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POPULAR COMMUNICATIONS

AUGUST 2008

Anatomy Of A PIRATE Favorite Rigs Of The Renegades

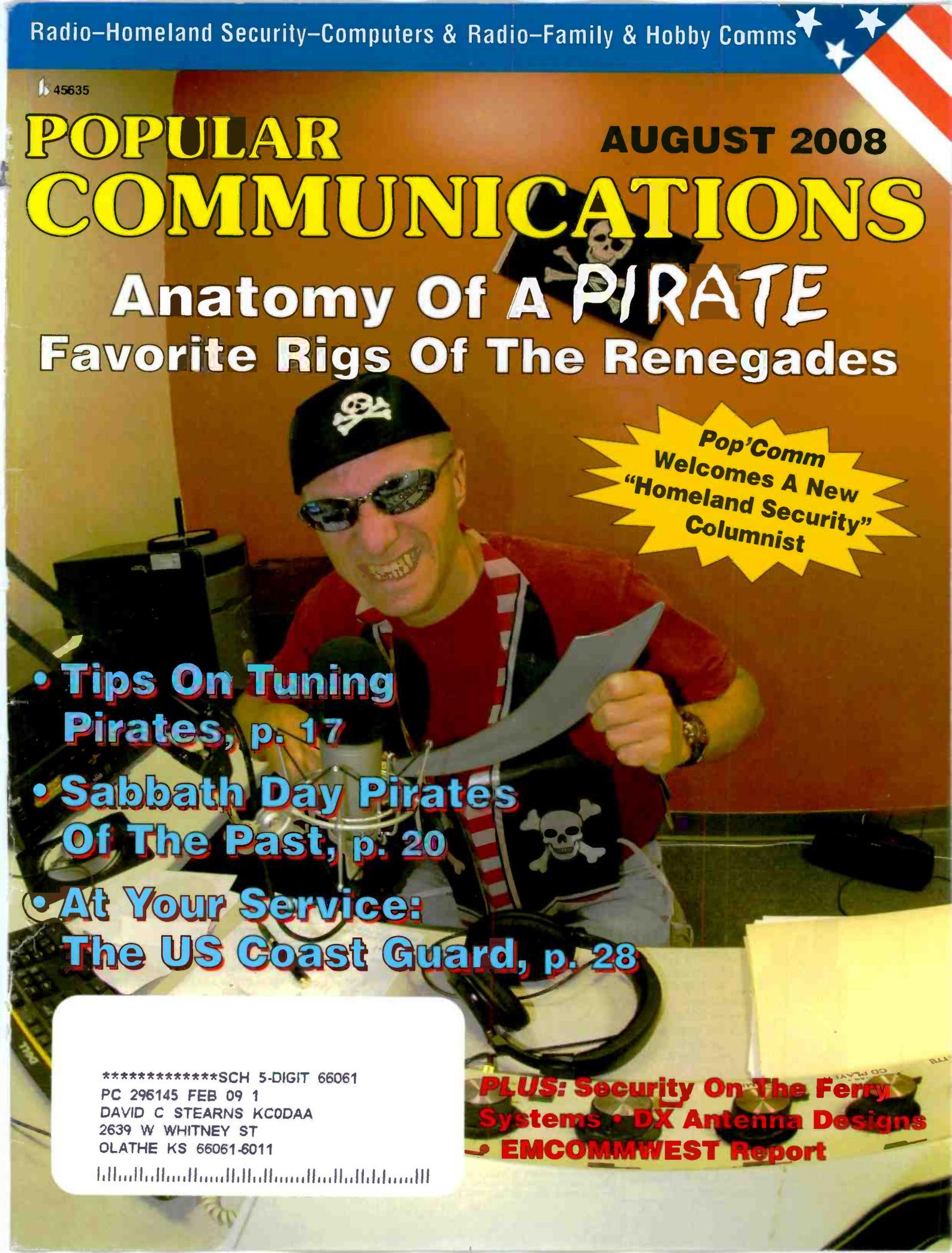
*Pop'Comm
Welcomes A New
"Homeland Security"
Columnist*

- **Tips On Tuning Pirates, p. 17**
- **Sabbath Day Pirates Of The Past, p. 20**
- **At Your Service: The US Coast Guard, p. 28**

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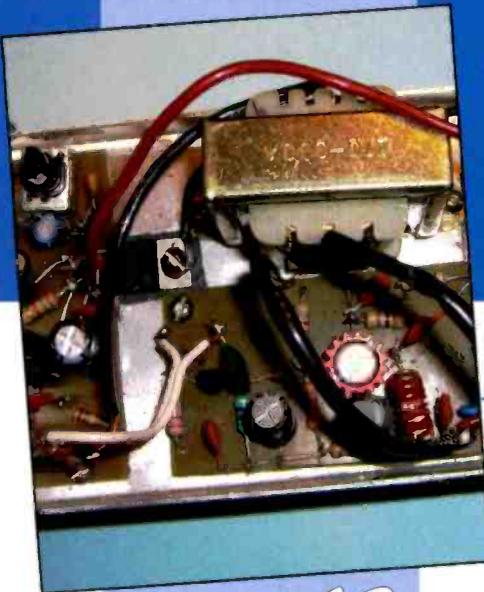
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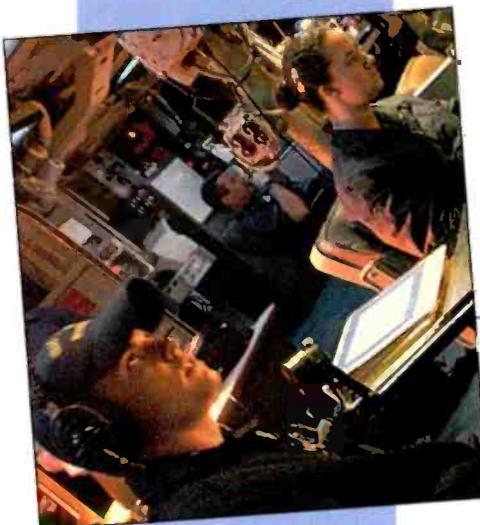


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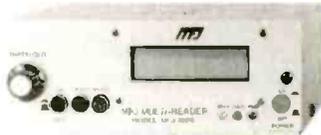
Pirate stations run the gamut from the barest of bare bones setups to full-fledged studios. And, yes, they have their favorite equipment, too. See "Making Radio—Pirate Style," by Andrew Yoder, starting on page 12, for a look at the gear outfitting the pirate's lair. (Cover photo by Larry Mulvehill, WB2ZPI)

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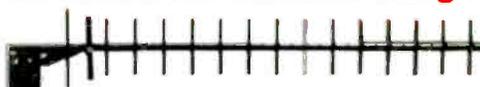
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by Edith Lennon, N2ZRW, Editor

The Low-Down On Low-Power FM

Since the inception of *Popular Communications* this page has held the radio spectrum as a national (international, I should say) resource. Like all such resources it is at once precious and finite. And for that reason it will always be fought over. That's normal. And all competing interests have the right to make their cases. That's democratic.

We're seeing a lot lately of pushing and pulling regarding spectrum. It's been intense, to say the least. The recent 700 MHz auction was a clash of titans, with players like Google and Verizon wielding their prodigious clout against a comparatively tiny contender, the "public interest," which took the form of public safety groups and first responders and had the weight of the FCC behind it. And it's not over yet. The swath of spectrum set aside for public safety organizations, the D Block, must be "reauctioned" as it failed to reach its minimum bid during the March blowout. The ever-tumultuous transition to DTV, still many months away, will also have spectrum spectators on the edge of their shack chairs till that all shakes out (we'll be taking a look at that next month).

Receiving less ink, but still critically important to radiophiles—and other big players wielding clout—is the ongoing battle over low-power FM (LPFM) radio. Making their contending cases in a back and forth that's gone on for nearly a

decade are community access groups and other "radio activists" on one side and the likes of the National Association of Broadcasters and National Public Radio on the other. With the FCC having just closed its most recent *Report and Order* to collect comments on the issue, the fight for the prize (spectrum access) moves back to Congress for the familiar tug of war.

For one interesting and informative look at where things stand today (and why) concerning LPFM, we turn to a just-released piece out of the Cato Institute (see box; original can be found at www.cato.org/tech/tk/080528-tk.html), which seems especially appropriate for this issue with its focus on certain notorious users of that slice of national resource: pirate broadcasters. It is reprinted in its entirety with permission.

A Correction

The May "Radio Resources" column on DSP noise reduction speakers referred to BHI Ltd. as the supplier of the filtering chip contained in SGC's speaker. SGC uses its own ADSP (Advanced Digital Signal Processing) technology in its product. We regret the error.



Cato's TechKnowledge

Low-Power FM: Freedom Is Diversity

Issue #115, May 28, 2008
by James Plummer

Last month, the Federal Communications Commission collected yet another round of public comments on the future of low-power FM radio (LPFM). The comments were submitted in response to a "Third Report and Order" concerning LPFM

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

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service issued late last year. Since the FCC's initial report was filed in early 2000, the regulatory battle has been so fierce that this "third" report is actually the fifth proposed set of rules. Large commercial broadcasters, National Public Radio, and community activists have all sought to bend the FCC's rules to their advantage. The twisted saga spotlights the need for a regulatory approach that is both hands-off and even-handed. Only this will encourage diversity and free choice in radio programming.

After years of playing cat-and-mouse with low-power "pirate" radio stations unlicensed by the FCC, the commission finally published proposed rules on issuing licenses to low-power FM stations and began receiving public comments in January 1999. Advocates of LPFM "microradio" argue that the start-up costs for a fully licensed full-power FM station (which are in the seven figures) preclude smaller, independent individuals and groups from getting on the air. The Telecommunications Act of 1996, which deregulated media ownership to allow one corporation to own more stations in a single city (and nationwide) than previously, further drove up the demand for, and cost of, FM licenses.

The FCC issued its initial order on LPFM in early 2000, announcing that it would start granting licenses for locally owned, nonprofit, 10-watt and 100-watt LPFM stations. A 100-watt station can typically broadcast over a radius of 3.5-5 miles. Seeking a compromise between demands from established broadcasters and microradio advocates, FCC set interference rules restricting new licenses from second-adjacent stations on the FM dial. This means that if an FM station is already broadcasting at 90.1 FM, for example, no LPFM licenses could be granted for adjacent FM stations on 90.5, 90.3, 89.9 or 89.7 FM.

Although many microradio enthusiasts argued at the time the rule was too restrictive given modern technology, NPR and the commercial National Association of Broadcasters immediately took their scare campaign to Congress, which dutifully passed a law establishing a third-adjacent interference rule for LPFM licensees. The Radio Broadcasting Preservation Act of 2000 ruled out new LPFM stations two slots away—in our example precluding 90.7 and 89.5 FM. This left only one slot available in the country's 50 biggest cities, quashing potential new competitors.

But Congress also directed the FCC as a part of that law to prepare a report on the interference created by second-adjacent channels. The FCC farmed the report out to the independent contractor MITRE, and their report, issued in 2003, found that LPFM stations would not interfere with a full-power FM signal only two channels away after all. The FCC is urging Congress to go back to the second-adjacent rule in their latest report and bills currently pending in the House and Senate would do just that.

The Senate Commerce Committee, however, added two restrictive amendments to that body's version of the bill. One keeps the third-adjacent rule in place for New Jersey (thanks to Sen. Frank Lautenberg, D-New Jersey). The other is a punitive measure to keep anyone who has ever operated a "pirate" radio station from obtaining an LPFM license—despite a near-identical provision in the 2000 law having already been struck down in federal court.

While the FCC was spending 2003 reviewing and approving the MITRE report, it also opened a license window for "FM translator" stations. Translator stations simply translate the signal of an existing station, whether AM or FM, onto another frequency. They typically ensure a local broadcaster's signal

can be heard throughout a community despite geographical features like mountains or skyscrapers that block one signal from reaching the entire populace. These stations are technologically similar to LPFM stations, being low-wattage (up to 250 watts versus full-power stations which range up to 100,000 watts). LPFM and translator stations are both "secondary services" which must yield to full-power "primary services" under FCC rules.

Noncommercial stations are allowed under the "FM translator" rules to have translators outside their primary coverage area. And translator stations are not hobbled by the arbitrary third-adjacent rule, or even a second-adjacent rule, but instead can use "contour mapping"—that's a fancy way of saying that licensees should produce an engineering study proving that the new translator would not interfere with the signal of an established full-power station. FCC's latest report mercifully, if tentatively, recommends that LPFM stations receive the same courtesy.

The FM translator license window obviously established a double standard on adjacent spectrum—with translators getting the best treatment and LPFM held to the third-adjacent rule. But it unleashed some unintended consequences as well. About 3,500 construction permits had been granted for translators when FCC suspended application processing in 2005 because it realized that the vast majority of licenses had been given to squatters and speculators with no intention of actually building radio transmitters. The number of actual FM translators had increased by less than 100 over those two years.

The other surprise was that some Christian broadcasting groups were "translating" the signal of a single full-power station to dozens or even hundreds of low-power FM translator stations via satellite, creating a national radio network (with 100-watt transmitters typically running no more than \$10,000) for a much lower cost than previously possible. This predictably enraged advocates of low-power "localism" even as it gave more listening options to the public. As a result, some microradio advocates are demanding the FCC limit the number of FM translators one entity may own to 10 nationwide.

NPR, which relies heavily on translators in rural areas, vehemently opposes such a restriction. On the other hand, NPR is asking the FCC not to require that a newly licensed full-power station which creates interference for an existing LPFM station be obliged to help the smaller entity move its facilities or frequency. Some property rights are more equal than others, apparently.

It is welcome that the FCC's latest LPFM "Report and Order" invites Congress to allow more small, independent broadcasters. And the rules move toward freedom and regulatory flexibility in other ways, too, such as by lifting restrictions on the transfer of licenses, geographically expanding the definition of "local," and allowing two or more part-time LPFM stations to time-share on the same frequency.

The FCC and Congress are both poised to further open up the FM spectrum. Both should ignore the pleadings of special interests on all sides as they do so. "Contour mapping" should replace arbitrary adjacent-channel restrictions for LPFM. Double standards between LPFM and translator stations should be ended and onerous ownership restrictions on both LPFM and FM translator stations should be eased.

—
James Plummer is a research assistant for Information Policy with the Cato Institute.

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

Frequency Coverage:

25.000-512.000 MHz., 764.000-775.9875 MHz., 794.000-823.9875 MHz., 849.0125-868.8765 MHz., 894.0125-956.000 MHz., 1240.000 MHz.-1300.000 MHz.

The handheld BCD396T scanner was designed for National Security/Emergency Preparedness (NS/EP) and homeland security use with new features such as **Fire Tone Out Decoder**. This feature lets you set the BCD396T to alert if your selected two-tone sequential paging tones are received. Ideal for on-call firefighters, emergency response staff and for activating individual scanners used for incident management and population attack warning.

