like A Bee!

Dear Editor:

First off, let me say that I really enjoy your magazine. I'd like to throw my two cents worth in on the "scanners becoming extinct" issue. I am appalled with what's happening. I live near Cedar Rapids, IA. Here the county police and sheriff's department is going to a digital radio system. I guess they think they are super cops who don't need the public's assistance for anything. I feel as taxpayers that we have every right to monitor their comms as we pay their wages!

If their big concern is criminals using scanners to break the law, why don't they make a device to attach to a scanner to allow people to monitor them, and you go out and fill out a form so they can do a background check on you—similar to what most agencies require for the purchase of handguns. No, I don't want to stir up that hornet's nest, but am using it as an example.

Bryon Henderson, KBØZUA  
Central City, IA

Dear Bryon:

I think if you talk with most cops—exclusive of the federal agencies—you'd find that many actually encourage citizen monitoring so we might act as an extra set of eyes and ears for them. The primary reason for agencies going trunked is not to necessarily prevent monitoring, but to increase the system's ability to handle multitudes of radio traffic on a minimum of frequencies, eliminating interference and delayed calls due to heavy channel usage in a conventional radio system.

Certainly requiring folks to register their scanners might at first seem to be a good idea, but consider for a moment that such registration and background checks is just one step away—and a small one at that—from requiring us to register Swiss Army knives, binoculars, all kinds of outdoor gear, flashlights, and anything else that could conceivably be used in the commission of a crime. ■

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# TrunkTracker Talk

## Answers to Your Most-Often-Asked Questions

By J.T. Ward

### Are 30 Channels Enough?

**Q.** *The trunk system is much too large for just one 30 channel bank. I think this restriction is a big downer for this little radio. Although it has not caused me too many problems yet, I can see some situations in which the trunked system would be too large and you will miss calls. Thus, my only wish for this radio would be to have the 30 channel max for trunked systems eliminated.*

**A.** Lots of the frequency lists you see showing more than 30 channels are deceiving. There are often many frequencies licensed to a single user, but these are almost always split into two or more systems each with less than 30 channels. In some cases the frequency lists include mutual aid, mobile data terminal and other special-use frequencies that aren't part of the trunked system.

### Can't Hear Cellular

**Q.** *Has any one got any info on modifications to the BC235XLT to allow it to scan cellular telephone frequencies?*

**A.** If there are any possible modifications that would allow the BC235XLT receiver to scan the cellular frequencies Uniden certainly isn't telling. Seriously, though, the radio was specifically designed to prevent cellular interception, even by listening for images.

### Let There Be Light

**Q.** *Is there a way, through a keypress routine or other method, to set the BC-235XLTs display light to a push-on, push-off configuration?*

**A.** According to Jim Cassidy, Uniden's product manager for scanners, there is no way to set the BC235XLT's display light to a push-on, push-off configuration.

### Antenna Troubles

**Q.** *The center pin in the base of my antenna broke off. I've heard of this happening to others as well. Is this a common problem with the BC235XLT, and what is Uniden doing about it?*

**A.** This is apparently a common problem with the antenna supplied with the BC235XLT as we have heard many reports of this happening. According to Jill Prince, Uniden is aware of the problem and the engineering department is working on a fix. No

specific procedure for customers having problems had been set at press time.

The center pin problem may also be causing complaints of poor sensitivity. If the pin is coming out of the BNC connector then it's likely it was never really electrically connected to the antenna in the first place. This is probably the case even where the pin is still seated in the connector. That would mean that those defective antennas, even with the pin intact, were much less effective than they should be. Tests show the supplied antenna (if it's not a defective one) to be better than a 1/4 wave 800 MHz antenna, and about the same as an 800 MHz dipole.

### All Frequencies Needed

**Q.** *Why does the BC235XLT require you to enter all the trunked system's channels if the receiver successfully monitors the control channel and already gets channel assignments?*

**A.** Because there are different frequency "plans" used by the Motorola systems. The user would need to tell the radio which one was in effect for a given system since the channel to frequency assignment is not the same for each system. It's easier for the user to simply enter the frequencies and thereby resolve the ambiguity than have the user try to determine the frequency plan in use. There are

other reasons as well that involve proprietary information.

### Motorola Hex to Uniden Decimal Conversions

**Q.** *A frequent question regards the conversion of Motorola Hex codes to Uniden format and vice versa. It happens that there are three Motorola variants of talk group codes for Type II systems.*

**A.** Type II talkgroup IDs come in three flavors:

Motorola 3 digit Hex variety such as A07, ID Range (000-FFE)

Motorola 6 digit decimal variety such as 802567, ID Range (800000-804094); Uniden format such as 41072, ID Range (0-65504).

In the following formulas, M3 represents a Motorola three digit Hex format value.

M6 represents a Motorola six digit decimal format value.

U represents a Uniden format value.

The notation Dec\_to\_Hex(X) means convert X to its Hex equivalent.

The notation Hex\_to\_Dec(X) means convert X to its Decimal equivalent.

### More Conversion Questions

**Q.** *How do you take a Type I subfleet ID, say 600-1, and convert it to either the M3 hex*

### Conversion Formulas

To convert	Use this Formula
M6 to U	$(M6 - 800000) * 16 = U$
M6 to M3	$\text{Dec\_to\_Hex}(M6 - 800000) = M3$
M3 to U	$\text{Hex\_to\_Dec}(M3) * 16 = U$
M3 to M6	$\text{Hex\_to\_Dec}(M3) + 800000 = M6$
U to M3	$\text{Dec\_to\_Hex}(U/16) = M3$
U to M6	$U/16 + 800000 = M6$

Examples:

Convert the M6 format ID, 802617 to U format:

$(802617 - 800000) * 16 = 41872$

Convert the M6 format ID, 802617 to M3 format:

$\text{Dec\_to\_Hex}(802617 - 800000) \Rightarrow \text{Dec\_to\_Hex}(2617) = A39$

Convert the M3 format ID, A39 to U format:

$\text{Hex\_to\_Dec}(A39) * 16 \Rightarrow 2617 * 16 = 41872$

Convert the M3 format ID, A39 to M6 format:

$\text{Hex\_to\_Dec}(A39) + 800000 \Rightarrow 2617 + 800000 = 802617$

Convert the U format ID, 41872 to M3 format:

$\text{Dec\_to\_Hex}(41872/16) \Rightarrow \text{Dec\_to\_Hex}(2617) = A39$

Convert the U format ID, 41872 to M6 format:

$41872/16 + 800000 = 802617$

or M6 type ident? Is there a way to take say a subfleet ID seen in the TT Type II mode such as 9956 that is not a multiple (divide by 16) type II ID and turn it around and convert it to its type I ID? The reason I ask this question is that based on some info I see here, there would appear to be a number of IDs on the Atlanta system that are Type I IDs (9956 is one of them). I guess I'm looking for an easier way to go from the ID seen in the Type II mode to a Type I ID or at least get it into its M3 or M6 equivalent.

A. The conversions you mention are defined for Type II systems. If see an ID in Type II mode that you suspect is really a Type I ID then the block from which it comes would need to be set to the appropriate Type I size code (S1-S14). In order to determine the suspect block, divide the ID by 8192 and discard the remainder. The result is the block to which the ID belongs. In your specific case:  $9956/8192 = 1.22$  therefor the ID comes from Block 1. You could now assign various size codes to Block 1 to determine the correct assignment. However, let me save you the trouble. The proper fleet map for Atlanta is: S3.S0.S0.S0.S0.S0.S0.S0. There is a little bit of Type I activity but the vast majority of the activity is Type II.

### TrunkTracker Tip

If your county uses a dedicated frequency for phone patches you can enter it in the 20th position of the bank for the system you're monitoring. Then, while monitoring and after pressing the PRT to make the trunk activity indicators display you can watch for the indicator on the far right of the display to 'light' up. When it does you know that a phone patch is taking place.

If you like to monitor the phone patches, this provides somewhat of an easy way to know when one's taking place so you can exit trunk mode to go monitor the patch. In conventional mode I locked out all the channels except the phone patch frequency so all I need to do is hit "trunk," then scan to monitor the patch. Thanks to Gordon Edwards, of Lawrenceville, GA for this tip.

We hope this gives you a little more insight into this dynamite radio, the Uniden Bearcat 235XLT "TrunkTracker." Readers with on-line access can get up to date information on the BC235XLT at <<http://www.trunktracker.com>> on the World Wide Web, or via the Internet e-mail listserver <[Trunkcom@grove.net](mailto:Trunkcom@grove.net)>. To subscribe to the listserver send an e-mail message to <[majordomo@grove.net](mailto:majordomo@grove.net)> leaving the subject line blank (AOL users type trunkcom) and in the message area type subscribe trunkcom. Do not use a signature line.

We invite TrunkTracker users to submit their questions, hints and tips for this radio to *Popular Communications* at <[popularcom@aol.com](mailto:popularcom@aol.com)> for inclusion in future columns or articles. ■

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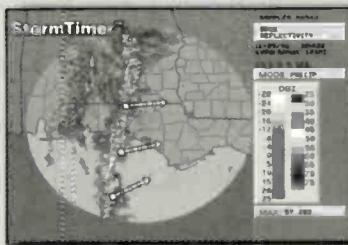
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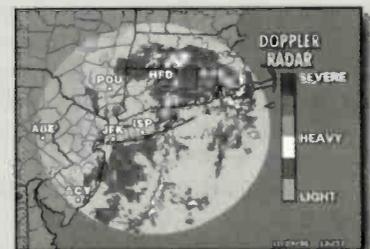
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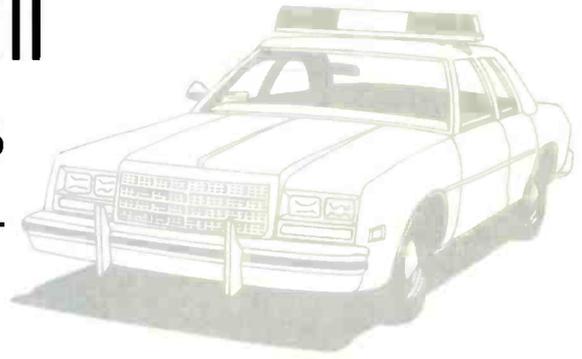
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# Markey Files New Bill To Restrict Scanners

*Another Hot Potato Threatens Scanning—  
The Time To Act is NOW!*

By J.T. Ward



The forces in Congress (and the money men behind them) are once again chipping away at the public's ability to oversee our government by monitoring the airwaves. If passed in its current form, a bill filed on June 19, by Rep. Edward J. Markey, D-Mass., will make it illegal to manufacture, sell or import scanners capable of receiving on business band frequencies.

On the face of it, that doesn't sound like such a bad thing. After all, who wants to listen to Joe's Plumbing Service dispatching a crew to unclog Jane Smith's drain? However, the Commercial Mobile Radio Service—the so-called “business band,” also includes many ambulance services, both private and volunteer, and in many areas, police and fire departments as well.

The bill, House Resolution 1964, called the Communications Privacy and Consumer Empowerment Act, isn't all bad. It includes provisions to give parents the right to keep their children's names off mailing lists, to improve access to the Internet, to study network and data security issues and other worthwhile items. However, two portions of the bill pose a direct and potentially serious threat to the scanning hobby.

Section 104, referred to as the *Extension of Scanner Equipment Manufacture Prohibitions to Digital Mobile Radio Services*, will make changes in the Communications Act of 1934, substituting the words “a commercial mobile radio service” for the words “the domestic cellular telecommunications service.”

As most radio hobbyists know, it's illegal to manufacture or import into the U.S. a scanner capable of tuning the cellular telephone frequencies. The changes proposed by this section will extend that prohibition to Commercial Mobile Radio Service frequencies—the so-called “business bands.”

While police and fire departments are normally licensed in the public safety

bands, in crowded areas where available public safety frequencies are already assigned, the FCC often allows police and fire departments to operate “out of band” and use business band frequencies. Of particular concern are public safety and government radio systems licensed on Specialized Mobile Radio Service (SMR) frequencies from 851.00 MHz to 866.00 MHz and from 935.00 MHz to 940.00 MHz.

While the majority of users licensed in this range are commercial businesses, there are also many public safety agencies licensed here as well. There just wasn't enough room for them all in the 866.00 MHz to 869.00 MHz public safety portion of the 800 MHz band.

A second problem with this proposed legislation is that many of the frequencies it proposes to ban from scanners are scattered piecemeal throughout the radio spectrum. Eliminating these frequencies from scanners is not comparable to blocking the cellular telephone bands from scanners. The cellular telephone frequencies are contained in two large chunks of the radio spectrum, each approximately 25 MHz wide. This is not the case with the business band. For example, business frequencies in the VHF-Low band are spaced from 30.76 MHz to 31.24 MHz; from 33.14 MHz to 33.16; from 35.02 MHz to 35.14 MHz; from 35.70 MHz to 35.72 MHz; from 35.88 MHz to 35.98 MHz; and from 42.96 MHz to 43.00 MHz. There are also a number of individual business frequencies scattered throughout this range. This same situation exists in the other portions of the radio spectrum as well.

From a practical standpoint it may be impossible for manufacturers to block so many scattered frequencies while leaving access to the “legal” frequencies, i.e. government, public safety, marine, citizens band, amateur radio and aviation, intact.

A third concern with this section is its prohibition on scanners capable of converting digital signals to analog voice

---

*“However, two portions of the bill pose a direct and potential threat to the scanning hobby.”*

---

audio signals. Many of the newer public safety radio systems being installed around the country (Motorola Astro and Ericsson EDACS) use digital transmission methods. Markey's bill, if left intact, would prevent the public—including hobbyists, the news media and volunteer emergency service workers—from being able to monitor these new digital systems.

A second provision of the bill, Section 102, requires the FCC to propose changes in regulations to ensure that the effect on consumer privacy rights is considered in the introduction of new telecommunications services and that the protection of such privacy rights and network security is incorporated as necessary in the design of such services or the rules regulating such services.

While not posing a direct threat to scanning as a hobby, it's not hard to see that as new communications technologies are created this opens the door for even more restrictions on what we can, and cannot, listen to legally.

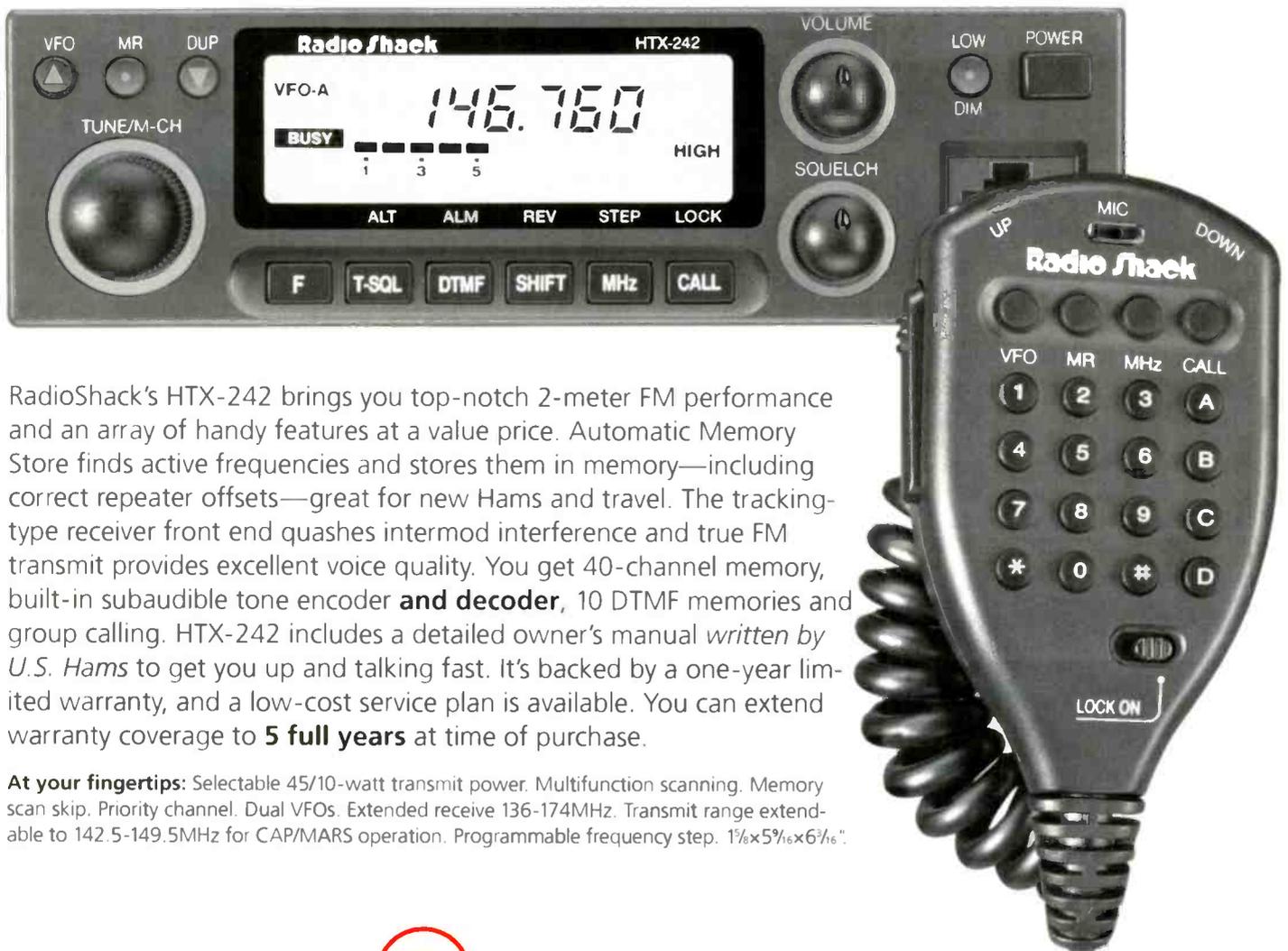
An interesting note: H.R. 1964 is a so-called “simple resolution,” and does not require the approval of the Senate or the signature of the President. It can be passed by House action alone.

While the intent of this legislation is to extend to users of commercial radio services—whether they are two-way radios, pagers, PCS devices or radio-based computer local-area-networks—the same expectation of privacy given to cellular and cordless telephone users, as written, this bill poses what many see as a serious threat to the public's ability to oversee government by monitoring their public safety radio communications. ■

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# Communications Privacy Wars, 1930s Style

*Elaborate Efforts Made to Tune Out Monitors 60 Years Ago!*

By Alice Brannigan

Communications hobbyists tend to think of the "privacy" issue as something that first reared its head in the early 1980s with the advent of cellular telephones. Let's find out . . .

During the 1930s, the high frequency edge of the AM broadcasting band was at 1500 kHz (extended to 1600 kHz in 1941). At various points between 1600 kHz and about 2500 kHz, listeners could find the 160 meter amateur radio band as well as many frequencies used for police, fire, remote broadcast, and other communications services. While most tabletop receivers couldn't tune all the way to 2500 kHz, they usually went far enough beyond the broadcasting band to hear at least some of these stations.

*"... most public safety stations didn't mind casual listeners monitoring their transmissions."*

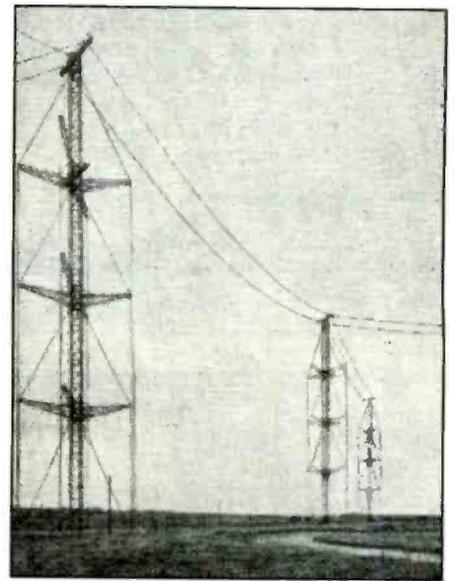
In those days, despite the presence of John Dillinger and other notorious desperadoes, long before trunking, digital scrambling, and state/local laws against mobile police receivers, most public safety stations didn't mind casual listeners monitoring their transmissions. OK, so

Oklahoma City had a law against car radios that could tune above 1500 kHz.

At night, scores of dispatchers could be picked up from coast-to-coast and had large audience followings. Parking a receiver on 1712 kHz alone would allow monitoring of police dispatchers running as much as 500 watts from Los Angeles (KGPL), Chicago (WPDB), Dallas (KVP), Lexington (WPET), Pittsburgh (WPDU), St. Louis (KGPC), and other metro areas. WNYF, the New York City Fire Department's 500 watt dispatcher on 1630 kHz, even issued its own attractive QSL card. At 500 watts, these stations were far more powerful than hundreds of the stations using the regular broadcasting band. Hobby magazines carried ads for police band converters that could extend the frequency coverage of broadcast receivers all the way to 2500 kHz.

On the shortwave bands, amateurs and SWLs with communications receivers were able to tune in on international broadcasters. With equal ease, they had the ability to eavesdrop on the many worldwide point-to-point stations exchanging private and business telegram by CW, as well as voice circuits carrying international telephone calls.

While early public safety stations generally didn't appear to mind having lis-



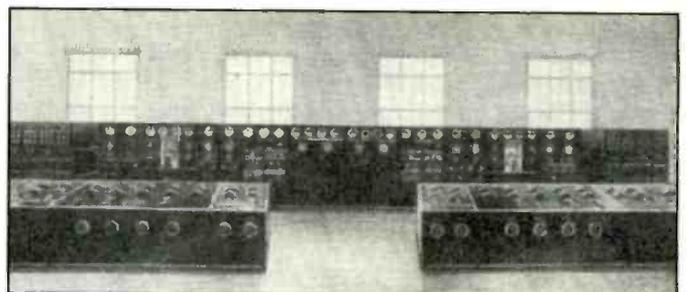
*Part of the directional antenna array used at the Pontoise station.*

teners, this was not necessarily the case with all of the point-to-point stations exchanging international telegrams and telephone calls. You may not know that the desire to prevent casual monitoring of such traffic was an issue at least 50 years before the Electronic Communications Privacy Act of 1986 was passed in response to complaints that the public could



← *A view of the complex speech processing and amplifier panels that could scramble voice transmissions for privacy.*

*Against the rear wall we see the transmitter control panel, while in the foreground we see some of the voice processing equipment ↓*



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*Pictured Right:  
The HX 1000 was a popular scanner  
under the Regency Electronics name.*

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April 20, 1948

Dear Sir:

This will acknowledge receipt of your letter dated January 13, 1948 in which you report the interception at 4117 GMT, January 13, 1948 of radiotelephone transmission from station WPC.

This station is located at Rocky Point, NY. and is operated on its assigned frequency of 8930 kilocycles. It is a point-to-point communication station, not a broadcasting station, and is one unit of the public service world-wide communications systems of RCA Communications, Inc., a service of the Radio Corporation of America. In addition to its direct radio circuits from the United States to many foreign countries, RCA Communications, Inc., also operates a number of radio circuits from Manila, P.I., and Honolulu, T.H., including not only radiotelegraphy, but also transoceanic point-to-point radiotelephone services for the transmission of addressed program material and public service telephony to points abroad.

The transmissions are specifically addressed to the subscriber organization or individual abroad, through our correspondent receiving station. They are not intended for general public reception and use. Regular schedules are not maintained; transmission is effected when and as the material is offered by a customer for transmission, and the station or frequency utilized is dependent upon the propagation phenomena of the season, time of day, direction, and distance of the foreign point to be reached. The power varies from one to forty kilowatts according to transmission conditions and usually a directional antenna is employed.

The transmission which you intercepted may have been addressed program material, a commercial radiotelephone call, or point-to-point transmission for observation at a specific foreign terminal. In any case it is classified by international treaty and United States law as point-to-point communication concerning which an obligation or secrecy is imposed, both upon us and upon any chance intercepting listener. Such communication is "correspondence of a private nature" of which "the unauthorized reception", "the unauthorized divulging of the contents or any of the existence" or "the unauthorized publication or use" is in violation of the secrecy provisions of the International Radio Convention.

With this in mind, you will no doubt appreciate that we may not supply any confirmation of material transmitted by our stations.

Very truly yours,

*Wayne Mason*  
 Wayne Mason  
 Manager

← RCA explained in exquisite detail to a ute monitor why they were not going to verify point-to-point monitoring. "Private nature" and all that rot, they said in 1948. Letter provided so much information, it was practically a QSL.

In response to a request for a point-to-point station QSL, the Soviets bluntly suggested the monitor tune in to Radio Moscow instead of their private traffic. ↓

Moscow, USSR  
 July 24

Dear

We received your letter of May 21st and wish to inform you that the stations you heard were not broadcasting to North America. They were stations belonging to different Soviet Ministries and functioning for their inner operational needs. QSL card are not filled out for these stations. But we will appreciate it very much if you send us QSL card for our broadcast to North America and in order that you may do so we are sending you a schedule of our broadcast.

Hoping to hear from you again, we are

Sincerely yours,

*Vladimir Afonin*  
 (Vladimir Afonin)

RADIO MOSCOW  
 North American Service

intercept messages going out over the airwaves. Sixty years ago the solution was not an ineffectual law, it was the design and construction of a devilish transatlantic point-to-point station that couldn't be monitored by most listeners. In 1936, this eavesdrop-proof so-called "secret phone link" station was considered the "last word" in technology.

## The Secret Phone Link

The gigantic station went into opera-

tion in 1936 from Paris, with transmitters located at Pontoise (Seine-et-Oise), France. It was designed by the Societe Francaise Radio-Electrique, and operated by the French government as a direct secure and plaintext PTP link to the U.S. for personal and commercial traffic.

This station could operate day and night with 14 kW for voice and 20 kW for telegraphy as TYE on 10890 kHz, TYE2 on 13760 kHz, and TYE3 on 10430 kHz. It used three capacity-coupled half-wave dipole antennas which could be remote-

ly selected by pushbuttons. The power levels and availability of the three frequencies allowed the station to get through at any hour of the day, and under just about all but the most adverse propagation conditions.

One design feature was a claimed extremely flat audio response curve, passing all audio frequencies between 50 and 11,000 Hz without appreciable attenuation. When compared to other stations handling international telephone calls, this was real high fidelity. Frequency stability was kept accurate and constant by placing each transmitter in an insulated container that could be heated or cooled, as required. A relay-controlled thermostat guaranteed a uniform transmitter accuracy that didn't stray more than 1/100,000th Hz per second.

The transmitter itself was symmetrically designed, and was modulated by means of a push-pull transformer stage. In case telegraphy was to be sent, the modulator stage was automatically disconnected from the transmitter at the very moment the operator touches the key.

At times when communications security was desired while sending telegrams, the traffic could be keyed automatically in RTTY mode at various rates up to 375 baud (500 wpm) for recording and later

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*"At best, reception reports brought rude letters bluntly requesting them not to listen any longer."*

playback slower speeds (if necessary) at the American receiving station.

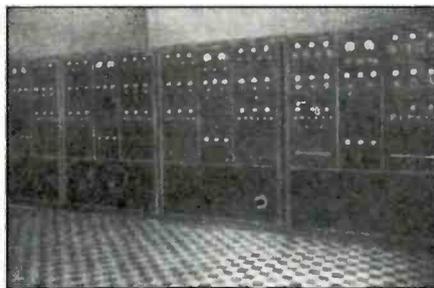
The precautions used to provide voice security during telephone conversations could use a form of speech inversion scrambling. A part of the voice frequencies were extracted by means of filters. The extracted frequencies were reversed, then fed into the modulator stage. This resulted in a garbled mix of frequencies that couldn't be understood when monitored on most receivers.

In order to reconstruct the voice so that it could be understood, the receiving station at the U.S. end of the circuit needed to use a filter to extract the reversed audio frequencies, then rearrange them in their proper sequence. American stations communicating with the Pontoise facility transmitted similar inverted speech.

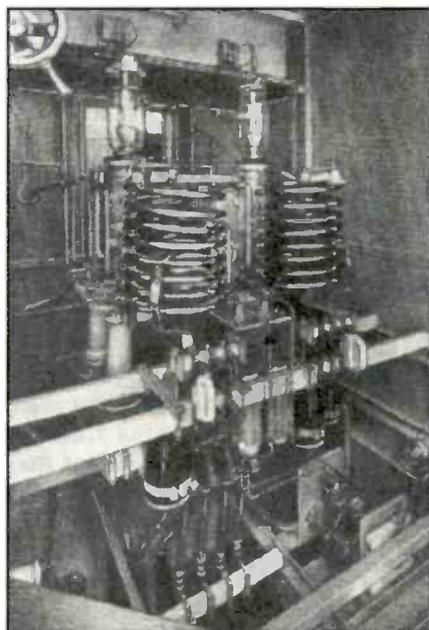
Utility listeners who copied traffic from those point-to-point stations that were demanding privacy had little luck in obtaining verifications, even if they had reported monitoring CW markers, voice mirrors, or plaintext transmissions. At best, reception reports brought rude letters bluntly requesting them not to listen any longer.

Most international point-to-point circuits didn't take elaborate efforts to ensure communications privacy. Many stations took no privacy precautions at all and gladly verified reception reports, especially those reports accompanied by a prepared reply cards. Therefore, the formidable Pontoise station stands out as one of the earliest examples of effectively restricting unwanted casual monitoring. That was more than 60 years ago, and someone figured out how to do it without the need to demand the passage of anti-listener laws or require their frequencies be locked out of receivers. Maybe they knew something then that has been forgotten along the way. Today, most of the international point-to-point voice and telegram traffic once on shortwave has been shifted over to satellites.

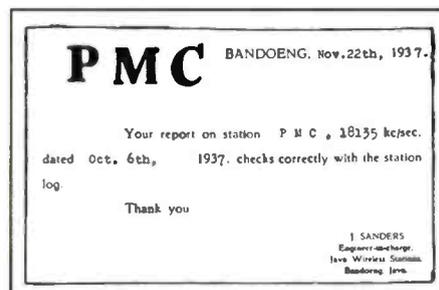
We always need your input here in the way of old radio and wireless station photos, picture postcards, news clippings, QSLs and veri letters (originals or good copies), and station listings. If you have column ideas, anecdotes, or memories you are invited to send me an e-mail at <radioville@juno.com>.



*These are the landline amplifiers. Each of the four was connected to cables leading to various areas of France. These boosted the incoming and outgoing voice levels in order to overcome circuit losses.*

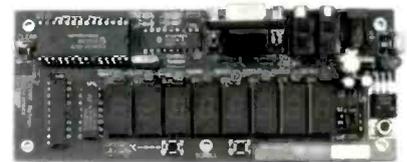


*A close look at the output stage of one of the Pontoise transmitters. The transmitter was rated at 14 kW for voice and 20 kW for telegraphy.*



*PMC, a point-to-point station in Java (Indonesia), didn't mind hobbyists listening in as they exchanged traffic with the Netherlands. In 1937 they sent out this attractive QSL card.*

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# Product Spotlight

POP'COMM REVIEWS PRODUCTS OF INTEREST

## RadioShack Digital SWR/Power Meter

**SPECIFICATIONS:** Digital SWR/power meter composed of three pieces: remote sensor, display unit and power adapter. Includes connector cords (except coax jumper) and instruction manual. Unit measures SWR and power levels for transmitters that operate from 1.8 to 30 MHz. Power requirement: 110 Vac.

**DIMENSIONS:** (HWD) Approx. 1 1/2" x 4 1/2" x 3". Remote sensor is approx. 3 1/2" x 3 1/2" x 2".

Let's face it, most of us would probably prefer not to be constantly checking our SWR, but aaah yes, checking the RF output of a transceiver is another matter. It's a thrill to see the meter swing (or peg!) when the mic is keyed. The time has finally come for high-technology to give CBers and hams a digital readout of the performance of their transceiver and antenna system.

The RadioShack Digital SWR/Power Meter is a small desk top unit that gives you an instant SWR or power reading, from one to 2,000 watts!

### Setting Up the Meter

The meter comes with a remote sensor unit that connects either at the radio or at the antenna. The manual is short, to the point and easy to read and understand. Operation is simple and straight forward. Simply insert the provided wires into the appropriate sockets on the rear of the sensor unit, and tighten a screw. Next, if you're planning on mounting the sensor in your shack, connect your outside antenna to the "ANT" SO-239 connector, and using a coax jumper cable, connect your CB (or HF ham transceiver) to the "TRANS" SO-239 socket. You can actually connect the sensor either at the transceiver or at the antenna. To measure the transceiver's power output and the combined SWR of the antenna cable and antenna, connect it at the transceiver. To measure the total power delivered to the antenna and the antenna's SWR without the cable, connect it at the antenna.

Then, using the provided cable, con-



The RadioShack SWR/Power Meter.

nect the sensor unit to the display unit, and plug the power adapter into 110 Vac after connecting the other end of the power adapter into the display unit. You're ready to fire up your rig!

An important note is in order here. As the manual points out, "your SWR/power meter's display and sensor are calibrated together before packaging. Do not interchange the display or sensor from one system with the display or sensor from another system." In a nutshell, if your friend down the street has the same meter and has a question about his readings, bring your meter to his shack, but don't use his display with your sensor!

### Measuring SWR

I'll admit it, I've got this thing about achieving a near-perfect SWR. I suppose it's a mental situation, but during my early years in CB, it seemed like it was the right thing to do. So I'm still hung up on 1:1:1. It doesn't always happen, but I can usually get close!

Using the typical analog meters—you know the kind—connect the meter, key the mic, calibrate the meter, then key the mic again. Forget about calibration, forget about inaccurate readings that vary from meter to meter. I found the RadioShack Digital SWR/Power Meter so easy to operate, I actually double-checked the SWR and RF power of my CB radio a couple of times just to make sure I hadn't done something wrong.

Then you press "POWER" to turn on the meter, press "SWR". At this point the meter displays "LO". Then select the channel on your CB (typically channel 19 or 20, which is midway between channel one and 40). Your installation's SWR will be shown on the digital display as a number from one to "INF". An SWR of 1.50, for example, will show "1.50" and a total of 11 small vertical bargraph segments along the bottom of the display. The manual correctly points out various SWR ranges, and explains how your system's efficiency compares to specific SWR readings. It even shows how much power is reflected back to your transmitter at certain SWR readings. Very handy, and need-to-know information!

### Measuring Power Output

It's as easy as pressing "RF POWER." The meter automatically sets the display to the 0-20 watt range. Transmit. The meter automatically sets the range appropriate for the signal: either 0-20 watts, 0-200 watts or 0-2,000 watts. For example, if the power of your transceiver is 15 watts, the meter displays the reading in the 0-20 watt range. If you'd like to check your PEP SSB power, simply set the meter to "PEAK" measurements, transmit and speak into the mic. For AM use, the meter should be set to "AVERAGE".