Close Call Radio Frequency Capture—Bearcat exclusive technology locks onto nearby radio transmissions, even if you haven't programmed anything into your scanner. Useful for intelligence agencies for use at events where you don't have advance notice or knowledge of the radio communications systems and assets you need to intercept. The BCD396T scanner is designed to track Motorola Type I, Type II, Hybrid, SMARTNET, PRIVACY PLUS, LTR and EDACS® analog trunking systems on any band. Now, follow UHF High Band, UHF 800/900 MHz trunked public safety and public service systems just as if conventional two-way communications were used. **Dynamically Allocated Channel Memory** - The BCD396T scanner's memory is organized so that it more closely matches how radio systems actually work. Organize channels any way you want, using Uniden's exclusive dynamic memory management system. 3,000 channels are typical but **over 6,000 channels are possible** depending on the scanner features used. You can also easily determine how much memory you have used and how much memory you have left. **Preprogrammed Systems** - The BCD396T is preprogrammed with over 400 channels covering police, fire and ambulance operations in the 25 most populated counties in the United States, plus the most popular digital systems. **3 AA NIMH or Alkaline battery operation and Charger** - 3 AA battery operation - The BCD396T includes 3 premium 2,300 mAh Nickel Metal Hydride AA batteries to give you the most economical power option available. You may also operate the BCD396T using 3 AA alkaline batteries. **Unique Data Skip** - Allows your scanner to skip unwanted data transmissions and reduces unwanted birds. **Memory Backup** - If the battery completely discharges or if power is disconnected, the frequencies programmed in the BCD396T scanner are retained in memory. **Manual Channel Access** - Go directly to any channel. **LCD Back Light** - A blue LCD light remains on when the back light key is pressed. **Autolight** - Automatically turns the blue LCD backlight on when your scanner stops on a transmission. **Battery Save** - In manual mode, the BCD396T automatically reduces its power requirements to extend the battery's charge. **Attenuator** - Reduces the signal strength to help prevent signal overload. The BCD396T also works as a conventional scanner to continuously monitor many radio conversations even though the message is switching frequencies. The BCD396T comes with AC adapter, 3 AA nickel metal hydride batteries, belt clip, flexible rubber antenna, wrist strap, SMA/BNC adapter, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO or ESAS systems. Order on-line at www.usascan.com or call 1-800-USA-SCAN.



Bearcat® BC246T Trunk Tracker III

Suggested list price \$399.95/CEI price \$214.95
Compact professional handheld TrunkTracker III scanner featuring Close Call and Dynamically Allocated Channel Memory (up to 2,500 channels), SAME Weather Alert, CTCSS/DCS, Alpha Tagging. Size: 2.72" Wide x 1.26" Deep x 4.6" High

Frequency Coverage:

25.000-54.000 MHz., 108.000-174.000 MHz., 216.000-224.9800 MHz., 400.000-512.000 MHz., 806.000-823.9875 MHz., 849.0125-868.9875 MHz., 894.0125-956.000 MHz., 1240.000 MHz.-1300.000 MHz.

The handheld BC246T TrunkTracker scanner has so many features, we recommend you visit our web site at www.usascan.com and download the free owner's manual.

Popular features include **Close Call Radio Frequency Capture**—Bearcat exclusive technology locks onto nearby radio transmissions, even if you haven't programmed anything into your scanner. **Dynamically Allocated Channel Memory** - Organize channels any way you want, using Uniden's exclusive dynamic memory management system. 1,600 channels are typical but **over 2,500 channels are possible** depending on the scanner features used. You can also easily determine how much memory is used. **Preprogrammed Service Search (10)** - Makes it easy to find interesting frequencies used by public safety, news media TV broadcast audio, Amateur (ham) radio, CB radio, Family Radio Scanner, special low power, railroad, aircraft, marine, racing and weather frequencies. **Quick Keys** - allow you to select systems and groups by pressing a single key. **Text Tagging** - Name each system, group, channel, talk group ID, custom search range, and S.A.M.E. group using 16 characters per name. **Memory Backup** - When power is lost or disconnected, your BC246T retains the frequencies that were programmed in memory. **Unique Data Skip** - Allows the BC246T to skip over unwanted data transmissions and birds. **Attenuator** - You can set the BC246T attenuator to reduce the input strength of strong signals by about 18 dB. **Duplicate Frequency Alert** - Alerts you if you try to enter a duplicate name or frequency already stored in the scanner. **22 Bands** - with aircraft and 800 MHz. The BC246T comes with AC adapter, 2 AA 1,800 mAh nickel metal hydride batteries, belt clip, flexible rubber antenna, wrist strap, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. For more fun, order our optional deluxe racing headset part #HF24RS for \$29.95. Order now at www.usascan.com or call 1-800-USA-SCAN.



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News, Trends, And Short Takes

Worldwide Audience For U.S. International Broadcasting Tops 175 Million

U.S. international broadcasting now reaches over 175 million people weekly, up from 155 million in 2007 and a 75-percent increase since 2001. Broadcasting Board of Governors (BBG) Chairman James Glassman announced the new global audience estimate in a May 15 speech delivered at the Heritage Foundation. BBG broadcasters include the Voice of America (VOA), Radio Free Europe/Radio Liberty (RFE/RL), the Middle East Broadcasting Networks (Alhurra TV and Radio Sawa), Radio Free Asia (RFA), and the Office of Cuba Broadcasting (Radio and TV Martí).

In his speech, Glassman referred to recent events in Burma and Tibet, pointing out that VOA and RFA warned the Burmese people of the potential severity of cyclone Nargis days before official Burmese media, and both broadcasters provided breaking news coverage of pro-democracy protests in Tibet in March and the subsequent Chinese crackdown.

The BBG global audience estimate is based on independent surveys conducted worldwide in accordance with industry-standard research methods. Audience gains in Indonesia, Nigeria, and Syria, in particular, helped drive the increase.

Canadian AM Transmitter Goes Silent

CKPT-AM 1420 kHz in Peterborough, Ontario, is the latest Canadian AM station to sign off for good. The station became 99.3 Energy FM last August, and has been simulcasting on AM since then. Last year Peterborough's remaining AM station, 980 CKRU, applied to also move to FM. Nearly a dozen other applicants are seeking Peterborough's available FM frequency. The Canadian Radio-television and Telecommunications Commission is expected to choose an applicant soon.

Two U.S. Lawmakers Urge Conditions On XM-Sirius Deal

The Federal Communications Commission should impose conditions on Sirius Satellite Radio's proposed \$3.95 billion acquisition of rival XM Satellite Radio Holdings to protect consumers, two senior Democratic lawmakers said in a letter to FCC Chairman Kevin Martin.

Representatives John Dingell, chairman of the House Energy and Commerce Committee, and Edward Markey, chairman of the House Subcommittee on Telecommunications and the Internet, urged the FCC to take steps to protect consumers in connection with any decision to approve the merger. Dingell and Markey called on the FCC to ensure the satellite radio companies adhere to pricing constraints they have already submitted to the agency. "Second, the commission should require the merged company to permit any device manufacturer to develop

equipment that can deliver the company's satellite radio service," they said in their letter.

Under U.S. law, the FCC determines whether a communications deal is in the overall public interest. Sirius Chief Executive Mel Karmazin has promised that the combined company would let customers buy channels individually as well as let them block adult channels and get refunds for those blocked channels. Sirius has also said all existing XM and Sirius satellite radios would continue to work after the merger.

The XM-Sirius deal has been cleared by antitrust officials at the U.S. Justice Department but still needs the approval of the FCC.

Radio Nacional de Venezuela Plans To Open Own Shortwave Station

The hiring commission of Venezuela's Ministry of Communication and Information (Minci) and the commission of Radio Nacional de Venezuela (RNV) met representatives of companies bidding for work in the construction of the new shortwave station for RNV, located in Calabozo, Guarico state.

Engineer Luis Alfredo Palacios, an adviser to RNV, said the station will propagate programming of RNV throughout the American continents and that the project's goal is to build a shortwave station in Venezuela "so that in the near future...we can begin to make international broadcasts from this centre."

Palacios said that the project will consist of two phases. The first is expected to be completed in the next 18 months and to cover only the northern hemisphere; the second phase would last an additional year and see RNV broadcasting throughout Latin America. Guarico state is a strategic location for the installation of the antennas because it is in the heart of the country.

Alaskan DRM Experiment Proposed

Digital Aurora Radio Technologies of Delta Junction, Alaska, has applied to the FCC for authorization to experiment with statewide DRM in the 5, 7 and 9 MHz shortwave bands. The FCC has assigned the callsign WE2XRH to this station, but its license is pending. Delta Junction is approximately 130 miles southeast of Fairbanks.

"The ultimate goal of this project is to provide a terrestrial digital radio service to the citizens of Alaska," the company said. "In general, the population of Alaska is underserved with respect to the ability to have a high quality, reliable public radio audio service. This is especially true for sparsely populated areas of the state."

Digital Aurora would perform propagation, S/N, field strength, bit rate and audio quality measurements over a two-year period. The signals will be contained in a 10 kHz channel, but the test may include a wider signal to investigate the impact on broadcast quality and "expanded digital capabilities."

Transmissions will be coordinated with the High Frequency Coordination Conference.

"It is clear from the coverage contours that nearly all of the energy is concentrated for reception in Alaska," the company said. Major parts of the planned experiment will be to investigate how well the propagation predictions reflect field conditions and how low the transmit power can go below 100 kW without jeopardizing coverage in some parts of Alaska.

A unique element of the proposed station is its use of government surplus over-the-horizon (OTH) radar transmitters. Tests by the OTH system manufacturer, Continental Electronics, demonstrated the capability of the transmitter to broadcast DRM with "excellent performance characteristics" and within the spectral mask recommended by the ITU for this mode.

"An Alaskan experiment will fill a gap in assessing the performance of digital terrestrial shortwave broadcasting in the difficult high latitude environment," the company said.

Italian Appeals Court Reverses Acquittal Of Vatican Radio Officials

Italy's top appeals court reversed the acquittal of two Vatican Radio officials implicated in alleged electromagnetic pollution emanating from the station's transmitters. The Court of Cassation announced its decision to put both the former director and president of the radio station back on trial, after they were acquitted in June 2007 by Rome's Court of Appeal. Vatican Radio said today it was disappointed with this latest decision.

In 2001, residents from Cesano, north of Rome, took Vatican Radio to court, alleging its nearby high-power transmitters caused leukemia and other serious health problems in the community. Investigators from the Italian Environment Ministry at the time found levels of electromagnetic fields that largely surpassed the legal limit of six volts per meter.

A damning report from the public health agency for Latium, the region surrounding Rome, followed. The investigation revealed infant mortality rates from leukemia in Cesano to be three times that of other areas. The charges of electromagnetic pollution brought about a 10-day jail sentence for Cardinal Roberto Tucci, the president of Vatican Radio, and Father Pasquale Borgomeo, the station's director at the time. That sentence was appealed by Vatican Radio, which said Wednesday it had conformed to international recommendations for electromagnetic emissions even prior to the existence of any such legislation in Italy.

RFE/RL Websites Hit By Mass Cyberattack

Several websites run by Radio Free Europe/Radio Liberty (RFE/RL) have been hit by an unprecedented cyberattack, making them inaccessible to the outside world. The attack, which started on April 26, initially targeted the website of RFE/RL's Belarus Service, but quickly spread to other sites. Within hours, eight RFE/RL websites (Belarus, Kosovo, Azerbaijan, Tatar-Bashkir, Radio Farda, South Slavic, Russian, and Tajik) were knocked out or otherwise affected.

The "denial-of-service" (DOS) attack was intended to make the targeted website unavailable to its users, according to RFE/RL's Director of Technology Luke Springer. "The way this is normally done is by flooding the target website with fake

requests to communicate, thereby using up all [the website's] free resources and rendering the site useless to all the legitimate users," Springer said.

RFE/RL has been hit before by denial-of-service attacks, but this attack was unprecedented in its scale, as RFE/RL websites received up to 50,000 fake hits every second. Springer says this more sophisticated assault is known as a "distributed denial-of-service" attack, in which "the attacker has made use of other machines, distributed its intentions out to other machines, and then all of these machines attack at the same time."

DOS attacks are difficult to protect against, and the software required to carry them out is available on the Internet. RFE/RL Belarus Service Director Alexander Lukashuk said he began getting emails from frustrated Web visitors about two hours after the attack began on April 26. He noted that the problems began on an important date in Belarus—the 22nd anniversary of the Chernobyl nuclear disaster. Lukashuk said that a large Internet audience was relying on RFE/RL's Belarus Service to report live on a rally of thousands of people, organized by the Belarusian opposition. The demonstrators were protesting the plight of uncompensated Chernobyl victims and a government decision to build a new nuclear power station.

Other Belarusian websites were also hit, including the Minsk-based nongovernmental organization Charter 97. Since the attacks, many other independent websites in Belarus have carried content from RFE/RL's Belarus Service.

Radio Nigeria Acquires New Transmitters

The Federal Radio Corporation of Nigeria (FRCN) has been working to improve its signals as well as programming and audio streaming. It will also add new transmitters at Kaduna and Enugu to be dedicated to the Educational Service. When completely installed in December 2008, the 200 kW mediumwave transmitter in Jaji, Kaduna, will be one of the most powerful radio transmitters in Africa, and, in combination with the 100 kW transmitter planned for Enugu in 2009, the whole country and much of Africa will receive the signals. The transmitters, a grant from the Japanese Government, will be digital ready.

The process of dismantling the gigantic, obsolete transmitter and its antenna component and installing the new one will take six months. To keep its Hausa language listeners during this transition, Radio Nigeria Kaduna recently commissioned a new Hausa language FM station in Kaduna. It also temporarily fixed its old shortwave channel [6090 kHz] on the 49 meter band. Karama FM, the callsign of the new FM station, and the shortwave station will both continue to carry Radio Nigeria's Hausa Service. ■



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Making Radio—Pirate Style

The Rigs Behind Radio's Renegade Voices

by Andrew Yoder

Tuning in to 6925 kHz USB, you hear the circus-like tinkling of calliope music and children laughing. Before long, a very deep-voiced, almost Wolfman Jack-sounding announcer says that Radio Ice Cream is “bringing you the hottest in heavy metal” and that they’re transmitting from a renegade ice cream truck. The signal is strong and clear, so much so that you look out the window, just to be sure that no white truck with suspicious antennas is delivering goodies to the neighborhood kids.

Aside from this real-life example, when was the last time you thought about where or how a signal was reaching your receiver? Various commercial interests have long pushed for the concept of audio streamed or stored on the Internet as being “radio.” It’s to the point now that the managers of government shortwave stations around the world seem to be confused between the definition of Internet and radio.

With pirate radio, there’s no confusion. If you can hear it on 6925 kHz, you can bet that there’s more to the operation than just uploading a file to an ftp site.

From the most basic to highly complicated arrangements, pirate radio stations exist in all forms, based on the desires of the operators. The only absolutely necessary parts of a station are an audio source, a transmitter, and an antenna.

A number of pirates have been on in past years with only an antenna, amateur radio transceiver, and a microphone (used for both announcements and held to the speaker of a stereo for music). Of course, this “kids playing radio” arrangement is not optimum, and most of the stations using this system eventually graduate to more equipment.

The audio system, transmitter, and antenna comprise a chain that is only as strong as its weakest link, to borrow from a stale (but accurate) metaphor. We’ll examine the other components in upcoming articles, but the transmitter is the keystone, so we’ll start there.

Pirate radio transmitters vary from homebrew designs of all types to amateur radio equipment (with or without modifications), and military surplus.

Mobility (Or Lack Thereof)

From a purely operational perspective, the ideal shortwave broadcast transmitter is one that sounds great in the AM mode and is built so well that it can operate for hours and hours at a time without any problem of overheating. The ideal rig would be either a commercial shortwave broadcast transmitter or a commercial AM transmitter that’s been modified for operation in the shortwave bands.

Andrew Yoder has heard hundreds of pirates over the past 27 years of shortwave listening. He is the author of *Pirate Radio Stations* and *Pirate Radio Operations*, among other books.



Photo A. WCYC's equipment from the early 1990s, showing the Yaesu FT-747 transceiver at the center of the top shelf and the AC power supply underneath.



Photo B. The Omega Radio setup from the early 1990s, showing the Heathkit HW-101 transceiver, at the center left of the shelves.