You can also manually set the display range by pressing "RANGE". With each press the meter changes between the three

ranges, and the automatic range. Power output readings appear on the digital display and on the bargraph at the bottom of the display.

Power output readings appear on the digital display and on the bargraph at the bottom of the display.

I was easily able to determine the power of several different CBs in a matter of minutes; 3.6, 2.8, 4.3 and 3.5 watts—all much easier than looking at a swinging meter! As a matter of fact, I'm leaving the meter in-line between the transceiver and antenna, and using the small provided mount-

ing bracket to tuck the display unit out of the way under a nearby shelf for easy viewing. The sensor unit has a small attached bracket with two holes that simply attaches to a wall or under the same shelf. A reminder: If you're mounting the sensor outdoors, use a sealant (RadioShack 64-2314 or similar) to protect the sensor from moisture damage.

If it were possible, I'd like to have this meter operate from battery power so it could be used in a mobile. The extra set of cords required for operation of the meter are just that—another set of power/

patch cords in my already-crowded shack, but the minor inconvenience is certainly worth the accuracy and convenience of being able to instantly check my CB installation.

The meter is smart-looking, the digits are large and the display is lighted for easy viewing. The RadioShack Digital SWR/Power Meter (Catalog #21-527) is available at your local RadioShack store for \$119.99. While it may not be listed in the latest RadioShack catalog, we're told there are plenty of these gems in the Shack's warehouses! ■

## Power Port 149 by Cutting Edge Enterprises

One of the first things you learn in this hobby is that you can never have enough NiCd batteries, chargers, and outlets to charge them all. I don't know about you, but I've got more wall adapters and NiCds in plastic boxes than most people have matches or paper clips. And charging them all is an exercise that would certainly amuse non-hobbyists. Find the adapter, connect it to the *right* battery, plug it into the wall or power strip, lay it on the floor or table (where it just adds to the clutter and mess), and wait overnight. Then reverse the entire process, winding up the adapter's long cord and putting it away for a couple of weeks.

While I still use these adapters for my ham HTs and scanners, it got to the point where labeling them all with plastic tabs became a major afternoon project. And if the battery suddenly dies in the middle of some great scanning action or a QSO, you only hope the battery on the shelf is fully charged. Murphy's Law says: "When your radio's battery dies, the battery closest to you will only be half-charged."

But now, thanks to the new Power Port family of batteries and attached chargers, you can have a ready source of both AC or DC power! The Power Port family of AC/DC power supplies is a welcome addition to the radio hobby market which is populated by some rather unusual and average-performing batteries and power supplies, with all sorts of claims and promises. But hold onto your cigarette lighter adapter, fellow hobbyists, because here's a power source that will knock your socks off!

A word of caution. Don't drop this nine amp gel cell charger on your foot. It weighs in at a hefty nine pounds and measures about 6" x 4 1/4" x 4 1/4"—not quite a miniature power supply, but then again, we're not talking miniature power, either.

The specifications say the product will deliver 140 watts of AC power (max. continuous power) and peak power of 200 watts from the nine amp hour gel cell, and 12 volts of DC power that will truly amaze even the most power-hungry ham or hobbyist! Put simply, the Power Port will run appliances that require 140 watts or less of AC power and any appliance you would normally plug into your vehicle's cigarette lighter adapter; scanners, CBs, ham HTs, camcorders, power tools, cell phones and more.

### Power That Won't Die

Using the Power Port 149 is simple and straight forward. You can keep it plugged in continuously without overcharging; yes, it comes with a small wall adapter charger. I've labeled mine with a red paint marker pencil and leave it plugged into the wall outlet and connected to the Power Port 24-hours-a-day.

The unique thing about the Power Port 149 is that you can charge it in your home's 110 Vac outlet or in your vehicle. Charging from a 12 volt vehicle battery takes about seven to 10 hours; simply plug the wall adapter into the Power Port's 110 Vac receptacle and connect the male cigarette plug into the Power Port's cigarette lighter receptacle, and plug the remaining power cord into the vehicle cigarette lighter receptacle.

The first chance I had to use the Power Port 149 was firing up one of those small 12 Vdc air compressors to pump air into a flat tire. I only wish we could have figured out why the tire went flat in the first place—no nail or other puncture, just flat as a pancake. In a couple of minutes the battery and compressor had done their job and it was time to further test the Power Port 149.



*The Power Port 149 is a nine amp-hour gel cell battery and charger that's ideal for the radio hobbyist. (Photo courtesy Cutting Edge Enterprises)*

That afternoon I plugged a small lamp with a 40 watt bulb in the unit. Two-and-a-half hours later the lamp finally went out. The next day after completely recharging the unit, I plugged in one of those small night lights—not the one with the little neon lamp, but the small bulb type. At first I thought that keeping track of when an appliance was first turned on and when it quit would be relatively easy. Frankly I lost track of just how long that bulb stayed lighted, but at least 24 hours later it was still going at full brightness! OK, so you can't read

your favorite novel by the night light, but in an emergency, you've got plenty of light to easily find your way around the room. Incidentally, the company sells a plug-in fluorescent camp light and hanging model that draws 5-7 watts and gives off light the equivalent of a 60 watt incandescent bulb. The price on either of these accessories is about \$20.

## How Well Does It Work With a Radio?

From a full charge I decided to give the Power Port a real workout. The radio I choose was my Yaesu FT-2500M 2-meter ham transceiver. Normally I use it as a base radio with a Daiwa regulated DC power supply. The rig draws 600 mA on receive, and 12, nine and five amps on transmit, depending on the RF power selection; 50, 25 or five watts.

I turned the rig on around 1 p.m. and left it on receive for the entire afternoon and into the evening. Later that evening I called George, WA2MNV and talked for about 45 minutes using five watts. Harry, W2IX and Dave, changed-his-call-letters-again, K2VPW joined the QSO a while later and we all signed off after another 25 minutes. I then left the radio on for what seemed an eternity—turning it off just after 11 p.m.

The next morning around 8 a.m. without having recharged the battery, the rig was turned on. At one point I reached the Mt. Beacon, NY repeater from my QTH in New Jersey and talked for about 10 minutes using 25 watts. I then parked the rig on our local repeater for the remainder of the day. Just before the 10 p.m. news

I decided that enough was enough and it was time to recharge the Power Port overnight. Let's see, that's a total of 24 hours, and it was begging for more use!

The next morning, from a full charge, I gave it another workout; a 20-minute QSO at five watts, then let it simmer on receive for eight hours after which I turned it off for the day, turning the pack back on the next day at 8 a.m., conducting two short five-minute QSOs and pulling the plug around 7 p.m. At this writing the rig is still going strong. I suppose I could go plug in the TV or VCR, but I'm not sure the rest of the family would support such an idea.

After some thought I decided to run my RadioShack HTX-404 handheld transceiver on the Power Port. The little handheld ran flawlessly the rest of the evening and into the next morning; I had no less than a dozen QSOs and left the rig on receive overnight. Fully expecting the battery to be dead by morning, I was pleasantly surprised to find it still up and running at 7 a.m. What's going on here? Is this the power source that won't die?

There's never a dull moment when you've been putting off projects around the house; I even put off doing the "fun" projects like making new homebrew mobile radio mounts and brackets, but there was one project that wouldn't wait. For weeks now I had been wanting to put a new antenna on my 10-speed. The small metal bracket needed a couple of mounting holes drilled that was done in no time right in the back yard; plenty of sunlight and plenty of power with the Power Port 149! I never thought I'd be glad to see a near-dead battery, but when the battery finally gasped it's last breath that night

when I plugged that 40-watt lamp in again, I sighed a sigh of relief.

Imagine what you could do with the Power Port 149 in a real emergency or on a camping trip. A CB draws considerably less and would therefore run much, much longer. And even running the 2-meter rig on receive and only occasionally checking into an emergency net with five watts would be a breeze with this battery. Of course the manual points out that unit won't operate most appliances designed to produce heat, (except soldering irons) such as coffee makers, irons, heaters and toasters. But I found it great for extended operation of scanners, ham HTs, base radios, shortwave receivers, small light bulbs, power tools, work lights, camcorders and drills. Frankly, every radio enthusiast who is *serious* about having emergency power should have one of these gems.

The Cutting Edge Enterprises company, at 1803 Mission St. #546, Santa Cruz, CA 95060, phone 800-206-0115 has a complete line of similar power supplies including the smaller Power Port 50 which provides 7 amp hours storage and 50 watts of AC and 10 amps of DC power, the Power Port 147 and Power Port Jr., a 2.3 amp hour unit.

The Power Port 149 sells for \$159.95 directly from Cutting Edge Enterprises, and they offer a padded bag with carrying strap and detachable side pockets that fits the 149 unit perfectly for \$26.95. You can even buy an inexpensive (\$5.95) car battery booster cable to boost your car battery on those cold mornings using the Power Port 149. Be sure to tell the folks at Cutting Edge Enterprises that you read about it in *Pop' Comm*. ■

## The BayGen Freeplay™ AM/FM/SW Radio

**I**t never needs batteries. Sooner or later your power will go out or you'll be in the unfortunate situation where there isn't a single battery or 110 Vac around for miles. It's then that the BayGen Freeplay™ radio shines.

It was originally designed for emerging countries and areas of the world where the cost of batteries or electricity prohibits folks from using a radio—there, the BayGen is nearly a staple. Some countries have estimated the need for the Freeplay™ radio to be in the millions. It has received the endorsement of over 20

international humanitarian organizations including War Child, UNICEF and the British Red Cross.

Originally designed to improve the flow of information in Africa, the Freeplay™ radio is manufactured in Cape Town, South Africa using disabled workers in 50 percent of the factory operation. Using the Freeplay™ Generator, developed by inventor Trevor Baylis, this basic receiver gives about 30 minutes of listening for 20 seconds of winding—about 60 turns of the side-mounted hand crank. Constructed of durable ABS plastic it

looks like one of those radios from the '60s that you could drop from the roof and it would still play.

### Operating the BayGen Freeplay™

This is no small portable radio; it measures about 10" × 13 1/2" × 5 1/2" and weighs in at just over six pounds. You can place the radio on a table and flip out the hand crank from the right side of the radio, hold the carrying handle and crank away. I've found it just as easy to hold the



The BayGen Freeplay™ radio features AM/ FM/SW and never needs batteries.

radio securely under one arm and crank with the other hand. Flip the crank handle back, turn on the radio, tune in your favorite station (AM/FM or SW 3.3–12 or 5.8–18 MHz), crank up the volume and you're in business.

Let's face it, the main focus of this radio is the internal spring-driven generator. Using the provided telescoping whip antenna here in the New York suburbs, all the typical local/regional AM and FM stations were heard with ease. Overall, the selectivity was pretty good, remember-

ing, of course that you're not going to use the radio for DXing the South Pacific, but hearing the more powerful shortwave broadcast stations beamed to your regional area.

The radio's analog tuning window isn't a high-tech digital display. In fact the calibration isn't the most accurate, especially on the SW or AM bands, but when the chips are down and you're without power, concern about the accuracy of the analog tuning needle won't be your number-one priority! Performance on shortwave was



The new second generation BayGen Freeplay™ is an AM/FM-only receiver that provides up to an hour of playing time after only 30 seconds of winding the hand crank. (Photos courtesy BayGen USA)

*“... it looks like one of those radios from the '60s that you could drop from the roof and it would still play.”*

as expected—sensitive enough to pull in broadcasters day or night, and selective enough to provide reasonable reception on the crowded short wave bands.

The audio from the huge 3 1/2" speaker is superb! I've used the radio while working on various projects in the garage, barbecuing and doing yard work, and as a back-up radio during a recent two-hour power failure. You won't strain to hear your favorite broadcaster with this radio. And certainly if this were a typical "boom box" it would easily have consumed several "D" or "C" cells in a weekend of heavy use, but all I had to do was stop working for 20 seconds and crank the radio to enjoy another 30 minutes of music and news. Once you turn off the radio, the crank will still unwind with a low whirring sound.

### A New BayGen Radio!

The folks at BayGen have announced the availability of a second generation Freeplay™ radio, the FPR2 (average retail \$69.99–79.99) which offers extended playing time (AM/FM) of up to one hour! Here's a company that seems committed to continuous research and development, coupling the needs of worldwide consumers with a focus on environmentally friendly "personal power generation" products that can be lifesavers and information-providers whether you're in New York or Namibia.

I'd recommend one of these radios for every family. Put it on the bookshelf or in the family room and use it every day; or fire it up as a second, back-up basic receiver; or have it ready when Mother Nature unleashes her fury.

The company reports the average retail cost of the Freeplay™ radio is \$99–109. Further information may be obtained by contacting the company directly at BayGen USA, 80 Amity Road, Warwick, NY 10990 or call 914-258-5660 or fax 914-258-3213. They're on the Web at <<http://www.freeplay.pair.com/>>. Don't forget to tell them you read about it in *Pop'Comm*. Now only if I could get a huge Baylis generator for our house, or in the radio room . . . ■

# Radio Resources

INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

## *Saving Your Portable From Drowning*

As the fall season fast approaches, many of us will work in one or two last outings to the ocean, lakes, and rivers before things begin to cool off. And of course we're going to bring along our favorite portable electronics, aren't we?

Whether you are packing a portable two-way radio, or one of those new combination portable scanner and shortwave receivers, or are tracking yourself on a portable global positioning system receiver, all of this equipment must remain bone dry for proper operation. Even though some equipment is advertised as "weatherproof," this only means an initial capability to repel mist or spray from getting inside the equipment. And to

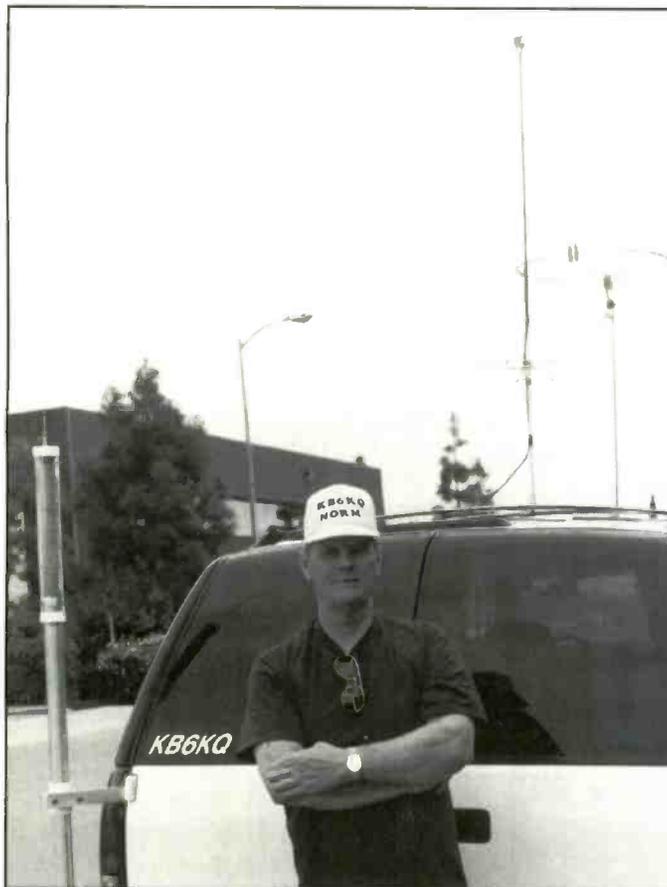
retain this weatherproof rating, it's important to push those little rubber stoppers into the top of your equipment's headphone and microphone jacks, plus rubber stopper in the jack for external 12 volts, and a rubber stopper in the battery pack's charging port. If any moisture gets into an uncapped port on your portable electronics, it will probably spell immediate death.

Portable equipment getting deluged by a waterfall or big wave may certainly leak water on the inside, even though you had pushed the rubber stoppers into each and every hole. Water usually comes into the battery compartment, and then leaks into the inside of the equipment. Same thing for submersion—if your portable elec-

tronics take a dive in the lake or river, or worse yet the salt water, the natural underwater pressure will quickly force water in through the battery compartment, quickly entering the insides.

### **Immediate Help Necessary!**

On a drowned piece of portable electronics, immediately remove the battery pack or individual battery cells inside the equipment. Give the battery pack to a friend to rinse out as you immediately begin disassembling your two-way portable radio or scanner. Except for most portable GPS equipment, you can gain access to the insides with just a small jeweler's flat-blade or Phillips screwdriver. Once



The "SuperLoop Man"—Norm, KB6KQ and his horizontal loop antenna. It's a favorite among VHF/UHF operators and weak-signal scanner users.



The MFJ SWR Analyzer is a handy way to check antenna tuning.

inside, make an initial assessment on how much water got in. If there are just traces of moisture on the inside, dry it out with an air hose or a tire pump. Then gently clean the area around the lithium keep-alive battery.

If your equipment is absolutely soaked with water on the inside, it's time to irrigate with fresh water. Distilled water is best, with bottled water a second choice. The rinse job is vitally important if your unit goes into salt water. Salt water will quickly eat away at the copper circuit board traces, and then your equipment is absolutely unsalvageable. But if you can get the salt water rinsed out quickly, the chances of survival are better.

If your electronics go into a river, you must rinse out all of the silt in order for the volume and squelch controls to possibly work properly. While sand inside the set usually won't do much harm, it will make any type of rotating control instantly inoperable.

Once everything is rinsed out, give your equipment a good drying in the sun. If your electronic fix-it arsenal contains any circuit spray cleaner, go ahead and shoot in this cleaner to help protect keypad contact points and rotating controls. Add some fresh batteries, and then turn it on and see what happens. If things sort of work, they may continue to get better as the unit dries out. Sometimes water gets into the little LCD display, and you may never get it to work again—even though the transceiver or portable scanner seems to work properly. On portable GPS equipment, this stuff is designed for the very wet marine environment, and chances are the ingress of water got no further than the battery compartment tray.

So try your best and see what happens; if you do nothing, the equipment is history, so why not give it a good rinse job and see what happens? Audio will continue to improve from that wet speaker as the speaker cone ultimately dries out.

### Better Protection

You can save yourself the agony of dealing with drowned electronics by putting these portable sets into vinyl waterproof pouches. This is perfect for river-rafting or a canoe trip out on the lake. Most boat owners regularly run their VHF marine radios and GPS equipment inside these vinyl waterproof bags; and if you are into any activities with a personal water craft or jet ski, the bags will keep your electronics absolutely dry.

These vinyl electronic "pouches"

*"While sand inside the set usually won't do much harm, it will make any type of rotating control instantly inoperable."*

aren't really expensive—under \$20—and they will protect everything on the inside down to 10 feet under water. Because of the trapped air within the bag, your equipment will never reach this depth because it will usually float. These bags are sold by marine electronic mail order companies like Boat/U.S. (800-937-2628), West Marine (800-538-0775), and Consumer Marine Electronics (800-332-2628). Be sure to measure the size of your equipment before ordering the waterproof bags. A company called Newmar Corporation (714-751-0488) supplies its dealers with over five different styles of waterproof bags featuring a snap-close sealing system that takes just seconds to open and gain access to your equipment, yet closes securely enough to prevent water under pressure from entering the inside.

### Favorite Antenna Tester

As an informed radio hobbyist, you already know the importance of a resonant antenna for your scanner or shortwave equipment. Resonance is achieved by building, tuning, and testing the antenna for fractional wave length operation—usually a half-wave for horizontal dipoles on shortwave frequencies, and a quarter-wave stinger and quarter-wave ground radials for a scanner.

If you purchase your antenna "ready made and tuned," chances are the factory has put it exactly into resonance on those frequencies you wish to tune or scan. But if you build your own shortwave or scanning antennas, or if you want to double-check that your purchased antenna is absolutely resonant "on the nose," a good piece of test equipment you could use is the relatively inexpensive MFJ HF/VHF SWR Analyzer™. This \$200 portable test meter runs on internal AA batteries, and incorporates a built-in "transmitter" that works from 1800 kHz to 170 MHz, and reads out down to the cycle with the built-in 10-digit LCD frequency counter. Turn it on and attach a short coaxial cable jumper between the output SO-239 antenna jack to your antenna under test. Select the frequency band, then rotate the tuning dial until the

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*Be sure to replace the rubber stoppers when using your equipment near the water!*



*This GPS unit was dropped in a lake, but the only damage was water condensation that disappeared after the air hose dry out.*

SWR meter takes a nose dive and the RF resistance meter hovers around 50 ohms. Now look at the frequency on the LCD display. If it reads slightly lower than where you plan to operate, you may need to slightly trim your antenna to raise the resonant frequency. If the unit indicates that your antenna is tuned too high, you may need to slightly lengthen the element or elements to bring it down in frequency response.

Best of all, you don't need to transmit with any radio in order to determine SWR with the MFJ-259 SWR analyzer. The little "transmitter" is built-in!

Out of all of the test equipment that I use the most when working with scanning, ham, and shortwave antennas, the SWR analyzer from MFJ is my absolute favorite. And I can even use the built-in frequency counter to double-check that my receiver is right on the nose.

MFJ is celebrating their 25th year in the business of providing hobby radio accessories, and their company president, Martin F. Jue (hint, MFJ), has an open request to all hobby radio enthusiasts to

write him personally and describe a product that is much needed in the hobby radio market, but is not yet available. He will analyze your ideas, and if it's a good idea, he'll develop the product and probably give you first shot at field testing it before it goes into production. And what was the very first MFJ radio product? It was an active audio filter for increasing the selectivity of any type of shortwave CW receiver. You can contact MFJ by calling 601-323-5869 and asking for their complete catalog of hobby radio accessories. Wish them a happy 25th, too!

### The New FRS

The new Family Radio Service 14 FRS channels are getting plenty of play from many hobby radio users wishing to extend the 100-mile DX record. Since the 14 channels are still relatively uncrowded, the chances of propagating a half-watt FM UHF signal well beyond 100 miles are very good.

"When I fly our search and rescue airplane, I can easily stay in touch with

portable ground Family Radio Service sets up to 50 miles away," comments Bill Alber, WA6CAX, an active sheriff AERO squadron member. "The signal strengths on a line-of-sight basis at 50 miles are strong enough that I would think it easy to punch through and go further than 100 miles," adds Alber.

Bob Helms, who lives in a high-rise in Miami, says he regularly hears FRS calls from boaters who are traveling to the Bahamas well beyond 100 miles out. He knows their distance by calculating the GPS coordinates they are saying on FRS. Helms adds that these operators would be quite surprised to hear the distance their little signals are going if they would just turn down their squelch and listen for weak stations wanting to break in.

***"You can save yourself the agony of dealing with drowned electronics by putting these portable sets into vinyl waterproof pouches."***



The watertight protective pouch will still allow you to operate the pushbuttons.

Are there any Popular Communications magazine readers claiming FRS DX two-way contacts greater than 100 miles? Remember, you may not modify the built-in rubber antenna system on the handhelds, but there's nothing in the FCC rules that says you can't enhance your range by using your car's metal roof as the range-extending ground plane.

Finally, two unique antennas worth inquiring about from literature sheets that they will send you—the new double-length "Outreach" mobile high-frequency antenna from Alpha Delta Communications (606-598-2029). I have recently worked with it on ground soil as well with the Outpost system, and it works well. They have versions for both high-frequency ham bands only, combination ham and marine, and for those of you into high-frequency emergency communications, an antenna that covers the FEMA frequencies, too.

And for those of you needing horizontal omnidirectional capabilities on the 2-meter band while mobile, the hottest antenna out there is a homebrew "KB6KQ" super-loop antenna that transmits and receives 2-meter signals, horizontally polarized. Ask for Norm, KB6KQ, at 702-885-7885. Tell him Gordo sent you.

Let's keep those cards and letters coming, and let's hear more about your activities out in Radioland. Until next month, 73 and enjoy!



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# The Radio Connection

BY PETER J. BERTINI  
<RadioConnection@june.com>

A LOOK BEHIND THE DIALS

## The Technical Side of Restoration—Audio Output Stages

I try to keep a balanced perspective in the pages devoted to the Radio Connection, whether it's technical information, solving reader problems, or just chewing the fat about interesting folks in this hobby or those nifty vintage devices that glow in the dark. We're working on covering the rebirth of old time radio shows on the DSS Ku and C microwave bands, and serials on restoring Zenith and Philco sets (I have on hand some real basket-case sets that we will be restoring together)! And, for those of you sick of only finding Rush on the AM dial, we will show how to broadcast your favorite vintage radio shows over your home radios. Rider's on CD? You bet. I own a computer; and no, it doesn't use tubes!

So forgive me if I go a bit "technical" this month and talk some more about audio output stages. Whether your interests are in restoring vintage radios, old tube-type HiFi gear or ham/CB radios, this is information you will want to keep handy for future reference.

### More on Tube Biasing

I have already showed you how power supply designs can supply a negative voltage for biasing the audio stages in a radio. Some elaborate sets utilize external biasing for several stages. We will deal with these circuits when we get into working on some of the large chassis Philco sets.

### Cathode or Self-biasing?

Biasing a Class A RF or audio stage is easily done by using cathode biasing, often called "self-biasing." The power supply circuits I showed a few months ago that used the voltage drop developed across a field coil or resistor are actually a form of "self-biasing." Single-ended audio stages are always biased for class A service. Radios that use push-pull audio stages can be run in class A, or most likely use a biasing point somewhere between class A up to and including class B. We will investigate class B push-pull audio stages when we get into restoring some of the larger chassis vintage sets.

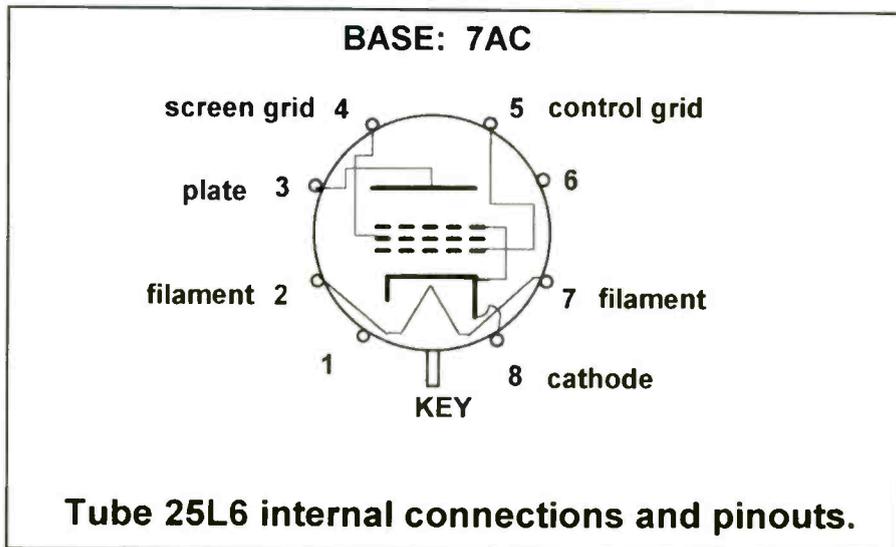


Figure 1. Pinout of the elements of the 25L6 tube are shown in the referenced 7AC base diagram. Tubes use many standardized base arrangements and each is given an industry-wide recognized base number.

The amount of negative voltage on the control grid determines the class of operation. Tube voltages are always measured directly from the cathode pin—NOT from ground reference! All tube element voltages are referenced to the cathode! This is very important to remember.

Several readers have sent us E-mail questioning the amount of heat being produced by the audio tubes in their vintage receivers. Yes, this is normal. Remember. Class A amplifiers are biased so that plate current flows at all times; that is the plate current is never driven to zero by the input signal. Also, the tube's dissipation (amount of power being wasted as heat) is maximum when there is no signal being applied. Class A amplifiers are also extremely inefficient, delivering only about one-third of the consumed energy as useful power. Their saving grace is simplicity, and good fidelity. Let's try to simplify this by looking at a practical example of a Class A audio stage.

### A Typical Audio Stage

My drawing represents the audio stage found in a typical All-American Five radio. The radio uses a 25L6 pentode audio

tube, but if the tube was a 6L6 or 50C5 the principle would remain the same. Take a look at the Tube Data table. It gives the operating parameters for the 25L6 as presented in my early GE tube manual.

To make sense of the schematic, and to really know what is going on, a basic understanding of this tube data is needed. First, we see that the 25L6 uses a type 7AC base. The 7AC designator is an industry standard, all 25L6 tubes regardless of manufacturer will use the octal base connections shown in the 7AC drawing. Other audio tubes, such as the 6L6, also share the 7AC tube base.

The filament voltage and current filament current draw are given next. Maximum plate ratings for voltage and current are given, but these are of little concern to us.

### Using Tube Manual Data

Starting with the heading "Service" we get into the nitty-gritty stuff we are looking for! Note that the tube is rated for Class A service by the manufacturer. Next, several operating parameters are given for typical operation. This is what we need to look at! Now, using the tube

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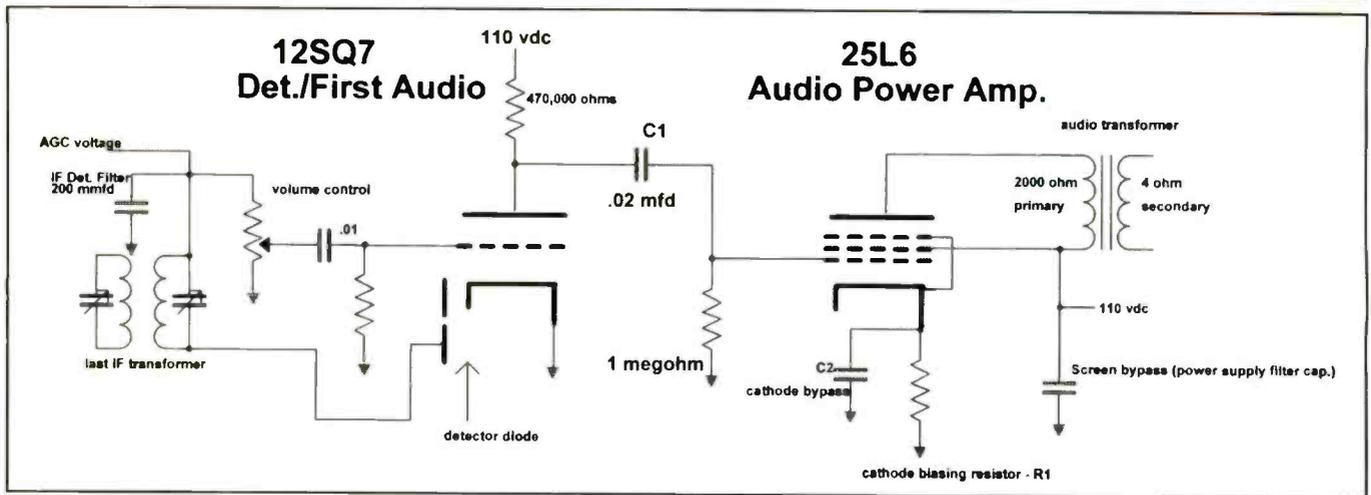


Figure 2. Simplified schematic diagram of an All-American Five table radio highlights the major audio components of the radio. The set uses a 25L6 audio tube in Class A. The text discusses how to determine the ratings of R1, the cathode biasing resistor.

data and the schematic drawing, let's start filling in some of blanks.

Let's suppose you are restoring a vintage set, and the cathode biasing resistor is smoked. You don't have the schematic. Don't you wish you bought that Rider volume at the last radio meet? You need to determine what value replacement resistor to use and its wattage.

The sum of all of the tube element cur-

rents flow through the cathode. Since the control grid is biased for Class A, it will NEVER draw grid current. The 25L6 data shows the screen grid typically draws either 2 or 4 mA, depending on the plate voltage (2 mA for 200 volts on the plate, and 4 mA with a 110 Vdc plate supply). Since this is an AC/DC set, we know the supply voltage will probably be closer to 110 than 200 volts, so will use the 2 mA rating. Next, we see the plate current is going to be either 49 or 50 mA depending on the plate voltage. The same goes for the Class A bias voltage, the data shows either 8 or 8.5 volts, but anything reasonably close will work.

### Splitting Hairs

Now, this is really splitting hairs! I wouldn't be surprised to see these values vary by several percent in either direction, depending upon the tube aging and other factors. We can safely assume that the total current flow through the cathode resistor will be about 50 mA. Now, remember what I told you in past columns. The tube control grid in Class A will never draw current—unless the tube is "gassy" or otherwise defective, or if there are other component failures involved.

The control grid is returned to ground by the 1 megohm resistor, since there is no current flow in the resistor (no current being drawn by the control grid) it is effectively at the same potential as the chassis, or ground. Now, this is the tricky part, and may take a bit of thinking to get straight in your mind how it works. We bias the control grid negative by making the cathode more positive as referenced to ground! This is done by the current

*"... this is information you will want to keep handy for future reference."*

flowing through the cathode, and the cathode biasing resistor. The more current, the higher the voltage drop developed across the cathode resistor!

### What Is Class A?

Tube biasing and the various classes of amplifier operation usually involve much more math, graphs and charts than what we can, or really need to cover, in this column! I told you earlier all tube voltages are referenced to the cathode. This is especially true of the control grid biasing. To bias the tube for Class A, we can apply a negative voltage to the control grid, making it have a more negative potential than the cathode. What we are doing with cathode biasing is making the cathode more positive than the control grid. In either case the bias voltage, when measured from the cathode to the control grid, will be the same—hopefully about 8 volts negative for the 25L6 tube!

### Cathode Biasing Is Self-Regulating

The real beauty of self-biasing is in its self-adjusting nature. As a tube ages, its cathode's electron emissions will slowly fall off and the plate current will decrease for a given amount of grid bias. In a self-biasing circuit, as the cathode current fails

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Tube type	Base connections	Outline drawing	Filament volts	Filament amperes	Maximum plate watts	Maximum plate volts	maximum screen volts and watts	Capacitance in Micromicrofarads		
								input	output	grid-plate
25L6	7AC	8-6	25.0	0.3	10	200	117 1.25	16.0	13.5	0.3

Service	Plate volts	screen volts	Negative grid volts	plate mA	screen mA	Rp*	Gm*	U factor	load for rated output ohms	power output watts	
Class A	200	110	8.0	50	2.2	30,000	8000		4000	4.3	25L6
Amplifier	110	110	7.5	49	4.0	13,000	8000		2000	2.1	

### Tube manual data for the 25L6 pentode vacuum tube.

Table 1. Tube manuals provide valuable data both for design engineers and technicians involved in restoration or repair work.

with age, less current will flow through the cathode resistor, resulting in less bias voltage. But, this decrease in bias voltage allows the tube to draw more current until equilibrium is reached, automatically compensating for tube's aging cycle.