Of course, pirate radio violates a few rules of the FCC, so it might not be wise to illegally operate a transmitter that fits into a 6-foot rack and weighs no less than 750 pounds. It's nothing you could take on a backpacking trip to the mountains.

Most pirates are always trying to balance the fine line between having the most portable transmitter possible and putting out a good signal. The stronger the signal, the better. Those stations using a fixed transmitter usually have something else up their sleeves, such as only broadcasting through massive snowstorms, etc.

It's much easier for stations in countries where few enforcement actions occur against pirates. Greece and Holland both have a history of high-powered pirates. Greece's Radio Odyssey operated occasionally in 2007 with 2000 watts and was easily audible in North America. Probably a dozen or so Dutch pirates have used more than 500 watts on occasion in 2008, including Radio Casanovas, Radio Barones, Radio East Coast Holland, Radio Spaceman, and Radio Boomerang.

In the United States, the FCC has been active at times against shortwave pirates and fines have been high, but no actions have been taken in about the past 10 years. The FCC has been plenty active against FM pirates, however, but it's anyone's guess when the FCC will again go after the shortwave stations—or if the Commission has decided that shortwave isn't worth its attention. Still, most American pirates are not willing to take chances with awakening the sleeping giant.

All Power Sources Are Not Created Equal

AC power, of course, is mostly limited to fixed locations and DC is typically used with batteries and vehicles. Going back to that sleeping giant analogy, you can assume that a mobile location is preferable to the average operator, so broadcasting via DC power is the method of choice. That means AC-powered transmitters either need to be powered via a power source from another location (at a park or public outlet), from a gasoline generator, or with batteries fed to a DC-to-AC power inverter.

DC-only transmitters can either be operated from batteries or from regulated power supplies. And modern transceivers also contain built-in DC power supplies so they can be operated from a 12 VDC power source. In either case, the DC-only transmitter or modern trans-

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Photo C. Johnson Viking Valiant II transmitter ad from 1964.

ceiver can be operated from inside a vehicle or from a car battery in the woods. And the modern transceivers typically come with an AC power supply as well, so they can be used with any sort of power.

Amateur Radio Transceivers

Hands down, the favorite in North America is the amateur radio transmitter or transceiver. For as little as \$100, an operator can find a used rig, add an antenna, and be heard worldwide with very little effort. Current favorites from this category are 100-watt digital transceivers from the 1990s, such as the ICOM IC-735, Yaesu FT-747 and FT-757 (Photo A), and the Kenwood TS-140 and TS-440. These and more recent transceivers are electronically restricted to transmit on only the amateur bands. However, many

modifications are widely published involving the snip of a diode or two that will allow the transceiver to operate over the full receive range of the radio, typically 150 to 30,000 kHz.

Peter Worth from Anteatr Radio, who regularly broadcasted from a tractor-trailer in the late 1990s, said "I used an IC-735 for many years trouble free. The unit is quite robust. I had mine keyed up for 10 hours straight once with no problems."

Commander Bunny from WBNY also uses the IC-735, but plays it safe with the transmitter, which has "a beefed up power supply for long transmissions. This gives us the ability to do FM on shortwave, which has been popular with the monkeys." (You can find out more about Commander Bunny's thoughts on monkeys, um, humans and other pirate goings-on in Mitch Gill's "There Be



Photo D. A Knight T-150 transmitter from the early 1960s. Although used by a number of pirates over the years, the grid-modulated AM with carrier control doesn't provide broadcast-quality audio.

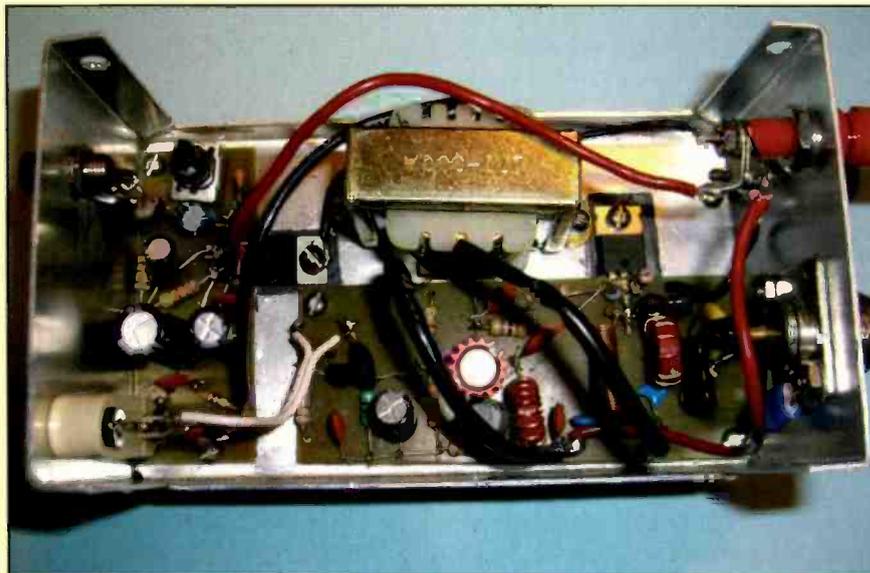
The Grenade

The name says it all. Engineered, built, and sold by the Radio Animal in the 1990s; then reverse-engineered, built, and sold by many others in the 2000s, the Grenade is the superstar of pirate technology. Plenty of hobbyists claim to have seen one and just as many hams and small-time commercial outfits claim to be capable of building transmitters that can outperform the Grenade. That no one has been able to do so has burnished its legend.

The Grenade is an AM-mode short-wave transmitter about the size of its namesake. Powered with about 12 VDC, these rigs can output approximately 12–16 watts into a balanced antenna. But more important than the power or size of the Grenade is its plug-n-play nature. The Grenade has no meters or controls. The front end of the transmitter contains a resilient limiter that requires little fiddling from the audio source to set the levels. It also contains a broadcast compressor to give the audio some punch, riding the fine line between great audio and strong audio.

Like the audio, the output requires essentially nothing, but can withstand almost anything. I've heard stories of operators accidentally running their Grenade for 10 minutes or so with no antenna connected, then plugging the antenna in and having everything continue to work fine. The popular Radio Free Speech made more than 1,000 broadcasts with the Grenade, being heard in all 50 states plus Canada and Europe. That Grenade is still working fine.

Some of the lore of the Grenade can be attributed to its creator, an eclectic and reclusive genius. The Radio Animal built



The mounted circuit board of Channel Z's homebrew Grenade copy

a few dozen Grenades throughout the 1990s in different series of cases, colors, and circuits, based on what components he had available. After a few Grenades reached stations, the demand far outstripped his manufacturing capabilities. A perfectionist who wanted total control over the design, the Radio Animal stopped answering requests for Grenades and ceased production in the late 1990s

Aftermath

Desperate for information about Grenades, a number of hobbyists started a Grenade reverse-engineering project via the Internet. This group compared and contrasted existing Grenades, noting in some cases that their work was being frustrated: parts had values removed or incor-

rectly changed and transformers were rewound. This was ostensibly to prevent the parts from being traced back to the electronics dealers, but it also made the transmitter more difficult to reverse-engineer. While adding to the frustration level, it also added to the legend.

Today, Grenade-style transmitters and clones have been successfully built by several pirates and ham radio operators (who also like the idea of a small portable AM transmitter for field day). Best known are the Corsair and Commando models, both designed by Dave Martin of West and North Kent Radio (WNKR) from England. Martin has sold some transmitters, but most of those in North America were home-built from schematics and plans, such as those by Channel Z and WKZP.

Pirates Out There... elsewhere in this issue.—ed)

Older tube and hybrid tube/transistor transceivers from the 1960s and 1970s have largely been abandoned in favor of the much smaller and lighter digital transceivers with built-in 12-volt power supplies for easy mobile transmissions. The older transceivers often weighed about 25 pounds and required a separate 30-pound AC power supply. The DC power supplies for these rigs are much smaller and lighter, but were options when the transceivers were new, so they are much more difficult to find.

Some of the more common transceivers from this era were the Yaesu FT-101; Heathkit HW-101 (**Photo B**), SB-101, and SB-102; Drake TR-3 and TR-4; Swan 350; National NCX-5; and Hallicrafters SR-160 and SR-400.

Surely a few pirates are still using these transceivers, but the only station publicizing the fact is WHYP, with its HW-101. But with the station falling largely inactive and typically using an AM-mode transmitter, such as a Viking II or Grenade (see sidebar), the HW-101 rarely sees the light of day. (Ironically, as this article was being completed, I heard

from two stations that were working toward getting their Yaesu FT-101s on the air, but they aren't on yet.)

Amateur AM-mode Transmitters

When pirates will rediscover vintage transceivers is anyone's guess, but they know all about the classic AM ham radio transmitters of the 1950s and 1960s. WHYP, The Crystal Ship, and MAC are current users of the Johnson Viking II and Viking Valiant (**Photo C**) transmit-

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ters from the 1950s. Because of the quality of the construction of these 85-pound beasts, and because they can be modified to provide broadcast-quality AM audio, they're very popular with pirates and AM hams alike. I've heard of more than one licensed Latin American broadcaster who used Johnson Viking transmitters on shortwave.

Of course, modifying and operating Johnson Viking transmitters is not for the faint of heart, and not just because of the hernia-inducing weight. Test equipment, some electronic knowledge, and a load of determination are required. James Brownyard of WHYP said, "I did arc a few caps, catch it on fire twice, caught a jolt on the B+ twice, and replaced a few tubes before I knew what I was doing, but I did learn eventually."

Most of the entry-level amateur transmitters from the 1950s and '60s that were popular with pirates 20 years ago have fallen out of favor with the current crop because of the lesser audio quality of using the carrier-controlled screen-modulation scheme. Some of the transmitters that fit into this profile are the Knight T-150 (Photo D) and T-60, Heath DX-60, and the Hallicrafters HT-44. As Brownyard says, "I would scrap the low-end, entry-level ham tube rigs for AM operation."

In the past, pirates with a desire for a classic transmitter capable of broadcast-quality AM, but at a much lower price than the Johnson Viking series, looked to the Heath DX-100 and Apache transmitters from the early 1960s. The Apache looks as nice as it sounds, but the DX-100's cabinet was built on the cheap, with

Photo E. A Mike Radio (Netherlands) photo QSL showing the station's Rohde & Schwarz SK-010 transmitter.

a plain painted front panel and flimsy plastic knobs—perfect for anyone who values performance over style.

Military Surplus

In past years, military surplus transmitters were often pushed into service by aspiring pirate broadcasters. Typical units ranged from the relatively small, low-powered AN/ARC-5 Command series (used by KOS, Cleveland) to the massive Hallicrafters HT-4/BC-610 (used by KPRC and The Fox), both from World War II. Vietnam-era transmitters that have been used by pirates include the T-195 and T-368 transmitters.

If size alone isn't enough to turn many away from the latter two transmitters, then nonstandard parts and connectors are. As Nemesis (Radio Doomsday) and Captain Eddy (Radio Airplane) penned in their *Pirate Radio Survival Guide*, "Do not purchase military surplus equipment! Unless you have a lot of experience with radio equipment, military surplus stuff can often turn into more trouble than it's worth."

Holland is again an exception, this time to the military-surplus rule. The Dutch have been pirating for decades and it seems that every town has at least one station at any given time. Whether this interest in radio electronics and defying the rules of the land goes back to the Dutch underground in World War II is anyone's guess, but the country is a DXer's dream. And it seems that nearly every AM or shortwave pirate has at least one ex-West German military Rohde & Schwarz transmitter stack from the 1960s (**Photo E**).

Just do a Google search on the company's SK-050 transmitters and you'll turn up links to Alfa Lima Radio, Radio Scotland, Radio Brandaris, Cupido Radio, and Orion Radio (all Dutch pirates), but not much else from European hams or military history buffs. Sometimes it seems that every R&S transmitter must have been dismantled from RTTY positions on ships and trucks and sold to Dutch pirates.

Audio Quality Vs. "Talk Power"

If you listen to pirate radio or read pirate forums for any length of time,

you'll come across a discussion (possibly heated) of AM vs. SSB. Throughout the 1990s, He-Man Radio announced that he was "broadcasting in USB, the manliest of all modes." USB is the mode of choice for a number of operators, but many think of SSB as an emasculated radio signal, surgically removed from the carrier and its twin sideband. Some, like the operator of Channel Z, express their views succinctly. "I never have (and never will) broadcast in SSB mode."

It all comes down to strength and listenability. AM sounds great when the transmitter's audio has been reworked (in the case of ham or military surplus equipment) and some audio processing is being used. Otherwise, the carrier doesn't get fully modulated and the audio sounds somewhat telephonic. Another problem with AM is that an awful lot of power goes into that carrier and extra audio sideband.

SSB, by contrast, requires very little tweaking. The signal's all audio power and no carrier to fiddle with. The problem is that SSB just doesn't sound very good when broadcasting music—one pirate listener likened it to hearing "seagulls squawking over a garbage dump."

But those seagulls are loud. With the power all focused on that one sideband, you can guess that the output of an AM signal will need to be six times more powerful than an SSB signal through a comparable system. Stations with standard modern 100-watt transceivers will discover that the 100 watts of SSB will cover the country, but when they flip the switch to AM (actually semi-AM: carrier plus one sideband), the power drops to 25 watts out and the signal will generally cover a radius of few hundred miles.

Some stations will work around the problems for each mode. Music-oriented shows might be broadcast in AM mode, but the station will air more talk-based material in SSB. Others take a more dogmatic approach and broadcast only in AM or SSB.

From A Freezer Near You...

When you hear the screams of delight from happy children and Radio Ice Cream's truck rolls into your neighborhood, you might not know exactly what transceiver or transmitter is behind the door of the nonfunctional freezer in the back, but now you can imagine some of the possibilities. ■

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There Be Pirates Out There...

Plying The Radio Waves They Elude Authorities, But You Can Catch Them

by Mitch Gill, NA7US

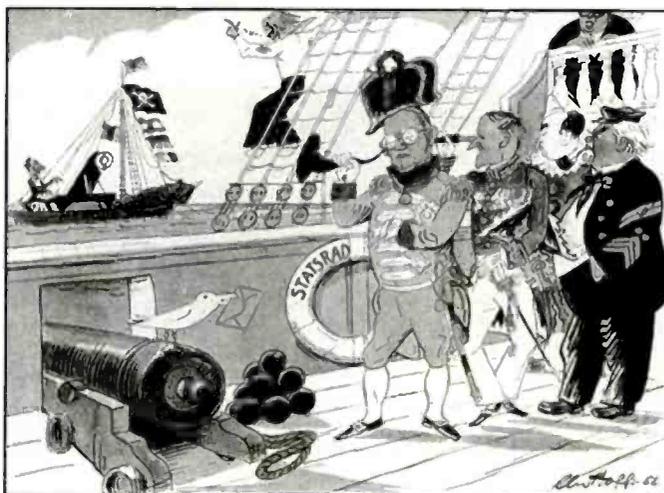
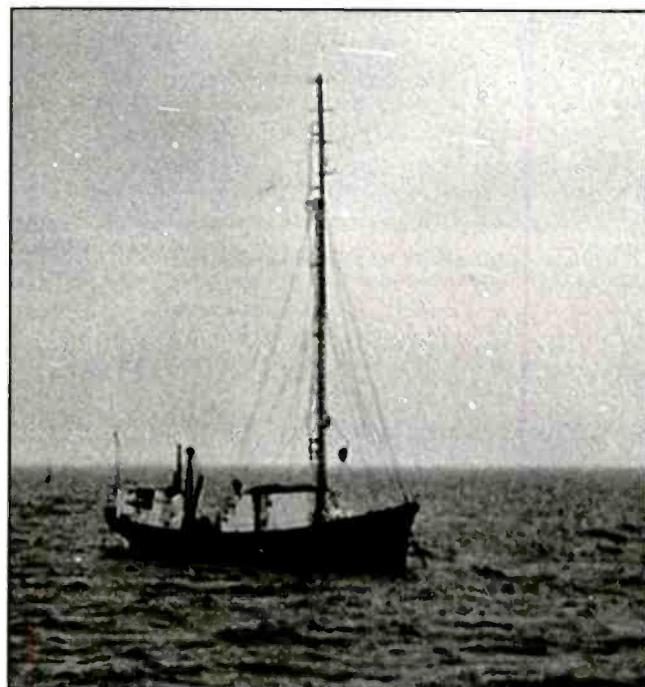
Times may have changed since early radio pirates first took to the waves to evade authorities, but the intrigue surrounding broadcasting's renegades remains. The term "pirate radio" was coined by Danish newspapers after the appearance of Radio Merkur, a station transmitting from a ship in international waters off the mainland in 1958. It was shut down in 1962 when the Danish parliament passed a bill effectively prohibiting all participation in activities supporting transmissions, recordings, etc. into their country. But the name pirate radio stuck and today refers to unlicensed stations broadcasting in violation of the laws of the country they're located in. However, if you ask a pirate he or she will tell you that it's a "Free Radio Station."

From The Pirate Evolution... To The Rodent Revolution

As far back as 1940, there were radio stations transmitting outside established guidelines. One of the more famous was run by guitar pioneer Les Paul. Many musicians of the great band era, including Tommy Dorsey and Glenn Miller, came to his basement broadcast studio to—illegally—play for the neighbors who lived in his apartment building.

Today pirates are still typically individuals operating a low-power station, playing music and providing news and satirical commentary. The station itself can be as bare-bone as a transmitter, microphone, and antenna in a suitcase, or it can be located in elaborate studios, sometimes in multiple locations, or in a vehicle or ship offshore (see "Making Radio—Pirate Style," by Andrew Yoder, elsewhere in this issue for a look at some pirate transmitters). Some operate at sufficient power to be heard on other continents.

All pirates are unique and follow their own format and schedules. Some broadcast so they can play entire albums; few are political in nature except for their disdain of the FCC, their belief in their right to "free speech," and that the public airwaves belong to everyone, not just large corporations. Some seem to be just having fun defying the FCC, and some are downright odd. While a number of pirates have moved to the Internet, avoiding the issue of radio broadcast regulations altogether,



Danish newspapers enjoyed the battle between the government and Radio Merkur (top), transmitting programming and news to the mainland from international waters just off the coast. One of many cartoons (bottom) depicting the pirate ship sailing with several countries' flags and the authorities listening to the station with great annoyance.

Mitch Gill is *Pop'Comm's* "Homeland Security" columnist. He has been involved in radio communications since the late 1960s as a hobby and vocation.

many can still be heard on the AM, FM, and shortwave bands.

One of the better-known shortwave pirate stations today is WBNY run by "Commander Bunny." He claims to be the leader of The Rodent Revolution and his programming consists of music, skits, and the promotion of rodents as superior to monkeys (his euphemistic term for

humans). In addition to fomenting revolution, Commander Bunny is supposedly engaged in running for President. WBNY also broadcasts using frequency modulation (FM), single-sideband (SSB) and slow-scan television (SSTV) modes on shortwave. Check out 6925 kHz, one of WBNY's many broadcast frequencies. You can also refer to the constantly updat-

ed pirate loggings on www.FRN.net for times and frequencies to help you listen to Commander Bunny and other pirates.

Many low-power FM (LPFM) pirates, like Radio Free Olympia in Washington, see themselves as providing uncensored music and information to the local community. This microradio station has operated since 2001, transmitting only 100 watts, and provides music and information to the local community at 98.5 MHz. It's pretty typical of local pirates, and there's a good chance you might have a similar LPFM pirate in your community.

If you're trawling the shortwaves for North American pirate stations there are plenty to be on the lookout for, including Anne Hoffer Radio, Captain Morgan, Channel Z, Conelrad Radio, Liquid Radio, Mac Radio, Northwoods Radio, Radio Appalachia, Radio Azteca, Radio First Termer, Radio Jamba International, Radio Maple Leaf, Radio Pigmeat International, Random Radio, The Crystal Ship, The Hole, The Wave, Undercover Radio, Voice of Prozac, WBNY, WHJR (Hey Joe Radio), WHYP, Wolverine Radio, WTCR (Twentieth Century Radio), and Sycho Radio (see below for frequencies to check).

For Euro's try for Continental Radio (3905 kHz), Radio Merlin (6280 kHz), Radio Calypso (6275 kHz), Radio Border Hunter (3905 kHz), Radio Joustic (9290 kHz), Mystery Radio (6220 kHz), and Radio Scotland (6300 kHz).

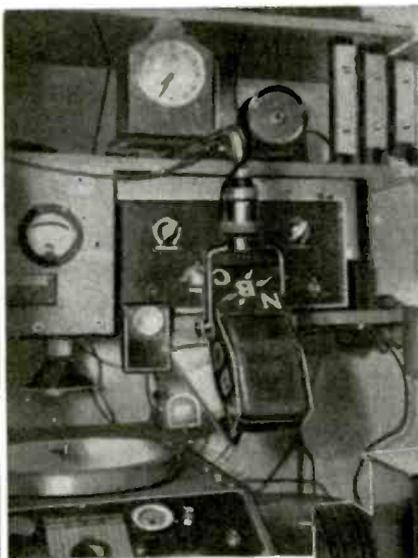
These stations operate at different times so they don't interfere with the other pirates. The programs are predominately music, from classical to hard rock and usually last only about half an hour to avoid being located by the FCC or whatever radio regulatory agency is in



A group of professionals go amateur to entertain apartment tenants. Right: "Static," the house cat, meows the station's call



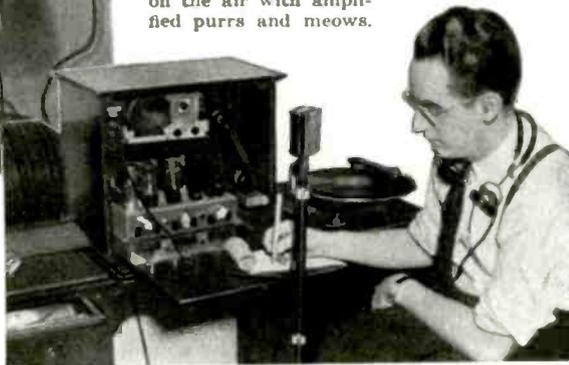
Tenants Run Apartment Network



Above is the control room occupying a second-floor closet and connected with the studio in the basement

Les Paul, right, monitoring a recorded program for the listeners in the building

TO ENTERTAIN friends and neighbors in a New York apartment house, a group of professional radio performers operates a unique basement "broadcasting" station. Every Friday and Sunday evening, led by Les Paul and Earnie Newton, they go on the air from their homemade soundproof studio near the furnace room. Programs go to all the apartments through a two-wire ground and aerial system which had been built into the structure and previously never used. The control room is in a closet on the second floor. Frequently, "big-name" musicians drop in to lend a hand, and guest announcers whose voices are heard regularly on nation-wide hook-ups have fun taking turns at the basement microphone. Even "Static," the apartment-house cat, occasionally goes on the air with amplified purrs and meows.



110

POPULAR SCIENCE



This image of "Commander Bunny" was sent via SSTV in 2007 and now is being sold on eBay and elsewhere in the form of T-shirts. (Via www.hfunderground.com)

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FREQ: 7415

QSL # 265

Do not list on the Free Call Your Station

Some interesting QSL cards from pirates Radio Azteca, Radio Goon, and WLS.

their country. In fact, when a station broadcasts for more than one hour it's known as a marathon.

How To Find Pirates To Listen To

Local pirate stations generally operate on FM. Besides simply tuning the FM band in your area, another way to find local pirates is to do an online search using Google or Yahoo. One good online resource is www.blackcatsystems.com/pirate/logs/listLogs.html, which lists frequencies and even some locations.

Other general sources include FRN.net (Free Radio Network,) FRW

(Free Radio Weekly), which offers free subscriptions at freeradioweekly@gmail.com, and CIDX's "Free Radio Scene" by Greg Majewski. For European information, check out Alfa Lime www.alfalime.net/start/. If you're not online you can consult the logs in Pop'Comm's "Global Information Guide" and in other publications, including *Monitoring Times*' "Outer Limits" by George Zeller and NASWA's "Pirate Radio Report" by Chris Lobdell.

On the shortwave bands, the main frequencies to tune are 3430, 5385, 6700, 6775, 6800, 6792.50, 6850, 6855, 6875, 6900, 6925, 6935, 6950, 6955, 7575, 13800, 13900, 13915, and especially 6925, where most operate. It can be a challenge to find the pirates on the air as many stations appear, disappear, and then reappear seemingly randomly. When you do catch one, log it somewhere.

The best times to listen are in the evening and on weekends and especially during holidays, although several dedicated pirate DXers have proven that you can hear a pirate at almost any time of the day and any day of the year. The most active days for shortwave pirates appear to be around Halloween, which seems appropriate.

If you do hear a pirate, send a reception report to the station so they know someone is out there listening. If they want reports by mail they'll announce a P.O. Box address and a request for details (day, date, time in UTC, frequency, signal strength and some details of the programming and comments on how you liked it) along with three first class stamps. Some stations will ask you to email instead. You may get a return

email with your QSL card, but most likely you will get it by postal mail, so include your snail mail address. It may take several months to receive a QSL so be patient.

But no matter when or where you catch a pirate broadcasting, you'll have fun listening to the interesting and varied—and at times bizarre—formats of these rebellious stations. ■

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Sabbath Day Pirates And Their Fast-Sinking Stations



Anyone under 40 might find it impossible to imagine a six-day American business week. As a U.S. citizen just shy of quadruple decade status, I even consider it difficult to fathom a 24-hour shopping moratorium. In fact, I wouldn't be able to claim ever having seen an empty mall parking lot were it not for several Christmas Day jaunts to grandma's house in the vicinity of stores that were closed on this single remaining holiday from our seemingly eternal 24/7 commerce cycle. When, from the backseat of the Ford Country Squire station wagon, my brother and I would declare how "weird" all the dark stores looked, the folks quickly retorted that, "in the good old days, it used to be nice and restful like that every Sunday."

What could our nation's former tradition of quiet Sundays possibly have to do with radio history? Maybe not much that I can prove, except for the fact that—in those olden days of, say, pre-1975—lots of broadcast stations observed shorter schedules and sometimes complete silence on Sundays and big holidays, too. FCC broadcast operation rules still allow a Sunday respite, though few AM or FM outlets embrace such a break.

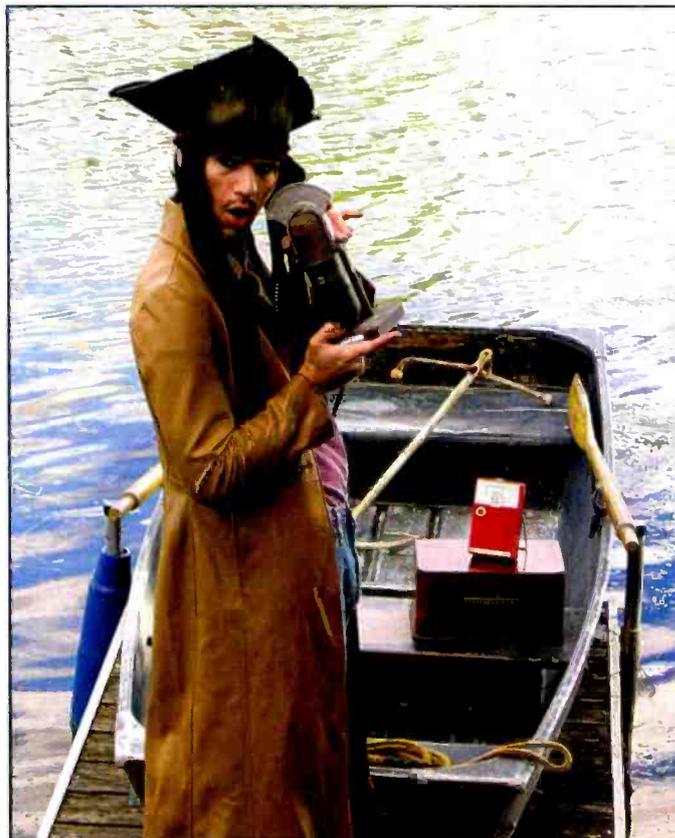
For contemporary music fans during the pre-1980s period, the traditional day of reflection and rest might not have resulted in their local Top 40 station's transmitter being cold, but it often meant that it wasn't rockin' round the clock. Instead, public affairs and religious programming often occupied the Christian Sabbath airwaves. Many station owners considered the transmission of popular music on Sunday mornings bad taste. And, more than a few in rural media markets continued the musical moratorium through at least noon.

Arguably, not all motivation for the be-bop blackout was spiritually based. Broadcasters had a long tradition of reserving portions of the weekend schedule for specialty programs ranging from live church services to ethnic-themed shows, most of which paid cash on the barrelhead for the weekly airtime. Consequently, anyone who craved hearing the latest Beatles or Beach Boys record had to wait until dinnertime or, in the most conservative areas, maybe put the desire on hold until evening skywave beckoned the hits from some distant flamethrower spreading the pop music gospel via 50,000 watts of amplitude modulation.

In the absence of these signals, however, there were bound to be a few electronically creative, frustrated hit music lovers who would marry this programming void with their love of concocting audio moonshine—this from the "still" of an illicit transmitter and "secret remedy" antenna.

The Short Sunday Story Of WIRS

Allow me to preface this tale with the disclaimer that it came from my radio nut father and originally seemed far too coinci-



Okay, so a 9-foot aluminum Arkansas Traveler dinghy wouldn't make for a very seaworthy pirate radio ship. Just for fun, though, we had a would-be bootleg broadcaster pose symbolically with an RCA DX-77 microphone and boatload of vintage radios.

dental to be true. He'd noticed a draft of my article's first couple of paragraphs and quickly launched into an account of some "incredibly rare southern pirate station that operated out of a washroom on Sundays." The only other thing dad recalled of the supposedly serendipitous saga is that the operator of this illegal outfit had written a letter to the editor of an electronics magazine asking "if the transmitter might short-out his house wiring, or something like that."

A week later, dad and mom dropped by with a carton of well-worn radio magazines. "That odd Sunday pirate thing could be in one of these," he speculated before suddenly announcing that he understood I'd "certainly want to get researching right away!" This was immediately followed by his quickly ushering mom back into their red Corolla, and then disappearing into what he typically brands as "parts unknown"—corners of the universe that often include the nearest Olive Garden restaurant.

Like garlic breadsticks and four-cheese chicken parmesan, those vintage magazines started calling to me. Eventually, I gave into my father's promise that one page in the pile contained "a great piece of pirate radio's past," and devoted the next hour and

a half to thumbing through those musty publications. The evidence surfaced on page 6 of *Electronics Illustrated's* March 1967 edition, though its scant wording almost made me wish that Dad hadn't remembered that there was such a reference. After reading it over several times, however, I realized the long-ago letter to the editor made a perfect cornerstone to this month's *Pop'Comm* column.