### Using Ohms Law and Power Formulas

Now, we can put those useful formulas shown in the second Table to work for us! These include Ohm's Law and its variations, and the various formulas for power, or watts.

Knowing that we need about 8 volts of bias, and that 52 mA of current is flowing, we use the variation of Ohm's law that allows us to find the unknown value of R, when the I (current) and E (voltage) are known. In our case, the R is value needed for the cathode resistor, and E is the bias voltage, 8 volts. "I" in the formulas is in amps, while the tube data is presented in milliamperes (mA). You must convert mA to amps to use the formulas; 52 mA is equal to .052 amps. Remember that 1 amp is equal to 1000 mA.

The formula is E squared, times the current (I) in amps—or, (8 times 8) divided by .052. Dividing 64 by .052 shows our cathode resistor should have a value of 123 ohms.

We also need the wattage of the resistor. Since we now know the values for E, I and R, we can use any of the power formulas (solving for P) to find the resistor wattage rating. If you did the math right, you should have a value near .52 watts.

I would use a 2 or 3-watt resistor for a replacement. A 1/2 watt resistor would be under rated and eventually fail. Since 123 ohms is not a common value found on dealers' shelves, we simply use the nearest common value. 120 ohms will do fine—again, a few ohms difference is splitting hairs, 10 or 20 percent tolerances are close enough.

**"All tube element voltages are referenced to the cathode!"**

Revisiting those power formulas again, we can also calculate the wattage being dissipated by the audio tube. We can measure the plate voltage with our meter, let's say we see about 120 Vdc between the plate and ground. But, to be accurate, we must either subtract the cathode resistor voltage, 8 volts; or better yet, take a reading between the tube cathode pin to the plate pin. If we measure 110 volts, and know the current flow is about .052 mA, we can see that the audio tube is wasting almost 6 watts as heat. We know the tube is running Class A and at best is about 33 percent efficient, so we can expect about two watts of audio from the 25L6 using these voltages. The 25L6 data proves this, showing the tube should deliver 2.1 watts given our plate and screen voltages.

Add the 13 watts of heat generated by the filaments to the six watts of heat from the plate current and you can see why you may leave some skin behind on the tube envelope if you grab one during operation. Ouch! As for whether you can randomly substitute tubes with similar base connections and filament ratings, the answer is no. You may find a 6U6 tube will play in lieu of a 6F6, but the bias voltage requirements differ enough to cause problems in a short time.

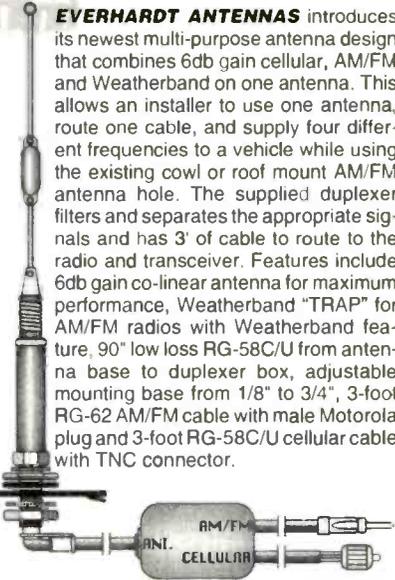
### Cathode and Screen Bypassing

The value of the screen and cathode capacitor bypasses are also chosen by design. The screen is always bypassed by a capacitor to ground, and its reactance value is chosen for the frequency ranges



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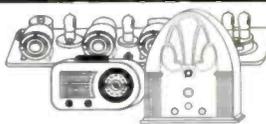
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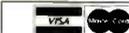
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$I = E/R$	$P = EI$	$R = P^2/I$	$E = \sqrt{PR}$

Table 2. These formulas only require a basic knowledge of algebra, yet they cover 90 percent of the math you need to know for radio restoration work.

### "Parts do fail, especially those pushing 50 or 60 years of service."

the tube will be operated over. Determining the value of capacitance will be covered in a much later column. Suffice it to say that bypass capacitor values of several mFd are needed on the cathode and screen grids for audio service. The frequency response of an audio amp can be tailored to favor the higher frequencies by using a smaller value capacitor for the cathode bypass.

Here is some info for my more technically advanced readers. If the cathode bypass is omitted, the amount of audio output power will be reduced, but the "linearity" (fidelity) of the amplifier will be improved. This is because the lack of a cathode bypass will allow the cathode resistor voltage to vary according to the input signal. As the input signal goes more positive, the cathode current will increase, causing an immediate increase in bias which tends to counteract, or reduce, the tube current draw. This is a form of "degenerative feedback" which is used in some amplifiers to reduce distortion. Distortion in the output waveform is feedback to the control 180-degrees out of phase, which tends to cancel out any distortion products due to nonlinearities in the tube's amplification process. No amplifier is perfect.

### Why Bypass the Cathode?

A large value cathode bypass capacitor tends to "filter", or remove, these AC variations in the cathode current, in the same manner as a filter capacitor "smooths" out the AC ripple left by the rectifier tubes in a power supply. The screen bypassing is usually provided by a power supply filter capacitor.

Why did the cathode resistor fail in the first place? Parts do fail, especially those pushing 50 or 60 years of service. After replacing the filter capacitors and the AC line bypass capacitors you should always replace the coupling capacitor between the plate of the first audio tube and the control grid of the audio power stage! This is a must, especially if waxed paper caps were used.

### Leaky Audio Capacitors

The reason is simple. The grid is tied to ground by a 1-megohm resistor. Any leakage in this capacitor will allow some of the B-plus plate voltage from the previous stage to seriously upset the biasing of the Class audio stage. Even 20 or 30 megohms of leakage resistance will cause big problems, and many digital ohmmeters will never show the problem! This is why many sets have distortion after warming up; the coupling capacitors in the audio stages have more "leakage" as heat builds up under the chassis. Allowed to continue, the audio tube will start drawing destructive current, becoming gassy, or even short internally causing more serious damage. Most likely the cathode resistor will be damaged in the process! Always check the tube for leakage or gas using a good tube tester if the cathode resistor was damaged. Let the tube run for several minutes in the tester to insure leakage or gas problems show. A gassy tube will show an unusual amount of bluish glow, or even arcing, between the tube elements, and will most likely deliver distorted audio to the speaker. You can watch for leakage by metering the cathode resistor for period, the voltage should not vary more than a few mA over a few hour period. You can convert the voltage measured across the cathode resistor to current by using the  $I=E/R$  formula.

Don't forget to keep the letters and questions coming. Until next month, 73!

# How I Got Started

## Congratulations to Arthur W. Vieth of Wisconsin!

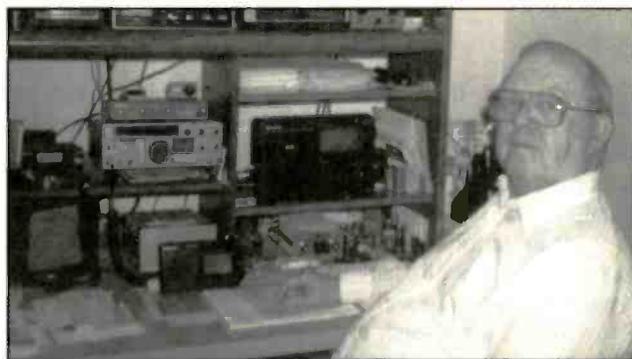
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### Our October Winner

Arthur W. Vieth, N9BM, of Beaver Dam, WI tells us he's been receiving *Pop'Comm* for several years. He specifically finds it "very helpful in checking listening times and frequencies." Well, Arthur, don't forget to send in those loggings to our various columnists as you tune across the bands!



Arthur W. Vieth of Beaver Dam, WI is an Extra Class amateur radio operator and an avid shortwave listener.

Here's Arthur's story: "My shortwave listening began in 1938 when I was in high school. I built a one-tube regenerative detector general coverage receiver with earphones which enabled me to listen to shortwave stations and amateur radio. I listened to hams with Admiral Byrd at the South Pole.

My present listening station includes a Kenwood TS430S, a RadioShack DX-392, a RadioShack DX-350, a Kenwood TM-221A (2 meters) and a Bearcat BC-170. I use both vertical and horizontal antennas and am an Extra Class amateur radio operator."

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CIRCLE 85 ON READER SERVICE CARD

# The Ham Column

BY KIRK KLEINSCHMIDT, NTØZ



## GETTING STARTED AS A RADIO AMATEUR

### Meteor-Scatter Comms

Thanks to the return of comet 55P/Tempel-Tuttle, every November 17 from 1997 through 2004, VHF ops will be hoping for the best meteor-scatter (MS) conditions since 1966. If you want to get in on the action (which takes place year round), here's how to get started. Beginners are welcome!

Newcomers often think that VHF signals travel in line-of-sight paths and peter out after about 30 miles. For casual 2-meter FM operation, that's mostly true. Once you cross the "30-mile barrier," however, there are many exciting ways to propagate VHF signals hundreds or even thousands of kilometers. Articles in the *ARRL Operating Manual* and *QST* detail E- and F-layer skip, tropospheric and transequatorial ducting, moon-bounce, auroral propagation and others.

Meteor-scatter communications—bouncing radio signals off of the ionized trails produced by meteors burning through the ionosphere—takes a little patience, but requires only an ordinary amateur station.

#### Meteors, Comets and Radio

Meteor showers are produced when the earth plows through the orbiting debris streams left by passing comets. The debris, mostly dust and other small particles, burns up as it speeds through the atmosphere. Although the earth constantly sweeps up "random debris" as it

orbits the sun, meteor showers are *recurring* events. The earth encounters certain debris streams at about the same time each year. **Figure 1** lists the biggies. Dozens of minor showers aren't listed.

Nighttime observers see falling stars streak across the sky. Radio signals see the trails left by meteors as long reflective tunnels of ionized particles. Basically, earthbound stations that can "see" the ionized trails can communicate with each other by bouncing (scattering) radio signals off of them.

#### Frequencies, Physics and Geometry

MS QSOs take place mostly on 10, 6 and 2-meter between stations 500 to 2300 km apart. Faster, larger meteors produce more intense, longer-lasting trails and better propagation paths. For two stations to communicate via MS, a meteor(s) must pass through the ionosphere in a useful direction and at mutually visible elevations (45 degrees or less is best).

Typical meteor trails reflect radio waves from a few seconds to a few minutes, depending on the frequency, the size and speed of the meteor, and several other factors. At 28 and 50 MHz, meteor trails can reflect signals for 30 seconds to several minutes. At 2-meters, the same meteor burst reflects signals for only a few seconds to a minute.

MS signals suddenly appear out of a dead band, persist for a short time, then

disappear. The effect is eerie! During meteor showers, when several overlapping ionized trails may be scattering radio waves simultaneously, amateur communications are possible for several minutes to several hours.

It's easy to see why MS ops are so excited about the November 17 meteor showers, officially called the Leonids. (Meteor showers are named for the constellations in which they appear—Leo, in this case.) Every 33 years or so, when the shower's parent comet Tempel-Tuttle sweeps near the sun (as it will in February 1998) the Leonids meteor shower can become a raging meteor storm!

During a typical meteor shower, 60 to 80 meteors blaze across the sky each hour. During the last Leonids storm (1966), scientists saw peak hourly rates of 150,000 meteors. It was pileup central! See **Figure 2** for a list of expected Leonid shower peak times.

#### Setting up Your Station

Although 2-meters is the MS workhorse band, the best bands for beginners are 10 and 6-meters. Station requirements are modest and openings last longer and are more consistent.

MS contacts (mostly SSB) are made with dipole, vertical and even mobile antennas, especially on 10 and 6-meters, but directional antennas work best. On 10 and 6-meters, 50 to 100 W and a 3-element Yagi produce solid results. On 2-

Major Annual Meteor Showers

Shower	Peak Dates	Approx. Hourly Meteor Rates
Quadrantids	Jan 3	50
Arctids	Jun 7-8	60
Perseids	Aug 11-13	80
Orionids	Oct 20-22	20
Geminids	Dec 12-13	60

Figure 1

Predicted Leonid Shower Peak Times

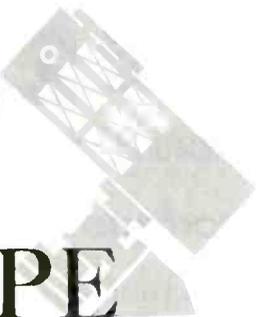
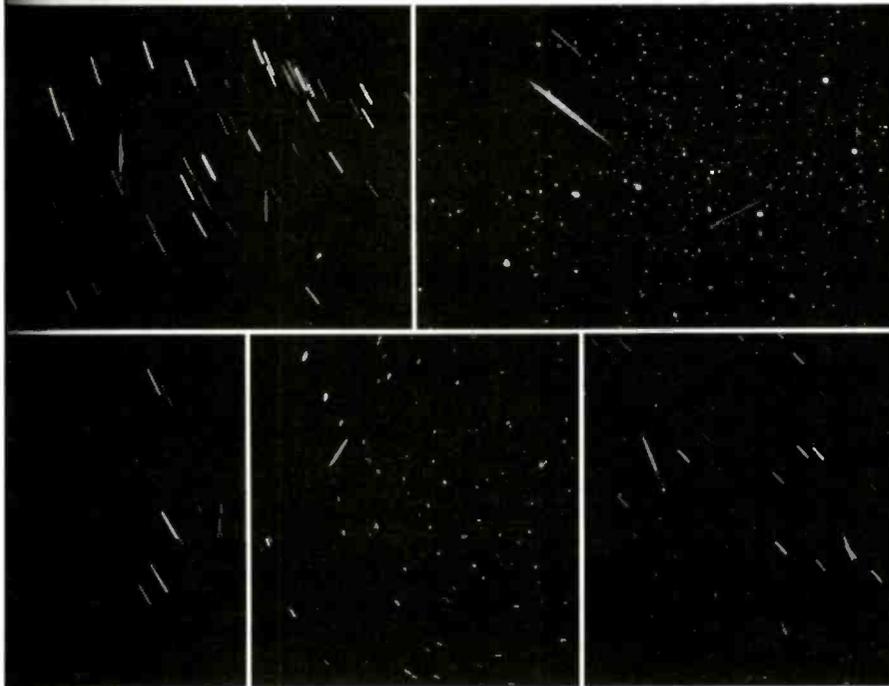
Year	Center of Predicted Peak Periods
1997	Nov 17, 1100 UTC
1998	Nov 17, 1702 UTC
1999	Nov 17, 2302 UTC
2000	Nov 17, 0517 UTC
2001	Nov 17, 1117 UTC
2002	Nov 17, 1731 UTC
2003	Nov 17, 2359 UTC

Figure 2

Joaquin Albioz Davis Library  
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# Sky and

# TELESCOPE

Leonid Meteors in 1966

### In This Issue:

<p>★ Vol. XXXIII, No. 1 JANUARY, 1967 60 cents ★</p>	<p>Great Leonid Meteor Shower of 1966 Eclipse Over the Andes The Visual Binary Krüger 60 Problems of the Solar Corona</p>	<p>Results from Lunar Orbiter 2 Color Events on the Moon A Roster of Space Activity Events of 1967 in the Graphic Time Table</p>
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*Published on the heels of the great 1966 Leonids storm, the January 1967 issue of Sky and Telescope was plastered with photos and stories describing the event.*

meters, where the action is a bit more frantic, 150 W and a 10-element beam should do nicely.

## Working the Meteors

There are no special procedures for 10-meter MS QSOs. Meteor trails usually last long enough to allow normal, brief contacts. Limit your transmissions to a few seconds. During meteor showers, try calling "CQ scatter" just above (and or below) 28.5 MHz. Aim your antenna in the direction you hope to make contacts.

On 6-meters, activity usually starts at

50.125 MHz and moves up. Contacts are fast, so stay awake! On 2-meters and above, most MS work is accomplished via schedules, where each station transmits and receives in coordinated 15-second intervals. This technique is detailed in Chapter 12 of the *ARRL operating Manual*. Most activity centers around the 144.2 MHz national calling frequency.

During peak shower periods on 6 and 2-meters, call CQ for a few seconds, then listen for a few seconds. "CQ CQ scatter NTØZ NTØZ break"—spoken without pausing for syllables—is what's needed for openings that may last only a

few seconds! A quick reply might be "NTØZ W3EP W3EP break."

Contacts are complete when call signs and one other piece of information (grid locator or state) is exchanged and acknowledged by "rogers." Repeats are often required. Keep your transmissions short and stay with a station until a full exchange of information is made.

## Weekend, Awards and DX

To get your feet wet, weekend mornings offer excellent, consistent QSO opportunities. Every Saturday and Sunday morning from sunrise to about 9 a.m. local time—prime time for meteors—MS ops work the bands for fun. You should, too! There are plenty of contacts to be made year-round, although June, July and August have the most meteor activity.

Because it's sometimes impossible to discern MS propagation from tropo or E-skip openings, there aren't any specific meteor-scatter awards per se. That said, MS QSOs work just fine for other awards or certificates, including WAS and VUCC.

The June VHF QSO Party overlaps the Arctids meteor shower which, unfortunately, is often a poor performer. MS propagation usually gives the best boost to the annual ARRL 10-Meter Contest, which intersects the December Geminids shower. Even when 10-meters seems totally dead, morning MS contacts put at least a few stations in just about everyone's log.

## Resources

In addition to the operating procedures outlined in *The ARRL Operating Manual*, see Clarke Greene's "Meteor-Scatter Communications" article in January 1986 *QST*. If you have access to the internet, point your Web browser to <<http://www.qsl.net/dk3xt/ms.htm>> for Bernie Gapiński, AB7IY's excellent list of meteor-scatter links.

If you're itching to get involved in one of the more "esoteric" VHF modes, meteor-scatter communications is a perfect place to start. Station requirements are reasonable, and the gear you'll accumulate will be useful for other VHF/UHF work. Besides, if a Leonids storm materializes on some November 17 between now and 2004, you won't want to miss the best meteor-scatter event of your lifetime!

Your QSL cards, letters and questions are always welcome at ARRL, Department PCN, 225 Main St, Newington, CT 06111. Happy trails! ■

# Communications Enroute

YOUR LINK TO PERSONAL COMMUNICATIONS

## No Shortage of New Ideas

One thing's for certain, personal communications is blossoming with innovative new concepts, products and services. ReadyTalk looks especially good. MobileComm, a major national radiopaging service, got together with ReadyCom, Inc., a company involved in radiopaging technology. Their conjoined efforts brought forth a new portable wireless voice-messaging service that combines the benefits of traditional pagers with telephone voice mail.

This is ReadyTalk, and it operates on cellular channels, using a patented store and forward technology to provide a subscriber a portable two-way messaging device. That means, users may also use the unit to reply to and initiate messages.

ReadyTalk uses the spare capacity on existing cellular networks to deliver its "voice mail in your pocket." The unit is slightly larger than the usual beeper and can store 12 minutes of incoming voice messages for later playback. All ReadyTalk messages may be individually stored or erased.

Simply by dialing a MobileComm customer's ReadyTalk number from any telephone, the caller can listen to a personalized greeting, then leave a message, just like voice mail. Messages are sent to the pager, which then alerts the subscriber with a ring, vibration, or light. The subscriber plays the messages privately by holding the device close to the ear, like a telephone receiver. Initiating a response is just as easy. For more information, contact MobileComm, a BellSouth Company, 1800 East County Line Rd., Ridge-land, MS 39157. Phone 601-966-0888.

### Stop Fraud!

Wireless fraud accounts for more than \$1 billion a year in the U.S., with worldwide losses estimated at over \$4 billion. Fraud prevention software marketed under the trade name FraudBuster 4.0 has recently been made available to wireless carriers. Its intention is to combat the most pervasive types of wireless fraud, and marks the industry's first detection

system that addresses all worldwide network systems while also identifying any newly emerging fraud techniques.

FraudBuster 4.0 provides service suppliers with a solution that supports all networks including GSM environments, analog (AMPS), or digital (CDMA and TDMA). It can be used with every system in the world.

To prevent wireless fraud, FraudBuster 4.0 builds personalized subscriber profiles based on their typical usage patterns over a 40-day period. This includes 30 separate event checks (number of calls placed/received, days of week, hours of day, duration of calls, credit limits, area codes, etc.) When suspicious activity is detected, a member of the service supplier's fraud investigation team contacts the customer to inquire about possible wireless fraud.

FraudBuster 4.0 incorporates a case management and profiling system that manages frauded accounts individually, and also allows carriers to group or segment specific customer bases according to chosen variables such as account value or business classification.

If your cellular carrier is having problems weeding out fraudulent calls, ask them to check this system. The fraud they stop protects you. FraudBuster 4.0 comes from Coral Systems, 1500 Kansas Avenue, Suite 2E, Longmont, CO 80501. Phone: 303-772-5800.

### Here's a Smart Idea

The Always-in-Touch unit allows you to leave your home or office and still remain in touch. If you rely heavily on the phone for conducting your professional, business or personal affairs, now you can return calls *instantly*. Avoid playing phone tag, and get back to callers with a quick response.

This is a small device that plugs into your phone or office line, then the beeper's number is programmed. When you are away from your phone, it notifies your beeper when someone calls. The unit monitors the phone line like an answer-

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***"Wireless fraud accounts for more than \$1 billion a year in the U.S., with worldwide losses estimated at over \$4 billion."***

---

ing machine and works with any other telephone accessory. After an incoming call is completed, Always-in-Touch dials the pager (using the same phone line). The beeper will display the caller's phone number and duration of the call. The duration of the call indicates if the caller left a message or hung up. For automatic display of the caller's number, Caller ID service is required. Otherwise, the caller enters their phone number manually. The only requirements for the Always-in-Touch are a standard phone line, a digital or alphanumeric pager, and any paging service.

With the Always-in-Touch, one main number reaches you wherever you are. You don't have to give out your beeper, cellphone, or stops-along-the-way numbers. You can respond quickly to urgent phone calls as if you were directly called, but you can also postpone returning routine calls. It eliminates multiple beeps from impatient people.

A private investigator friend says that it has been used often for surveillance purposes, especially in domestic cases. When used with other equipment and a covert second phone line, it will notify a beeper user while any ulterior calls are being received or made, and will also provide their number.

Here are other bonuses: If you are concerned that your phone is misused while you are away, this can notify you of outgoing calls, including numbers dialed and duration of the calls. Also, you'll no longer have to make cellphone calls to check your answering machine, office, or message service. A person can easily alert the beeper owner by simply dialing up 77\*\*. The beeper owner is automatically notified if 911 is called on the home or office phone. Using a touch tone

***"If you rely heavily on the phone for conducting your professional, business or personal affairs, now you can return calls instantly."***

phone, the beeper owner can call the unit from any remote location to change any of its settings. Quite a clever device, don't you agree? This device has many applications for professionals, service techs, small business owners, contract workers, sales reps, consultants, home office workers, students, or anyone on the go. The Always-in-Touch is available from its manufacturer for about \$100, plus shipping and handling.

Always-in-Touch comes from Zeus Phonstuff, 3841 Holcomb Bridge Road, Norcross, GA 30092. Phone 800-240-4637. International callers should call 770-263-7111.

### Unauthorized Access

The topic of calling in from remote locations to get messages from answering machines brings a problem to mind. Most answering machines are equipped with a security code feature to prevent unauthorized remote accessing of their stored messages or voice mail. On consumer grade machines, often the security code is factory set at "111" or "1111" when the machine comes from the box new, but the owner is able to reset it to any three or four digits of their choice.

Because of ignorance or laziness, many answering machine owners don't bother to change the factory's original security code setting. Or, perhaps it's left unchanged because the owner never plans on using the remote access feature. No matter. Allowing the original factory-set security code to reside in an answering machine is an invitation to answering machine hackers call up and monitor its stored messages, access voice mail, even modify announcements. Yes, there are people out there who hack telephone answering machines and voice mail for whatever reasons.

Vandals cracked into and tampered with the general information voice mail of the New York City Police Department. Callers were abruptly told that police couldn't deal with their inquiries because they were "too busy eating donuts." It was hours before the NYPD discovered the switched message.

On a lesser scale, my local newspaper ran a story about a character who was monitoring all the checking-in messages models were leaving on the answering machine of a small agency. The agency never had a clue it was being hacked. The hacker was calling up the models to "interview" them for what he claimed were modeling jobs. I won't get into more of a description here, but the models complained, police tracked him down, and he was arrested on morals charges.

Unfortunately, it isn't easy to disable

this remote access feature. You're stuck with it, even if it has no value to you. Of course, there's no guarantee that you'll be hacked. Still, I suggest that all answering machine users reset the original factory security codes, then regularly change them in order to keep messages and voice mail as safe as possible from unauthorized access.

Here are some hints. Avoid using security codes made up of triples or quads (such as 222 or 5555), or with numbers in ascending/descending consecutive



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series (for instance 345 or 4321) and don't use the first or last three or four digits of your telephone number. These are examples of codes that are easy to remember, which means they are commonly picked as security codes. A tenacious hacker will try them all. Therefore, use random numbers, or birthdays.

The average personal or small business should pick a new security code at least once or twice a month. A machine thought likely to be attractive to motivated hackers should have a new security code installed weekly, or more often. It takes only a minute.

### Too Much RF?

Inquiries have come in asking about if problems must be faced when using several of the latest wireless conveniences in close proximity to one another. That's because cellphones, beepers, advanced cordless phones and most new other consumer doodads are located in what seems to be a relatively small slice of spectrum. Will the one piece of equipment jam another if it's used within the same house?

I have read the dire warnings in the media, so it's no wonder that there's some concern around. The chunk of spectrum is not so small. Think about it. The mobile cellular band is at 824 MHz so there's little chance your flea-power handheld is going to zap your 931 MHz beeper tuned in on a frequency more than 100 MHz away. But what about equipment that operates closer in frequency? My best answer is drawn from personal experi-

ence. I have an Escort Courier 9600 spread-spectrum digital 900 MHz cordless phone which operates in the 902 to 928 MHz band. In the same room, there is a VideoGuide receiver. The VideoGuide unit is connected to the TV receiver, feeding it with daily program listings, and continually updated real time news, weather, and sports information. VideoGuide units are individually addressable, just like beepers, and receive their signals from the national MobileComm paging network. Data is constantly being taken in by the unit as it updates news, weather, and sports information. When the VideoGuide is first installed, it searches out and locks in the correct frequency for the local area where it is being used. In my case, it's 931.8875 MHz.

There's no interaction between my 900 MHz cordless phone and the VideoGuide, even though they use frequencies rather close to one another, and separated by no more than 10 feet. The fact that they're both using digital technology makes the difference, and most of the services in this portion of the spectrum are digital, or are heading there. Signals from the cordless phone can't be detected on a scanner tuned to the 902 to 928 MHz band, however they do light the LEDs on an Optoelectronics R10 Interceptor.

### Who's Calling?

Panasonic's two new 10-channel 46 MHz cordless phones, the KX-T4108 and KX-T4168, both feature large LCDs in the handsets for displaying Caller ID.

**"Yes, there are people out there who hack telephone answering machines and voice mail for whatever reasons."**

This is an interesting feature for cordless phones, particularly because Panasonic brought it out in equipment for the older 46 MHz band, and in units operating on only the 10 original channels instead of the full 25 channels now available to these devices. Most cordless phones with Caller ID hail from the 900 MHz band, although I have seen a 46 MHz unit from Northern Telecom.

The new Caller ID in the Panasonic units stores the last 30 calls in its memory, including the name of the caller (in areas where that information is provided). This information may be scrolled through, and any of the numbers may be dialed at the touch of a button.

They tell me it scans its 10 channels to find the clearest one at any given time. A quick-charging battery holds its charge for two weeks in standby mode. Both phones will speed dial up to 30 numbers, have auto redial, and "auto security, which draws on 65,000 security codes to virtually eliminate the chance of another cordless phone picking up conversations." Don't confuse that fancy wording to imply that these have analog scrambling, because they do not. Their signals can be copied on any scanner.

Of the two units, the KX-T4168 is fancier because it has a second key pad on the base, a speakerphone, a hold button and two-way local base/handset paging with intercom. This one carries a suggested retail price tag of about \$160, while the KX-T4108 has an SRP around \$140. Panasonic products are marketed in the U.S. by Matsushita Consumer Electronics Company, One Panasonic Way, Secaucus, NJ 07094.

If you have any comments, ideas, or opinions relating to cellphones, beepers, personal communications hardware, service, or others things covered in this column, your are invited to make yourself known. Also, the column is always on the lookout for relevant news clippings, photos, as well as new products and information about new services. You can e-mail me directly at: <K2AES@juno.com> or you can send mail to the column at Pop'Comm. Please be sure to indicate "For Communications Enroute" in the address of your mail.

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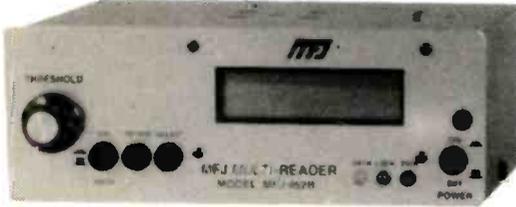
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# Tap into secret Shortwave Signals

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MFJ-462B Plug this self-contained MFJ MultiReader™ into your shortwave receiver's earphone jack.

**\$169<sup>95</sup>** Then watch mysterious chirps, whistles and buzzing sounds of RTTY, ASCII, CW and AMTOR(FEC) turn into exciting text messages as they scroll across your easy-to-read LCD display.

You'll read interesting commercial, military, diplomatic, weather, aeronautical, maritime and amateur traffic... traffic your friends can't read -- unless they have a decoder.

## Eavesdrop on the World

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

## Super Active Antenna

"World Radio TV Handbook" says MFJ-1024 is a "first rate easy-to-operate active antenna... quiet... excellent dynamic range... good gain... low noise... broad frequency coverage."

Mount it outdoors away from electrical noise for maximum signal, minimum noise. Covers 50 KHz to 30 MHz.

Receives strong, clear signals from all over the world. 20dB attenuator, gain control, ON LED. Switch two receivers and aux. or active antenna. 6x3x5 in. remote has 54 inch whip, 50 ft. coax. 3x2x4 in. 12 VDC or 110 VAC with

**\$129<sup>95</sup>** MFJ-1024 MFJ-1312, \$129.95.

## Indoor Active Antenna

MFJ-1020B **\$79<sup>95</sup>**

## Rival

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

Tuned circuitry minimizes intermod, improves selectivity reduces noise outside tuned band. Use as preselector with external antenna. Covers 0.3-30 MHz. Has 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, \$129.95.

## Compact Active Antenna

MFJ-1022 **\$39<sup>95</sup>**

Plug this new compact MFJ all band active antenna into your general coverage receiver and you'll hear strong clear signals from all over the world from 300 KHz to 200 MHz -- including low, medium, shortwave and VHF bands.

Also improves scanner radio reception on VHF high and low bands.

Detachable 20 in. telescoping antenna. 9 volt battery or 110 VAC with MFJ-1312B, \$129.95. 3 1/4x1 1/4x4 in.

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 -- from all over the world -- Australia, Russia, Hong Kong, Japan, Egypt, Norway, Israel, Africa.

## Printer Monitors 24 Hours a Day

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

Printer cable, MFJ-5412, \$9.95.

## MFJ MessageSaver™

You can save several pages of text in 8K of memory for re-reading or later review.

## High Performance Modem

MFJ's high performance phaselock loop 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 sloped 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. 5 1/4x2 1/4x5 1/4 inches.

## No Matter What Guarantee

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

## Try it for 30 Days

Order an MFJ-462B MultiReader™ from MFJ and try it in your own setup -- compare it to any other product on the market regardless of price.

Then if you're not completely satisfied, simply return it within 30 days for a prompt and courteous refund (less shipping).

Order today and try it -- you'll be glad you did.

## Receive Color News Photos, MFJ 12/24 Hour LCD Clocks, Weather Maps, RTTY, ASCII, Morse Code

MFJ-1214PC **\$149<sup>95</sup>**

Use your computer and radio to receive and display brilliant full color FAX news photos and incredible WeFAX weather maps with all 16 gray levels. Also RTTY, ASCII and Morse code.

Animate weather maps. Display 10 global pictures simultaneously. Zoom any part of picture or map. Frequency manager lists over 900 FAX stations. Automatic picture capture and save.

Includes interface, easy-to-use menu driven software, cables, power supply, comprehensive manual and Jump-Start™ guide. Requires 286 or better computer with VGA monitor.

## Super Hi-Q Loop™ Antenna

The Super Hi-Q MFJ-1782 Loop™ is a professional quality remotely tuned 10-30 MHz high-Q antenna.

It's very quiet and has a very narrow bandwidth that reduces receiver overloading and out-of-band interference.

## High-Q Passive Preselector

MFJ-956 **\$39<sup>95</sup>**

The MFJ-956 is a high-Q passive LC preselector that lets you boost your favorite stations while rejecting images, intermod and other phantom signals. Covers 1.5-30 MHz. Has preselector bypass and receiver grounded position. 2x3x4 in.

## Mobile Scanner Ant.

Cellular MFJ-1824BB/BM look-a-like. Covers 25-1300 MHz. High

est gain on 406-512 and 108-174 MHz, 19 in. Magnet mount. MFJ-1824BB has BNC/UHF plug; MFJ-1824BM has Motorola plug.

## MFJ Antenna Matcher

MFJ-959B **\$99<sup>95</sup>**

Matches your antenna to your receiver so you get maximum signal and minimum loss.

Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload.

Pushbuttons let you select 2 antennas and 2 receivers. Cover 1.6-30 MHz. 9x2x6 inches. Use 9-18 VDC or 110 VAC with MFJ-1312, \$129.95.

## High-Gain Preselector

MFJ-1045C **\$69<sup>95</sup>**

High-gain, high-Q receiver preselector covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Pushbuttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18VDC or 110 VAC with MFJ-1312, \$129.95.

## Dual Tunable Audio Filter

MFJ-752C **\$99<sup>95</sup>**

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 in.

## Easy Up Antennas Book

How to build MFJ-38 and put up **\$16<sup>95</sup>** inexpensive, fully tested wire antennas using readily available parts that'll bring signals in like you've never heard before.

Covers receiving antennas from 100 KHz to almost 1000 KHz. Includes antennas for long, medium and shortwave, utility, marine and VHF/UHF services.

## MFJ-107B

MFJ-108B **\$19<sup>95</sup>** MFJ-105B **\$19<sup>95</sup>**

MFJ-108B, dual clock displays 24 UTC and 12 hour local time simultaneously. MFJ-107B, single clock shows you 24 hour UTC time. 3 star rated by Passport to World Band Radio!

MFJ-105B, accurate 24 hour UTC quartz wall clock with large 10 inch face.