The writer's true confessions began with a rationalization that his home state of West Virginia did not possess a sufficient number of radio stations for there to be at least one offering hit music all weekend. He explained that what really bugged him was that his town was "left without any strong rock-and-roll signals all day Sunday." The guy then admitted to taking matters into his own solder iron-wielding hands by scaring up a 32-watt transmitter that was conveniently mated to a 1200 kHz crystal. That 1200 kHz locale was long a prime spot for AM pirates. Even the least sophisticated of RF swashbucklers had heard that, at the time, WOAI in San Antonio, Texas, was the only full-time north American AM transmitting at the dozen x10 mark.

Results of the letter writer's 1200 kHz enterprise got unofficially dubbed WIRS and made its tax-free debut in August 1965. Already on the air for about two years before contacting *E-I's* staff, the pirate station operator wanted advice about two problems plaguing his one-day-per-week Top 40 peanut whistle. Most perplexing to the fellow was a condition apparently caused by the transmitter's 6146 tube. According to the correspondence, this component and WIRS' steady diet of rock favorites prompted the fluorescent light over the pirate's bathroom sink "to flicker in time to the music." Seems like the solution was a no-brainer...don't turn on the restroom light while spinning Rolling Stones' tunes. Actually, my guess is that this guy still lived at home with his folks and siblings who probably washed-up before church and didn't appreciate the pulsing lightshow's tempo making makeup application a nightmare.

The pirate also moaned to *E-I* that the buggy 6146 "tube must not be sending out a very strong signal to Fox Charlie Charlie. Where is he?" the fellow wondered regarding his regional FCC inspector. It appears WIRS' owner was practically insulted that the Commission hadn't noticed his contraband product. After all, he reasoned, "I've gotten [attention in the form of] records, public service messages, and jingles from DJs at two local

legit stations." He ran the co-opted programming on WIRS and figured that he must have been just plain old fortunate that FCC officials had not yet been among his Sunday audience.

"Because of my good luck," our West Virginia pirate concluded, "I am now considering borrowing a friend's broadband linear amplifier to hook up to WIRS. Would 200 watts be too much power for a bootleg radio station?" he asked *E-I's* expert. This understandably unsigned query without return address elicited *E-I's* response that 200 watts should be sufficient for reaching FCC monitoring units. Finally, the editor said he was sorry that 32 watts hadn't been able to get WIRS arrested.

Neither a check of Commission files nor perusing later *E-I* editions in my Dad's cardboard box unearthed any further documentation of this obscure WIRS. Who's to say whether or not that's due to his pal reneging on the linear loan or a parent laying down the law about blinking bathroom lights. Then again, maybe one of the guy's local stations began playing hit music on Sundays, rendering WIRS superfluous.

R-X-K-R Calling! Come Aboard Me Treasure Ship!

While on the peripheral subject of musty magazines, I'd like to reference *Modern Mechanix* from March 1934. Its cover story, "Radio Outlaws To Broadcast From Super Stations At Sea," was one of the earliest general interest articles chronicling those who sought to personally pirate the public airwaves.

The piece began with a reminder of something familiar to most Los Angeles area listeners during the time period from May to August 1933: "the presence of a radio pirate ship which had taken unto itself a very popular spot on the [AM] dial and broadcast without regard for the [legally licensed California-based] stations with which it interfered." This vessel, The *S.S. City of Panama* (built in 1918 as the British naval ship *HMS Mistletoe*) was not only refitted with a standard broadcast transmitter rigged for 815 kilocycles, but featured stores of liquor, a boisterous gambling operation, fortune telling, and state rooms in which "other dubious pleasure activities" could be secured.

About the only formalities the owner of this craft observed were the 12-mile international limit and registry of the ship in a laissez-faire banana republic. Until the U.S. State Department pres-

sured Panamanian officials to cancel the ship's registration, this vice-laden siren cruised just outside U.S. boundaries and, via "infomercials" beamed back to the California mainland, enticed passengers to come aboard. *Modern Mechanix* reported that "thousands responded to the advertising [and] the owner...found other sundry rackets which brought in additional money and finally assumed such an extensive program [schedule] that one Los Angeles station was threatened with a complete loss of audience and business because the ship's radio signal was the more powerful of the two."

In fact, the *S.S. City of Panama's* radio transmissions were on speaking terms with 5000 watts, some five to 10 times the power authorized in the ship's experimental, non-commercial radio license sanctioned by Panama. One could argue that because the boat possessed a radio license and legally recognized callsign, RXKR, this outfit was not actually a pirate. The licensee's blatant failure to observe his permit's specified operational parameters, however, ostensibly sailed RXKR into the pirate realm.

According to Andrew Yoder's *Pirate Radio Stations* (McGraw-Hill, 2002), this oceangoing AM outlet, "pumped out popular music and commercials [that could be] heard as far away as the [U.S.] East Coast, Hawaii, and northeast Canada, with fair signals." Yoder says that, in August of 1933, after Panama rescinded its blessing on the ship and related RXKR, the vessel lost its ability to generate pizzazz, as well as a requisite registry of origin, and ended up getting "towed into a Los Angeles Harbor." Nearly a decade later, having been recurrently recast—under several subsequent names—as a floating casino, sport fishing venue, and party ship, the vessel sunk during a storm a couple of miles off Santa Monica Bay. It's unclear whether or not any of the RF generating gear from RXKR was still around to make that tragic descent to Davy Jones' Locker.

What's A Landlubber Pirate To Do?

Officials with the FCC's predecessor, the Federal Radio Commission (1927–1934) angrily mused that the *S.S. City of Panama/RXKR* incident got other publicity hounds thinking about ways to skirt U.S. radio regulations. During the early 1930s, FRC brass cited one Dr. John R. Brinkley as the most egregious example of such dubious scheming. His trek into con-

founding American broadcast regulators is long enough for a dedicated "Shannon Broadcast Classics" exposé. But for brevity's sake, suffice it to say that Brinkley—branded a "diploma mill" quack by the American Medical Association—hit the infomercial airwaves in 1923 on his KFKB out of Milford, Kansas.

By 1928, his station wielded 5000 watts on 1130 kilocycles, and the lion's share of this facility was programmed with promotion for the doctor's medicinal products and controversial surgical procedures he performed at his personal hospital. The year 1931 saw the FRC denial of KFKB's license renewal. Frustrated but not out of ideas, Brinkley found some front men south of the U.S./Mexico border who made some dough by getting him on the air again, this time through his business associates' new XER. The Villa Acuna (Coahila)-based Mexican flamethrower was designed to reach American audiences. It began with an impressive 50 kW (@ 735 kc) but was cranked up to 150 kW soon thereafter.

Moving his business from Kansas to Del Rio, Texas, Brinkley built a hospital "studio" there. Audio was supplied by phone lines to the XER transmitter sitting a few miles away in Mexico and—for a while—out of the FCC's reach. A host of Mexican complaints and U.S. pressure ended Brinkley's days on XER. Not long after this 1934 change, however, he bought airtime on another big Mexican AM and "land-lined" the programming from Texas to this XEPN in Piedras Negras. A series of Mexican radio regulations sprang up to discourage Brinkley and others who followed suit in quasi-pirating Mexico's radio real estate for advertising to primarily American listeners. Among these dictates was the simple call to broadcast in Spanish rather than in English, unless otherwise allowed by "special permission." The rules eventually silenced the doctor's "health" broadcasts, but not until he ran out of appeals in 1940.

Free Buoy Radio

Though Brinkley preferred terra firma for his transmitters, the *Modern Mechanix* piece noted that he did propose "to float his station [in order to circumvent] trouble with Mexico." Quartered in what could best be described as a giant, antenna-topped buoy, the floating radio stations envisioned by the surgeon and subsequently fancifully depicted in *Modern Mechanix's* cover rendering were predicted to be anchored strategically outside the 12-mile U.S. ocean boundary so that their signals would paint a combined coverage all along the Gulf Coast and beyond.

In those days prior to broadcast-quality recording, microwave studio-to-transmitter links, and Dramamine, it's difficult not to dwell on the "broadcast buoy" proposal's limitations of seasick announcers and performers bobbing to and fro in their tin can studio. Add to that the smell of diesel fuel from the noisy generators and one can see why this brand of radio pirate operation looked best on paper.

And "all of the so-called 'radio-pirates' [were] not across the border or out on the high seas," that *Modern Mechanix* story indicated. It cited the FRC's principal engineer, A. D. Ring, as estimating "that [circa 1934] at least 200 outlaw stations have been under surveillance in the United States alone." The official source confirmed, "most of these stations operate on from one to five watts power and claim immunity from federal restrictions on the assertion that their radio waves do not travel from one state to another." Such a loophole in other jurisdictional matters had been utilized to escape the wrath of the Interstate Commerce Commission, then much more feared than radio regulators. "However," the magazine warned, "supersensitive



Here's the old magazine snippet that inspired this month's column. *Electronic Illustrated* loved to accent their quirkier letters to the editor with cartoons highlighting their advice-seeking readers' plights.

equipment employed by federal investigators has broken down this claim and as a consequence many such station operators have been indicted and held for trial in the federal courts."

My guess is that this 1934 clincher represented a bit of FBI hyperbole. There aren't too many cases in media law that feature some 1-watt pirates getting sent to the Big House for a little free use of the public airwaves. This is especially true of pirates like our West Virginia bathroom blinker who only wanted to play local DJ for a while, and harbored no desire to interfere with legitimate broadcasters or bilk audiences of their savings.

Clandestine AM & FM From The Mysterious Studio B

Lately, no "Shannon Broadcast Classics" column seems complete without a radio memory from one of our loyal *Pop'Comm* readers. And this bit of AM/FM obscurity comes from Dennis Routenger's 1970s high school days in western Montana.

The tale began as suddenly as it ended about a half year later, and Routenger can't even recall the main subject's real name. "The girl must have been sick the day that school pictures were taken," Routenger speculates, "as I couldn't even find her in any of the yearbooks." On the radio, she playfully identified herself as Anne Bonny. Though few of the teen's mountain-oriented listeners got the drift, her on-air name was apparently a clever reference to one of the early 18th Century's rare female pirates.

According to our *Pop'Comm* story contributor, the first evidence that Anne Bonny had metaphorically raised a pink Jolly

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Roger arrived on his radio during the tail end of a rather dreary fall. He guesses that she got the idea to start a bootleg station after being the new kid in English class where the teacher often allowed students to say whatever they wanted, as long as it was clean and delivered as a speech in front of the room. A common topic back then centered on how life for pop music lovers in that part of the country “stunk” because there were no “cool” stations like the ones some of the more upwardly mobile kids had heard while visiting big cities like Spokane.

One day, the teacher encouraged the newcomer to describe the music radio scene from “back east.” Obviously, self-conscious about having one of the only sets of braces in that rural community, the new girl seemed tongue-tied and didn’t divulge much other than to note three AM and two FM outlets that offered Top 40 hits for New Yorkers. “FM?” someone in the class retorted sarcastically. “Isn’t that a station that plays all that classical junk for rich people?” The teacher prompted her to briefly define some differences between AM and FM, which Anne Bonny did understandably enough to cause the former dissenter to acquiesce with a contemplative, “Wow.”

There’s Something Neat Just Past 16!

Routenger estimates that he was among the first to hear Ann Bonny’s initial shot over the FCC’s bow—not that anybody from the Commission was targeting any part of Montana as “pirate cove.” In fact, neither she nor her father (whom Routenger was

A 1934 cover artist’s rendering of the type of floating pirate radio buoys fancifully anticipated for an early article about outlaw broadcasting. Check out the high seas and that bouncing cabin cruiser tethered to the offshore studio/transmitter rig! →



later told “mainly built the station with things from the Army”) probably ever seriously considered the bucolic venture to be more than a clever school science project.

“I was mindlessly twisting the knob on this old tube radio up in my room,” Routenger remembers. “when a song I liked blasted through the speaker. This seemed very strange because it was during early afternoon, not at night when we usually picked up faraway Top 40 stations.” Also interesting to the then-15-year-old was the dial’s position, right at the end, past the 16. He called a buddy a few farms down the road and directed him to see if anything was coming in near the top of his AM band. Sure enough, *The Last Train To Clarksville*, or some such recognizably youthful hit, was detected there, too.

Both boys stayed with the signal until, about four o’clock when a female voice back-announced a list of songs and then expressed “thanks to anyone who liked listening to Studio B at 1605 on the AM side.” A minute later, the quiet carrier disappeared and hissy static reared its crackly head. The guys’ debriefing phone call included the notion that the girl’s voice sounded familiar, but their Ma Bell analysis session ended inconclusively.

Within a month or so, Routenger and his pal were no longer that familiar voice’s only audience. And by Christmas vacation, Anne Bonny—whoever she was—was the talk of the English class speech givers, as well as the darling of many of the more mature constituents of the little Montana town’s kindergarten through 12th grade school. The boys especially liked her ever more professional voice.

It seems that Anne Bonny’s relatively dependable Studio B broadcast schedule of a few hours on Saturday and Sunday

afternoon and an occasional weeknight offered the opportunity for her to find her style, speaking slower, dropping her voice an octave, and adding a hint of smile to the presentation. Not that she talked after every song, but her format of recapping the records spun in each quarter hour music segment, and maybe offering a sentence or two of school news, gave listeners a sense that Anne Bonny was a true friend.

When Routenger surmised that the sultry sound belonged to the quiet, plain-Jane newcomer, even his best friend rhetorically asked what he’d “been smoking?” But our *Pop’Comm* reader actually had solved the Anne Bonny mystery. He picked her for a partner in some literature project and, in the midst of their planning, casually said, “By the way Anne, I really enjoy the way you talk on the radio.” She felt obliged to look at him quizzically and quickly change the subject. In study hall, the day after they’d gotten kudos for their English project, however, he was rewarded with her admission that she was, indeed, the Anne Bonny of Studio B.

They said no more about it until Anne must have felt confident that she could trust Routenger with their secret. Today he laughs that he hadn’t let the cat out of the bag mainly because no one would believe him, rather than having concealed Pirate Bonny’s ID for virtue’s sake. No matter the reason, her gift of treasure to him was an invite to Studio B.

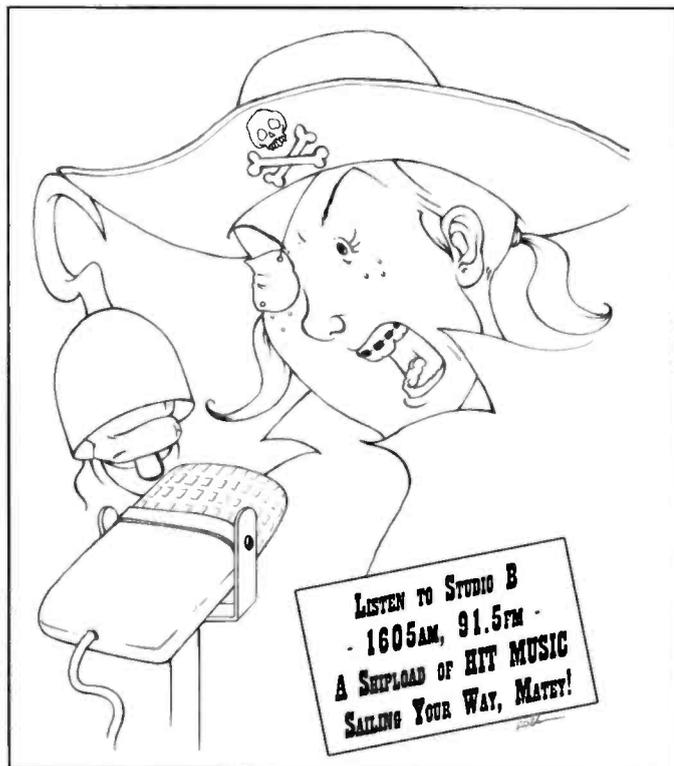
It’s Been Many Years, But I Think That’s What I Saw

Anne’s mother drove a blue late 60ish Buick LeSabre convertible and gave Routenger his first ragtop ride. Anne and her mom had arranged to start the tour at a popular family restaurant where they bought him lunch and made Routenger feel like one of the family. He was captivated by their stories of the other places they’d lived while Anne’s dad advanced his military career...Germany, Japan, Korea, Texas, California, and Washington, D.C. After his retirement, “Colonel Bonny” moved the family to Manhattan for a couple of years.

On the way to their contemporary chalet, Anne’s mother explained that they were renting it from a ski bum friend and thought it’d be nice for Anne to experience a little slice of life in the rugged American West before they embarked for another exotic port of call. Routenger had been in the area his whole life, but never knew the secluded lodge existed. The only thing familiar in the mountainside setting was a rusty old windmill tower that the homeowner must have had relocated there—for city folk aesthetic reasons—from some nearby farm. Anne pointed out where her dad had run a length of #12 copper wire down one leg of the tower, stood off with small squares of 2 x 4 boards, and into another wire threaded through a small window in the chalet’s walk-out basement.

“Keep the door open, kids,” Anne’s mom directed as Anne led Routenger up the stairs to Studio B. He learned that the “B” not only stood for Bonny, but was originally concocted to denote this studio locale’s commonly known French name, *boudoir*.

The corner of the room sheltered Anne’s desk, on which was a long, shiny silver Electrovoice mic with an on/off switch at the neck (which was probably an E-V model 664 or 636) and a small mixer with four volume controls and a switch labeled “Stereo/Mon” (this sounds like an early 1960s Switchcraft model 306 mixer). Sharing the other corner wall with the desk, a sturdily-built plywood and 2 x 4 table with just enough room to hold two Garrard record changers. Of this brand Routenger is positive, as he later bought an almost iden-



Pop’Comm story contributor Dennis Routenger remembered seeing a caricature of Anne Bonny on the bulletin board above her Studio B desk. She told him that she’d drawn it as a station promotional ad to be run in their school’s newspaper. He doesn’t recall the picture ever being published, however, so we commissioned our illustrator (from EH-ARTS of Haverhill, Massachusetts) to recreate what Routenger described.

tical unit from a guy at college trying to raise some quick cash.

To monitor Studio B's output, Anne's father took audio off the air from a cheap solid-state radio. This AF was also sent to headphones via a standard jack mounted in a gray minibox next to the mic. The box held an A/B toggle switch that Anne clicked to kill the radio speaker and activate the earphones when talking into the Electro-Voice.

Rounding out the equipment roster was the transmitter. It sat on an upside down packing crate in the chalet basement. A run of lamp zip-cord, hidden between baseboard and wall-to-wall-carpet transferred audio from Studio "B" to a crinkled charcoal gray transmitter approximately the dimensions of a dorm-sized refrigerator. Anne Bonny's assertion that her dad got this item "surplus" from the Army, combined with Routenger's description, leads me to believe that the Montana pirate sailed with wind from a Korean War-era Gates-brand transmitter rated at 100 watts. These units were designed to be quickly trucked or air-lifted into a staging area to provide the 1950s technology version of "instant AM radio station" for the front line listeners.

Though an easy spot on the dial to find, Anne Bonny's 1605 kHz venue resulted from a 1605 kHz military issue crystal originally meant for some foreign outpost. Circa 1970, though, when the AM band ran from 540-1600 kHz, 1605 kHz was a fine backstop for anything from cheap transistor pocket portables with a smidgen of headroom to vintage tube sets able to reach into the old police band just above AM land.

Here's Your Chance...

Our contributor's pirate adventure sails off into the sunset with a mention of his guest appearance over the facilities of Studio B. He watched Anne enliven the Gates 100-watt box by first warming up the tubes and then hitting the high voltage. Next, he accompanied her back upstairs where she asked him to select some records strewn across her bed. Anne readied an album and 45 rpm platter on two of the turntables, put on the headphones, flipped open the mic, and did her sign-on announcement.

Routenger was most fascinated with the way she closed her eyes, massaged her voice, and almost seemed to become someone else as she spoke, someone who sounded at least 10 years older. They'd

programmed nearly an hours worth of music when Anne announced the presence of "a very special guest." She invited him to say a few words, and issued a sophisticated laugh when he could only think of two: "Hi Mom."

After that weekend, they talked a few times at school. The Friday before spring vacation, she thanked him for being a friend. He couldn't come up with anything more responsively savvy than, "You're Welcome." Nor was he able to

receive Studio B again. Anne Bonny never returned to English class or 7th period study hall. Dennis Routenger spent a good part of the following Saturday afternoon riding his bike up to the chalet. The place looked empty. Like a sunken pirate ship that vanished beneath the waves, even the copper antenna wire on the windmill was gone. ■

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

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Capitol Hill And FCC Actions Affecting Communications

Special Counsel Of FCC's Spectrum Enforcement Division Steps Down

Riley Hollingsworth, K4ZDH, Special Counsel in the FCC Spectrum Enforcement Division, announced plans to retire from the FCC "assuming the results of the second round of the PAVE PAWS/440 repeater monitoring in California present no complications."

"It has been a privilege to work with and for the amateur radio licensees and the land mobile frequency coordinators," he told the American Radio Relay League in May. "I am extremely fortunate to work for two wonderful groups of people: Those at headquarters in the Enforcement Bureau, and for the amateur radio operators."

Hollingsworth had announced a retirement date earlier this year, but subsequently rescinded his decision, stating at the time, "There are several issues on the table that I want to continue to work through with the amateur community." He has targeted July for his departure. At the time of his announcement, a successor had not been named.

"Hollingsworth said he considered it an honor to have given something back to 'the incredible enjoyment and benefits that amateur radio has given me since age 13. And to every one of the thousands of you that thanked us for our work, many of whom waited for long periods after a forum or radio meeting just to come up and express appreciation for what the FCC was doing in enforcement, you have no idea how much that was appreciated every single time. It sure wasn't a 9 to 5 job, but it was a gift and a daily joy to work for the best group of people on earth,'" Hollingsworth told the ARRL.

Hollingsworth told the League he was "so very impressed" with the young people who are involved with amateur radio. "To the very young amateur radio operators I met at Dayton, who have dreams of being scientists and astronauts and communications engineers, we will be pulling for you," he said. "I have a strong feeling we won't be disappointed."

"The Amateur Radio Service is part of the American heritage, and I am going to stay as actively involved in it as I possibly can," Hollingsworth said. "Thank you all for working tirelessly to provide the only fail safe communications system on Earth and for helping this country keep its lead in science and technology. What an incredible gift it has been to work with you every day, and how fortunate we are to love the magic of radio."

Petitions Related To Digital Communications Denied By FCC

The FCC has denied two Petitions for Rule Making (PRM) related to digital communications.

Mark Miller, N5RFX, was seeking to delete the FCC's 2006 addition to how it defines data, amend the rules to prohibit automatically controlled stations from transmitting on frequency segments other than those specified in Section 97.221(b), and replace the symbol rate limits in Section 97.307(f) with bandwidth limitations, according to the ARRL. Miller is from Arlington, Texas.

Indicating he "did not set forth sufficient reasons for the Commission" to approve his petition, the FCC denied all three parts of Miller's PRM, the *ARRL Letter* reported. "Should future experience substantiate Miller's concerns, he may file a new, factually supported petition for rulemaking," the Commission said.

Ken Chafin, W6CPA, of La Crescenta, CA, and Leon Brown, KC6JAR, of Los Angeles, also filed a PRM concerning additional spectrum for more repeaters, including digital systems, requesting that the FCC "propose to expand the frequencies on which an amateur station operating as a repeater (repeater station) may operate," the ARRL reported.

Chafin and Brown put forth a case that additional spectrum is needed for repeater stations because some amateur repeater stations have begun using digital communications protocols and



“digital voice operation is incompatible with existing analog operations because digital voice users are unable to determine if the desired frequency is in use by analog users and can inadvertently cause harmful interference to those users,” the *ARRL Letter* reported.

After considering Chafin and Brown’s PRM, the Commission concluded it did not present grounds for the Commission to amend its rules: “Repeater stations are authorized to transmit on any frequency in the 2 meter band except the 144.0–144.5 MHz and 145.5–146.0 MHz frequency segments.

“These two segments were excluded to minimize the possibility of harmful interference to other amateur service stations and operating activities, including ‘weak signal’ operations. Allocating an additional three hundred kilohertz of the 2 meter band to repeater operation would not be consistent with that concern. Rather, it would likely result in increased interference to non-repeater stations.”

New Executive Director Taking Reins At NENA

The National Emergency Number Association’s announcement of former AT&T vice president Brian Fontes as its new executive director has drawn praise from the Association of Public-Safety Communications Officials (APCO) International.

APCO International works closely with NENA on 9-1-1 related issues and “has been working with Brian for years, and we look forward to working with him more closely than before in his new role,” APCO International Executive Director George Rice said.

“Based on my 10 years of public sector service and subsequent 11 years of nonprofit and association experience, I understand how important it is to have a range of related professional accomplishments on which to draw when serving the unique needs of an association,” Rice said. “I am certain Brian will bring to NENA not only the know-how he has from his interactions with government, but also his understanding of the intricacies of the private sector as well.”

APCO says it has “collaborated (with NENA) on a number of outreach initiatives and technical projects over the past few years, while also recognizing the unique and independent nature of each organization’s mission.”

“We’ve enjoyed an excellent recent history of effective partnership with NENA through open board-to-board communication,” said APCO International President Willis Carter. “APCO is appreciative of, and committed to, maintaining this working affiliation with NENA on issues of mutual interest and we expect to have a fruitful relationship with Brain as he assumes the role of executive director.”

Increase To Vanity Callsign Fees Being Considered

In a Notice of Proposed Rulemaking and Order in May, the FCC sought to hike fees for amateur radio vanity callsigns. Currently, a vanity callsign costs \$11.70 and is good for 10 years. If the FCC’s proposal is approved, the fee will increase to \$12.30 for 10 years, an increase of \$.60.

The FCC is authorized by the Communications Act of 1934 to collect vanity callsign fees to recover the costs associated with that program. The vanity callsign fee has changed over the 12 years of the current program, from a previous low of \$12 to a high of \$50. At \$11.70, the current fee is the lowest since the inception of the vanity callsign program.

“The FCC said it anticipates some 15,000 Amateur Radio vanity call sign ‘payment units’ or applications during the next fiscal year,” the ARRL reported, “collecting \$184,500 in fees from the program.” The vanity call sign regulatory fee is payable not only when applying for a new vanity callsign, but also upon renewing a vanity callsign for a new term, the League said.

To comment on the proposed increase, visit the FCC’s Web site at www.fcc.gov/cgb/consumerfacts/howtocomment.html.

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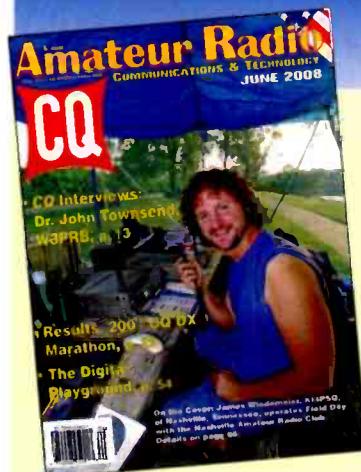
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The US Coast Guard

Pop'Comm Takes The First Of A Multi-Part Look At Who Is In The Military Branches That Serve Our Citizens



By R.B. Sturtevant, AD7IL

The Coast Guard, with 41,200 officers and enlisted, is only slightly larger than our biggest police department (New York City with about 38,000 sworn officers). Often a forgotten child among our military. "Coasties" are indeed counted among our fighting forces, as detailed in Title 14 of the United States Code: "The Coast Guard as established January 28, 1915, shall be a military service and a branch of the armed forces of the United States at all times." In February 2003 it became part of the Department of Homeland Security.

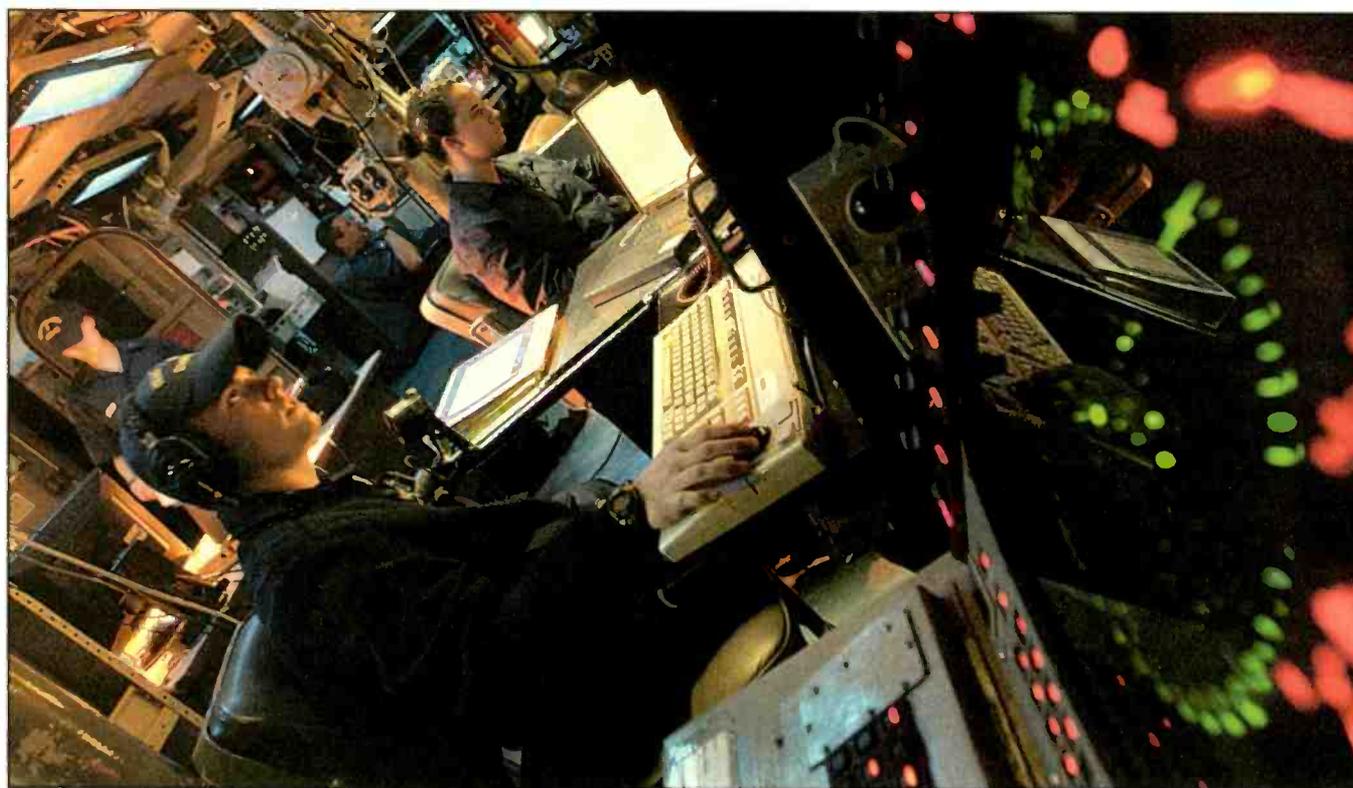
Because the Coast Guard is so small, yet have responsibilities as widely diverse as any other armed service it handles its staffing requirements in a unique way. The Coast Guard tends to have job descriptions that are broader than those of the other

Licensed in 2000, Bob has been writing *Pop'Comm's* "Trivia" column since 2005 and has written several Radio History features for the magazine as well.

armed services. This requires the average Coast Guardsman to tackle a job with a wider range of responsibilities than his or her counterpart in another service.