## MFJ Antenna Switches

MFJ-1704 **\$59<sup>95</sup>** MFJ-1702B **\$21<sup>95</sup>**

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

## World Band Radio Kit

MFJ-8100K **\$59<sup>95</sup>** MFJ-8100W **\$79<sup>95</sup>**

Build this regenerative shortwave receiver kit and listen to shortwave signals from all over the world with just a 10 foot wire antenna.

Has RF stage, vernier reduction drive, smooth regeneration, five bands.

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# Pop'Comm's World Band Tuning Tips

October 1997

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 UT equals 7 p.m. EST, 6 p.m. CST, 4 p.m. PST.

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	11990	Radio Kuwait		0300	4985	Radio Brazil Central, Brazil	PP
0000	9705	R. Mexico Int'l	SS	0300	5025	Radio Rebelde, Cuba	SS
0000	9845	Radio Netherlands via Bonaire	EE	0300	7150	Radio Ukraine Int'l	
0000	13605	Radio Australia		0300	7450	Voice of Greece	GG/EE
0000	13845	Caribbean Beacon, Anguilla		0300	9495	Hrvatski Radio, Croatia	EE
0028	5900	Radio Vlaanderen Int'l, Belgium	EE/Flem	0300	9550	Radio Ukraine International	
0100	3365	Radio Cultura, Brazil	PP	0300	9690	China R. International, via Spain	
0100	4805	Radiodifusora Amazonas, Brazil	PP	0300	9700	Radio Bulgaria	
0100	4835	Radio Tezulutlan, Guatemala	vern	0300	15115	Radio New Zealand Int'l	
0100	4915	Radio Anhanguera, Brazil	PP	0310	7305	Vatican Radio	SS
0100	4975	Ondas del Ortegua, Colombia	SS	0330	5019	Ecos del Atrato, Colombia	SS
0100	5012	Radio Cristal, Dominican Rep.	SS	0330	5030	Adventist World R., Costa Rica	
0100	5930	Radio Slovakia International		0400	3270	Namibian Broadcasting Corp.	
0100	6055	Radio Exterior de Espana, Spain		0400	3330	Christian Voice, Zambia	
0100	6135	Swiss Radio International		0400	3380	Malawi Broadcasting Corporation	
0100	7180	Radio Ukraine		0400	4820	La Voz de Evangelica, Honduras	SS
0100	7250	Voice of Vietnam, via Russia	EE	0400	6135	Swiss Radio International	
0100	7345	R. Prague, Czech Republic	EE	0400	7300	Voice of Turkey	
0100	9580	Radio Budapest, Hungary		0400	9435	Israel Broadcast Authority	EE
0100	9745	HCJB, Ecuador		0415	4775	Trans World Radio, Swaziland	GG
0130	4419	Radio Bambamarca, Peru	SS	0430	6165	Radio Netherlands via Bonaire	
0130	7290	Radio Sweden		0500	3222	Radio Kara, Togo	FF
0200	3250	Radio Luz y Vida, Honduras	SS	0500	4850	CRTV, Cameroon	FF
0200	4919	Radio Quito, Ecuador	SS	0500	6105	Radio Universidad, Costa Rica	SS
0200	5077	Caracol Colombia	SS	0500	6185	R. Educacion, Mexico	SS/EE
0200	6000	Radio Havana Cuba	EE	0500	7255	Voice of Nigeria	
0200	6045	Deutsche Welle, Germany		0500	7270	RTV Gabonaise, Gabon	FF
0200	6090	Radio Bandeirantes, Brazil	PP	0500	7480	R. Bulgaria	
0200	6150	AWR, Costa Rica	SS	0500	9475	Kol Israel	
0200	6155	Radio Romania Int'l	EE	0500	9580	Africa No. One, Gabon	FF
0200	6997	Radio San Ignacio, Peru	SS	0500	9675	Channel Africa, South Africa	
0200	7465	Radio Norway Int'l	NN/EE	0530	4960	VOA relay, Sao Tome Hausa	
0200	9615	Radio Cultura, Brazil	PP	0530	9810	Radio Kiribati	EE, other
0200	9735	R. Nacional, Paraguay	SS	0600	3290	GBC Radio, Guyana	SS
0230	7160	Radio Tirana, Albania		0600	3366	Ghana Broadcasting Corp. R. One	
0230	9840	Radio Budapest, Hungary	AA	0600	4815	RadioTV Burkina, Burkina Faso	FF
0250	4910	Zambia Nat'l Broadcasting Svc.		0600	4870	ORTB, Benin	FF
0300	4830	Radio Tachira, Venezuela	SS	0600	5100	Radio Liberia	
0300	4955	Radio Nacional, Colombia	SS	0600	6090	Radio Esperanza, Chile	SS

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0600	7295	Radio Norway Int'l	NN/EE	1400	17680	Radio Ukraine Int'l	
0600	11730	Trans World Radio via S. Africa	PP	1400	17780	RAI, Italy	II
0630	6015	R. Austria Int'l, via Canada		1400	17830	Qatar Broadcasting Service	AA
0630	15570	Vatican Radio		1430	9485	Radio Sweden	
0700	3316	Sierra Leone Broadcasting Svc.		1430	9535	Radio Japan NHK World	
0700	4783	Radio TV Malienne, Mali	FF	1430	21645	Radio Portugal International	
0700	5860	HCJB, Ecuador		1500	9410	BBC, England	
0730	9660	Radio Australia		1500	9785	China Radio International	
0800	4885	Radio Clube do Para, Brazil	PP	1500	9880	Radio Kuwait	AA
0800	9500	Trans World Radio, Swaziland	EE	1500	9910	All India Radio	
0830	6100	Radio New Zealand Int'l		1500	9980	Radio Norway International	NN/EE
0900	3925	Radio Tampa, Japan	JJ	1500	11600	FEBA, Seychelles	
0900	6010	Radio Mil, Mexico	SS	1500	11660	Radio Australia	
0900	6030	Radio Globo, Brazil	PP	1500	13635	Swiss Radio International	
0900	6035	R. Vlaanderen Int'l, Belgium		1500	13785	Radio Pyongyang, North Korea	
0900	6060	Radio Nacional, Argentina	SS	1500	17840	BBC via Canada	
0900	9505	Radio Record, Brazil	PP	1600	11900	Channel Africa, South Africa	Swahili
0900	9885	Swiss Radio International	II	1600	21560	Deutsche Welle, Germany	GG
0900	9930	KHBI, Hawaii		1630	21700	R. Japan NHK World, via Gabon	JJ
1000	4790	Radio Atlantida, Peru	SS	1700	11690	Radio Jordan	
1000	4996	Radio Andina, Peru	SS	1700	15210	Radio France International	
1000	6115	La Voz del Llano, Colombia	SS	1800	11710	UAE Radio, Abu Dhabi	AA
1000	6135	Radio Santa Cruz, Bolivia	SS	1800	11785	Qatar Broadcasting Service	AA
1000	9535	Swiss Radio Int'l		1800	15244	RTNC, Kinshasha, Congo	FF/irreg.
1000	21605	UAE Radio, Dubai		1800	15450	RTT Tunisia	AA
1030	5020	Solomon Is. Broadcasting Corp.	EE	1830	11645	Voice of Greece	
1030	5995	Radio Melodia, Peru	SS	1830	11705	Radio France International	FF
1030	11715	Radio Korea via Canada		1830	13695	Voice of Turkey	
1100	3340	Radio Altura, Peru	SS	1900	11605	Kol Israel	
1100	4800	R. Buenas Nuevas, Guatemala	SS	1900	12015	HCJB, Ecuador	
1100	4890	NBC, Papua New Guinea	Pidgin	1900	15345	RAE, Argentina	
1100	6064	Colmundo Bogota, Colombia	SS	1900	17785	VOA relay, Morocco	
1100	6175	Faro del Caribe, Costa Rica	SS	1930	15505	Radio Kuwait	AA
1100	15540	FEBA, Seychelles	various	2000	11620	All India Radio	
1130	3260	R. Madang, Papua New Guinea	Pidgin	2030	9510	Trans World Radio v/S. Africa	EE, others
1130	4780	R. Cultural Coatan, Guatemala	vern	2030	11960	HCJB, Ecuador	
1130	6120	R. Japan, via Canada		2030	13610	Radio Damascus, Syria	
1130	9540	Radio Nacional, Venezuela	SS	2030	15185	Radio East Africa, Eq. Guinea	
1130	9650	R. Korea, S. Korea, via Canada		2100	6290	World Music R. via S. Africa	Sat/Sun
1200	4753	R. Rep. Indonesia, Ujung Pandang	II	2100	13725	Radio Havana Cuba	USB mode
1200	9370	Adventist World Radio, Guam	CC	2100	21455	HCJB, Ecuador	USB mode
1200	13790	R. Bulgaria		2130	6245	Voice of Greece	GG/EE
1200	13800	Radio Norway		2200	6180	La Voz de Guatemala	SS
1200	15400	R. Finland Int'l	Finnish	2200	9275	ICBS, Iceland	Icelandic
1200	15445	Radiobras/R. Nacional, Brazil		2200	9445	Voice of Turkey	TT/EE
1216	13860	Icelandic State Bc Service	Ice., s/on	2200	9570	R. Portugal	PP
1230	9715	Radio Tashkent, Uzbekistan	Urdu	2200	11815	RAI, Italy	
1230	12085	Voice of Mongolia	EE, others	2200	17795	Radio Australia	
1300	7365	KNLS, Alaska		2230	5945	Radio Austria International	
1300	9590	R. Norway	NN	2245	9600	Vatican Radio	
1300	15605	Radio Norway Int'l	NN/EE	2300	5895	Croatian Radio	
1320	21520	RAI, Italy	s/on; Sun.	2300	5975	BBC via Canada	
1330	13730	Radio Austria Int'l		2300	7125	Voice of Russia	
1330	15240	Radio Sweden		2300	7475	RTV Tunisienne, Tunisia	AA
1400	6840	CPBS, China	CC	2300	9725	AWR, Costa Rica	
1400	9615	KNLS, Alaska		2300	9755	Radio Canada International	
1400	11865	BBC via WYFR		2300	9900	Radio Cairo, Egypt	
1400	11985	Voice of Russia		2300	11700	R. Pyongyang, North Korea	
1400	13580	Radio Prague, Czech Republic		2300	11830	Radio Anhanguera, Brazil	PP
1400	17560	Radio France Int'l, via Gabon		2330	5960	Radio Canada International	



Here's a book that lists many Web locations, picturing hundreds of sample pages, showing worldwide databases and homepages dealing with topics of interest to listeners. Topics covered include ham radio, aviation, equipment dealers, DX clubs, geography, geophysical data, intelligence, government and international agencies, manufacturers, maritime, weather, navigation, newsgroups, publications, radio propagation, radio stations, satellites, secret services, solar data, reception, and more. Hyperlinks are given to aid in assembling data.

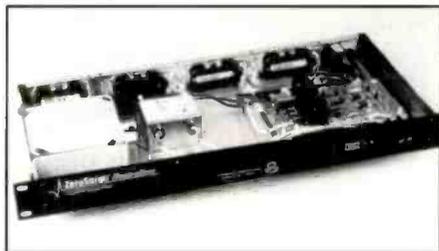
There's a lot of information here that can probably point out many new and great places of interest, providing that a person is a shortwave broadcast or ute listener. On that basis alone, this book is probably worth having.

However, note that the book provides relatively no information of particular use to scanner owners. Moreover, it does not list any of the numerous of American and Canadian AM/FM/TV stations, networks, cable systems, broadcast programs, personalities and fan clubs now operating their own fascinating Web sites. For example, New York City's WCBS/880 is on the Web as <http://

www.newsradio88.com>, while Louisiana's KSLU/90.9 operates as <http://www.i-55.com.kslu/>. Cable TV's Weather Channel site can be accessed as <http://www.weather.com>. Even virtual radio station KRUD operates a hilarious Web site as <http://www.krud.com>. There are many hundreds of such sites, but this book makes no attempt to deal with them.

Yet the book piddles away *an entire page* for the sole purpose of bringing readers the useless news that (months ago) AOL had accidentally erased the *Pop' Comm* Web site. *Yawn.*

*Internet Web Guide* is available in German funds for DM 50, plus DM 10 airmail, from Klingenfuss Publications, Hagenloher Str. 14, D-72070 Tuebingen, Germany. If you need more information, their e-mail address is <101550.514@compuserve.com>. On the Web, check them at <http://ourworld.compuserve.com/homepages/Klingenfuss/>.



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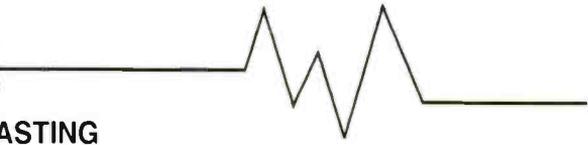
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## Applied for Permits to Construct New FM Stations

AK	Nikiski	93.3 MHz	
AL	Thomaston	97.7 MHz	
AR	Blytheville	88.1 MHz	
AR	Fayetteville	88.3 MHz	
AR	Fayetteville	90.1 MHz	500 watts
AR	Waldo	99.1 MHz	
AZ	Willcox	92.5 MHz	
CA	Bishop	88.5 MHz	
CA	Coalinga	88.3 MHz	1.45 kW
CA	Pollock Pines	89.9 MHz	980 watts
CA	Santa Maria	89.7 MHz	2.45 kW
CA	Soledad	89.9 MHz	
CA	Weaverville	101.1 MHz	
CO	Holyoke	92.3 MHz	
FL	Clewiston	88.5 MHz	3 kW
FL	Clewiston	91.5 MHz	1 kW
FL	Sebring	91.5 MHz	25 kW
IA	Anamosa	89.1 MHz	
IA	Cedar Rapids	89.1 MHz	
IA	Fairfield	88.1 MHz	250 watts
IA	Keokuk	90.9 MHz	
IA	Mount Pleasant	89.9 MHz	
IL	Colchester	104.1 MHz	
IL	Fairbury	107.7 MHz	
IL	Taylorville	97.3 MHz	
IN	Columbus	90.3 MHz	
IN	Mitchell	88.1 MHz	1 kW
IN	New Haven	91.3 MHz	
KS	Galena	104.3 MHz	
KY	Drakesboro	103.9 MHz	
LA	Blanchard	89.1 MHz	6 kW
LA	Cotton Valley	88.5 MHz	14 kW
LA	Jonesboro	88.5 MHz	2 kW
MI	Imlay City	88.1 MHz	
MI	Reed City	97.3 MHz	
MN	Belview	105.9 MHz	
MO	Boonville	93.1 MHz	
MO	Ellington	103.9 MHz	
MO	High Point	89.9 MHz	7 kW
MO	Jackson	89.9 MHz	
MO	Sunrise Beach	90.3 MHz	3.8 kW
MT	Great Falls	90.7 MHz	
MT	Plains	91.5 MHz	500 watts
NC	Aurora	104.5 MHz	
NC	Elizabeth City	88.3 MHz	
NC	Folkstone	89.9 MHz	10 kW
NC	Mount Airy	90.3 MHz	630 watts
NM	Belen	90.9 MHz	100 kW
NM	Grants	90.5 MHz	
NY	Brooklyn	91.9 MHz	
NY	Old Forge	94.1 MHz	
OK	Alva	103.5 MHz	
OK	Crescent	88.5 MHz	60 kW
OK	El Reno	88.5 MHz	37 kW
OK	Magnum	97.7 MHz	
OK	Piedmont	88.5 MHz	38 kW
OK	Yukon	88.5 MHz	50 kW

PA	Franklin	89.5 MHz	1 kW
SD	Lead	94.3 MHz	
TX	Brackettville	94.7 MHz	
TX	Camp Wood	99.1 MHz	
TX	Crockett	91.5 MHz	250 watts
TX	Del Rio	90.7 MHz	
TX	Eagle Pass	90.5 MHz	
TX	Falfurrias	103.3 MHz	
TX	Freer	90.7 MHz	
TX	Hebbronville	101.7 MHz	
TX	Jefferson	91.9 MHz	
TX	Lamesa	91.3 MHz	250 watts
TX	McCook	91.5 MHz	2.6 kW
TX	Mount Enterprise	99.9 MHz	
TX	Pampa	90.9 MHz	250 watts
TX	White Oak	91.7 MHz	1.3 kW
UT	Blanding	92.1 MHz	
VA	Ashland	88.1 MHz	
VA	Dillwyn	105.3 MHz	
WA	E. Wenatchee	88.1 MHz	600 watts
WI	Algoma	104.1 MHz	
WI	Forestville	102.1 MHz	
WY	Cheyenne	88.1 MHz	
WY	Gillette	91.9 MHz	1 kW

## Granted Permits to Construct New FM Stations

AK	Seward	105.9 MHz	3 kW
AZ	Payson	101.1 MHz	88 kW
CA	Los Molinos	101.7 MHz	6 kW
GA	Folkston	91.3 MHz	
OR	Malin	100.5 MHz	750 watts
TX	Borger	91.5 MHz	250 watts
TX	Shamrock	92.7 MHz	
TX	Tahoka	95.3 MHz	3 kW
VA	Danville	91.1 MHz	
WY	Diamondville	105.3 MHz	50 kW

## Seeking Permit to Construct New AM Station

TX Sherman 1700 kHz (KDSX)

## Granted Permit to Construct New AM Station

ID Rupert 1340 kHz

## Canceled

KLLT Vinton, IA 107.1 MHz  
 WTXY Whiteville, NC 1540 kHz (Appealing)

## Seeking to Modify AM Facilities

KLO Ogden, UT 1430 kHz Seeks day increase to 10 kW.  
 WHBC Canton, OH 1480 kHz Seeks day increase to 15 kW.  
 WJZZ Frankenmuth, MI 1210 kHz Seeks move to Kingsley, 50 kW.  
 WRAH Easley, SC 1360 kHz Seeks to change day power.

WRRR Fredericksted, VI 1290 kHz Seeks to change power.  
 WSIV E. Syracuse, NY 1540 kHz Seeks move to 670 kHz,  
 1.5 kW.  
 WTMP Temple Terrace, FL 1150 kHz Seeks change city and power.

### AM Facility Modifications Canceled

WGSP Charlotte, NC 1310 kHz to add 1.6 kW night service.

### Seeking to Change FM Frequency

WUDZ Sweet Briar, VA 91.5 MHz Seeks move to 89.9 MHz,  
 100 watts.

### Pending AM Call Letter Changes

<b>New</b>	<b>Old</b>	
WDBI	WEJM	Chicago, IL
WVZN	WNZT	Columbia, PA

### Changed AM Call Letters

<b>New</b>	<b>Old</b>	
KDON	KHTX	Salinas, CA
KJON	KRPT	Anandarko, OK
KRAM	KWSA	W. Klamath, OR
KTKZ	KMJI	Sacramento, CA
KWUF	KRQS	Pagosa Springs, CO
WGYM	WUSS	Atlantic City, NJ
WHSR	WWNN	Pompano Beach, FL
WNML	WITK	Warner Robins, GA
WVZN	WNZT	Columbia, PA
WWNN	WRBD	Pompano Beach, FL

### New FM Call Letters Issued

KAUQ	Omak, WA
KAUU	Hereford, TX
KAUV	Viola, AR
KAUY	La Junta, CO
KBLT	Leakey, TX
KBVC	Alta, IA
KEZT	Madrid, IA
KMPQ	Woodward, OK
KRMH	Red Mesa, AZ
KRMN	Shamrock, TX
KSIL	Wallace, ID
WAQB	Manahawkin, NJ
WATP	Johnstown, PA
WATU	Christiansted, VI
WYGB	Edinburgh, IN

### Pending FM Call Letter Changes

<b>New</b>	<b>Old</b>	
KHUL	KDEO-FM	Waipahu, HI
KYBB	KIXX	Canton, SD
WUKQ	WKJB-FM	Mayaguez, PR

### Changed FM Call Letters

<b>New</b>	<b>Old</b>	
KAYY	KSPG	Clearwater, KS
KCRZ	KZZC	Tipton, CA
KEZF	KRZN	Albuquerque, NM
KGIM-FM	KQKD-FM	Redfield, SD

KOFH	KAUH	Nogalez, AZ
KOWS	KHSP-FM	Ashdown, AR
KRAT	KCHQ	Altamont, OR
KRRX	KARZ	Burney, CA
KRWV	KGZF	Emporia, KS
KSSE	KVAR	Riverside, CA
KTKL	KTLE-FM	Tooele, UT
KWEZ	KWSP	Santa Margarita, CA
KWUF-FM	KRQS	Pagosa Springs, CO
KXXP	KREV	Lakeville, MN
KXXR	KCFE	Eden Prairie, MN
KXXU	WREV-FM	Cambridge, MN
KZAT-FM	KXPW	Belle Plaine, IA
KZYQ	KDTL	Lake Village, AR
KZZO	KQPT-FM	Sacramento, CA
WAKX	WPJB	Narragansett Pier, RI
WBDR	WKGG	Cape Vincent, NY
WBFB	WVFX	Belfast, ME
WDBS	WGAB-FM	Newburgh, NY
WEXT	WZXA	Sturtevant, WI
WLCE	WSJZ	Buffalo, NY
WNML-FM	WWIQ	Gray, GA
WPCK	WKFX	Kaukauna, WI
WQNU	WXRm	Naples Park, FL
WRHK	WWDZ	Danville, IL
WVYB	WDXD	Holly Hill, FL
WVYV	WVHB	Hampton Bays, NY
WWXY	WRGX	Briarcliff Manor, NY
WXCT	WTGE-FM	Baton Rouge, LA
WXEF	WZNX	Arcola, IL
WXPT	WFMI	Brookfield, IL
WZNX	WKJR	Sullivan, IL
WXRm	WFSN	Port Charlotte, FL
WZUU	WNTX	Allegan, MI



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# The Pirate's Den

FOCUS ON FREE RADIO BROADCASTING

## Radio Metallica Worldwide, Heard Worldwide!

**R**adio Metallica Worldwide must be in the running for first prize as the most widely heard pirate in years. Brandon Artman in Pennsylvania found them at 0113 on **6955 LSB** with "Dr. Tornado" participating in a pirate net along with operators from Solid Rock Radio, Radio, Mouser Worldwide, Radio Eclipse and others. Stephen Vilmin of Illinois had them at 0230 saying they'd have QSL information in upcoming broadcasts. Jack Ambush in Virginia had them at 0145 with the sound of gurgling water in the background and claiming they were using 10,000 watts. The signal in South Carolina was so strong Ken Evans thought at first they might be a new domestic shortwave station when he tuned them in at 0100 on **6960**. They played lots of Guns 'n Roses and Queen. The host mentioned running a "plate modulated 4CX5000 in AM mode."

Dean Burgess in Massachusetts had them on **6955** at 2152 playing Stone Temple and 0217 with the Wide World of Sports theme music. Joe Wood in South Carolina had them at 2102 just before Dr. Tornado signed off due to lightning strikes in his area. They were also heard at various times between 1400 and 0000 with heavy metal, and power stated at either 10,000 or 10,600 watts. David Baltes in New York found them at 2213 with themes from such old TV shows as "Yogi Bear," "The Munsters," "Peter Gunn," "Green Acres" and others. They signed off with the theme from "Secret Agent." Dave Jeffery in New York had them at 0230 with rock and the "Green Acres" theme.

We're not done yet—just time for a new paragraph! Giorgio Di Roberto in Quebec had them at 2301 with oldies and rock, claiming to be the "world's most powerful pirate broadcaster." He also had them at 2118 saying they were beaming to Europe, at 0015 with an editorial comment from "Senior El Nineo" Giorgio had another dozen or so logs of the station at widely varying times. (I hope I converted your times correctly. Please use UTC when reporting. Thanks!)

John Casses in Pennsylvania had them

at 0230 with rock, theme music from "Star Trek," "Batman" and "The Flintstones." Chris McLees in Iowa logged the station at 2016 with TV themes, Pearl Jam and saying hello to other pirate broadcasters. They signed off at 0230.

Metallica's signal made it to the California shack of David McAllister who heard them at 0803 with the Blue Ridge Summit address and announcing an Internet address which couldn't be copied. Lee Silvi in Ohio noted them at 0225 and 2135. Steve Lagni in Illinois found them at 0206 with rock numbers and TV themes. Donald Lane in Washington took a log at 0411 to sign off at 0449. Michael P. Diener II of Indiana logged them at 0315, also at 2319 during which Tornado announced it would be the last broadcast as he would be breaking down the transmitter.

Believe it or not there were other stations on the air! **Radio Titanic International** was heard by Silvi on **6955 USB** at 0023. Also at 2013 and 2358.

**Papa India Radio** was heard by Dave Jeffery in New York on **6955** at 2342 with music, funny news items and listener letters. They announced P.O. Box 146, Stoneham MA 02180. Di Roberto noted this as "Partial India Radio" on **6954** at 2341 with a number of features including the "seven mysteries of DXing."



Di Roberto heard **KRAP** on **6949.9** at 0030 with rock and roll described as "noise from the '70s." Also at 0154 with "Fred Flintstone" and "old crap on KRAP." Also at 0003 and 0025.

Marina Pappas in South Dakota had **WARR** on **6955 USB** at 0207 with "Captain No Beard, ID and rock songs."

WMPR was logged on **6955** at 1643 by Wood with modern rock which sounded like it might be computer-generated. They gave call letters and "we gotta be free" at 1702.

Lane had **Radio Anteater** on **6955 USB** at 0345 with songs, ID and sign off.



Kenny Love got this QSL from Outlaw Radio last year.

Silvi had a tentative on this one at 0103 mentioning the Belfast drop "73 and keep on truckin."

**Solid State Radio** was heard by Di Roberto at 0100 on **6954.3** with "engineering and test equipment broadcast" and a mention of 200 watts, Providence, RI address.

**Voice of Laryngitis, 6955** was heard by A. Gann in Florida taking calls for the President with a barking seal and mention of Battle Creek, Michigan. Silvi had them at 0155 replaying an old program requesting three 20 cent stamps be sent to the Battle Creek address.

Di Roberto had the **Voice of Green Acres**, at 0042 on **6954.7 LSB** with host "Arnold the Pig" and mentioning "worst station on the air." They played the "Green Acres" theme over and over. Silvi had this one at 0135.

**Radio Eclipse**, heard by Di Roberto with very weak signals on **6954.3 USB**.

**Radio Tellus, 6955 USB** was logged by Silvi at 0109 and 0258 with a test.

**Radio Atlantica, 6954.3** at 0158 with Dr. Fishead and Granpa playing bits and pieces of music and requesting signal reports. They claimed to be on the east coast and then talked with Radio Eclipse, reports Di Roberto.

**WREC** was noted by Di Roberto at 0042 on **6954.3 USB** with T.J Sparks calling "anybody out there." Silvi found them barely audible at 0257.

**Lounge Lizard Radio** was found by Di Roberto on **6954.1 USB** at 0032 with program #2 and Providence address.

**KGDR** was heard by Silvi at 0147 on **6955 USB** playing Grateful Dead songs.

**Radio Fusion Radio, 6955 USB** noted by Silvi and 1950 with the "usual stuff."

**Voice of Juliet, 6955 USB** at 0155 with the end of a program on leg shaving.

**WSRR, 6955 USB** at 0100 noted by Silvi with many IDs and mention of the Belfast drop. Heard other times at 0056 and 0100.

**DC Radio** was heard by Silvi on **6953 USB** at 0045 with "Don't vote Republican de DC Radio" sent in Morse code.

**Radio Communication International** was another Silvi log, on **6950 USB** at 0200—a relay of this German station.

Silvi also noted **WMPR on 6955 USB** at 0052 with music and "loop IDs."

**Radio Domsday** was tentatively heard by Silvi on **6955 USB** at 0058 with music and saying "That's great" many, many times.

We're out of room. Thanks to all for another fantastic turn out! Keep 'em coming and I'll see you again next month! ■

Rave Review  
Pop Comm  
April '96

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# Scanning The Globe

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

## Those Itinerants in The Neighborhood

In the business radio service, the frequencies of 151.625, 464.500, 464.550, 469.500 and 469.550 are known as *itinerant channels*. These frequencies are used by businesses that move around from area to area a lot, and are an effort to minimize interference to normal business radio users on their everyday frequencies.

These are good frequencies to have in your scanner, because if something comes to your town for a few days or a few months, chances are these frequencies will become active. The frequencies might be used by a musical group or singer performing while their stage is set up, they might be used by the circus coming to town for a few days or you may even find prohibited communications by families who bought radios on these frequencies and are using them for personal, not business, communications.

Although not specifically listed in the FCC rules as itinerant frequencies, there are a couple of higher frequencies that have become itinerants, too. In the 800 MHz band, 853.4875 (paired with 808.4875 input) has come into wide use. And in the 900 MHz band, the frequencies of 936.6375 and 936.6625 (paired with 897.6375 and 897.6625 inputs) are starting to get more and more users.

It should be noted that 27.49 (in the AM mode) and 35.04 also are itinerant business frequencies, however, these aren't used much. There also are similar itinerant frequencies for use by construction crews and farms, however, these frequencies aren't used as much as their business counterparts. These frequencies, which are licensed under the special industrial radio service, are 43.04, 151.505, 158.400, 451.800 and 456.800 (mobile only). The 151.505 MHz channel probably is the most popular one of the bunch, with 158.400 and 451.800 also getting a fair amount of use. The 43.04 frequency is used in some rural areas where VHF low band works best. Stick these frequencies into your scanner and you may hear some heavy construction crews on a major project or a road-paving

job. You never know who might be using these frequencies.

### Sleuthing Around

How do you become a good frequency finder? How do you go about finding new and exciting scanner frequencies? What is out there beyond the local fire and police calls?

What do you routinely listen to on your scanner? Do you have ALL the frequencies used in your community for public service programmed in? If not, you surely are missing some potential scanning action. For instance, if your city has a water department, it might pay off monitoring that agency's radio frequency during a large fire because it would be responsible for seeing that there was an adequate water supply for firefighters.

Likewise, if there was a traffic accident, you might hear electric utility workers responding to the scene if the police request that power be shut off because of downed power lines and utility poles.

*Moisture, rain and wind can wreak havoc on outside antennas, so always be sure you've done your best to prevent damage. Use a commercial coaxial sealant and periodically inspect your antenna for signs of corrosion or wind damage.* →

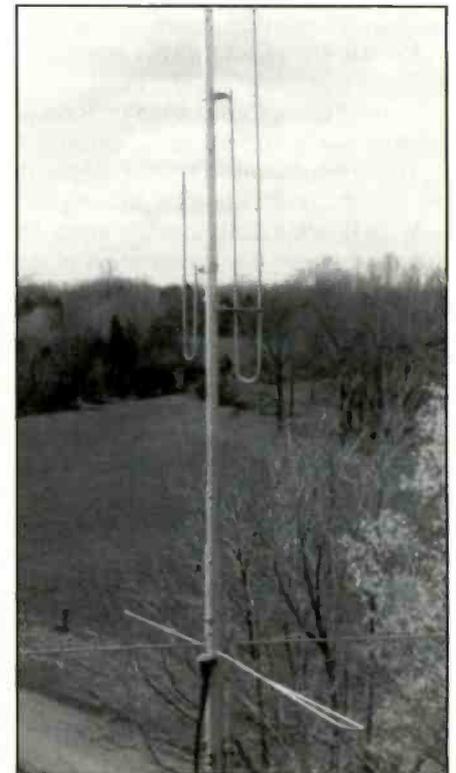


There are other forms of scanning that go hand-in-hand with public safety monitoring. In another example, for instance, I have monitored tow trucks in towns I lived in because they often are called by the police on a rotating basis for various jobs, including accidents. And believe me, next to cab drivers, tow truck operators can offer some interesting listening.

While you may have found the local police and fire channels easily, it's not so easy to find other frequencies. Most stores and shops that sell scanners also are willing to help program your scanner. They might have a frequency list on a sheet of paper they are willing to offer you, especially if you buy your scanner from them.

On some of those handout frequency lists, you'll often find an interesting mix of frequencies listed, from news media channels to amateur radio repeaters to weather broadcast transmitters. It all depends on what can be monitored in your community.

If you purchased your scanner mail





Mobile data terminals such as this one can't be successfully monitored—besides, making any sense out of the noise is impossible! (Photo by Steve Adams)

order, you may not be able to utilize a store's prepared frequency list. However, most hobby radio shops sell frequency directories that will be helpful in letting you find new things to monitor. Of course the quality of these scanner guides can vary greatly. Some are as simple as photocopies and plastic-spiral presentations that may or may not offer the meat you need in your scanning diet. Some are complete ripoffs and offer less than outdated frequencies from an old edition of *Police Call*. In fact, every scanner listener should start out with a copy of *Police Call Plus* to find the public safety frequencies in use in his or her community. The *Police Call Plus* guides are sold at most RadioShack stores as well as most other scanner shops.

There also are many excellent regional scanner guides that will help you get on your way, too. The Scanner Master series of publications have an excellent reputation in the areas they serve. These guides not only list frequencies and channelization information, but also radio codes, unit and station number lists and subaudible tone encoding information that can be used with some Uniden Bearcat scanners to screen out unwanted communications on various frequencies. Almost every area of the United States and Canada has a hobbyist or publisher compiling a scanner directory that is available for sale. In addition, if you are wired, many computer bulletin boards and online services have files available for download that offer much of the same extensive scanner information.

And last, but not least, there are various scanner clubs around the continent.

There are many excellent regional scanner clubs, including the All Ohio Scanner Club, the Chicago Area Radio Monitoring Association and the Bay Area Scanner Enthusiasts. We'll try to take a look at the various clubs and what they have to offer their members in a future

column here. (Hint: Club officers, I invite you to send me information on your club.) Most of the various clubs publish monthly or bi-monthly newsletters and many also have regional meetings. Getting to meet your local scanner enthusiasts can result in newfound friendships and the opportunity to exchange information to enhance your listening.

## Terminal Case

A friend of mine in California told me that the police department in his city was getting ready to start using mobile data terminals and will be encrypting its 800 MHz communications. He wanted to know whether there are any tricks to monitoring the computer data terminals which are in the patrol cars. Additionally, he wanted to know whether there are descramblers that are able to decode encrypted communications.