Take for example an Avionics Electrical Technician. The Coast Guard flies the HC 130H Hercules, the HU 25A Falcon, the HU60J Jayhawk, and the HH 65A Dolphin. A Coast Guard AET might be working on any or all of these aircraft types depending on the mission of their station of assignments. The only distinction for an AET is made between rotary and fixed wing aircraft. A Coast Guard AET might be working on any or all of the aircraft types depending only on the mission of his or her station of assignment. Most of the other services keep their avionics techs with one type of aircraft.

Holding a "Highly Paid Job in Electronics" (just ask our own Bill Price of "Loose Connection" infamy how important that can be) with the Coasties puts you into one of only five of their 20 job categories or ratings. AETs inspect, service, maintain,

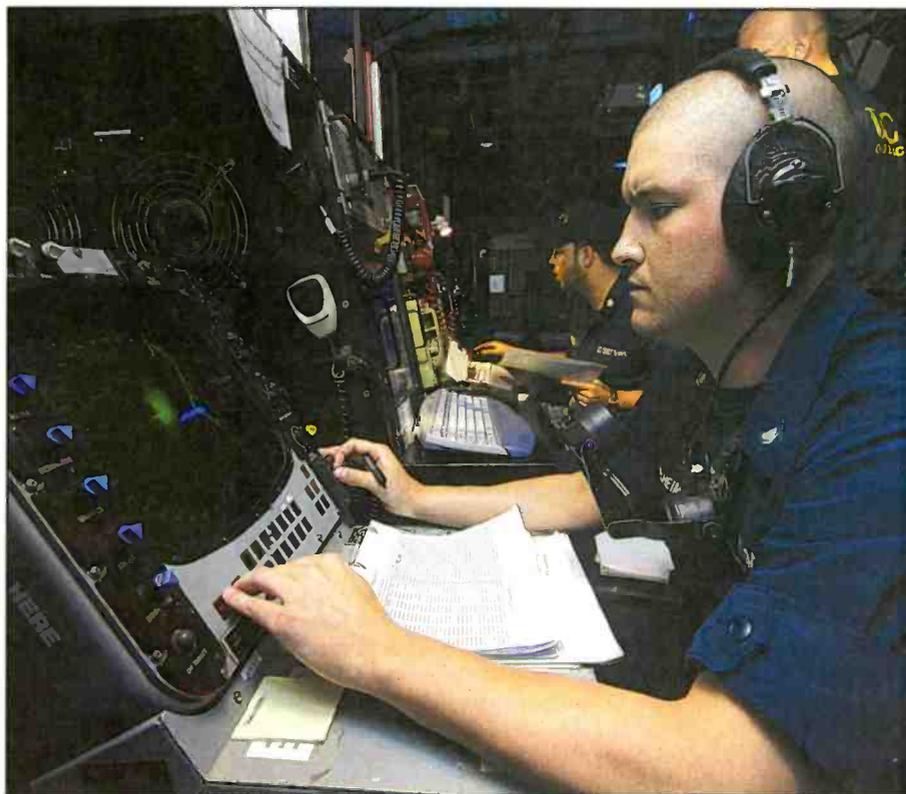


Radarman Third Class Jesse R. Switzer, 21, of Edmond, Oklahoma, tracks vessels in the North Arabian Gulf off of the coast of Iraq from the Combat Information Center onboard the U.S. Coast Guard Cutter Boutwell. The Boutwell, homeported in Alameda, California, is in the Gulf region in support of Operation Iraqi Freedom.

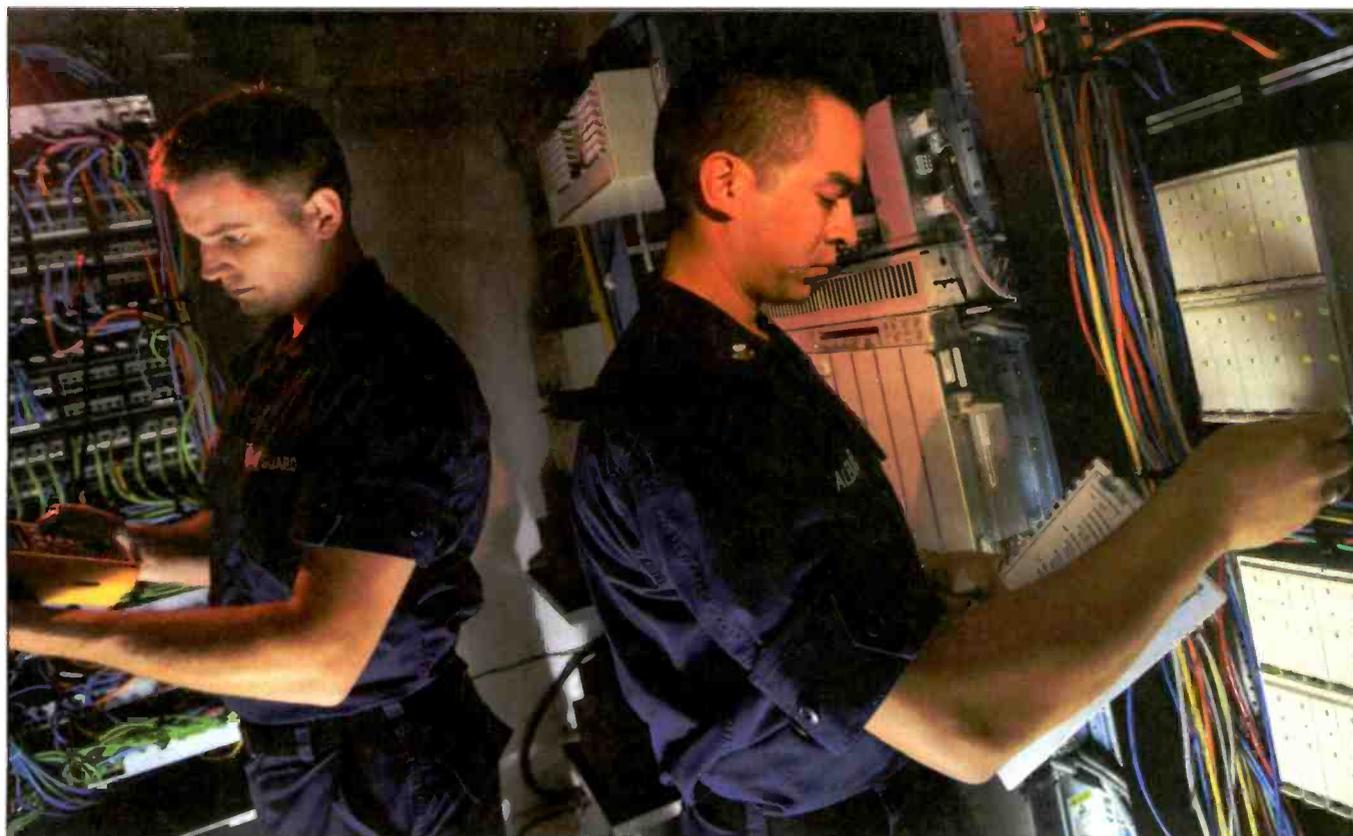
troubleshoot and repair all the electrical systems on aircraft. They also cover things with the hydraulics, flight control, fire detection, and other systems aboard aircraft. Electronics Technicians (ETs) do the same type of work on sophisticated non-flying equipment that includes command and control systems, shipboard weapons systems, guidance and fire-control systems, navigation and search radar and computers to name a few. Information Systems Technicians (ITs) deal with computer systems, analog and digital voice systems, communications and computer systems on land and afloat.

Operations Specialist (OSs) finds its personnel in the tactical command and control rating. They work in Search and Rescue, Law Enforcement and Combat Informations Centers with the latest in computer, GPS, electronics charting, satellite and radio equipment. Intelligence Specialists (ISs) perform a wide range of duties associated with the collection, analysis, processing and dissemination of intelligence in support of operational missions.

Specific career fields are determined by the enlistee and a recruiter after a would-be Coastie has accumulated



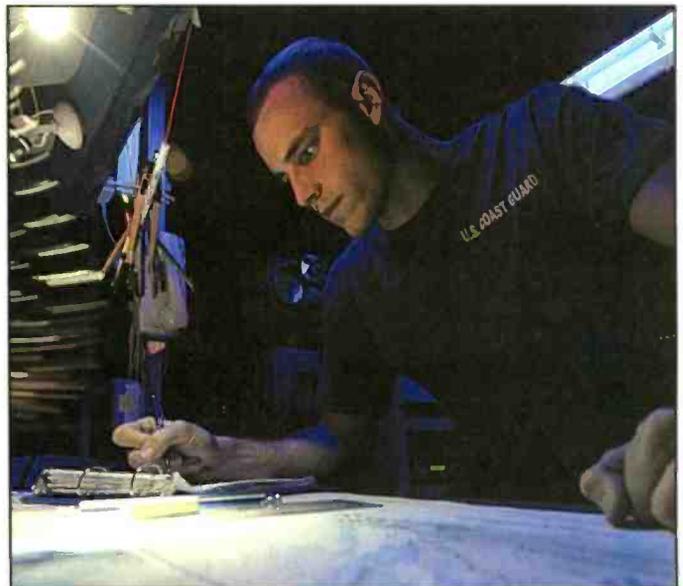
Coast Guard Petty Officer 3rd Class Brian Vogelheim, 24, monitors a radar screen in the combat information center aboard the Coast Guard Cutter Gallatin. (U.S. Coast Guard photograph by Petty Officer 1st Class NyxoLyno Cangemi)



Two Coast Guard Information Technician Specialists working in a server room where information is stored and handled throughout the service.



Petty Officer Second Class David Kissell and Petty Officer Third Class Kenneth Harper both man CAMSLANT's Civilian Broadcast Booth where all weather faxes, broadcasts to mariners advising them of any dangers in the water, ice patrol broadcasts, both voice and typed, are sent out to civilian mariners using transmitter sites in Boston, Miami, New Orleans, Chesapeake, Virginia, and Savanna, Georgia. (USCG photo by Petty Officer First Class Truman Watkins)



Coast Guard Petty Officer 3rd Class Ryan Ketchum makes an entry into a ship's log while on patrol in the Caribbean Sea. Ketchum is an operations specialist aboard the Coast Guard Cutter Gallatin and works in the ship's combat information center analyzing information and assisting in ship navigation. (U.S. Coast Guard photograph by Petty Officer 1st Class NyxoLyno Cangemi)

ASVAB (Armed Service Vocational Aptitude Battery) scores. He or she will usually go to Basic Training with a guarantee of what Technical or A School has been selected based on these. Those of us who remember the armed services of a few decades ago should know that not getting the A School of your choice is grounds for breach of contract charges against the military and can lead to discharge.

From The Inside

Pop'Comm recently talked to Joe Loveri, WS8X, at Command Center for Sector Lake Michigan where he is an Operations Specialist 1st Class. He said he was a casual operator who shoots DX and does some SWL from his home in Milwaukee, Wisconsin. Joe joined the Coast Guard in 1999 and is an E6 in a sector that concentrates the Coast Guard's Search and Rescue mission. He has served as a telecommunications specialist and a ships radio operator from the Combat Information Center. Joe got the ham bug from his dad but waited until May of 2000 to get his ticket. He was clear, however, that having amateur radio experience prior to joining would have been very beneficial during his training.

Joe explained that each Coast Guard billet has a specific job description that goes with it. His main concern in Sector Lake Michigan is boater safety, search and rescue, and navigational issues. Were he in San Diego, for example, he would probably be more concerned with law enforcement and smuggling issues. This is one reason that specific advanced training is available for Coasties. Requests for additional training in a specific area are often made by Coast Guardsmen; if they're judged to be needed or beneficial they can be approved as soon as someone is available to cover a Coast Guardsman's absence. Schools in the electronics fields can be as long as 26 weeks. Transfer to another rating is even possible within the first term of enlistment.

After a certain time in a specific job at a specific rank a Coast Guardsman can test for a higher rank. Academic preparation is required as well as demonstration of skills. After passing off in both areas the Coastie is placed on a list for the next available spot.

Coasties can find themselves anywhere in the continental United States, Alaska, Hawaii, Puerto Rico, Guam, the U.S. Virgin Islands or deployed to a Combat Zone where they do a great job searching ships for contraband among other jobs.

Best Training For Best Skills

Like all the services, the Coast Guard gives some of the best electronics and operational training in the world. And of course this training and experience is transferable. I remember a botched kit that I brought in to a shop to be worked on by a professional radio technician. After he had corrected my mistakes I asked him if he had learned radio repair in the Coast Guard. "No," he said, "I worked weapons targeting systems for them."

Pay, of course, is exactly the same at any given rank in all the armed services. The thing that makes the real difference between the various services is the personality or attitude one finds in each service. Here is the real difference. I asked Joe about what made the Coast Guard the right fit for him. His answer was very enlightening. "The Coast Guard," he said, "is a small service with lots of great missions. The people are what keep me in. It is a small service with really big jobs. Running into people you've served with before makes for a really strong team."

One thing I learned about the Coasties in talking with many of them is that they are some of the best-trained and most experienced people working with electronics equipment in the world. We should all be glad that they are out there. ■

Security Issues On The Ferry Systems— You Can Make A Difference, Plus An Introduction

Let me start off by saying how excited I am to be working with *Popular Communications* as the new contributing editor for “Homeland Security,” but I also know I am filling some big shoes. Richard Arland and I have been friends since I deployed to Iraq in 2006. I hope that you’ll find this column as informative and interesting as it was under his tenure. There’s a lot we need to think about and act on, and as we go forward I will be giving you suggestions as to what to watch and listen for, suggest frequencies to monitor, and tips on how to report what you’ve heard.

My Background

A little background information is probably warranted. I joined the USAF in 1976. My first direct exposure to terrorism was the taking of the embassy hostages in Iran in 1979 and their subsequent release in 1981. I was in charge of all communications while serving at Rhein-Main Air Base, near Frankfurt, from the time of their incarceration to their release and return to Germany.

The threat of terrorism was as real then as it is today, but at that time terrorists were mostly ideological Marxists, such as the Baader-Meinhoff Gang. We had to be vigilant where we were stationed as bombs were planted in our cars or near where we walked and traveled. I vividly remember learning that an unexploded bomb was found not 20 feet from the route I walked to my apartment. It had been there for months. It brought home to me that terrorists do not care who gets killed or maimed, and that has stuck with me ever since.

I left the USAF in 1987 and worked as a civilian in telecommunications, but when the jets struck the towers in New York

I began searching for a way back into the military and joined the Washington Army National Guard. My responsibilities are in communications and operations, working for the Joint Operations Center (JOC), which deals with any and all emergencies, whether natural or man-made.

I was deployed to New Orleans during Hurricane Katrina and served a tour in Iraq, meeting and working with the Iraqi people. I’m also a former trainer to first responders in Weapons of Mass Destruction for the Department of Homeland Security (DHS), a trainer in the Automated Exercise and Assessment (AEAS) program and a member of Army MARS. Homeland Security is very much a part of my daily life and I hope that it becomes a part of yours as well.

Where Do We Start?

If you really want to help in this vital area you need to be monitoring as much as possible and reporting what you hear. I will provide that information later in this column but, for now, just remember that you are a critical piece in our efforts to thwart terrorists. They have many targets, which we will discuss and explore. We begin this month with the U.S. ferry system.