Even though mobile data terminals have been used on a wide basis in the past decade and a half or more, I have yet to run across someone who has been able to successfully monitor these data communications being sent by public safety com-

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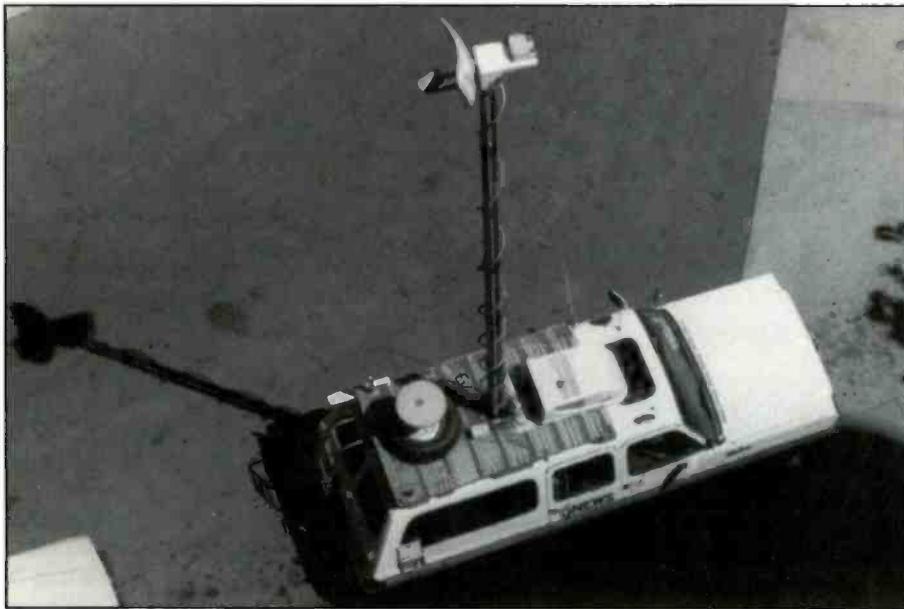
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Denver's KUSA-TV remote unit in operation. (Photo by Patrick Griffith, CO)

puters to mobile terminals in vehicles. For the most part, each system is proprietary and you would need the software put out by the manufacturer of the mobile terminals in order to do anything with the information captured off the air. In other words, forget about trying to make any sense out of all those grinds over the air. Most are status data anyway, such as the mobile terminal sending a signal to the dispatcher indicating the unit has arrived on the scene, is in service, etc. However, a lot of messages are passed along over the terminals, too.

On encryption, you probably can forget about that, too. Most 800 MHz systems employ digital encryption that cannot be decoded only because there are so many possible combinations of encryption. While it used to be possible to unscramble simple voice-inversion scramblers (where it sounds like Donald Duck on the air) with an add-on device, the Electronic Communications Privacy Act of 1986 made possession or sale of such devices illegal and you just cannot go out and buy one of these units today.

### The Missing Frequencies

Jim Benton from Little Rock, AR, sent me e-mail asking why 868.9875 to 894.0125 is eliminated from his Uniden Bearcat 200XLT scanner. He wants to know whether these frequencies are in use, and if so, why they are eliminated from his scanner. He also wants to know whether this range can be restored to his receiver. First, the range from 869-894

MHz is used for the base side of cellular phone calls (the mobile side is 45 MHz lower and also is eliminated from your receiver—823.9875 to 849.0125). This range can be restored to Bearcat 200XLT and the similar BC205XLT scanners, but the Electronics Communications Privacy Act of 1986 prohibits persons from listening to cellular phone calls. You might be able to find a dealer who is willing to make the modification to your receiver, but it's going to be hush-hush. Dealers know that they can get into a lot of trouble making these modifications and usually opt to avoid the work. While some versions could be modified by simply snipping a diode, other versions require additional procedures to make the modification. There also are modification books available from many scanner dealers that detail how to make such modifications to your scanner.

### Federally Trunked

A reader who prefers to remain anonymous inquired via e-mail about federal trunking systems. He heard that they operate on UHF instead of the 800 or 900 MHz bands. That's true! There are many trunked UHF radio systems in place already across the United States that are used for Air Force bases and other federal operations in and around large cities. Here's a list of frequencies assigned to the various trunk groups. You may want to check these out for scanning action:

• **Trunked group 1**—406.350, 407.150,

407.950, 408.750, 409.550, 415.150, 415.950, 416.750, 417.550, 418.350.

• **Trunked group 2**—406.750, 407.550, 408.350, 409.150, 409.950, 414.750, 415.550, 416.350, 417.150, 417.950.

• **Trunked group 3**—406.550, 407.350, 408.150, 408.950, 409.750, 415.350, 416.150, 416.950, 417.750, 418.550.

• **Trunked group 4**—406.950, 407.750, 408.550, 409.350, 410.150, 414.950, 415.750, 416.550, 417.350, 418.350.

### Getting The Callsigns

Several readers wrote in to inquire how they can become a registered monitor. In fact, *Scanning the Globe* usually gets at least a half-dozen requests for this information every month. Registered monitors receive a distinctive identifier, such as my own, KPA3CA, which helps identify them as a serious monitor when writing to others, especially when seeking verification letters or QSLs.

For more information on the registered monitor program, write to CRB Research Books Inc., P.O. Box 56, Commack, N.Y. 11725, and tell them *Pop Comm* sent you!

### In The News

Bill Brantford of Newton, NJ, said he's looking for frequencies used by newspapers not just his area, but also where he might be traveling.

Newspapers are allocated two basic groups of frequencies. The first one is a block of four VHF frequencies: 173.225, 173.275, 173.325 and 173.375 MHz. The second group is on UHF. Base stations, repeaters and mobiles can use 452.975 and 453.000 MHz, while mobiles can use 457.975 and 458.000. In addition, a handful of frequencies are reserved for low-power handheld use: 452.9625, 452.9875, 457.9625 and 457.9875. Newspapers use these frequencies for a variety of functions, including circulation (newspaper delivery), administrative and dispatch (delivery of advertising materials) and news (both reporters and photographers). Some newspapers even might use the frequencies for advertising sales representatives, vehicle maintenance, paging and more.

While a lot of newspapers use these few channels, many smaller papers can't afford to invest in all the equipment needed to put a major radio system on the air and instead may use conventional business band frequencies (after all, a newspaper is a business, and thus qualifies for that radio service as well). Most newspa-

pers using business band will show up on shared repeaters in the 461-465 MHz band, or on T-band frequencies in the top 20 metropolitan areas. In addition, some newspapers also use 800 MHz repeaters and trunked systems, not to mention 935-940 MHz trunked systems in major cities. In fact, some larger metro newspapers may use a variety of radio systems in their operations.

## Corroded Metal

One reader wrote in asking how to deal with corrosion on antenna terminals. The connectors are 300-ohm lead. He also asks how to get rid of the corrosion in some of the antenna rods.

First of all, antennas aren't designed to last a lifetime. After a while, there just comes a time to replace antennas, connectors and cable. Weather is a harsh element for antennas no matter where you live. And when the system isn't in good order, it won't help you snag signals off the air.

One of the best ways to avoid corrosion is to use preventative methods. Commercially available coaxial sealant is available from most amateur radio supply shops. It is a pliable material that you wrap around the connector and the base of the antenna where the connector attaches. It helps prevent moisture and other elements from causing their damage. Even if you don't use the sealant, at least wrap connections in a good electrical tape. It won't be fail-safe, but it's better than leaving the connectors exposed to the elements.

For the connectors themselves, it would prove worthwhile to simply install new connectors on cable when the old connectors look very weathered. Typically, PL-259 connectors sell in the neighborhood of \$1, so it's a minor cost. If the connector at the base of the antenna is corroded, you could try to clean it up. While I don't have the absolute answer, you might try using naval jelly. Just be sure you don't get any inside the connector where it could short out the antenna when the coax is reconnected.

On some antennas, you might even be able to remove the female receptacle for the cable and replace it. However, you'll need to solder on the new connector to the antenna. Again, replacing that part of the antenna shouldn't be too costly either. The decision whether to repair the antenna should be based on whether the rest of the antenna is in good condition.

On the 300-ohm connectors, make sure they aren't exposed to the elements.

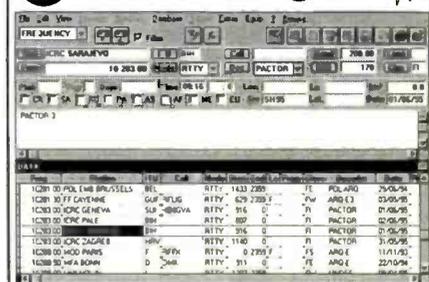
*"The decision whether to repair the antenna should be based on whether the rest of the antenna is in good condition."*

While coaxial sealer works good, even electrical tape is better than leaving the components exposed. You can clean the antenna rods the same as you clean the connectors. Try something like naval jelly or you may even consider replacing weathered or worn parts. If you get 10 years out of a scanner antenna, you probably made out OK. It may be time to retire the chunks of metal!

## Write In

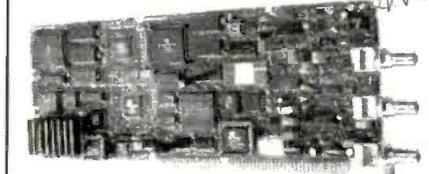
What are some of your favorite frequencies? Do you have any scanner-related questions? Do you have any listening tips that might be worth passing along to your fellow readers? How about sending in a photo of your listening post or antenna farm? Write to: Chuck Gysi, N2DUP, Scanning the Globe, *Popular Communications*, Box 11, Iowa City, Iowa 52244-0011, fax to 516-681-2926, or e-mail to <SCAN911@aol.com>.

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# The Computer Corner

BY BONNIE ZYGMUNT/ED GRIFFIN

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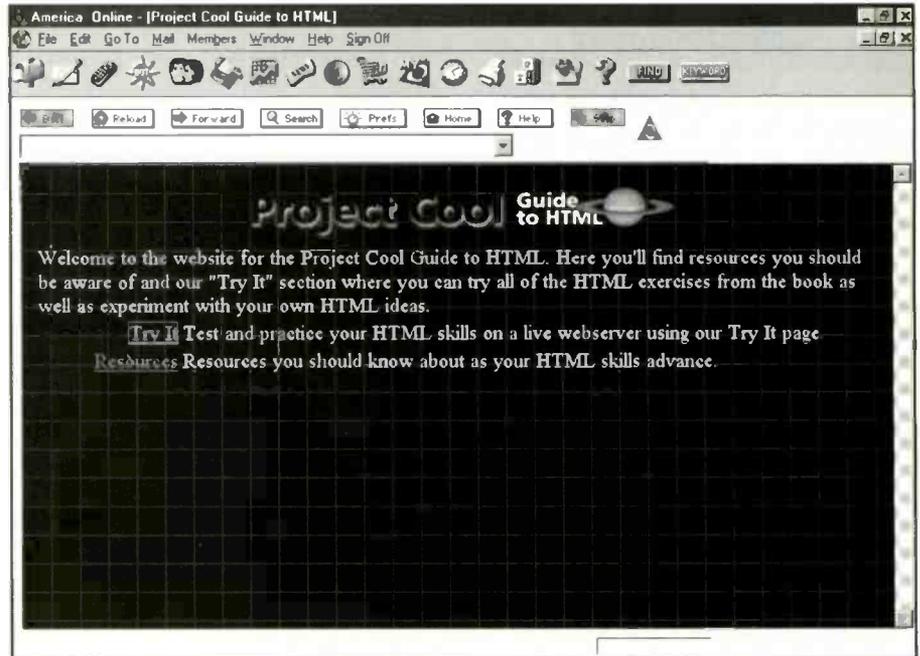
## Oh, The Webs We Weave!

In the last column we started a contest for *Pop Comm* readers to submit the Web pages they wrote. I've listed the ones that I have received to date (remember it's two months before the publish date of the issue you're reading). I've got to say that I am truly impressed so far. I think the judges have their work cut out for themselves. But, the rest of you will reap the benefits of this contest too, even if you didn't have a Web page to submit. Now you can go to all these new Web sites and check out the information that your fellow readers have to offer.

Since we are dealing with reader's Web pages, some information on the process might be useful for others who may be interested in doing their own Web page. Writing your own Web page involves a few simple tools. A text editor that can save text as an ASCII file, a graphics program that can save files in standard formats (GIF-Graphics Interchange Format—or JPEG—Joint Photographic Experts Group—are the two most common), a Web browser, and a program for transferring files from the computer you've used to create the HTML (Hypertext Markup Language) file to the place they'll be stored and accessed by others is necessary.

Even before you start typing the text or create any graphics, you need to sit down and decide just what you want the Web page to do. Is it a business site? Is it a personal site, introducing yourself? Does it feature your hobby? Who will be your target audience? Once you decide what you want to portray it's a good idea to sit down with a pencil and paper and sketch out the elements. What words do you want to type for the text and what pictures or graphics do you want to use?

A Web site is made up of HTML files. Those HTML files contain tags that tell browser programs how to display your information. Each tag defines the basic page appearance such as paragraphs, lists and tables. It also allows linking to other pages and lets others send you E-mail. Some HTML tags are considered standard and are supported by most browsers.



Once you purchase the book *The Project Cool Guide to HTML* you can use their web site to practice creating your own page.

Certain browsers can only view other tags. Sometimes you will see a Web page that states that it is best if viewed with Netscape or a particular version of a browser. That is because it contains some tags that other browsers may not recognize. So, remember that if you use some new and special HTML tags, not everyone who will load your page will be able to enjoy it the way you set it up. Make sure the major points of your page come across to your viewers.

There are HTML editors that will create the tags needed to set up the page. Still, understanding what the program is doing is necessary in case you need to fix a problem later. Some programs that can be used this way are: Microsoft Word, WordPerfect, Adobe PageMill & PageMaker, Netscape Navigator Gold and SoftQuad HotMetal. For a Macintosh computer there is also BBEdit. I'm sure there are new ones coming out all the time. All HTML documents should have the filename extension of .html or .htm. A browser will know to interpret these

files as HTML tags rather than straight ASCII text.

OK, you've decided you want to create a Web page. A book on the market that has helped me understand what it takes to do this is called *The Project Cool Guide to HTML*, by Teresa A. Martin and Glenn Davis. They start the book with down-to-earth chapters on the basic designs of Web pages and then take you to the next level to make your page unique. The authors give you examples of the correct wording of tags and then you can go to their Web site "Project Cool Teaches" and see how it looks in the "Try It" section. This allows you to practice different elements

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*"Even before you start typing the text or create any graphics, you need to sit down and decide just what you want the Web page to do."*

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@aol.com>. I may not be able to answer each one personally, but I do appreciate hearing from you. Happy clicking. Here Are the Contest Offerings So Far:

- <http://www.mindspring.com/~vincem/>
- <http://www.users.fast.net/~wa3key/collins.html>
- <http://www.execpc.com/~gollonik/>
- <http://www.li.net/~j4dice/scanli.html>
- <http://milagro.austin.tx.us/ask>
- <http://www.localnet.com/~nlvk>
- <http://www.laker.net/mikef>
- <http://www.mvillage.com/slater/>
- <http://www.mindspring.com/~lurch13/>
- <http://members.aol.com/mcgilcutty/library.html>
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- <http://www.geocities.com/siliconvalley/lakes/1962>
- <http://www.angelfire.com/nc/TheGateBBS>
- <http://members.aol.com/ke6zgp/index.html>
- <http://funnelweb.utcc.utk.edu/~jtdybka/home.htm>
- <http://members.aol.com/rkdx/index.html>
- <http://www.wvcr.com>
- <http://www.trsc.com>
- <http://user.mc.net/jtl/nlights/index.html>
- <http://pages.prodigy.net/hounddog/home.html>
- <http://www.angelfire.com/la/guwapo>
- <http://abcc.nmsu.edu/~bwood/bwood.html>
- <http://www.net-link.net/~chappy/links.htm>
- <http://www.net-link.net/wmat/>
- <http://web.net-link.net/~chappy/>
- <http://norden1.com/~jeschke>
- <http://www.altelco.net/~fatcat/grandvillefire>

of Web page creation to see how they will look before you copy the whole file to a server.

They also give seasoned tips for the first time Web designer, such as reminding you not to create such a huge HTML file that it takes longer than 30 seconds to load. Too many or too large graphics on your page will cause the audience to gnash their teeth and perhaps even stop the download and go elsewhere.

### A Look at the Web Pages YOU Submitted

I hope everyone enjoys looking at the submitted Web pages. Good luck to them all. Just a quick word to the wise, one page submitted did warn viewers that it contained "adult subject matter" so you can choose to view it or not. Remember to e-mail me any ideas you'd like covered in this column at <BSZ3866

Bonnie Zygmunt

## The Optoelectronics OptoScan

**H**ow do you improve your scanner? How can you add computer control capabilities to your scanner? Can you use a Scout frequency counter to reaction tune your scanner? Do you want to be able to scan up to 80 channels per second? If you are looking for answers to these questions, Optoelectronics may just have the answers you need. If you own a PRO-2005, PRO-2006, PRO-2035, or PRO-2042, then they'd be glad to sell you an add-in board designed for your radio. If you've been looking at used scanners and have seen listings for an "Opto-equipped" scanner, this article will also be of interest to you.

Opto sells three different computer control add-in boards for these specific RadioShack model scanners. The product is called "OptoScan" but I'll use OS for short.

### Which Board Is Right For You?

The OS535 is for PRO-2035 and PRO-2042 model scanners and sells for \$199. The addition of this board adds CTCSS, DCS, and DTMF decoding capabilities to your radio when controlled by software and a computer. Installation requires soldering two additional wires to the PRO-2035 or PRO-2042's receiver board, and temporarily unsoldering two additional



A radio, computer and software can do more than a radio alone.

wires. The radio's case and boards are removed from the metal chassis to facilitate nibbling a slot in the back panel to accommodate the board's port connectors. The scanner is reassembled and original modular wire connectors are rerouted to the OS board, and provided modular plug in jumpers.



A peek at the pipes behind the wall. The OS board installs inside your radio.

The OS456 is for PRO-2005 and PRO-2006 model scanners and sells for \$199. Its capabilities and installation mirrors that of the OS535, with the exception that it has *one* instead of two CI-V ports.

The OS456 LITE is for PRO-2005 and PRO 2006 model scanners and sells for \$99. This version is similar to the OS456 but because it doesn't support CTCSS, DCS, and DTMF decoding and signal strength measurement. It retails for a smaller price tag and provides an option for owners for PRO-2005 and PRO-2006's that want to get into computer-controlled scanning but might not need all of the features of the OS456 or want to limit the expense. If you are primarily an aviation or railroad monitor, the lack of decoding tones is less of a concern because they typically aren't used in those services. If you don't care to use a computer but want to add reaction tuning capability to your PRO-2005 or PRO-2006 then this fits the bill. Another benefit of the OS456 LITE over the OS456 is that installation requires no soldering.

### What's The Use?

An Optoscan 456 or 535-equipped radio can be reaction tuned using an Opto Scout frequency counter. This means that a user could install both in a mobile environment, and using a cable, can have the radio tuned to any near field signals the counter finds via the built in CI-V interface. A computer is not required for using this feature. Memories stored in the Scout can be recalled and the Opto-equipped receiver will also be tuned to the frequency. Other features for the OS535 and OS456 include tone decoding of 52 CTCSS, 106 DCS, and 16 DTMF characters. Signal strength indication are only available when the radio is being controlled using a computer and software. The internal memories of the radio are not programmable using the board, but are still available via the radio's keyboard for programming and use when the radio is not under computer control. CI-V and RS-232 interface ports and tape pause interface are added to the back of the radio when the board is installed, and are used for

***"If you don't care to use a computer but want to add reaction tuning capability to your PRO-2005 or PRO-2006 then this fits the bill."***

connection to a computer's serial port, other CI-V devices, and a tape recorder for selective recording. The radio has two "personalities," the first being that of a normal RadioShack scanner when computer control or reaction tuning is not being used, and the second being the multi-functional receiver while under computer control.

I'll point out the need for a computer and additional software to harness this power, but suggest that even a 386 and reasonably priced software like Radio Manager yield excellent results. I've been using 486's and have no problems controlling multiple receivers at the same time. The display of the radio blanks when the OS board is being used, and it does require some adjustment to look at the PC rather than the radio to figure out what's going on, but after an initial period this becomes familiar.

Another issue you'll have to deal with is that unlike other computer-interfaced radios such as the AR8000, ICOM R7100, and others, there is no ability to download frequencies into the memories of the OS-equipped radio for use in a non-computer controlled application. This is a lot easier to deal with if you are planning to use a laptop computer, as the total size of the RadioShack scanner with the OS board installed and a notebook is easily transported in a car or on a trip. I took an OS535-equipped PRO-2035 and my notebook computer on my last vacation and only experienced a minor delay at the airport security check point in return for major signal sleuthing capability once I reached my destination.

### Spare No Details!

The OS boards feature a standard 9 pin DB-9 serial connector, so no additional converter interface is required. If you already own radios that use the CI-V bus interface, you can chain them off of a single Comm port by using the CI-V port on the back of the OS board, if your scanning software supports it and you set the radios for different CI-V addresses.

Here's a real world example of what I'm explaining. My notebook has a single Comm port which I have connected to my first OS535-equipped PRO-2035, CI-V address 80. I have a second OS535-equipped PRO-2035 which is connected via the CI-V ports to the first radio. The second radio's CI-V address was set to 81 using switches on the OS535 board. I also own an ICOM R7100 which is connected to the CI-V port on an OS535, and it's address is 84. Scan\*Star software supports this configuration which allows me to control three radios, which can be doing three different scanning functions, via a single serial port. Performance isn't as fast as giving each radio it's own serial connection via three different Com ports which might be possible on a desktop computer, but for users of notebooks or systems on which Comm ports are limited, this ability to chain multiple radios on a CI-V bus is handy. Use of the DB-9 serial connector also allows a technique called *pipeline tuning* to be implemented in software, which is one of the methods that allows OS-equipped boards to scan at 80 channels per second, which is faster than any other scanner with or without computer control.

### Tool Time

Installation of an OS board is pretty much a five-step process:

- 1 Take the radio apart.
- 2 Nibble a small portion of the back panel to allow for the board's connectors.

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***"I installed my first OS535 board using a soldering iron, a nibbling tool, and a computer tool kit with screw drivers and wire strippers in between one and two hours."***

---

- ③ Reassemble the radio but leave some cables unhooked.
- ④ Next, add the Opto board and then make a couple of soldered connections.
- ⑤ And finally, reassemble the radio connecting cables back using additional jumpers and connections to the new and existing board.

I installed my first OS535 board using a soldering iron, a nibbling tool, and a computer tool kit with screw drivers and wire strippers in between one and two hours. I took my time, read the complete detailed and illustrated instructions, and worked with caution to avoid errors. I installed my second board in less than an hour due to familiarity with the process. The instructions state that reasonably good vision and steady hands are needed—I'd agree with that and add that use of the nibbling tool requires a good amount of hand strength. I'd characterize my electronics skills as average and the installation posed no problems for me given the proper tools and working environment. As a side note, my second PRO-2035 was one that I bought second hand, and it had a modification performed by the original owner. During the OS535 installation some of the modification-related wires came loose, and my project ground to halt while I frantically tried to locate the details needed to reconnect the wires and continue the installation. Always make sure you have notes and/or photographs of any existing modifications before undertaking additional changes. I learned the hard way, but you don't have to.

### Hands On, A Hands Down Favorite!

I've been using my two OS535's to map out local channel and tone usage. I use the time that I spend away from home at work, or out of my shack to operate in search and store mode. The channels that are found active are saved, and a log file indicates the particulars including tone usage and signal strength. These are saved to a file on my hard disk, and at a later date, when I have time to analyze them, I can determine frequencies of interest that merit interactive monitoring, which allows me to identify specific users and additional information that's gathered as I sit in my radio shack monitoring the communications.

If you've been wondering how to get more monitoring time in, using computer control is a possibility. I start things going in the morning before leaving for work, turn down the volume on the radios, and return home in the evening to see what activity has been collected. If I'm not in the mood to use the computer control features, I can still operate each radio in a nor-

---

***"Always make sure you have notes and/or photographs of any existing modifications before undertaking additional changes."***

---

mal manner.

There are many software applications that support the OS boards and the RadioShack models that are compatible with the Opto boards are readily available. It's my opinion that an OS-equipped radio along with computer and software offers the greatest bang for the buck when discussing computer-aided monitoring of the VHF/UHF scanning bands. I love my AR8000's computer interface for quickly programming its memories prior to a scanning session independent of computer control, and I'm still a fan of the ICOM radios, like my R7100 which feature computer interfaces, but the tone decoding of the OS boards adds another dimension which in turn allows the serious monitor to elevate his or her listening to an even higher level.

The Optoelectronics order line is 800-327-5912, and technical questions may answered by calling 954-771-2050. Their Web site is at <www.optoelectronics.com> and E-mail may be sent to <sales@optoelectronics.com>.

Scan\*Star's Web site is at <www.scanstar.com> and their E-mail address is <info@scanstar.com>. Call 408-926-5630 for information via telephone. That's it for this month, but expect more information about computers and scanners in the next Computer Corner. Until then feel free to send correspondence to me via E-mail at <griffined@sprynet.com> or snail mail to the *Pop'Comm* HQ address.

Ed Griffin

<griffined@sprynet.com>

## Ferrell's Confidential Frequency List

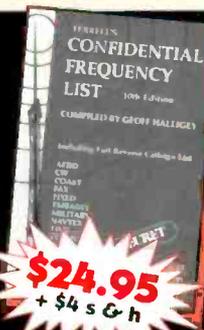
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## Big Changes Are Around the Bend!

Sound effects, please—jingle a few bells, beat the drums, and let's hear a couple of ho-ho-hos. I'm delighted to prematurely announce a Christmas present for the loyal readers of "CB Scene." Starting in January, 1998, the column will be expanded!

After some consultation, *Pop'Comm* Editor Harold Ort, co-columnist Ed Barnat, and I have concluded that there's too much write about going on in CB and not enough room to get the word out. So, beginning with the new year, CB scene will be about 60 percent longer. That means more room for your cards, letters, and shack photos, so keep them coming! Now, on to the news.

### Midland's New SSB/Weather Channel CB Packs a Powerful Wallop

After several years' absence, Midland Consumer Radio has finally reentered the SSB CB market with a top-of-the-line rig that includes not only 40 channels of AM and SSB, but also a built-in 10-channel

receiver that covers seven U.S. and three Canadian weather channels.

The Midland 79-290 has a multi-function black matrix LCD readout that displays channel number or frequency in 5/8" high numerals, a 12-segment RF output/signal strength meter, and indicators for memory channels 1-4, noise blanker, dual watch, RF gain, weather, and CB operating mode (AM/LSB/USB).

There are four user-selectable memory channels, mic gain, dual watch for monitoring any two user-selected channels, coarse/fine tuning for SSB, a noise blanker, and a local/DX switch. Output is the full legal maximum: Four watts AM and 12 watts PEP on single sideband. There are connectors for an external speaker and an antenna as well as a full-size four-pin microphone.

The entire rig is quite small, just 2" high x 6 1/4" wide x 7" deep. For security, there is a detachable control panel with a battery-powered memory that retain data for up to 100 hours.

I've tried this rig, and it truly is a top-of-the-line performer. Perhaps most impressive is the SSB transmit audio.

In on-the-air tests with a bunch of local critics, they preferred the quality of transmit audio from the Midland 79-290 over every other rig, and all the top guns were present for comparison.

If you're looking for a CB that offers both SSB mode and weather channels, there's just one choice: the Midland 79-290. And it's a dandy! The suggested retail price of the Midland 79-290 is \$349.95. For additional information, contact Midland Consumer Radio, P.O. Box 33865, Kansas City, MO 64120-3865 or phone 816-241-8500 and them *Pop'Comm* sent you.

### Cobra Introduces Hot New Line of Accessory Mics

If you're looking for a new CB microphone, or if you have a rig that seems a little "reluctant" to modulate fully, Cobra Electronics may have the solution for you. They have just introduced a new line of accessory microphones that perform as good as they look—and they look great!

Each one is a big, beefy hand microphone molded from "drop-proof" black ABS, fitted with a heavy duty coiled cord, and the fit and finish on these microphones is truly superb.

Available in both four- and five-pin models, they range from replacement non-amplified dynamic microphones with a street price of around 10 bucks, to noise canceling and power microphones with an expected street price under 20 dollars, to a power/echo microphone that will carry a street price just under 40 dollars. The amplified models require a nine-volt battery and can be adjusted using a knurled wheel set into the back of the mic. It's easy to reach, yet is adequately recessed so that it can't be moved out of adjustment by accident.

My personal favorite is the five-pin CA-80 power/echo mic. I tried it on both the Cobra 2010 and the Cherokee CBS-1000, and found that it increased both the volume and clarity of audio on both radios. That means when I'm monitoring on emergency Ch. 9 and take a call from



Midland's new 79-290 AM/SSB/Weather Channel CB has a detachable front panel and displays the channel number or frequency in 5/8" high numerals. (Courtesy Midland International Corp.)



A new line-up of CB microphones from Cobra features drop-proof ABS plastic and range in price from \$10-\$40. (Courtesy Corba Electronics Corp.)

a distant breaker, it will be easier for them to hear me.

### Shakespeare Unveils Potent 5/8 Wave CB Antenna

Whether used onboard ship or on tactical base stations in environmentally harsh locations, Shakespeare's fiberglass military antennas have won praises from U.S. and NATO military forces for excellent durability and strong communications capability. Now, for the first time, Shakespeare is making this military antenna design experience available to civilians in the Army Base Stick broadband, high-power, off-center fed 5/8 wave CB antenna. Built to military specifications, this new antenna is rated for 4000 watts PEP and covers 26-28.5 Mhz. This three-piece 21-foot unit is camouflaged green with heavy chrome fittings.

I tried an early production unit and liked it very much. The quality of construction is the highest I've seen in any commercial CB antenna, and the whole thing goes together in about five minutes. It actually takes longer to get the staples out of the shipping tube than it does to assemble the antenna.

Even better, the performance is top flight. It's fully equal to a Magnum 44 metal antenna that it replaced, yet with



Cobra's entry into the Family Radio Service (FRS) market is the FRS-200, a slim palm-sized radio that's loaded with features. (Courtesy Cobra Electronics Corp.)

none of the worries of environmental degradation that often plague multi-jointed metal antennas. This is a great antenna built for decades of trouble-free operation, and I give it my highest recommendation.

For price and availability information, call 800-800-9008, ext. 159 or write Shakespeare, P.O. Box 733, Newberry, SC 29108. Don't forget to mention you read it in *Pop'Comm*.

### Cobra's New FRS Radios

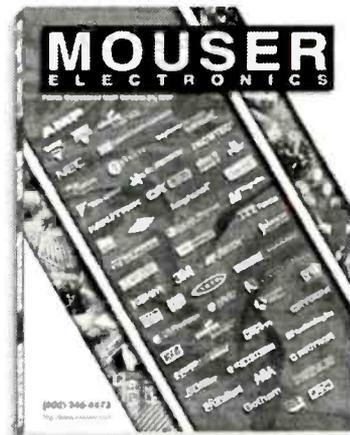
I have a confession. For a while, I was suspicious that the new Family Radio Service was really a lot of hype without much performance to back it up. But all that changed when I tried a pair of Cobra's new FRS 200 Family Radio Service handheld transceivers.

These tiny handhelds (you can easily hold a pair of them in one hand) really deliver the goods. They operate in the 460-470 MHz range—UHF frequencies—which means great penetration through buildings, thick forests, hills, and other radio obstacles.

They deliver 1/2 watt of transmit power in FM mode, which means clear, phone, quality communications with up to two mile range.

There are 14 user-selectable channels, and LCD readout that tells you what's

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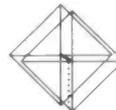
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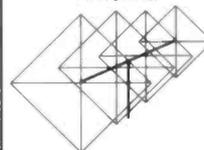
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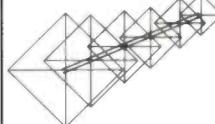
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going on with the FRS 200 including channel selection. Each FRS uses 4 "AA" batteries, and there's a battery-saver circuit to extend battery life. A low-battery indicator let's you know when it's time for fresh "AA"s. There's a push-to-talk switch on the side of the FRS 200, and with the speaker at one end of the case, and the microphone at the other end, you can operate it cellphone-style.

An auto-squelch circuit eliminates the need to manually squelch out the noise, although you can defeat it by pressing the MONITOR button just below the PTT switch. On the face of the unit are buttons

for changing channels, adjusting volume, a light for the display, power, and locking the unit so the channel cannot be accidentally changed.

But what makes these radios remarkable is how well they work. We took them to an amusement park with another family and were easily able to stay in touch wherever we were; inside a building or out. Later, we used the FRS 200s for staying in touch on the road between two vehicles, and again they sounded just great. Finally, when the wives walked the kids to the park when rainy weather was threatening, we used the FRS radios to stay in touch in case

the husbands (watching TV at home) needed to pick them up. In short, these radios worked just great for their intended purpose—reliable license-free short-range communications.

Cobra tells me that, by the time you read this, the FRS 200 will also be equipped with a feature that will alert users to an incoming call. Contact your local dealer for price and availability or write Cobra Electronics Corporation, 6500 Cortland Street, Chicago, IL 60707.

## Some Publications You'll Want to Check Out

Got an interest in Neighborhood Watch or another of the citizen crime-prevention programs? Then you'll definitely want a copy of "On Guard!" This informative, 128-page book published by Limelight Books and written by Laura E. Quarantello, tells you how to win the war against the bad guys.

Part One of her book is devoted to primers on crime and crime prevention, including residential security, personal safety, child safety, and more. Part Two focuses on citizen patrol from the case for citizen involvement to mobile patrols and confrontations. Copies of *On Guard!* are \$17.95 each (plus \$3 s&h) from Limelight Books, P.O. Box 493, Lake Geneva, WI 53147.

Also worth a look is *The WoodyWorld CB Gazette*, a quarterly publication that looks at CBs old and new. You'll find reviews of new rigs, as well as nostalgic remembrance of old classics, articles on a variety of CB subjects, as well as classifieds, reprints of old ads, and a lot of other cool stuff like photos of old CBs (Woody has a collection of over 200 CBs). Subscriptions are \$25 per year from WoodyWorld, P.O. Box 137, Sealy, TX 77474 or visit their Website at <www.cb gazette.com>.

Finally, *Sporadic Waves* is a monthly newsletter that addresses CB (primarily), but also scanning, ham and shortwave radio. Aimed at folks just getting started in radio, it covers a wide range of subjects with a light touch. *Sporadic Waves* also carries classifieds and some space advertising. Subscriptions are \$15 per year from Pineapple Paradise Radio Co., P.O. Box 751, Chester, MA 01011.

Until next time, write to me here at *Pop'Comm* or E-mail me: <CBEditor@aol.com>. You should also check out the new *Pop'Comm* Web site at <http://www.popcomm.com/>.



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In tests conducted by Lockheed Corporation, one of the world's largest Aerospace Companies, at their Rye Canyon Laboratory and Antenna Test Range, the Wilson 1000 was found to have 58% more power gain than the K40 Electronics Company, K40 CB Antenna. This means that the Wilson 1000 gives you 58% more gain on both transmit and receive. Now you can instantly increase your operating range by using a Wilson 1000.

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CB Antenna or Your Money Back\*\*  
New Design

The Wilson 1000 higher gain performance is a result of new design developments that bring you the most powerful CB base loaded antenna available.

### Why Wilson 1000 Performs Better

Many CB antennas lose more than 50% of the power put into them. The power is wasted as heat loss in the plastic inside the coil form and not radiated as radio waves.

We have designed a new coil form which suspends the coil in air and still retains the rigidity needed for support. This new design eliminates 95% of the dielectric losses. We feel that this new design is so unique that we have filed a patent application on it.

In addition, we use 10 Ga. silver plated wire to reduce resistive losses to a minimum.

In order to handle higher power for amateur use, we used the more efficient direct coupling method of matching, rather than the lossy capacitor coupling. With this method the Wilson 1000 will handle 3000 watts of power.

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So far you have read about why the Wilson 1000 performs better, but it is also one of the most rugged antennas you can buy. It is made from high impact thermoplastics with ultraviolet protection. The threaded body mount and coil threads are stainless steel; the whip is tapered 17-7 ph. stainless steel. All of these reasons are why it is the best CB antenna on the market today, and we guarantee to you that it will outperform any CB antenna (K40, Formula 1, you name it) or your money back!

\*Inductively base loaded antennas  
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Subject: Comparative Gain Testing of Citizen's Band Antennas  
Ref: Rye Canyon Antenna Lab File #870529

We have completed relative gain measurements of your model 1000 antenna using the K40 antenna as the reference. The test was conducted with the antennas mounted on a 16' ground plane with a separation of greater than 300' between the transmit and test antennas. The antennas were tuned by the standard VSWR method. The results of the test are tabulated below:

FREQUENCY (MHZ)	RELATIVE GAIN (dB)	RELATIVE POWER GAIN (%)
26.965	1.30	35
27.015	1.30	35
27.065	1.45	40
27.115	1.60	45
27.165	1.50	41
27.215	1.60	45
27.265	1.75	50
27.315	1.95	57
27.365	2.00	58
27.405	2.00	58

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# Clandestine Communique



TUNING IN TO ANTI-GOVERNMENT RADIO

## News About the Most Intriguing Clandestine in the Western Hemisphere!

Let us, once again, slip around a corner, into radio's back alleyways, its secret nooks and crannies, and see what's happening in the dark world of clandestine radio.

A rarely active, and thus rarely heard Latin American clandestine has surfaced again, however brief the appearance may prove to be. **Radio Patria Libre**, the station of Colombia's National Liberation Army (ELN) showed up recently on **6250** at around 2200. This station, operated by the main Colombia guerrilla group, has a history which dates back nearly 10 years now. However, it has probably not been active for more than 20 percent of that time. A few years ago it was reported to have been located and destroyed by the Colombian army. Since then it seems to operate on a much more reduced and sporadic schedule, so perhaps they have never been able to find a secure location and/or replenish their equipment, although, considering the many guerrilla groups which have used clandestine broadcasts in the past while operating under highly difficult conditions, one wouldn't think keeping a low power, low-tech station on the air would be all that difficult.

The 6250 frequency is as good a spot as any to check for this one, although it has operated up to 100 kHz or so higher. It has also made use of the area around 6600 and, on very rare occasions, the area around 15050. In the decade or so since Patria Libre first came on the air, clandestine hunters have made no progress in digging up a mailing address so no QSLs exist. Radio Patria Libre certainly qualifies as the most intriguing and challenging clandestine in the Western Hemisphere. Keep an ear open for this one. Other than the anti-Castro broadcasts and programs coming out of the U.S., Radio Patria Libre and the sporadically active Guatemalan clandestine Voz Popular are "it" as far as clandestine activity in Latin America is concerned these days, at least as far as we know.

The **Voice of the People of Kurdistan**, operated by the Patriotic Union of Kurdistan, switches to Arabic language broadcasts at 1700 and 0300 on **4120** and at 0900 on **6015**. Several hours of Kurdish-language programs precede the Arabic broadcasts on this station.

Another Kurdish station is the **Voice of Islam**—the Voice of the Islamic Movement in Iraqi Kurdistan, (the name of the group which supposedly operates the station). It broadcasts in Kurdish on **4135 variable**, **4400 variable** and **6305 variable** at 0200-0300 and 1430 to 1600 both in Kurdish, and in Arabic, irregularly, from 1600 to 1700.

The **Voice of the Communist Party of Iraqi Kurdistan** is operating on **3905** and **7695** from 1630 to 1700 and then again from 0400. The station seems to be using the same facilities as the Voice of the Iraqi People.

### News From Zaire

The way things are going it's likely that the Zairian regional station **Radio Candip**, now in the hands of the Kabila forces, may again be a legitimate operation by the time you read this. The station, on **5066**, has been identifying itself as Radio Candip at times and "**Voice of the People**" ("La Voix du Peuple") at other times. By the way, the official government station, La Voix du Zaire, has been only sporadically active on its 15245 frequency, a condition not necessarily caused by the civil war. During the past several years La Voix du Zaire has been off more than it has been on the air.

Meantime, what seems to be a genuine Zairian rebel station has appeared. **Radio Butembo**, broadcasting in support of the Alliance of Democratic Forces for the Liberation of Congo-Zaire, is in operation on **7060** until sign off at 1630, broadcasting in both Swahili and local languages. Butembo is the name of a town in North Kivu province. Ah, if only this one would

provide us with an 0300 or 0400 sign on!

The **Voice of Southern Azerbaijan** is broadcasting in the Azeri language from 0515 to 0615 on **11935** and 1530 to 1630 on **7093**. The so-called Southern Azerbaijan is actually the Iranian province of Azerbaijan, on the border of the former Soviet Republic of Azerbaijan (now the Republic of Azerbaijan) and is operated by the "National and Independent Front of Southern Azerbaijan." The broadcasts oppose the current Iranian government. No reports of this one being heard by North American clandestine hunters yet. If you get lucky, the address is Vosa Ltd., Postfach 108, A-1193 Vienna, Austria.

The **Voice of Free Tajikistan**, another former Soviet republic, operates from 0300 on **5965** and from 0600 sign-on on **7100**. There are two "Radio Afghanistan's." The government outlet, of course, and one operated by anti-government (anti-Taliban) forces. The **opposition station** is active on a frequency varying between **7080 and 7100** between 0730 and 0830 and again from 1330 to 1430. This Afghanistan clandestine is believed to be using the same facilities as the Tajikistan clandestine mentioned above.

The **Voice of Democratic Burma**, which is relayed over the facilities of Radio Norway, is reported to also be carried by a transmitter in Russia, on **7330**. Or, it may be aired via a transmitter in Uzbekistan (**11820**). The airing is from 1230 to 1300, give or take a few minutes.

The **Voice of Oromo Liberation** is currently on the air on Mondays, Wednesdays and Fridays only, at 1600 to 1700 on **9870**.

That covers things for this time. Your informational input to this column is always very welcome! That includes loggings of clandestine and related stations, operational schedules, background information, address and QSL information and the like. Every contribution is both helpful and appreciated!

Until next month, good hunting! ■





# RADIO BULGARIA

EXTERNAL SERVICE OF THE BULGARIAN NATIONAL RADIO

March 30, 1997 - October 25, 1997

TARGET AREA	TIME UTC	FREQ/KHZ	TRANSMITTER / PWR / AZIMUTH
<b>BULGARIAN</b>			
SOUTH AMERICA	00.00 - 01.00	9415, 11660	Pl. 500/245, Pl. 250/258
NORTH AMERICA	00.00 - 03.00	7480, 9485	Pl. 250/306, Pl. 500/306
BALKANS	03.00 - 04.00	1224	Vd 500/205
EAST EUROPE	03.00 - 04.00	6035, 7430	Sr 100/030, Sr 100/030
BALKANS	12.00 - 15.00	1224, 6195, 7310	Vd 500/205, Sr 050/140, Sr 150/140
MIDDLE EAST	14.00 - 15.00	11740	Pl. 500/140
CENTRAL ASIA	14.00 - 15.00	13715	Pl. 500/078
EAST EUROPE	15.00 - 18.00	7425, 9775	Sr 100/030, Sr 100/030
EUROPE	17.00 - 20.00	7495	Pl. 250/270
BALKANS	18.00 - 19.00	1224, 5850, 5860	Vd 500/205, Pl. 250/248, Sr 050/140
MIDDLE EAST	18.00 - 19.00	7435	Pl. 250/140
<b>ENGLISH</b>			
NORTH AMERICA	04.00 - 05.00	9485, 11720	Pl. 500/306, Pl. 500/306
EAST ASIA	12.00 - 13.00	13790	Pl. 250/050
EUROPE	19.00 - 20.00	9700, 11720	Pl. 500/306, Pl. 500/306
EUROPE	21.00 - 22.00	9700, 11720	Pl. 500/306, Pl. 250/306
NORTH AMERICA	23.00 - 24.00	7480, 9435	Pl. 250/306, Pl. 250/295
<b>FRENCH</b>			
NORTH AMERICA	03.00 - 04.00	9485, 11720	Pl. 500/306, Pl. 500/306
EUROPE	04.00 - 07.00	9485, 11825	Pl. 500/306, Pl. 500/306
EUROPE	10.00 - 11.00	11605, 13630	Pl. 500/295, Pl. 250/292
EUROPE	17.00 - 18.00	9700, 11720	Pl. 500/306, Pl. 500/306
EUROPE	20.00 - 21.00	9700, 11700	Pl. 500/306, Sr 100/306
<b>GERMAN</b>			
EUROPE	05.15 - 06.00	9485, 11825	Pl. 500/306, Pl. 500/306
EUROPE	10.00 - 11.00	11660, 13185	Pl. 500/306, Pl. 250/306
EUROPE	16.15 - 17.00	9700, 11720	Sr 150/306, Pl. 500/306
EUROPE	18.00 - 19.00	9700, 11720	Pl. 500/306, Pl. 500/306
<b>ITALIAN</b>			
EUROPE	17.15 - 18.00	5850, 7510	Pl. 250/248, Sr 150/140
EUROPE	20.00 - 20.45	7495, 7510	Pl. 250/270, Sr 150/140
EUROPE	21.15 - 22.00	1224, 5850	Vd 500/205, Pl. 250/248
<b>SPANISH</b>			
SOUTH AMERICA	01.00 - 02.00	9415, 11660	Pl. 500/245, Pl. 250/258
CENTRAL AMERICA	01.00 - 02.00	9700	Pl. 250/295
EUROPE	19.15 - 20.15	9500, 11660	Sr 100/270, Pl. 250/258
EUROPE, S. AMERICA	21.15 - 22.15	11660, 13710	Pl. 250/258, Pl. 500/245
SOUTH AMERICA	23.00 - 24.00	9415, 11660	Pl. 500/245, Pl. 250/258

TARGET AREA	TIME UTC	FREQ/KHZ	TRANSMITTER / PWR / AZIMUTH
<b>RUSSIAN</b>			
EAST EUROPE	02.00 - 03.00	1224, 6035, 7430	Vd 500/205, Sr 100/030, Sr 100/030
EAST EUROPE	14.00 - 15.00	7425, 9775, 11855	Sr 100/030, Sr 100/030, Pl. 250/050
EAST EUROPE	18.00 - 19.00	7425, 9775	Sr 100/030, Sr 100/030
<b>ARABIC</b>			
MIDDLE EAST	15.15 - 16.15	9430, 11625	Pl. 250/115, Pl. 500/140
NORTH AFRICA	20.15 - 21.15	11460, 13710	Pl. 250/258, Pl. 500/245
<b>ALBANIAN</b>			
BALKANS	MTWTFSS 04.30 - 05.00	1224, 6140, 7115	Vd 500/205, Pl. 250/248, Sr 150/140
BALKANS	06.30 - 07.30	1224, 5895	Vd 500/205, Pl. 250/248, Sr 150/140
BALKANS	MTWTFSS 15.45 - 16.30	1224, 5850, 5860	Vd 500/205, Pl. 250/248, Sr 050/140
BALKANS	MTWTFSS 19.00 - 19.45	1224, 5850, 5860	Vd 500/205, Pl. 250/248, Sr 050/140
<b>GREEK</b>			
BALKANS	MTWTFSS 04.00 - 04.30	1224, 6140, 7115	Vd 500/205, Pl. 250/248, Sr 150/140
BALKANS	06.00 - 05.00	1224, 6140, 7115	Vd 500/205, Pl. 250/248, Sr 150/140
BALKANS	08.00 - 09.00	5930, 7135	Sr 050/140, Sr 150/140
BALKANS	MTWTFSS 16.30 - 17.15	1224, 5850, 5860	Vd 500/205, Pl. 250/248, Sr 050/140
BALKANS	MTWTFSS 19.45 - 20.30	1224, 5850, 5860	Vd 500/205, Pl. 250/248, Sr 050/140
<b>SERBIAN</b>			
BALKANS	MTWTFSS 05.00 - 06.00	1224, 6140, 7115	Vd 500/205, Pl. 250/248, Sr 150/140
BALKANS	06.30 - 07.00	1224, 5895	Vd 500/205, Pl. 250/248
EUROPE	08.30 - 09.00	9475	Sr 100/331
BALKANS	07.30 - 09.00	1224, 5895	Vd 500/205, Pl. 250/248
EUROPE	07.30 - 09.00	9475	Sr 100/331
BALKANS	MTWTFSS 15.00 - 15.45	1224, 5850, 5860	Vd 500/205, Pl. 250/248, Sr 050/140
BALKANS	MTWTFSS 20.30 - 21.15	1224, 5850, 5860	Vd 500/205, Pl. 250/248, Sr 050/140
<b>TURKISH</b>			
BALKANS	MTWTFSS 04.15 - 05.00	5945, 6040	Sr 050/140, Pl. 250/140
EUROPE	MTWTFSS 04.15 - 05.00	7345	Sr 100/306
BALKANS	05.00 - 06.30	1224, 6040, 7115	Vd 500/205, Pl. 250/140, Sr 150/140
EUROPE	05.00 - 06.30	7375	Sr 100/306
BALKANS	MTWTFSS 17.15 - 18.00	1224, 5860, 7455	Vd 500/205, Sr 050/140, Pl. 250/140
EUROPE	MTWTFSS 17.15 - 18.00	7355	Sr 050/306
<b>HORIZONTAL/NOVA SERVICE</b>			
EUROPE	MTWTFSS 03.00 - 17.00	9850	Pl. 250/273
EUROPE	MTWTFSS 06.00 - 09.00	1224	Vd 500/205
EUROPE	MTWTFSS 09.00 - 12.00	1224	Vd 500/205
EUROPE	MTWTFSS 03.00 - 21.00	7670	Sr 015/140
<b>SHORT WAVES</b>			
5850 - 6200 kHz	49 m	11600 - 12100 kHz	25 m
7100 - 7550 kHz	41 m	13600 - 13800 kHz	22 m
9400 - 9900 kHz	31 m	15100 - 15700 kHz	19 m
<b>MEDIUM WAVES</b>			
	1224 kHz	245 m	
<b>TRANSMITTER SITES</b>			
Vd = VIDIN	Pl = PLOVDIV		
Sr = SOFIA	St = STOLNIK		

**RADIO BULGARIA**  
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This Radio Bulgaria schedule is good through late October.

happen) thanks to the budgetmeisters. Don't be surprised, though, if Darwin sees use as a relay station for other international broadcasters.

Vatican Radio is carrying a segment of the programming of **Voix de la Charite**, a Catholic station in Lebanon. It airs in Arabic on 11715 at 0430 to 0500, following Vatican Radio's own Arabic broadcast at 0400.

XEQM in Merida, Mexico, unheard for some years, has returned to shortwave and is being noted at its old stomping grounds—**6105**—and still seems to be using its old slogan "La Pantera" ("The Panther") Check it in the early mornings or evenings. A pessimist would point out that many Mexican stations have a habit of firing up their shortwave transmitters for a few days and then going silent for a few more years, apparently a maneuver intended to retain their shortwave licenses. So there's a good chance The Panther may have already run off with its game.

The Philippine government reportedly has told the U.S. it has to close down its relay base at Poro, from which half a dozen high power shortwave transmitters broadcast programming to much of Asia.

How soon, or even whether this happens is anyone's guess, but station hunters who haven't got Poro yet might be wise to get after this site.

Ecuador's HCJB and the Sudan Interior Mission (SIM), which operated the now destroyed ELWA in Liberia, are joining in a cooperative effort aimed at putting new Christian radio stations on the air and establishing more Christian churches. HCJB will focus mainly on the radio effort while SIM will concentrate on expanding churches. Both organizations will continue working in all the areas in which they are currently engaged. One of the first of these new stations may very well be in Bolivia.

A new religious station due on the air from Peru soon is **Radio Chaski**, in Cusco, which will be operated by Baptist Mid Missions. Initial operations will probably be on **6090** but that spot probably won't be used for very long.

**World Music Radio** describes itself as "the first English speaking, non-government, international radio station in Africa." It's now on the air via the Meyerton transmitter site in South Africa, broadcast to all of the continent and beyond

on Saturdays and Sundays, using **3345** (100 kW) and **6290** (250 kW) from 1800 to 2200. The station hopes to expand to daily broadcasts starting this fall. WMR dates back to 1967 and has aired its programming on such stations as Radio Andorra, Radio Milano International in Italy and Radio Dublin in Ireland as well as on a number of local medium wave and FM stations.

Open Mouth, Insert Keyboard Department. A couple of months ago, in reporting the news of the passing of WRNO owner Joe Costello, we said that he was responsible for the coming of all private U.S. shortwave broadcasters except WINB. Anyone who's been active in shortwave listening more than a couple of weeks knows that WYFR dates its history back practically to the beginning of time. It preceded WRNO by several decades. Thanks to Dan Elyea of WYFR for pointing this out. Shortwave authority Stan Leinwoll also takes us to task, noting that the FCC, in deciding to deregulate shortwave broadcasting as much as possible, was responsible for the huge growth which followed. That, of course, is technically correct. But if someone lays

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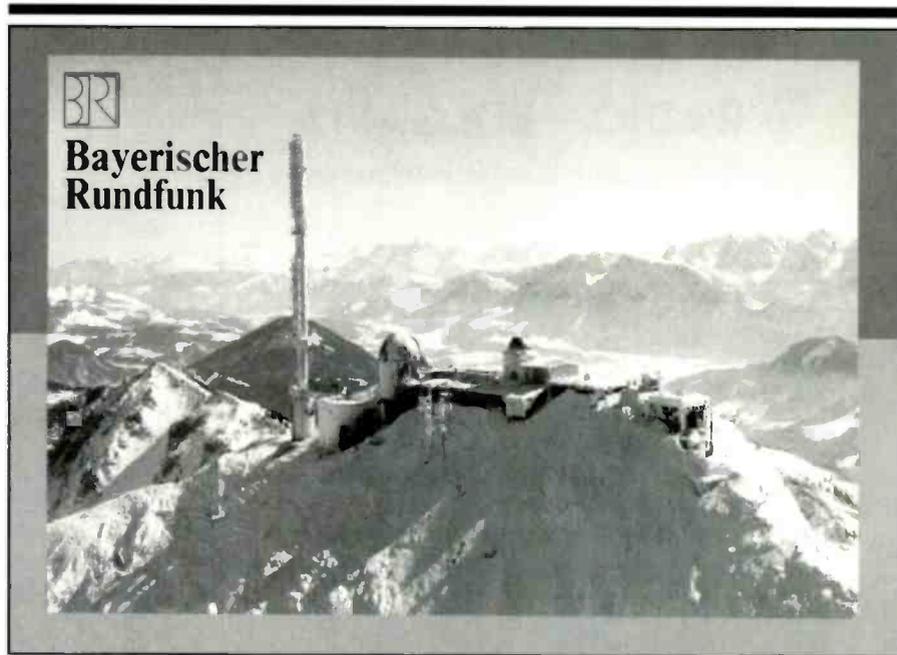
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CIRCLE 77 ON READER SERVICE CARD



Germany's Bayerischer Rundfunk FM transmitters are on this mountain peak. The station uses 6085 on 24 hours a day on shortwave, but DW also uses the same frequency at times.

out the goodies and no one shows up, is there a party?

Remember that your shortwave logs are always sought and welcome. Please list your catches by country, double-space between the items (at a minimum) and add your last name and state abbreviation after each item, otherwise we can't use them. Logs can be sent to *Pop'Comm* headquarters in Hicksville or directly to me via the *Pop'Comm* Web site at <http://www.popcomm.com/>. We also need spare QSL cards, station and shack photos, station literature, news, changes

in station addresses and QSL policies and whatever else you think might be of interest and support!

Here are this month's logs. All times are 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. Abbreviations such as SS, FF, PP, etc., indicate languages (Spanish, French, Portuguese). If no abbreviation is given the broadcast language is assumed to be English (EE).

**ALBANIA**—Radio Tirana, 6140 at 0247 with news. (Tucker, AL)

**ARGENTINA**—Radio Nacional, 6060 in SS with romantic Latin music hrd at 0521. (Miller, WA)

**ARMENIA**—Voice of Armenia, 9965 at 2030 to 2100 with English to Europe, then Spanish at 2100 to 2115 sign off. (Silvi, OH)  
**AUSTRALIA**—Radio Australia, 9580//9860 at 1205 with news. (Hornstein, MI) 9860 at 1215. (Northrup, MO) 11900 at 1439 with sports: 17795 heard at 2257 with "Hindsight" and 21725 via Darwin heard at 0815. (Miller, WA) (The Darwin site has since been closed down. — Editor)

**AUSTRIA**—Radio Austria Int'l, 6015 at 0543. (Tucker, AL) (Via Canada. — Editor) 13730 at 0504 with news in GG. (Foss, AK)

**BRAZIL**—Radio Mundial, 4974.9 at 0125 with ballads, ID, call, mention of Santa Catarina, Cuba, vocals and announcements in PP. (Paszkwicz, WI)

Radio Nacional Amazonia, 11780 at 0000 in PP with heavy echo effect, ID on the hour. 15445 at 1445 with music and talks in PP. (Hornstein) 11785 (new frequency) at 0020

#### Abbreviations Used in Listening Post

AA	Arabic
BC	Broadcasting
CC	Chinese
EE	English
FF	French
GG	German
ID	Identification
IS	Interval Signal
JJ	Japanese
mx	Music
NA	North America
nx	News
OM	Male
pgm	Program
PP	Portuguese
RR	Russian
rx	Religion/ious
SA	South America/n
SS	Spanish
UTC	Coordinated Universal Time (ex-GMT)
v	Frequency varies
w/	With
WX	Weather
YL	Female
//	Parallel Frequencies

with education and religion, IDs and ballads. (Paszkiwicz, WI)

**CANADA**—Radio Canada Int'l, 9535 at 0238 with discussion about national unity. (Foss, AK) 9650 at 1215 in FF and 11855 at 1355 with talk about communist party electioneering. (Northrup, MO) 15305 at 1507 in FF. (Miller, WA)

**CHINA**—China Radio Int'l, 9730 (via French Guiana) at 0405 with news. (Tucker, AL) 17680 via Kunming in Indonesian at 0800. (Miller, WA)

**COLOMBIA**—La Voz del Guaviare, 6034.9 at 0350 with phone talks, mentions of Sudamerica, Colombia. Jingle, time checks, commercials. (Paszkiwicz, WI)

Caracol Colombia, 5077 in SS at 0316 with "Radio noticias Caracol." (Miller, WA)

**COSTA RICA**—Adventist World Radio, 5030 at 0318 with religious programming in SS. (Miller, WA) 9725 at 1200 with religious program. (Hornstein, MI) 1210. (Northrup, MO) 1456. (Wilden, IN) 0020 in FF. (Foss, AK) 0456 with ID. (Tucker, AL)

Radio For Peace Int'l, 7385 at 0410. (Foss, AK) 0559 with ID. (Tucker, AL)

**CUBA**—Radio Havana Cuba, 9550 at 0242 with songs in SS. (Foss, AK) 11760 at 1205 with news in SS. ID. (Northrup, MO) 15340 at 2016 in SS. (Wilden, IN)

**CZECH REPUBLIC**—Radio Prague, 7345 at 2255 with woman reading news. (Hornstein, MI) 0258 with IS. (Tucker, AL)

**ECUADOR**—Radio Nacional Espejo, 4879.6 at 0325 with romantic music, ID, announcements mentioning "onda corta," jingle, song—"Up Where We Belong." (Paszkiwicz, WI)

HCJB, 9410 at 0441 in FF with Ecuadorian music. (Foss, AK) 9765 at 1300 in SS. (Northrup, MO)

**ENGLAND**—BBC, 6175 via VOA Delano, at 0402. (Foss, AK) 9515 at 1220. (Northrup, MO) 15220 at 1502. 17760 at 0805 via Singapore, 21660 at 0807 via Ascension, all with news. (Miller, WA)

**FINLAND**—YLE, Radio Finland Int'l, 15400 heard at 1402 with news of Europe. (Miller, WA)

**GABON**—Africa Number One, 17630 at 1400 with talk in FF and African music. (Hornstein, MI)

**GERMANY**—Voice of Germany, 6100 at 0133 with news in GG. (Wilden, IN)

**GREECE**—VOA relay, 15205 at 0528 with discussion on use of violent teaching on the Internet. (Foss, AK)

Voice of Greece, 9420 at 0030 with vocals in Greek. (Foss, AK)

**HONDURAS**—La Voz Evangelica, 4819 at 0251 carrying Adventist World Radio message in SS. (Miller, WA)

**HUNGARY**—Radio Budapest, 11910 at 0150 with DX show in progress. (Foss, AK)

**INDIA**—All India Radio, 4790 at 0000 sign on with Tamil service. IS, ID, presumed news, subcontinental music. What of AIR Itanagar Domestic Service on this frequency from 0030? (Rausch, NJ) (Apparently 4790 is now



Windische Tracht, Gailtal, Kärnten  
Regional costume from the Gail Valley, Carinthia  
Costume régional de la vallée de Gail en  
Carinthie  
Traje regional del Gailtal, Carintia



A Radio Austria QSL card from 1990—one of many designs used in recent years.

Chennai with Itanagar now on 4990. — Editor)

**IRAN**—Voice of the Islamic Republic of Iran, 15084 in Farsi at 2119. (Miller, WA)

**ISRAEL**—Reshet Bet service, 15615 at 1800—1900 to Europe heard while on vacation in Tennessee. (Silvi, OH)

**LIBYA**—Radio Jamahiriyah, 15415 in AA at 2254. (Miller, WA)

**JAPAN**—Radio Japan, 6110 at 0512 with news, weather. (Tucker, AL) 9750 at 1519 with talk on Hong Kong. (Miller, WA) 13630 at 0509 with news of Asia. (Foss, AK)

**KUWAIT**—Radio Kuwait, 15505 at 0645 in AA. (Foss, AK)

**MEXICO**—Radio Mexico Int'l, 9705 at 0436 with traditional Mexican music, EE ID and more Mexican music. (Foss, AK)

Radio Educacion, 6185 at 0449 with kids song in SS. (Foss, AK)

**MOROCCO**—VOA relay, 7255 at 0423 with man in AA. (Foss, AK)

**NETHERLANDS**—Radio Netherlands, 9890 at 1523 closing. (Miller, WA)

**NEW ZEALAND**—Radio New Zealand Int'l, 15115 with "Newstalk" program about golfing. Good until fade at 0344. (Silvi, OH)

**NIGERIA**—Voice of Nigeria, 7255 at 2150 with business and financial news, ID "Voice of Nigeria, Lagos." Talking drums interval signal at 2200 and into program in local lan-

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guage. English scheduled at 0500 to 0800, 1200 to 1400 and 1900 to 2200. (Rausch, NJ)  
**NORWAY**—Radio Norway Int'l, 7485 at 0400 with news and information. (Hill, ID)  
**13805** at 1215 with Norwegian and European news. (Hornstein, MI) 0502 in presumed Norwegian. (Foss, AK)

**PAKISTAN**—Radio Pakistan, 9516 variable from 0030 sign on to 0130 close. Subcontinental music. ID by man at 0128, national anthem and off. (Rausch, NJ)

**PAPUA NEW GUINEA**—Radio Northern, 3290 at 0945 in Pidgin English, with island music, ID, news in Pidgin. (Rausch, NJ)

**PORTUGAL**—Radiodifusora Portugal, 15200 at 1625 with soccer coverage in PP. (Miller, WA)

**RUSSIA**—Voice of Russia, 15445 at 0625 with the program "New Market." (Foss, AK)

**SAUDI ARABIA**—Broadcasting Service of the Kingdom of Saudi Arabia, 11870 in AA at 0249. (Foss, AK)

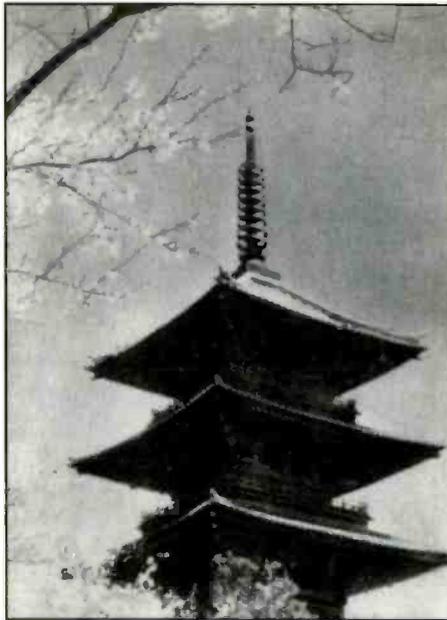
**SEYCHELLES ISLANDS**—Far East Broadcasting Association, 11690 at 0325 to 0330 with talk in unidentified language, address in Dushanbe, ID, interval signal. (Paszkiwicz, WI)

**SOUTH AFRICA**—World Music Radio via Meyerton, 6290 at 2100 to 2200 close with pops, macarena, etc., voice and jingle IDs, address, fax and e-mail addresses. Scheduled Saturdays and Sundays only on 3345 and 6290 from 1800 to 2200. P.O. Box 112, DK-8900 Randers, Denmark. 45 70 222 888 <wmr@cybernet.dk> for E-mail. Web is <www.wmr.dk>. (Rausch, NJ)

**SOUTH KOREA**—Radio Korea Int'l, 15575 being received quite well with EE broadcasts to Western North America from 0200 to 0300. (Silvi, OH)

**SPAIN**—Radio Exterior de Espana, heard on 11815 at 1230 in SS. (Northrup, MO) (via Costa Rica, - Editor)

**SRI LANKA**—Radio Japan relay, 11890 at



LEFT: Japanese pagoda in Uyeno Park surrounded by Cherry Blossoms. From the end of March to April the park is visited by crowds of people to see the "sakura", known as "The Flower of Japan".

RIGHT: The new Diet Building in which sessions began in 1937. See the contrast in Nippon between the old and the new!

*Harold Hostetler of Ohio received this QSL back in 1938 from NHK, Japan. He says "many years ago we traded our Crosley for a new five-tube Philco with a shortwave band. I became hooked on DXing. This is one of my first QSLs."*

0120 to 0145 with news, music. "Let's Learn Japanese." Still there at 0236 recheck. (Paszkiwicz, WI)

**SWEDEN**—Radio Sweden, 7135 at 0233 to 0300 with news. "60 Degrees North." (Paszkiwicz, WI) 13625 at 0515 in presumed Swedish. Very heavy QRM from Radio Japan on 13630. (Foss, AK)

**TAIWAN**—Voice of Free China, via WYFR, 5950/9860 at 0030 with "Kaleidoscope." (Tucker, AL) 11745 in CC at 1210. (Northrup, MO) 15320 (no relay) at 1627 with boy's choir in CC. (Miller, WA)

**THAILAND**—Radio Thailand, 9680 heard at 2030 to 2045 with feature on Thai cooking. IS. (Rausch, NJ)

**TURKEY**—Voice of Turkey, 9655 at 2250 just at sign off. (Hornstein, MI)

**VATICAN**—Vatican Radio, 9600 at 2245 just signing on. (Hornstein, MI) 11830 at 2243 with interval signal. (Miller, WA) 15570 heard at 0636 with news. Woman at 0642 with "This is Vatican Radio broadcasting to Africa." (Foss, AK)

**VENEZUELA**—Radio Tachira, San Cristobal, 4830 with religious message in SS at 0307. (Miller, WA)

Ecos del Torbes, San Cristobal, 4980, heard at 0321 with romantic Latin ballads in SS. (Miller, WA)

Radio Rumbos, Caracas, 9659 at 0324 in SS with pops. Nearly co-channel with NHK, Tokyo. (Miller, WA)

**VIETNAM**—Voice of Vietnam, 15010 at 1617 with talk of Marble Mountain in Da Nang. (Miller, WA)

**YUGOSLAVIA**—Radio Yugoslavia, 6195//7115 at 0112. (Tucker, AL) 11870 0030 to North America, parallel to 9580 (transmitter in Bosnia) which was slightly better. Included "Box 200" letters segment. Runs to 0030. (Silvi, OH)

A tip 'o your hat, please, to the following folks who came through with the goodies this month: Susan J. Wilden, Columbus, IN; Lee Silvi, Mentor, OH; Mark Northrup, Gladstone, MO; Sheryl Paszkiewicz, Manitowoc, WI; Hugh Hornstein, Muskegon, MI; Ed Rausch, Cedar Grove, NJ; Marty Foss, Talkeetna, AK; Thomas Hill, Mountain Home, ID and Michael J. Miller, Issaquah, WA. Thanks to each of you!

Until next month, good listening! ■

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# The ACARS Downlink

BY BOB EVANS

YOUR LINK TO DIGITAL AIRCRAFT COMMUNICATIONS

## Shopping For An ACARS Decoder? Here's the Equipment Rundown . . .

I first reviewed currently available decoders back in my December '96 column. Since then, a few changes have taken place and we have received several requests to present this subject again.

ACARS decoders are available in a variety of packages; some are stand-alone dedicated units, only decoding ACARS traffic. Others offer ACARS as simply another mode in addition to the plethora of others that they will decode. Some units are meant for base station operations and require an AC power supply, while others permit portable operations through the use of a laptop or notebook computer drawing their power from the computer's COM port.

Depending on the model you choose, you can expect to spend from \$99 to \$1399.

### Here's The Breakdown

**1 The Universal M-400**, the unit that started it all, is a stand-alone desktop decoder (requiring an external power supply) that features several popular digital shortwave modes as well as other VHF pager modes. The M-400 has a unique, two-line, 20-character LCD display and an 8,000-character scrollable buffer that allows the user to review previous transmissions. Audio connections to your radio are made through a standard RCA cable. A parallel printer interface is provided on the back of the unit.

For serious monitoring however, it was necessary to keep a printer running at all times. During its first year of use, I generated over 5,000 pages of decoded traffic. With the very future of Canadian forests at stake, I built a "homebrew" parallel to serial interface and ported the messages to my desktop computer. A simpler solution exists today. Universal now also markets the CI-400 Capture Interface which provides an easy and effective connection to a PC-type computer. My Universal M-400/ICOM R-7100 combination continues to remain the benchmark configuration used to evaluate all other contenders. Update: The M-400 has now been replaced by the M-450 which includes a serial interface and optional PC controlling software.

**2 The Universal M-8000v7** desktop decoder is a top-of-the-line digital decoder designed for the serious digital monitoring. Sporting several HF and VHF decoding modes, it is also the most costly decoder featured in this review. In addition to the decoder, you will require a VGA analog color monitor. A parallel printer port also supports laser printers. Audio connections are made through a cable with an RCA male at one and a quarter-inch phone plug at the back of the decoder. A second audio input is available for shortwave radios. Computer Aided Technologies markets a program named "Copy Cat" that permits control of and data capture from the M-8000 from your PC. Although this unit is outstanding for ACARS decoding, obviously no one purchases it for that reason alone.

**3 The Universal M-1200 Decoder Card** is a plug-in circuit board that requires one full-size slot in your PC. It offers the same decoding capabilities and modes as the external M-400 unit, except that all data acquisition takes place within the confines of the computer. The M-1200 functions well with most brand name PC clones. Owners of the "El Cheapo" brands would do well to consider another alternative, as computer-generated RFI will seriously impact its decoding abilities.

**4 The Universal ACT-1** is a portable, dedicated ACARS-only decoder requiring no external power. The Audio Input Converter hardware consists of an RS-232-sized 25-pin interface that plugs into a serial port. A cable from the interface terminates in a mini plug which connects to an audio-out source of your scanner/receiver. Another serial device (such as a mouse) may be daisy-chained through the back of the interface. The user-friendly software, run under DOS only, includes full mouse support. The interface must be plugged into your serial port in order to run the program. You can view, filter, print and save incoming messages as well as view, search and print previously logged files. A feature unique to this decoder is its ability to individually suppress the display of each of the message elements. Another unique feature provides the capability to filter messages for viewing, printing or saving. Each of these filters can be set to monitor one of the three following fields: Address/Registration, Flight ID/Number and Message Text. Up to 16 entries may be defined for each of the three fields and wildcard characters are supported. Only incoming text that does not match your previously defined excluded specifications will be displayed, printed or saved. Priced at just under \$100, the ACT-1 is one of the two units in this price range.

All Universal decoders are supplied with adequate set-up and user documentation and a complimentary copy of Ed Flynn's "Understanding ACARS" book.

**5 The Lowe Air Master** is also a portable, dedicated ACARS-only decoder requiring no external power. Terminating in a 25-pin plug, the decoder interface automatically senses COM ports 1 through 4. The cable from the interface also terminates with a mini plug connector. Again the interface must be present for the software to run. The program is designed to run under DOS and no mouse support is provided. Lowe has just released the Version 3.0 software for this very popular decoder, with many enhancements over previous versions. Perhaps the most unique feature of this decoder (and that of the AEA ACARS unit that shares its common heritage) is its ability to optionally suppress messages with bad parity. By the very nature of their small size, all portable interface units lack the sophisticated audio/digital conversion processing circuits of their desktop counterparts. Although the software attempts to compensate for this shortcoming, it is not always successful. The end result may be a screenful of messages containing garbled unintelligible text (even more unintelligible than some real ACARS messages).

---

***“Armed with this information, you should be able to make a reasonable choice.”***

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Should you elect to display messages with bad parity, the Air Master will even display the garbled portion of the message in a different color than that of the correctly received text. My personal preference is to keep this feature enabled at all times. You actually will not lose much traffic and your frustration level will be kept to a minimum.

As with most portable decoders, messages are displayed and saved with message element headers. While this makes message content easier to read, it also means larger file sizes, since individual messages now comprise several lines.

A new feature in the Version 3.0 software allows you to turn off all message headers. This bodes well for mobile operations at local airports. Ground-to-air uplink messages usually contain Aircraft Registrations and not Flight Numbers. Decoders that display message headers tend to erroneously place the first few characters of the actual uplink message text in the Message Number and Flight ID/Number fields. The Air Master's new software permits you to optionally turn off all header information, thereby also providing a more compact display, even for downlinks. Although no mouse support is provided, a series of “hot keys” mimics the functions of the pull-down menus. The display of message contents can also be suppressed, a feature especially suited to aircraft “Spotters.” Up to six character strings of alert text can be specified. If any of this text appears in an incoming message, the computer will beep to alert the user. This feature is designed to help in spotting particular registrations or flight numbers.

Display of repeat messages can be suppressed so that details of the last 50 messages received are kept in memory and any incoming messages are checked against them. In addition to scrolling back through the current session's logs, previously saved logs may be called up for review. Set-up and user documentation were provided by the third-party design and development team. A 23-page chapter on Understanding ACARS provides only a skeletal introduction.

⑥ **The AEA ACARS Decoder** is virtually identical in every respect to Version 1 of the Lowe Air Master. This is no mere coincidence, inasmuch as the third-party UK-based development team that designed the Air Master also developed the AEA unit. Like the Air Master, its most significant feature, in my opinion, is the ability to suppress messages with bad parity. It may be purchased as an ACARS-only decoder or as a bundled product with other popular AEA decoders.

Current owners of the AEA FAX III, DSP-232 and PK-900 demodulators may purchase software-only versions designed to provide full ACARS capabilities. Although AEA originally provided a demo unit for this evaluation, I ended up purchasing it for my own use. At a suggested list price of \$99, you can hardly go wrong in making this your first ACARS decoder.

Not satisfied with the documentation supplied by its original designers, AEA has produced an exceptional 132-page operating manual excelling in message types and interpretation. It is obvious that the authors of this document spent many hours actually monitoring and interpreting ACARS traffic. Update: Although AEA has since gone out of business, many radio dealers continue to carry their products.

⑦ **The Hoka Code3-Gold** is also a portable decoder that plugs into your computer's COM port and requires no external power.

The interface is designed with a 25-pin plug on one end and a 9-pin plug on the other. Simply plug the appropriate configuration into your computer. Similar to the Universal M-8000, the Hoka supports a myriad of digital modes (over 30 to be exact). When used to decode ACARS, this unit is unique in that it is capable of distinguishing between Uplink and Downlink messages as well as message status (ACK or NAK). I was surprised to discover that it also identifies “Squitter” transmissions (random transmissions from the ground that alert aircraft that a ground station is available to receive traffic).

With exception of a paragraph on what type of antenna to use, there is absolutely no documentation on ACARS reception or even an illustration of the ACARS data screen. Nowhere is the abbreviation “AGCS-D”, that appears at the start of every message, explained. Nor do they explain how they derive their ACK and NAK message status.

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### Which Decoder Is Best?

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Before I can answer that question, there are a few questions that you must ask yourself. Read carefully:

- Are you only interested in decoding ACARS or are there other digital modes that interest you as well?
- Do you own a computer? Is it a desktop or laptop model?
- How much “real-estate” (space) do you have in your computer/radio shack to accommodate a larger outboard unit?
- If you do own a desktop computer, do you have a free full-size slot in your PC?
- Would you ever envision yourself setting up for portable operations at your local airport?
- And last, but not least, how much money are you prepared to spend?

Armed with this information, you should be able to make a reasonable choice. Remember, that even though so called “portable” units have the advantage of mobility, when used in combination with a desktop computer, they virtually take up no space. Also remember that these units don't possess the electronics to filter out garbled text. You would do well to consider units that suppress data parity errors.

For me, the perfect ACARS decoder does not exist—if it did, it would incorporate all the unique features of each unit now available. Another anomaly lies in the fact that no two decoders “see” all the same messages. When operating several decoders simultaneously, messages will be captured by some and not by the others. This fact has been borne out by other sources and should not affect your choice.

All of the above decoders will perform equally well whether attached to VHF desktop receiver or a good brand-name handheld scanner. The secret is that the squelch circuit must be left completely open at all times.

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### Internet WWW APRS Display of Aircraft Communications and Reporting System on 131.55 MHz AM

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APRS is a program developed by Bob Bruninga, WB4APR, to track mobile stations equipped with GPS navigation systems and to link those stations by radio. The U.S. Naval Academy uses APRS in a number of applications for data, communications and telemetry as shown below.

**“For me, the perfect ACARS decoder does not exist . . .”**

The Live displays will show current APRS activity being monitored off the air in Annapolis, MD. (Your Browser must be JAVA capable and some of these pages will only be *live* while there are unused PC's in the satellite lab).

This screen shows the LIVE positions of commercial aircraft being monitored on the national ACARS frequency of 131.55 MHz. They are using a VHF scanner and a DSP-12 packet TNC for the ACARS decoding and then converting those packets to APRS format for display here. At the altitude of most aircraft, notice that they can hear out 200 miles in all directions.

The following is the URL address:

<<http://web.usna.navy.mil/~bruninga/acar.html>>

### The ACARS Information Center

Be sure to check out <<http://www.grove.net/~acarsweb/index.html>>. If you only visit one ACARS Web site, this is the one. The site is maintained by ACARS monitors who are a sub-group of the WUN (Worldwide Utility News) group. Here's what's covered in the Web site. Individual topics are further subdivided into many facets.

1. What is "ACARS"
2. Message decode reference
3. Download raw ACARS log files

4. Download useful software
5. ICAO/IATA Information
6. Useful references
7. Credits

The most important "other" source to consider is the ACARS listserver courtesy of Grove Enterprises. To join up, simply send a message to <[majordomo@grove.net](mailto:majordomo@grove.net)> with the following text in the message:

subscribe acars

Please don't put anything else in the message body or subject.

### Fancy A Chat About ACARS?

Occasionally some of the people from the list can be found on IRC. The best time to try is probably a Sunday afternoon. Set up your IRC client to use the following server:

irc.dal.net  
port: 7000

When logged on join the #acars channel ("!join #acars").

Until December, why not drop me a note telling about your ACARS experiences? And of course I welcome your questions about ACARS decoding. Send them to me at *Popular Communications*, 76 North Broadway, Hicksville, NY 11801 or visit the *Pop'Comm* Web site at <<http://www.popcomm.com/>> where you can see what's new at your magazine and link directly to my desk. ■

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# Communications Confidential

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

## More on FEMA, and Goodbye Albrook

In the August issue I did an article called "Riders on the Storm" which discussed Federal Emergency Management Agency communications in times of crisis. I didn't have room at the time to include them, but Table 1 is a list of FEMA call signs readers may find useful. Some of the terms used are: EOC, Emergency Operations Center; NECC, National Emergency Communications Center; MATTS, Mobile Air Transportable Trailer System; MERS, Mobile Emergency Response Support; and MRV, Multi-Radio Van.

FEMA conducts a quarterly exercise of the FEMA National Radio System (FNARS), National Emergency Coordination Network (NECN). FNARS objectives include providing a High Frequency (HF) radio medium for federal, state, local and territorial governments that is inter-operable with other Federal departments, agencies and military services. NECN objectives are to provide federal emergency response personnel with a common HF radio frequency to exchange emergency information, coordinate activities, and request assistance during an emergency. Hurricane Andrew provided the incentive for the NECN system and on June 1, 1994 the first NECN test was conducted to coincide with the beginning of hurricane season. Although the exer-

cises are performed quarterly, the NECN is available 24-hours-a-day as part of the normal operation of the FEMA Special Facility located at WGY-912, Barryville, VA. Two common calling frequencies are maintained; 5211.0 and 10493.0 kHz, USB. These are often reported in error as "night" or "day" calling as both have a listening watch maintained 24-hours-a-day. During the NECN exercises, a wide variety of stations can be heard checking in. These include all U.S. military services and their MARS counterparts, and stations from: American Red Cross; Federal Highway Administration; Department of Energy; Department of Transportation; Federal Aviation Administration; Defense Logistics Agency; Department of Commerce/NOAA; FCC; DEA and the FBI among many others.

At 2400 UTC on July 16, AFH3, Albrook Global, Albrook AB Panama, signed off the air as part of the U.S. Air Force GHFS system. The station had been scheduled to close by 1999, however recent command moves/restructuring moved the date up. I was listening as the following transmission was sent on 11175.0 kHz: "Attention all stations, Attention all stations, this is Albrook Global, providing service from 5 April 1969 through 15 July 1997. This is Al-

brook, signing out." Several other GHFS stations acknowledged, and that sent another call sign into the history books.

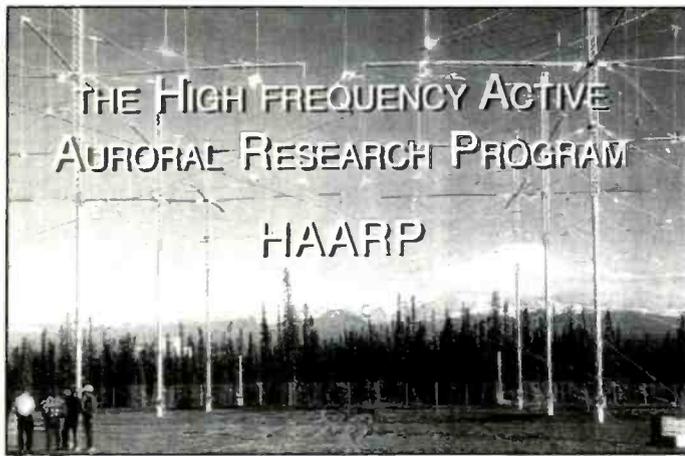
In other military news of interest to us utility fans, Coastal Mine Hunter Shrike (MHC-62) was christened May 24 at Intermarine USA, Savannah, GA. Coastal mine hunters of this class are named after North American birds of prey. The ship is to be commissioned next year, and be homeported in Ingleside, Texas. Earlier this year, the Coastal Mine Hunter USS Falcon (MHC-59) was commissioned at Port Arthur, Texas. At Travis AFB, the 20th Airlift Squadron has inactivated and retired its last nine C-141B aircraft. At Buckley Air Guard Base, the 140th Wing (ANG) has retired its two remaining T-43A aircraft. At Moody AFB, GA, the 52nd Airlift Squadron has deactivated. The 41st and 71st Rescue Squadrons from Patrick AFB, FL will relocate to Moody AFB in 1997. At Robins AFB, the 116th Bomber Wing (ANG) will increase from four to eight B-1B aircraft in late 1997. Additionally, the fourth JSTARS (E-8C) will be received in spring 1998. At Cannon AFB, NM., the 27th Fighter Wing has completed retirement of the EF-111 fleet. The Air Force EF-111 Raven will be replaced by the Navy's EA-6B Prowler. Combined Navy/Air Force EA-6B Prowler squadrons are being formed



Steve Fisher (OH) took this picture of HC-130's on the flightline at "E-City Air", USCG Air Station Elizabeth City, NC.

Photo of "Telecom Slovenija" building taken by Marry Foss (AK) while in Ljubljana, Slovenia recently. →





VERIFICATION OF RECEPTION  
High Frequency Active Auroral Research Program  
PO Box 271  
Gatona, AK 99573

We are pleased to confirm your reception.

Date: 3-7-97  
UTC Time: 0430  
Frequency: 6.99

HAARP Location: Latitude = 62°23.5' North  
Longitude = 145°8.8' West

Limited scientific research at the HAARP facility began in March 1997, using a 3 x 6 portion of a 6 x 8 horizontal array of crossed dipoles. Availability of the complete 48 element antenna system is expected by Spring 1998.



AL 7813  
Marty Foss  
Tallkeetna, AK  
99676

Front and rear view of Project HAARP QSL card received by Marty Foss (AK).

at NAS Whidbey Island, WA. The joint venture is the result of a decision between the two services and the Secretary of Defense to consolidate the mission of airborne threat radar jamming. Five EA-6B squadrons, with 24 aircrews, are being created. At McChord AFB, WA, the 62nd Airlift Wing has begun retiring its C-141B aircraft. The 60th Air Mobility Wing at Travis AFB, CA, has flown its last scheduled mission to Antarctica. For more than 40 years, Travis crews have flown supply missions—dubbed Operation Deep Freeze—from Christchurch, New Zealand, to McMurdo Station, on tiny Ross Island near the southern polar ice cap. But the ongoing retirement of the C-141 Starlifter from the Air Force inventory means Travis will stay out of the cold, while remaining Starlifters at McChord AFB will take over.

In cruise ship news, the former Royal Cruise Lines M/S Royal Odyssey, now the Norwegian Cruise Lines M/S Norwegian Star, has changed its homeport to the Port of Houston, TX. From there she sails to the western Caribbean. NCL has also purchased the 800 passenger M/S Crown Majesty (former Crown Dynasty). The vessel will be re-named the M/S Norwegian Dynasty and be operated under NCL. Built in 1993, she is currently sailing in Alaska and will become an NCL vessel on September 29, 1997. As the Norwegian Dynasty, the vessel will sail on its originally published schedule of 10 and 11 day Panama Canal cruises between Acapulco and Montego Bay from October 12, 1997 through March 29, 1998, and will return to Alaska for the spring and summer season in May 1998.

Last, for those internet surfers out there, the Worldwide UTE News Club (WUN) has changed their Web site loca-

tion to: <<http://www.gem.net/~berri/wun>>. Besides lots of utility informational files, this location offers links to dozens of other related utility sites. And don't forget to check out the *Pop'Comm* site at <<http://www.popcomm.com/>>, which is still under construction.

## Reader Mail

Ary Boender in the Netherlands reports the sad news that one of Holland's most famous utility stations, Scheveningen Radio, PCH, days are numbered. The services of Scheveningen Radio will be discontinued as Jan. 1, 1999. At the end of this year already part of the radio-telephone services will be discontinued. Apparently European governments have ruled that by 1-2-1999, all ship traffic must be done via satellite. This is also the date that GMDSS must be in place.

Eddy Waters in Australia reports finding the Yonhap News Agency, China active on 11602.5 kHz at 0750 UTC with a baud rate and shift of 50/425. This is the first time Eddy found this one active.

Alan Gale in the UK has noted an interesting exchange on the International Distress frequency of 5680.0 kHz USB. On several mornings recently Kinloss Rescue has called the 'Rescue Standby' Nimrod aircraft for a radio check in SSB at 0800 UTC, and then asked for a CW check. Then the station sent the following CW QSO:

Nimrod: "GFFGFF de MPYJQRK QSA K"  
Kinloss: "MPYJ de GFF QSA 4 QRK 4 K"  
Nimrod: "de MPYJ QSA 5 QRK 5 K"  
Kinloss: "de GFF r tu QRU AR"

The Nimrod callsign is 'MPYJ' and GFF is Kinloss. The MPY series calls are

listed in some reference books as belonging to the Royal Air Force, but no specific base or squadron allocations. The "Q" codes are QRK—The intelligibility of your signals is (1 thru 5, with 5 being the best), QSA—The strength of your signal is (1 thru 5 with 5 being the best) and QRU—I have nothing for you.

Don Lastine (GA), who is a retired "Coastie," caught a point in the July column where I spoke of U.S. Coast Guard Communications Stations being remoted. It appeared I omitted NMN as a presently "not remoted" station. However the stations listed were the stations not remoted at this time other than the "CAMS" or Communications Area Master Stations. NMN, CAMSLANT Chesapeake, Portsmouth, VA on the east coast, and NMC, CAMSPAC Point Reyes, CA on the west coast. Under the Coast Guard's "Plan 2000" eventually only the CAMS will remain with the other locations all remoted from either the east coast or the west coast. I think a line got zapped and wanted to clarify that thanks to Don's observations. Joe Richards (FL) wrote with more information he has observed on the CLP65 Embacuba Managua traffic. The station has been holding its 1900 UTC schedule on 10423.3 kHz. The crypto system used by the station seems to be an off-line scrambler, probably computer controlled. The operator often sends the individual coordinates at the end of his schedule and Joe has noted five or six message numbers, dates, times, precedence indicators and start sets sent after the crypto. This is so Havana can set up their equipment to descramble the traffic sent. Also, when Managua uses the word "relaciones," he is speaking of the coordinates for the individual messages and does not mean foreign relations.

Abbreviations Used For Intercepts

AM	Amplitude Modulation mode
BC	Broadcast
CW	Morse Code mode
EE	English
GG	German
ID	Identification/led/location
LSB	Lower Sideband mode
OM	Male operator
PP	Portuguese
SS	Spanish
tfc	Traffic
USB	Upper Sideband mode
w/	With
wx	Weather report/forecast
YL	Female operator
4F	4-figure coded groups (i.e. 5739)
5F	5-figure coded groups
5L	5-letter coded groups (i.e. IGRXJ)



RADIO  
BROADCASTING  
AND  
TELE  
COMMUNICATION  
IN  
GREENLAND

QSL card from Greenland TeleCom circa 1976 from the collection of Jack Roberts (ME).

UTE Logging's SSB/CW/DIGITAL  
All Times in UTC

2582: ZBM, Bermuda Harbour Radio, Bermuda heard at 0437 in USB w/info for mariners. (AR)  
 2598: VON, St. John's Cg Radio, NF, Canada at 0007 w/MIB & ice conditions. At 0050, VCP, St. Lawrence CG Radio, NF, Canada w/MIB. VCM, St. Anthony CG Radio, NF, Canada w/MIB & ice conditions. At 0137, VOK, Labrador CG Radio, Canada w/MIB & ice conditions. VOJ, Stephenville CG Radio, NF, Canada at 0207 w/MIB. At 0239, VCK, Sept Iles CG Radio, PQ, Canada w/MIB & msgs for mariners. All in USB mode. (AR)  
 2628: AXM, Melbourne Meteo. Australia at 1016 in FAX, 120/576, w/wx map. (EW)  
 2670: NMN13, USCG Group Cape Hatteras, NC at 0133 w/marine info bdst. GLD, Lands End Radio, England at 0237 w/traffic list & msgs for mariners. NMR, USCG San Juan, PR at 0305 w/MIB. All in USB mode. (AR)  
 2749: VCN, Cap-aux-Meules CG Radio, PQ, Canada at 2339 w/MIB. VCS, Halifax CG Radio, Canada at 0037 w/msgs for mariners about their services. Both in USB. (AR)  
 3152: CKN, Vancouver Military, BC, CAN at 0322 in USB w/kg RESCUE 451 w/pp RCC re unid SAR. (Ed.)  
 3186: Vint Hills Counting Station at 0207 in USB, EE/YL w/5FGs. //4645. (AWH) At 0100 on Monday, carrier has been on most of the day //4645, tones heard in parallel on both frequencies, at 0200 The Counting Station, msg to "339." (CS)  
 4028: Cuban YL/SS 5F stn in AM heard at 0530. (TS)  
 4210.5: WNU, Slidell Radio, La in FEC w/tfc list at 2300. (TS)  
 4271: FUJ, French Navy Noumea, New Caledonia at 1022 in 75/850 RTTY RY line test. (EW)  
 4298: NOJ, USCG Kodiak, AK, USA at 1023 in FAX 120/576 w/wx map. (EW)  
 4357: WAH, Virgin Islands Radio, U.S. VI, at 0201 in USB w/marine info & wx for surrounding areas. (AR)  
 4426: NMC, CAMSPAC Point Reyes, CA at

0430 in USB w/marine info bdst for west coast of U.S. (AR)  
 4466: New York Civil Air Patrol net at 0023 in USB w/WHITE ROCK (formerly EMPIRE) 65 as NCS, others checking in. (RK)  
 4471.9: RFHWWO, French Forces, Tahiti, ckt MNS/MOS at 1130 in ARQ-M2 128.5/85, here after QSY from 5 MHz freq, return link from Mururoa tentatively on 4564.7. Diff freqs every day for these two, though Mururoa seems to frequent 5440-5470 range most often. Tahiti varies much more widely. Still no copy on ckt ID from Mururoa. (AWH)  
 4645: The Counting Station at 1700, YL/EE w/3/2FG w/msg to "582." (CS) Same in AM w/3/2F grps at 0100. Also heard at 1432. (TS)  
 4670: The Counting Station at 1700 in USB, EE/YL w/3/2FG msg to "520." (CS) Same at 1432 w/3/2F msg. In sync with station on 4645, but not //. (TS)  
 4690: DOUG w/kg CARY, Canadian Oil Rig t/c at 1218. Cary passing oil drilling daily op's report. (AWH)  
 4780: Abnormal Mossad transmission was heard at 1720 in USB, Mossad lady Rptng KPA26L53 phonetically for more than 30 min. Next day usual KPA2 Mossad was heard at same time. (TY)  
 4855: NPM, Pearl Harbor Meteo, HI, USA at 1028 w/FAX 120/576 wx map. (EW)  
 4868: Cuban CW net. XBJ w/kg CVD, at 1245, generally most active of the lot. (AWH)  
 5234: Cuban or Nicaraguan station at 1645, RTTY 52/500, up w/Ry's & brief text, into open carrier, same as 5201? (AWH)  
 5320: NUIH, USCGC Point Warde (WPB-82368) at 2323 in USB w/kg Group Fort Macon w/op's normal report, ETA. (Ed.)  
 5341: Cuban Babbler, periodic reactivation, first noted 1356 in USB w/carrier swishing around 5340, sounded like jammer. Recheck 1503 had stabilized here, usual telco noise. Gone 1532 recheck but back again 1544 re-recheck. 1556 had two SPM doing long counts oblivious of one another. Carrier still there past 1800. Not heard since. 5688 on at same time. (AWH)  
 5350: YL/EE w/EE accent at 0147 in AM w/5FG's, off w/3 zero's. (JBJ)  
 5390: CDG206, Alma Radio, PQ, Canada at 0148 in USB for R/T t/c, YL/FF, OM/FF having conversation. (RK)

5405: JMJ2, Tokyo Meteo, Japan at 1020 w/FAX 120/576 wx map. (EW)  
 5414: Cuban CW net 1210, unid stn passing 5FLG t/c. (AWH)  
 5439: Unid station L9CC rptng "CP17 DE L9CC" at 1502 in CW. (TY)  
 5460: Unid in N. Quebec in USB at 0110, bush radio system w/phone calls from fishing camps. I have no listing of this frequency being used by Bell Canada. (PS) (no prior logs here, so, it's a new one for me too—Ed.)  
 5483.5: Unid CW station R5SA Rptng "PV2S DE R5SA" at 1050. (TY)  
 5526.5: BAF6, Beijing Meteo, China at 1030 w/FAX 120/576 wx map. (EW)  
 5562: Cubana 447 w/kg Habana-Boyereros, Cuba at 1245 in USB en route from Pt-a-Pitre, due in 1330, passing wx. (AWH)  
 5629: SYN2 Mossad best at 1546 in USB // 6745. (TY)  
 5680: At 1000, 'Sardine Formation' asking Plymouth Rescue for radio watch (believed to be 9 a/c in formation!). Kinloss clg the following MRTs (Mountain Rescue Teams—Ed.) for r/check: 0630 Alpine 23, 0635 Alpine 22, 0640 Alpine 24, 0646 Alpine 20, at 0645 Plymouth Rescue clg Alpine 95 for r/check. At 0802 Kinloss Rescue clg Rescue Standby for a r/check in both SSB & CW. At 0814 Shannon Aeradio calling Kinloss for a r/check. At 0930 Stavanger Rescue clg Kinloss for r/check. All in USB mode. (AG)  
 5688: Cuban MINFAR Babbler numbers station continues active sporadically; noted at 1700 in USB w/OM/SS, 2339, 1258 USB+ carrier; and 1530 in USB. (AWH)  
 5696: At 2353 CAMSLANT Chesapeake clg RESCUE 1712, at 2355 clg RESCUE 6009, who is on finals to homeplate. (AG) USCGC MAUI (WPB-1304) at 0145 w/kg CAMSLANT Chesapeake. MAUI wanted SCN freqs for COMSTA New Orleans. CAMSLANT responded that New Orleans was monitoring 4, 6, 8, & 12 MHz. MAUI stated that he would call on 4 or 6. (DW) At 1834 CAMSLANT clg CG 1720, 1720 reports back flight ops normal & secures radio guard. (MF) NLKY, USCGC Edisto (WPB-1313) at 0538 in USB w/kg NMC11, Group Humboldt Bay re distressed S/V Ezra 2, has raft in water, reports posn. At 0552, NMC11, USCG Group Humboldt Bay, CA, w/kg USCGC Edisto,

RESCUE 6549 (HH-65) is airborne, ETA 33 mins. Sadly the 6549 later crashed w/loss of all aboard. Cutter rescued those in raft. All in USB. (Ed.)+(WT)

5715: YL/Korean w/3+2FG's in powerful AM at 1407. (TY)

5716: Cuba? CLA at 1115 w/CW CQ marker, noisy, maybe relayed by someone else (frequent open USB ckt on 5714 USB tx). (AWH)

5717: RESCUE 303, CanForces, poss Lab helo, at 0130 in USB w/kg Halifax Military w/pp RCC Halifax for ETA on-scene & medical situation update for unid SAR. CKN. Vancouver Military, BC, CAN at 0311 w/kg SNAKE 451 (442 Sqd a/c) w/ETA Comox. Both in USB. (Ed)

5725.2: Unid "Time Hack station" at 0055+, presumed FEC, on every 10 minutes but too weak to lock on. (AWH)

5807: ZKLF, Auckland Meteo, NZ at 1031 w/FAX 120/576 wx map. (EW)

5820: YHF Mossad bcst at 1746 in USB //7918//9402. (TY)

5841: PANTHER w/kg PANTHER 404 (US DEA) at 1218 w/callup & switch to ANDVT. Have been noting some ANDVT on 5217.0 also, maybe Bahamian police using it now also. (AWH) At 1903 3 ALPHA req PANTHER 400 secure their radio guard. (MF) Both in USB.

5857.5: HLL8, Seoul Meteo, S. Korea at 1022 w/FAX 120/576 wx map. (EW)

6200: At 2256 tones, then music box at 2300 in USB, Swedish Rhapsody station, music box w/1234567890 count rpt twice. Then two 5FG groups, "Achtung" then into 5FG traffic, each group rpt. Close with "Ende," my first logging of this station. (CS)

6224: WB18183, Tug Paragon at 1240 w/kg unid stn w/status & ETA info. At 1340, "Nightwatch", unid MV w/kg WHX672, Brownsville. At 1342, WHX672 w/kg vsl "Raleigh". At 1343 w/kg vsl "Captain Sam." Big net w/these vessels & others all clearing traffic w/WHX672 & conducting radio checks. All in USB mode. (DW)

6348: KFS, Palo Alto Radio, CA in FEC w/tfc list at 0128. (TS)

6462: FUM, French Navy Papeete, Tahiti at 1141 in 75/850 RTTY w/RV, "DE FUM FUM SG." (EW)

6496.4: CFH, Canadian Forces Halifax in RTTY 75/850 w/RV & ID tape at 0250. Later went into WEFAX. (TS)

6508.2: Unid packet 300/200 at 1120 w/CO trying to connect to R0, good level, no success. (AWH)

6512.2: Oil Rig Global Shawnee, Mexico, at 1230 w/RTTY 45/170. SS daily ops report, mentions of PEMEX and Global Offshore co. Some voice on 6510.0 afterward. (AWH)

6626: Unid 0030+ in FSK morse & RTTY 75/500 or 75/1000. station back after absence, mostly idle or sloppy CW, occ RTTY t/c. Reputed to be either Ukrainian MIL or Cuban MIL in Angola. (AWH)

6637: 'Cedar Rapids' LDOC in USB at 0315 w/kg United 997 w/selcal check. (TS)

6658: CI02 Mossad bcst at 1549 in USB. (TY)

6715: CFH, Halifax Military, NS, Canada at

# Department of Defense

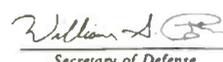


CERTIFICATE OF MERIT ARMED FORCES DAY 1997

*This is to certify that*

**SUE WILDEN**

*has demonstrated unusual proficiency by receiving and transcribing without error the Armed Forces Day message of the Secretary of Defense transmitting via military radio on May 18 1997.*

Washington, D.C.   
Secretary of Defense

**"CELEBRATE ARMED FORCES DAY"**

Sue Wilden (IN) received her first Armed Forces Day certificate from this year's transmission.

0325 in USB w/kg 52 BRAVO w/radioclock, then into encrypted RTTY send. (Ed.)

6728: Unid station LNC9 Rptng "V Q8HB DE LNC9" in CW at 1130. (TY)

6730: SAM 300. C-20H tail 90-0300 at 1942 w/kg Andrews VIP on F267 for radio ck's. At 1651, TROUT 99, "Speckled Trout" C-135C normally used by AF Chief of Staff, w/kg Andy VIP w/pp SAM COMMAND. is in-bound to Andrews, will have a "follow me" waiting for parking. (Ed.)

6745: SYN2 Mossad bcst at 1546 in USB //5629. (TY)

6768: At 0121 SS/YL w/5FG in progress in USB. (CS)

6788: HERSHEY, Joint Inter-agency Task Force-East. NAS Key West, FL. at 1603 in USB w/kg SP4 & Q1A. At 1621 "all units this is 4UA up in the air;" link-11 coordination net, at one point SP4 was instructed to lower tx power from 7850(!) to 200 watts. At other times noted similar open-ckt feedback noise like commonly heard on 4739 and 8971 Khz when no t/c going. (AWH)

6815.6: At 1851 FOXTROT 1 LIMA in USB clg K1LO 4 MIKE in the "red." At 1855 FOXTROT 1 LIMA req VICTOR 3 LIMA's current whisky. (MF) (USCG here, "whiskey" means "location"—Ed.)

6840: EZI2 Mossad xmission in USB at 1700 being heavily QRM'ed by BC/CC. (TY)

6868: Cuban Bored Man numbers stn at 1403 in USB, R290 msg, good, some audio breaks, continues regular Sunday 1400 sked, R290 msg last couple of weeks. This past Sunday people in background trying very hard, with some success, to get the bored man to laugh while reading his traffic. (AWH)

6898.5: MKK, British Military at 0142 in Piccolo-6, "MTS DE MKK ZUB 0 PSE QSY

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**FEMA HF CALLSIGNS**

**National HQ**

KC1609 FEMA HQ MT WEATHER TDL  
 KC1610 FEMA HQ JOHNSTON ATOLL RELAY STATION  
 WGY912 FEMA HQ NET CONTROL, BERRYVILLE, VA  
 WGY913 FEMA HQ NECC  
 WGY917 FEMA MATTS MATTS  
 WGY986 FEMA HQ FSC, OLNEY, MD  
 WGY9200 FEMA MERS DET MOBILE CMD POST  
 WGY9210 FEMA MERS DET FLY AWAY  
 WGY9220 FEMA MERS DET  
 WGY9400 FEMA SPECTRUM MGR WINCHESTER, VA  
 WGY9401 FEMA SPECTRUM MGR MOBILE  
 WGY9402 FEMA SPECTRUM MGR SUITCASE RADIO

**OTHER**

KC1615 AMERICAN RED CROSS HQ, FALLS CHURCH, VA  
 KC1622 MITRE RESTON, VA  
 KC1623 MITRE BEDFORD, MA  
 KC1624 MITRE NORFOLK, MA  
 KGB640D ISA/JEED RESTON, VA  
 WGY979F EMA HQ EARTH QUAKE CENTER

**REGION 1**

WGY901 FEMA REGION 1 FRC, MAYNARD, MA  
 WGY911 FEMA MERS DET MAYNARD MOC  
 WGY921 STATE EOC NH EOC  
 WGY931 STATE EOC VT EOC  
 WGY941 STATE EOC ME EOC  
 WGY951 STATE EOC CT EOC  
 WGY961 STATE EOC MA EOC  
 WGY971 STATE EOC RO EOC  
 WGY981 FEMA REGION 1 TACTICAL SUPPORT STATION  
 WGY9001 FEMA REGION I RGN 1 MOBILE  
 WGY9011 FEMA REGION I OFFICE, BOSTON, MA  
 WGY9111 FEMA MERS DET MAYNARD MRV  
 WGY9112 FEMA MERS DET MAYNARD MRV  
 WGY9113 FEMA MERS DET MAYNARD  
 WGY9114 FEMA MERS DET MAYNARD HF SUB SYSTEM

**REGION 2**

KA80664 STATE EOC NY EOC MOBILE  
 KA80665 STATE EOC NY EOC MOBILE  
 KA80666 STATE EOC NY EOC MOBILE  
 KA80667 STATE EOC NY EOC MOBILE  
 KA80668 STATE EOC NY EOC MOBILE  
 KA80669 STATE EOC NY EOC MOBILE  
 KA80670 STATE EOC NY EOC MOBILE  
 KA80671 STATE EOC NY EOC MOBILE  
 KA80672 STATE EOC NY EOC MOBILE  
 WGY902 FEMA REGION 2 OFFICE, NY, NY

WGY922 EOC  
 WGY932 EOC  
 WGY942 STATE EOC  
 WGY952 EOC  
 WGY962 EOC  
 WGY982 STATE EOC  
 WGY992 EOC  
 WGY9002 FEMA REGION 2  
 WGY9012 FEMA REGION 2

**REGION 3**

KA80658 STATE EOC VA EOC MOBILE  
 KA80659 STATE EOC VA EOC MOBIL E  
 KA80660 STATE EOC VA EOC MOBILE  
 KA80661 STATE EOC VA EOC MOBILE  
 KA80662 STATE EOC VA EOC MOBILE  
 KA80663 STATE EOC VA EOC MOBILE  
 WGY903 FEMA REGION 3 OFFICE, PHILADELPHIA, PA  
 WGY923 STATE EOC PA EOC  
 WGY933 STATE EOC MD EOC  
 WGY943 STATE EOC WV EOC  
 WGY953 STATE EOC DE EOC  
 WGY963 STATE EOC VA EOC  
 WGY983 STATE EOC DC EOC  
 WGY9003 FEMA REGION 3 RGN 3 MOBILE  
 WGY9013 FEMA REGION 3 RGN 3 MOBILE

**REGION 4**

KC1610 FEMA REGION 4 RGN 4 PORTABLE  
 WGY904 FEMA REGION 4 FRC THOMASVILLE, GA  
 WGY914 FEMA REGION 4 THOMASVILLE MOC  
 WGY924 STATE EOC TN EOC  
 WGY934 STATE EOC SC EOC  
 WGY944 STATE EOC GA EOC  
 WGY954 STATE EOC AL EOC  
 WGY964 STATE EOC MS EOC  
 WGY974 STATE EOC FL EOC  
 WGY984 STATE EOC NC EOC  
 WGY994 STATE EOC KY EOC  
 WGY9004 FEMA REGION 4 RGN 4 MOBILE  
 WGY9014 FEMA REGION 4 OFFICE, ATLANTA, GA  
 WGY9141 FEMA MERS DET THOMASVILLE MRV  
 WGY9142 FEMA MERS DET THOMASVILLE  
 WGY9143 FEMA MERS DET THOMASVILLE  
 WGY9144 FEMA MERS DET THOMASVILLE HF SUB SYSTEM

**REGION 5**

KA80650 STATE EOC MN EOC MOBILE  
 KA80651 STATE EOC MN EOC MOBILE  
 KA80652 STATE EOC MN EOC MOBILE  
 KA80653 STATE EOC MN EOC MOBILE

VI EOC  
 ST. THOMAS EOC  
 NY EOC  
 ST. CROIX EOC  
 PR EOC  
 NJ EOC  
 PR EOC  
 RGN 2 MOBILE  
 RGN 2 MOBILE

Table 1

TO F4," so link to Falklands. Return link not heard, this freq common lately. (AWH)  
**6937:** USS MacInerney wkg DoD Cape at 1543 in USB passing local wx report supporting STS-94 launch. (AWH)  
**6970:** YL/EE monitored at 0327 in AM w/5FG's in progress, off 0330. Sounded same as 5350 log. (JBJ)  
**6983:** At 0200 on Friday in AM, "Atencion 00952 70261 20243". Signal was S9+70dB! Best signal yet for me from Castro Numbers, Ltd. I checked and noticed that R Havana Cuba on 6000 was also S9+70dB, whatever anyone wants to infer from that. (CS)  
**7435:** YL/EE counting station in AM monitored at 0531. (TS)  
**7519:** Unid, at 0405 in CW w/5FG's, very steady, off @ 0435. (AB2)  
**7520:** Unid Mexican maritime stn, VER-ACRUZ wkg unid m/v at 1325 in USB, yet another random OOB marine freq. (AWH)  
**7533.7:** Japanese Embassy, Haiti at 1245+ in ARQ, 5LG cipher t/c simplex, signing DE HAITI SAISOU, tlxs addressed to DOMINI KAKYOO (Dominican Republic), so app. wkg Santo Domingo. Freq dropouts at tx stn, quite typical of Santo Domingo power distribution system having been there. Haiti would selcal IQQV when that happened. X is by far

the most frequent first character in each cipher group. Also noted same time frame another day, working Panama, don't think was same rx station, t/c both ways this time, incl some from embassy Peru. (AWH)  
**7540:** JSR Mossad best in USB at 1530. (TY)  
**7595:** NEWCASTLE, unid military, prob USN at 0120 in USB clg "any station this net," later clg BUCKEYE & MISSOURI. (Ed.)  
**7605:** CI02 Mossad best in USB at 1446 w/heavy QRM from RTTY & CW. (TY)  
**7654.5:** YL/EE counting station in USB monitored at 0543. Stn in sync w/one on 7435, but not //. (TS)  
**7830:** AFA3GM wkg various AF MARS stns in FEC at 0053. (TS)  
**7841.7:** RFFX1. French Forces, Bangui, CAF (assumed) heard at 0050 in ARQ-E 96/371 idling. (DW)  
**7887:** Unid flight center contacts various aircraft in USB using EE & possible Tagalog at 1100. Not listed in CFL and Klingenfuss Guide. (TY) (no prior logs here either—Ed.)  
**7918:** YHF Mossad best at 1746 in USB //5820 //9402. (TY)  
**8001.7:** RFHJ. French Forces Tahiti (ckt HJL) at 1126 in ARQ-E3 96/400, too weak to lock but sounds like running betas. (AWH)  
**8012:** PWX33, Basilia Naval, Brazil, wkg

ZRH, Cape Naval, RSA in RTTY 75/850 w/ test tapes at 0113. (TS)  
**8067.6:** Unid at 1120 in CW w/5lg's: TDTAR TDGWW TWNAAGGNNM. (PS)  
**8142:** OLX, Prague, Czech Republic w/V CW marker at 1455 //14977. (TY)  
**8176:** BRAVO, unid probable USN, at 0455 in USB wkg PAPA re alligator exercise canceled, but will maintain this net for tonight, ltr GULF, MIKE, NOVEMBER, LIMA hrd w/X-ray brevity codes in Link-11 coordination. (Ed.)  
**8259.8:** Unid at 0222 in RTTY 50/990 w/814 5FGs. New msg at 0231: 245 5FGs. Msg preamble as follows: '51/02 41 250 03217 03217'. (DW)  
**8294:** WYU2001. Tug Sea King at 0132 in USB wkg WQZ449. Tug Communications, Long Beach, w/parts request message. (DW)  
**8310:** Unid maritime stn in Mexico at 1345 in USB, couldn't copy station ID but seems to be shore station located at Progreso. Wkg m/v Laurenti. Said guards 8310 0930-1100 and 1630-1730 local. 8291 0830-0930 and 1530-1630. (AWH)  
**8310:** Unid at 0910 in ARQ, seems to idle here for hours, never any traffic. (EW)  
**8420.5:** 9VG, Singapore Radio, Singapore at 0850 in FEC w/traffic list. (EW)

KA80654	STATE EOC	MN EOC MOBILE	KA80674	STATE EOC	WY EOC MOBILE
KA80655	STATE EOC	MN EOC MOBILE	KA80675	STATE EOC	WY EOC MOBILE
KA80656	STATE EOC	MN EOC MOBILE	KAS0676	STATE EOC	WY EOC MOBILE
KA80657	STATE EOC	MN EOC MOBILE	WGY908	FEMA REGION 8	FRC DENVER, CO
KA80677	STATE EOC	IL EOC MOBILE	WGY918	FEMA MERS DET	DENVER MOC
KA80678	STATE EOC	IL EOC MOBILE	WGY928	STATE EOC	SD EOC
KA80679	STATE EOC	IL EOC MOBILE	WGY938	STATE EOC	WY EOC
KA80680	STATE EOC	IL EOC MOBILE	WGY948	STATE EOC	ND EOC
KA80681	STATE EOC	IL EOC MOBILE	WGY958	STATE EOC	MT EOC
KA80682	STATE EOC	IL EOC MOBILE	WGY968	STATE EOC	CO EOC
KA80683	STATE EOC	IL EOC MOBILE	WGY988	FEMA REGION 8	RGN 8 MOBILE
KA80684	STATE EOC	IL EOC MOBILE	WGY998	STATE EOC	UT EOC
KA80685	STATE EOC	IL EOC MOBILE	WGY9008	FEMA REGION 8	RGN 8 MOBILE
KA80686	STATE EOC	IL EOC MOBILE	WGY9018	FEMA REGION 8	RGN 8 MOBILE
WGY905	FEMA REGION 5	OFFICE, CHICAGO, IL	WGY9181	FEMA MERS DET	DENVER MRV
WGY925	STATE EOC	WI EOC	WGY9182	FEMA MERS DET	DENVER MRV
WGY935	STATE EOC	MN EOC	WGY9183	FEMA MERS DET	DENVER
WGY945	STATE EOC	OH EOC	WGY9184	FEMA MERS DET	DENVER HF SUB SYSTEM
WGY955	STATE EOC	IL EOC			
WGY965	STATE EOC	IN EOC	<b>REGION 9</b>		
WGY975	STATE EOC	MI EOC	KA80687	FEMA REGION 9	RGN 9 MOBILE
WGY9005	FEMA REGION 5	REGION 5 MOBILE	KA80688	FEMA REGION 9	RGN 9 MOBILE
WGY9015	FEMA REGION 5	REGION 5 MOBILE	WGY909	FEMA REGION 9	OFFICE, SAN FRANCISCO, CA
<b>REGION 6</b>			WGY929	STATE EOC	NV EOC
KA80689	FEMA REGION 6	RGN 6	WGY939	STATE EOC	CA EOC
KCI617	FEMA MERS DET	MERS DENTON	WGY946	STATE EOC	LA EOC
WGY906	FEMA REGION 6	FRC. DENTON, TX	WGY949	STATE EOC	AZ EOC
WGY916	FEMA MERS DET	DENTON MOC	WGY959	STATE EOC	HI EOC
WGY926	STATE EOC	OK EOC	WGY969	EOC	GUAM EOC
WGY936	STATE EOC	NM EOC	WGY989	EOC	SAIPAN EOC
WGY956	STATE EOC	TX EOC	WGY999	EOC	SMA EOC
WGY966	STATE EOC	AR EOC	WGY9009	FEMA REGION 9	RGN 9 MOBILE
WGY9006	FEMA REGION 6	RGN 6 MOBILE	WGY9019	FEMA REGION 9	RGN 9 MOBILE
WGY9016	FEMA REGION 6	RGN 6 MOBILE	<b>REGION 10</b>		
WGY9161	FEMA MERS DET	DENTON MRV	WGY910	FEMA REGION 10	FRC BOTHELL, WA
WGY9162	FEMA MERS DET	DENTON MRV	WGY920	STATE EOC	ID EOC
WGY9163	FEMA MERS DET	DENTON	WGY930	STATE EOC	WA EOC
WGY9164	FEMA MERS DET	DENTON HF SUB SYSTEM	WGY940	STATE EOC	OR EOC
<b>REGION 7</b>			WGY950	FEMA MERS DET	BOTHELL MOC
WGY907	FEMA REGION 7	OFFICE KANSAS CITY, MO	WGY960	STATE EOC	AK EOC SOLDOTNA
WGY947	STATE EOC	IA EOC	WGY980	STATE EOC	AK EOC WASILLA
WGY957	STATE EOC	NE EOC	WGY9010	FEMA REGION 10	RGN 10 MOBILE
WGY977	STATE EOC	MO EOC	WGY9020	FEMA REGION 10	RGN 10 MOBILE
WGY997	STATE EOC	KS EOC	WGY9501	FEMA MERS DET	BOTHELL MRV
WGY9007	FEMA REGION 7	RGN 7 MOBILE	WGY9502	FEMA MERS DET	BOTHELL MRV
WGY9017	FEMA REGION 7	RGN 7 MOBILE	WGY9503	FEMA MERS DET	BOTHELL
<b>REGION 8</b>			WGY9504	FEMA MERS DET	BOTHELL HF SUB SYSTEM
KA80673	STATE EOC	WY EOC MOBILE			

**8421.5:** JCS. Choshi Radio, Japan at 0837 in ARQ w/msg to ship "UGKP." (EW)  
**8429:** EAD. Madrid Radio, E at 0058 in ARQ w/sitor tree signal & CW ID. (Ed.)  
**8630:** WCC, Chatham Radio, ME at 1922 in CW w/marker. (SW)  
**8641:** MIW Mossad best at 1416 in USB. (TY)  
**8749:** LFL/LGN. Rogaland Radio, Norway at 2315 in USB w/MIB. // 6507. (AR)  
**8782:** HEB18, Berne Radio, Switzerland at 0447 in USB clg 9OMP4. (EW)  
**8942:** Singapore Aero at 1243 in USB wkg Brunei 876 w/posn rpt. (EW)  
**8971:** At 1846. PAPA SIERRA passing posn coordinates to LIMA ALPHA. (MF) Navy JW560 (poss P-3) clg/wkg VR-62 command post at 2354 for de-icing upon arrival. (RK) Both in USB.  
**8974:** PJK. Suffisant Drop Naval, Curacao at 1444 in USB wkg unid a/c. (Ed.)  
**8981.5:** YN3, unid at 1932 in USB wkg ?-94 going 'Uniform.' (DW) (UHF—Ed.)  
**8983:** RESCUE 1713. USCG HC-130H7 at 1905 in USB wkg RESCUE 2139, HU-25C w/relay of t/c from 2139 for CAMSLANT. 2139 req that CAMSLANT pass to District 7 that another FALCON (HU-25) be launched. Requested FALCON be equipped a 'Drop Can w/a strobe light, food, water, blankets and

instructions in Spanish.' (DW)  
**9009.3:** Unid at 0537 in USB, Spanish comms using some sort of low level voice encryption system. (PS)  
**9023:** BLUE CRAB. NORAD facility, Tyndall AFB, at 0248 in USB wkg unid ?—RIVER. (Ed.)  
**9035:** Operaciones, Columbia? wkg Avianca 079 at 1300 in USB, QSO by 2 OM/SS, mentions Caracas, sounds like LDOC. (AWH)  
**9041:** 5YE, Nairobi Meteo, Kenya at 0034 in RTTY 100/769 w/RYS and 'CQ de 5YE.' At 0040. w/synoptic wx. (DW)  
**9074:** Unid numbers at 0519 in AM. EE/YL w/5fg's. Simulcast on 9090 KHz. (PS)  
**9130:** Mossad "EZI" at 2100 on Saturday in USB. //11565 EZI. Message w/group 90! This seems long for them, off suddenly at 2124 during rpt without normal close. (CS)  
**9190:** Russian Man numbers stn at 0100 on Tuesday, carrier noted at 0108, Russian Man with "187" heard once, and at 0114 Russian Man going again with "187" rpt, then "502" rpt then "171" rpt then into message 0148 Russian Man done w/00000. (CS)  
**9197:** A9M41, Manama News Agency, Bahrain monitored at 1330 in RTTY 75/425 Arabic text. (EW)  
**9213:** Cuba? at 0102 in RTTY 75/500, end of

5LGTfc & "QRU QRU SK SK." missed callup but station is probably SVR (ex-SOUD) Lourdes. (AWH)  
**9218:** The Counting Station at 0017, EE/YL w/3/2FG in progress. End at 0023, so not a 215 count msg. This station appears to be sending real traffic, regular Wednesday 0000z sked. (CS)  
**9226:** RPFN. Portuguese Navy tuned at 0100 in 75/425 RTTY w/"PWX DE RPFN" & RY's. (JR)  
**9227:** PWX33: Brazilian Navy, Brasilia monitored at 0026 RTTY 75/796 w/RYS & 'ZRH1 de PWX33'. (DW2)  
**9233:** Unid, poss. N. Africa at 0510 in USB, comms in Arabic. (PS)  
**9253:** OM/SS w/5FG phonetics at 0025 in USB live, then a QSO w/another OM/SS op, then more phonetics, then both stns were exchanging traffic? Non-standard phonetics used (like "Digital" for D). (CS)  
**9320:** SAM 050. USAF C20C tail 85-0050 at 2009 in USB wkg Andrews requesting freqs for Air Force One. (Ed.)  
**9323:** Atencion numbers stn, Cuba at 0329, OM/SS w/5FGs, weird buzz on tx. (AWH)  
**9328:** Vietnam News Agency, Vietnam at 1240 in RTTY 50/425 w/EE nx. (EW)  
**9830:** NAR, NAS Key West KAWN relay at

Saddlebunch Key, FL at 0400 in RTTY 75/850 USAF wx feed in the clear. //7784, apparently ex-12835, seems 24 hrs. (AWH) 9983.7: RFFA, MOD Paris at 0011 in ARQ-E3 100/396 assumed (idling). (DW) 10066: Bangalore ATC, India at 1115 in USB clg Dacca. (EW) 10423.3: CLP65, Embacuba, Nicaragua in 75/425 RTTY crypto after ZZZZ at 1910, also SS chat. down at 1922. (JR) 10438: Unid, heard at 0100 in USB, two stations w/comms in GG. Lasted for quite a while. (PS) 10693: Unid 'P7X' heard at 1600 in CW w/5lg's. (PS) 10798: Unid spook stn P7X at 1408 in CW w/5LG tfc, usual format. (AWH) 10970: MIW Mossad station was heard in AM (AM compatible reduced carrier USB mode) at 1416//8641//12747, ended w/"End of message, end of transmission" at 1427 per usual, but carrier was still on, suddenly "YHF" phonetically once at 1429, then signed off. 8641 & 12747 kHz were normal operations. (TY) 11038.5: DDH47, Grengel Meteo, Germany at 1451 in RTTY 50/425 Wx reports. (PS) 11175: 'ADTK', 35 km North of Cape Hatian at 2320 in USB w/PIREP to 'AAC2' via Ascension. (PS) (not a 'pilots report/PIREP' in this case. ADTK is the USAV COL Seth Warner (LT-806). U.S. Army Transportation Corps. 73 Transportation Co., Fort Eustis, Va. She is one of six "Large Tugs" (LT's) in this class. AAC2 is the harbormaster at Fort Eustis—Ed.) HAWK 83 (B-196th BW, Dyess AFB, TX) at 0107 in USB att to call TURBO 49 (KC-135, 22nd ARW, McConnel AFB, KS). QSY'ed tp 6761 w/no joy, then back to 11175 w/mainsail request. Thule answers, but not hrd. (RK) 11202: At 1827 CAMSLANT Chesapeake in USB req posn from OSCAR 9 LIMA. At 1828 CG6004 req CAMSLANT accept there guard, at 1830 CG2104 passes flight operations to CAMSLANT. (MF) (USCG alternate day freq—Ed.) 11220: Air Force 1, President of U.S.'s a/c. at 2358 in USB clg Andrews in the clear, then into ANDVT tfc. (Ed.) 11232: VXA, Edmonton Military, CAN at 1528 wkg CanForce 85 w/pp RCC. CHR, Trenton Military, Ont, CAN at 1533 wkg TANGO 418 w/pp RCC Ascension. (Ed.) 11244: At 1822, Albrook w/pp for "ADTG" to DNS#357-XXXX. (MF) (USAV MG Henry Knox (LT-802)—Ed.) 11384: Honolulu Radio heard at 0813 in USB clg unid Continental Airlines flt for posn report. (EW) 11545: Lincolnshire Poacher numbers stn heard at 1824 on Sat in USB, 11545//13375//16084. (CS) 11565: EZI Mossad best at 1430 in USB. (TY) 12254: 3ETG9, M/S Royal Majesty at 1423 in USB, 32,400 DWT cruise ship clg/wkg WOM, AT&T Coast Station Florida, re R/T tfc holding for passengers on board. (Ed.)

12494: At 1906 in AM on Sun, YL/SS w/5FG "02" rpt then into 5FG at 1907, gone by 1911. Very distorted audio. (CS) 12613: XSQ, Guangzhou Radio, China at 0625 in ARQ w/msg to ship UIIP. (EW) 12747: MIW2 Mossad best at 1416 in USB //10970 //8641. (TY) 12903: RBSL, Bombay Naval, India at 1530 in RTTY 50/795 w/test tape, VTH/1/4/5/7 BNB/RV/ID/SG'S etc. (RH) 13528: SLHFB "F", "S", "C" in CW mode at 1317. (TY) (now known to be the Russian Navy, F is Vladivostok, S is Arkhangelsk and C is Moscow—Ed.) 13543: 'PARIS' MOD Paris, France monitored at 2312 in ARQ-E3 192 baud w/"Controle De Voie". (PS) (this is probably RFTJD, Gabon on 13543.7 circuit HAI 'to' Paris reflecting a Paris CdV, but circuit needed to confirm—Ed.) 13579: KCNA, Pyongyang, N. Korea heard at 1238 in RTTY 50/300 w/nx & commentary in EE. (PS) 13868: Unid station 13MF clg various stations such as 4QKU, ICWR, WNIN in CW at 1215 w/heavy interference from Cherry Ripe number station (13866 kHz). Another day similar Unid station FL9X operating in same manner on this frequency at 1222. (TY) 13895: BRAVO FOXTROT heard at 2218 in USB w/kg various units on a USN link-coordination net. Units included: Charlie, Golf, Hotel, India, Kilo, Whiskey. Mode refs include: Alligator, Blue, Red, and Green. Going strong at 2359, probable Pacific area based upon propagation. (DW) 13954: MFA Berne in ARQ w/5LG's heard at 1305. (JR) 14467.4: DDH, Hamburg meteo in 50/425 RTTY RY's at 1319. (JR) 14639.5: Laos News Agency, KPL, Laos at 0935 in RTTY 50/425 w/EE nx. (EW) 14931: Unid station 8BY Rptng VVV 8BY, 3FG's separated by /in CW at 1340 //18415 //20946. (TY) (reportedly French Intelligence—Ed.) 14977: OLX, Prague Radio, Czech Republic w/V CW marker at 1255 for 5 min, followed by YL Czech Rptng 177 (Jeden Sedem Sedem) in faint USB till 1705, then into 5FG's in USB, signed off at 1320. Another day V/CW marker start at 1355, Rptng 739/T11 for 5 mi 14977 n till 1405, then into 5FG's in rapid CW. And //8142 at 1455, also //18303 at 1055. First Time I've ever encountered OLX nbr stations. (TY) 15673.4: RFQP, French Forces, Jibouti at 1449 in ARQ-M2 200/400 w/"CdeV" on cid QPF. (RH) 15980: EZI2 Mossad best heard at 1330 in USB. (TY) 16124: Unid at 1722 in ARQ w/5lg's, off w/"END OF MESSAGE". (PS) (MFA Berne, Switzerland—Ed.) 16200: Unid heard at 0644 in USB, sounds like Russian radio telephone group, no ID given. (EW)

16216.6: Unid heard at 1700 in RTTY 75/540, station w/tfc for "HZW". 11177 00117 link id, followed by 5lg's. (PS) (Russian FAPSI station believed to xmit from Cuba, poss 'WFO'—Ed.) 16227.7: RFFXI, French Forces, Bangui at 1105 in ARQ-E 96/396 w/ 5LG to RFFX-IA/FAF COMAIR BANGUI. (RH) 16332: SLHFB "S", "C" in CW mode at 1318. (TY) (see notes on 13528 log—Ed.) 16801: UTHJ, BMRT Maria Polinova at 1242 in RTTY 50/170 w/crew TG'S to Sev'pol, KMD Gurov. (RH) 16802: USNM, RTMA Potigorsk at 1240 in RTTY 50/170 w/tfc to Sev'pol Radio. (RH) 16807: 9VG82, Singapore Radio, at 1130 in FEC w/traffic list. (RH) 16813: UAT, Moscow Radio, Russia at 1205 in ARQ & FEC w/tariffs. X-Change rates, then w/traffic list. (RH) 17093: JOR, Nagasaki Radio, Japan at 0543 in CW w/EE msg to unid ship. (EW) 17410: EZI Mossad best at 1101 in USB. (TY) 17443.5: 5YE, Nairobi meteo, Kenya in 100/425 RTTY at 1300. (JR) 18021.7: MFA Cairo, Egypt at 1540 in ARQ Arabic tfc w/unkl typical sing-song tx fm "HUXD." (RH) 18036.2: ZRH, Capetown Naval w/"LOL DE ZRH" in 75/425 RTTY at 1240 w/EE tfc to Argentine Navy. Buenos Aires, msgs are part of exercise OCEANIC XII. down 1240. (JR) 18064: SNN299, MFA Warsaw, Poland heard at 1550 in POL-ARQ 100/250 w/traffic to unid. (RH) 18303: OLX, Prague, Czech Republic w/V CW marker at 1055 //14977. (TY) 18594: At 1841, U.S. Customs transmitting in scrambled mode in USB. (MF) 18597.5: Spanish Embassy, Kinshasa at 1205 in ARQ w/lotsa opchat w/Madrid in SS. EAE220?, MFA Madrid at 1617 w/tfc to Kinshasa, 5LG's. (RH) 18704.2: DGS7045, PIAB Bonn, Germany at 0740 in FEC-A 96/425 w/FF nx. (RH) 18801.7: MFA Jakarta, Indonesia at 0610 in RTTY 50/425 w/passport info, etc. in Indonesian. (EW)

This month's contributors: (AB2) Art Blair (CA); (AG) Alan Gale, UK; (AR) Allen Renner (PA); (AWH) Albert W. Hussein, FL; (CH) Chris Halinar, Germany; (CS) Chris Smolinski, MD; (DW) Dave Wright, TX; (EW) Eddy Waters, Australia; (JBJ) J. Braxton James (NC); (JR) Joe Richards, FL; (MF) Mike Fink, FL; (PS) Paul Scalzo, PQ, Canada; (RH) Robert Hall, Capetown, RSA; (RK) Richard Klingman, NY; (SW) Sue Wilden, IN; (TS) Tom Severt, KS; (TY) Takashi Yamaguchi, Japan; (WT) Wade Taylor, CA; and (Ed.) ye editor in Ohio. Thanks to all. ■

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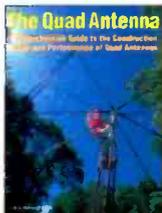
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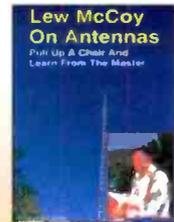


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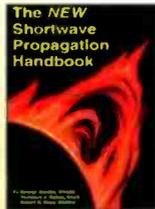


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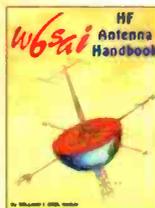


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# The Loose Connection

BY BILL PRICE, N3AVY

RADIO COMMUNICATIONS HUMOR

*After a Half-century, Bill Lays Some of His Dumbest Beliefs to Rest . . .*

**OK**—the word's out—I've turned 50. I am so old that I remember riding to first grade in the rumble-seat of my mother's '36 Ford (and yes, I still know where the car is). The fact is, this is an introspective time for me, and although I have learned some stuff as I've aged, this is no bottle of fine wine writing your column every month. I'd say I'm more like a jar of pickled eggs that's been forgotten in the back of the fridge for a generation or two.

I have, however, improved in some ways over the years, and on the momentous anniversary of my half-century of breathing, I've listed some of the things I've come to realize—as a sort of base line against which you can measure your own realizations—particularly those which deal with communication. I'd like to remind you that most of these wrong-headed ideas came to me when I was a child. I'd *like* to remind you of that, but unfortunately, it's not really true. So, in no particular order:

☞ I now know—with some sense of relief—that broadcaster John Cameron Swayze could *not* see me in my underwear while I watched television.

☞ I have learned that in spite of their name, rabbit-ear TV antennas do not have to stick up in the air like their namesakes in order to work.

☞ It was with some disappointment that I admitted that WFIL-AM's *Danny the Drowsy Dragon*, who joined me for breakfast throughout first and second grades, was not really a dragon, but a slowed-down tape recording of some announcer.

☞ I finally admitted that only Fran was real; Kukla and Ollie did not live normal lives when the show was over, but were carefully stored in trunks and remained essentially quiet without assistance from Burr Tilstrom.

☞ I'm still not 100 percent certain, but I'm closer to admitting that there is no secret wire inside an AM receiver which can turn it into a powerful transmitter when clipped and soldered to another point.

☞ My wife is correct today, as was my father so many years ago, in advising me that those enormous cabinet radios I hauled home from the dump *are* not—and will not—*be worth something* someday.

☞ You can indeed patch a blown or torn radio speaker with a paper towel soaked in Elmer's Glue, but it does lose some of it's fidelity.

☞ I now begrudgingly admit (after several late-night discussions with some folks from 1919 M St., NW) that the FCC did not use voiceprint technology to identify minor CB rulebreakers in the '60s and '70s.

☞ I have conducted tests with several friends and am ready to admit unconditionally that pressing *really, really* hard on a code key does not make your CW signal go any farther.

☞ Of the many easy-to-learn Morse code substitutes I devised during my childhood, the worst one was definitely "One dit = A, Two dits = B . . . and 26 dits = Z.

☞ As a result of extensive testing, I am prepared to sign a statement avowing that a code key attached directly to a long copper wire attached to a maple tree, will not emit any signals whatsoever, even if you think *really, really* hard about the signals while pressing the key. Also, adding a battery to the circuit does not help.

☞ I now know for certain that no matter how long it lasts, there is never a winner in an "I can transmit a dead-carrier longer than you can" battle on CB radio.

## . . . And a Few That Are True:

☞ No matter how tough your testosterone-laden friend tells you he talks with state troopers who dare to stop him for speeding, I have it first hand that it's not a good idea to tell everyone at the bowling league how he begged for mercy the night you were riding with him and he got nailed in the radar trap.

☞ 97 percent of doctors surveyed said that if done well, and with taste, a Whoopie Cushion can be as much fun on a CB radio as it is in person.

☞ Extensive interviews with linguists throughout the Nation have concluded that more people from the east coast talk funny—particularly on the radio—than all the people from the rest of the country, including Guam.

☞ And this one from first-hand experience: When you are working alone in a satellite television uplink, transmitting a major political speech to the entire United States of America, you must sometimes use a time-locked pair of handcuffs to keep from reaching for the character generator and typing "He's Lying" across the bottom of the screen for the world to see.

☞ I now have several overdue books from the library and am close to proving that roofs become increasingly steep as a person ages. It appears that the formula will demonstrate a directly proportional relationship, but the library fines are mounting and may force an early end to my research unless a grant-renewal is forthcoming.

☞ My informal survey is almost complete, and it's indicating clearly that spouses—particularly those of the feminine persuasion—will never truly appreciate the information and entertainment value of a CB radio, a mobile scanner, and a good AM talk show—all playing at the same time.

☞ Finally, a crumb of knowledge that has saved my kiester many times (and may help you): A good sense of humor can sometimes disarm an antagonist faster than a really big guy with a fungo bat. ■

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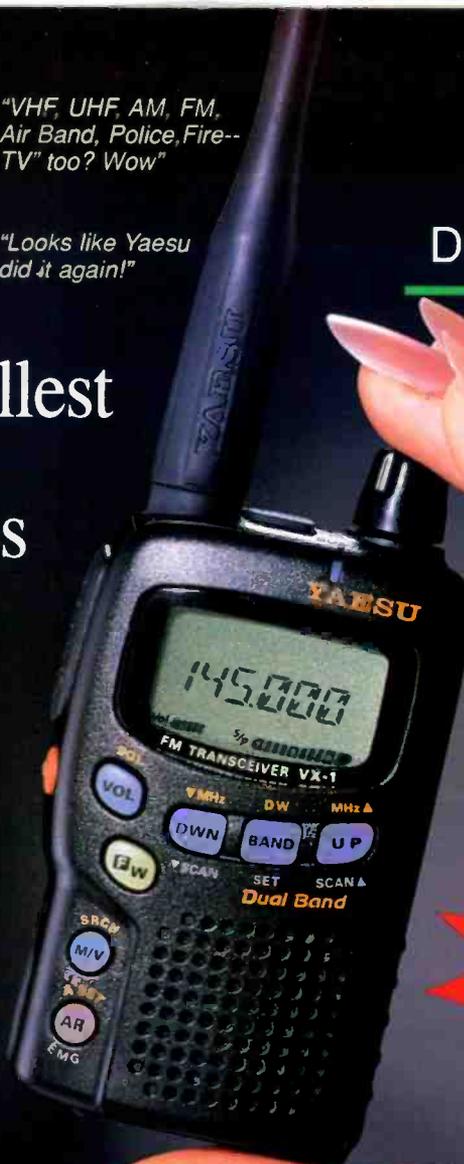
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\*Battery Life: 5-5-90 duty cycle.

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