Ferries Are A Target

The ferry systems all across the United States still remain on a high alert. If you scan the news you’ll find many, many stories of suspicious activities detected on and near the ferries. The DHS issued a bulletin warning that terrorists were scouting ferry systems for a possible attack back in 2003. The major concern was for large ferries like the Staten Island run, but the

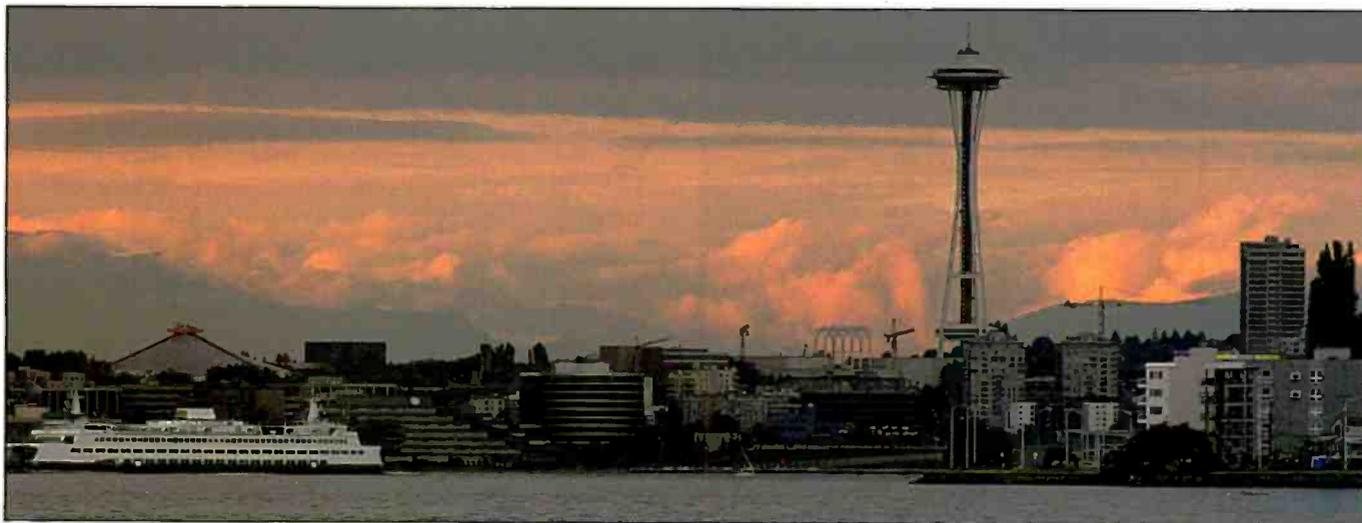


Photo A. This ferry plies the waters off Seattle and may carry as many as 600 to 700 passengers during peak hours. (Photos by Zachary Larson)



Photo B. Here's a typical tourist shot of the ferry Kittitas...

Department believed that smaller ferries were at risk as well. The bulletin is still in affect today.

Seattle also provides a high-profile target with its extensive ferry system (Photo A). A report in the October 10, 2004, issue of the *Seattle Times* stated, "Groups of men, including one tied to a federal terrorism investigation, have videotaped Washington ferry operations, prompting federal authorities to conclude the system has been under surveillance as a possible target for an attack." Such incidents have continued. Recently two Middle Eastern or Latin American looking men were photographed by a worker on the Bremerton, Washington, ferry.



Photo C. Same ferry, but a much less typical photo. Why would someone take this shot? It's the kind of thing to take notice of.

They had been seen taking snap shots of areas of the ferry's engine compartment as well as other areas that are not normally photographed. Though their photo was circulated nationwide, the two men disappeared. They eventually reappeared in their home country in Europe and explained that they took the odd pictures simply because there were no ferries in their country.

Some have questioned why we don't do more to stop these people. The answer is that while some have been questioned, they really haven't done wrong. They were only taking pictures. Of course that's the way terrorist cells operate: These people take the pictures and drop them off somewhere. They have no idea who is getting the photos or what they will be used for. Oh, yes, they know they'll be used against us but they don't know the details.

The threat is quite real and your assistance is needed. *You* can make a difference! But you must be vigilant.

What's Wrong With This Picture?

Let me give you an example of what I'm talking about. **Photo B** is one that any tourist might take. It shows the name of the Ferry and it's a good shot of the front of the ferry. But why would someone take a shot like **Photo C**? You can see the loudspeakers in the event of an emergency and if you look through the glass you can see a sign that states that it is fire station number 16. Also notice that no one is in the picture. This is the kind of thing you should take note of: Seeing someone taking such photos should at least make you more aware of your surroundings while traveling on any ferry system. It doesn't mean that they're *not* innocent tourists taking random photos, but you need to be aware and vigilant.

So What Can You Do?

Here we come to the main point of this column. We have an army of listening posts out there, and you're part of it! By monitoring the marine frequencies (see **Table**) you may hear of an incident that's occurring. By monitoring the frequencies a little lower or higher as well you may hear something that could save lives. Maybe it's an accent or the nature of a conversation that stands out, but in either case record it and send it to your local office for the DHS with the date and time of the recording.

I know some people believe their reports may be ignored, but I can tell you they are not. No matter how insignificant the officer believes it is, he or she must report it and then it must be checked out. I've seen many, many reports and the results of investigations. Some incidents are found to be insignificant while others are important enough to warrant further investigation. So, don't be complacent—record what you hear and pass it along.

Speaking Of Recording

There are several recording programs on the Internet. I recommend the Scanner Recorder (www.davee.com/scanrec/index.html), which is free. It works best on FM but try it on SSB and AM as well if you have a squelch control. Just place the squelch on a little higher than normal. You also need to have a connection from your speaker on your scanner to the microphone input or line input of your computer. Just remember that you want to check your recordings often and then erase those

Table. Marine Frequencies

(in MHz)

Ch.	Ship Xmt	Ship Rcv	Use
01A	156.050	156.050	Port Operations and Commercial. VTS in selected areas.
05A	156.250	156.250	Port Operations. VTS in selected areas.
06	156.300	156.300	Intership Safety
07A	156.350	156.350	Commercial
08	156.400	156.400	Commercial (Intership only)
09	156.450	156.450	Boater Calling. Commercial and Non-Commercial.
10	156.500	156.500	Commercial
11	156.550	156.550	Commercial. VTS in selected areas.
12	156.600	156.600	Port Operations. VTS in selected areas.
13	156.650	156.650	Intership Navigation Safety (Bridge-to-bridge). Ships >20m length maintain a listening watch on this channel in US waters.
14	156.700	156.700	Port Operations. VTS in selected areas.
15	—	156.750	Environmental (Receive only). Used by Class C EPIRBs.
16	156.800	156.800	International Distress, Safety and Calling. Ships required to carry radio, USCG, and most coast stations maintain a listening watch on this channel.
17	156.850	156.850	State Control
18A	156.900	156.900	Commercial
19A	156.950	156.950	Commercial
20	157.000	161.600	Port Operations (duplex)
20A	157.000	157.000	Port Operations
21A	157.050	157.050	U.S. Coast Guard only
22A	157.100	157.100	Coast Guard Liaison and Maritime Safety Information Broadcasts. Broadcasts announced on channel 16.
23A	157.150	157.150	U.S. Coast Guard only
24	157.200	161.800	Public Correspondence (Marine Operator)
25	157.250	161.850	Public Correspondence (Marine Operator)
26	157.300	161.900	Public Correspondence (Marine Operator)
27	157.350	161.950	Public Correspondence (Marine Operator)
28	157.400	162.000	Public Correspondence (Marine Operator)
63A	156.175	156.175	Port Operations and Commercial. VTS in selected areas.
65A	156.275	156.275	Port Operations
66A	156.325	156.325	Port Operations
67	156.375	156.375	Commercial. Used for Bridge-to-bridge communications in lower Mississippi River. Intership only.
68	156.425	156.425	Non-Commercial
69	156.475	156.475	Non-Commercial
70	156.525	156.525	Digital Selective Calling (voice communications not allowed)
71	156.575	156.575	Non-Commercial
72	156.625	156.625	Non-Commercial (Intership only)
73	156.675	156.675	Port Operations
74	156.725	156.725	Port Operations
77	156.875	156.875	Port Operations (Intership only)
78A	156.925	156.925	Non-Commercial
79A	156.975	156.975	Commercial. Non-Commercial in Great Lakes only
80A	157.025	157.025	Commercial. Non-Commercial in Great Lakes only
81A	157.075	157.075	U.S. Government only - Environmental protection operations.
82A	157.125	157.125	U.S. Government only
83A	157.175	157.175	U.S. Coast Guard only
84	157.225	161.825	Public Correspondence (Marine Operator)
85	157.275	161.875	Public Correspondence (Marine Operator)
86	157.325	161.925	Public Correspondence (Marine Operator)
87	157.375	161.975	Automatic Identification System duplex repeater
AIS 1	161.975	161.975	Automatic Identification System (AIS)
AIS 2	162.025	162.025	Automatic Identification System (AIS)
88	157.425	162.025	Public Correspondence only near Canadian border
88A	157.425	157.425	Commercial, Intership only

Some of these channels may change depending on where you live. Channel 16 does not change and is one that you definitely want to program in your radio.

Pop'Comm August 2008 Reader Survey Questions

This month we'd like to ask you about your thoughts on pirate broadcast stations. Please use the Reader Survey Card and circle all appropriate numbers. Thanks for participating.

How interested are you in pirate radio broadcasting?

Extremely, it's my main tuning objective	1
Quite interested, I seek it out	2
Moderately, I leave it if I come across it	3
Slightly, in theory it's an interesting subject	4
Not at all	5

If you do listen to pirate radio, where do you primarily seek it out?

Shortwave	6
FM	7
AM	8
Internet	9

If you catch a pirate broadcast do you typically...?

Listen and move on	10
Record it	11
Send for a QSL card	12
Send in a log	13
Report it to authorities	14

How much coverage of pirate radio would you like to see in Pop'Comm?

None, it's illegal and they shouldn't be encouraged	15
The occasional feature is about right	16
More feature articles, it's a fascinating subject	17
A regular column, not only is it fascinating, but also constantly changing	18

OUR READERS SPEAK OUT

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

Air Band Antennas

We keep getting comments and questions about the air band antennas that Kent Britain covered in one of his recent "Antenna Room" columns, so we'll briefly revisit the topic here.

Dear Kent:

I still have your March article folded inside out, wanting to try your air band Yagi as described on page 30. I have been to all the hardware and electronic stores and looked around the net but am having a hard time finding the mast saddle bracket you have your wood boom attached to. This has been a joint mission looking for over-the-air TV hardware for this debacle of a transition to DTV in order to help out some relatives get set (to continue!?) to watch this beautiful digital broadcast scheme that is going to solve all problems known to man.

All the retailers' employees (I mean *all*) act as if I'm crazy or from outer space since I don't have a dish or cable and am real hesitant or unwilling or flat just don't know anything about TV beyond a satellite dish or cable services. One place has antennas, masts, F connectors, and RG6 but said they will not be stocking converter boxes; another place gave me a bad photocopy sheet and told me it would answer all my questions...it just goes on and on...And the same goes for this mast bracket, the closest I got was the display in hardware for winch line cable clamps. Ya think somebody wants something to go away and disappear?

Anyway, do you know where I can get some saddle brackets that have long U-bolts? And what program did you use to slide the element spacing impedance?

Any thoughts appreciated.

Troy
Via email

Dear Troy:

Interesting problem. I have salvaged quite a collection of old U-bolts from antennas, etc., but I think those had come from RadioShack. Most hardware stores carry a variety of U-bolts and any of the long ones should do. You can also put a V-notch in the antenna boom at that point (not too deep) or even make one of out of a piece of wood

from the same stock as your Yagi boom. You can also use two long straight bolts and some strapping.

My next column will be a do-it-yourself HDTV version of the Cheap Yagi. It's much smaller, you can just about use bubble gum to hold this one up.

As far as software goes, I use YagiMax for most of my Yagi simulations. But then I actually build and test one before publishing as YagiMax does not simulate the driven element well.

Good luck with your project.

Kent, WA5VJB

Dear Kent:

Your March article about air band antennas is very helpful. I am close to a few airports and only a few miles from Wright-Patterson Air Force Base where the secret hangar housing the aliens is rumored to be. So, I can see and hear most traffic. I do need help with ATIS reception! Thanks!

On spring days I often program my 20-year-old scanner to listen to the local unicoms and 123.45 "inter-plane."

Here are some possible article topics:

1. An inexpensive RF field meter. An add-on to digital or analog volt-ohm meters. Broadband! VHF, UHF, GMRS! And hints.

2. How to compare antennas for performance while transmitting.

3. If I had to choose just one antenna for best performance (other than beams) for 2 meters only, GMRS only, etc. Best one for fixed/house. Best mobile. Best field/portable. For each band of interest.

James E. Moody
Via email

Dear James:

The RF field strength meter is interesting. The design is easy, getting the parts is a bit more difficult these days. I will give it some thought.

Kent, WA5VJB

Dear James:

We appreciate your suggestions for future topics. I'd like to again invite our readers to drop us a line to let us know what you'd like to see covered in these pages.

—Editor

that have nothing of interest or they'll fill your hard drive up fast.

Don't Forget To Monitor HF

It's important to monitor HF as well. To do so properly you need to understand propagation so you know when the frequencies are active for short- or long-haul communications. I highly recommend Tomas Hood's propagation column right here in *Pop'Comm* as well as his website (<http://propagation.hfradio.org/>), which is great for beginners to experts.

I believe any activity that can be heard will be just outside the ham bands, because ham radio equipment is easier to acquire and less expensive than commercial communications equipment. (Ham equipment will operate just outside the ham bands; even 2 meter and higher radios can transmit and receive just outside the bands.) Visit www.arrl.org/FandES/field/regulations/allocate.html for a listing of ham bands. Listen at least 100 kHz above and below the band as you never know what you may hear. I vividly remember the morning that terrorists hit the World Trade Towers and the Pentagon. A man with a Middle Eastern accent was transmitting in the ham bands about how the United States would be destroyed. He went on for hours and was recorded by several people. Another time someone was transmitting locally here in Seattle on a ham repeater for 2 meters and talking about a bomb and a military location.

Keep Listening

Those who would do us harm are out there, and they have to communicate. Telephones, cell phones, and satellite phones have become a major problem for them with the Patriot Act, but radios still give them some semblance of security. At least that's what they believe, but with people like you monitoring the frequencies we can help to keep the homeland secure. I'd like to know what you're hearing as you listen, and I welcome any feedback you'd like to offer me. You can email me at NA7US@yahoo.com. I look forward to hearing from you.

Next time we'll look at some other areas to monitor and at some ways we need to prepare ourselves. Richard has covered the subject very well and I just want to add my two cents. Until then, remember that the security of our homeland is not just the government's responsibility—it's ours as well. ■

Radio Fun And Going Back In Time

Q. Physician Luigi Galvani discovered that a frog's leg would jump if an electric current was passed through it. That was about 1786 in Italy if I remember correctly. Did anyone ever do any follow up experimentation along those same lines?

A. Yes, you are right about Galvani's experiments, and other certainly did follow in his footsteps. And it was the French. In the February 1913 issue of *Popular Mechanics* was a write up on "Le Détecteur Français Cuisse de Grenouille" or "The French Frog Leg Detector." Professor of Physiology Charles Lefeuvre of Rennes University in Brittany brought Galvani's classic experiment to its logical conclusion. With text and diagrams the Professor showed how he had connected the output of a wireless receiver to the sciatic nerve of a frog's leg. One end of the leg was secured and the other was attached to a recording pen. The Morse code letter D was recorded on a paper when a time signal was received from a station on the Eiffel Tower, 230 miles away.

Engineers may suggest that the frog's leg was merely a transducer and not one that would continue its activity very long. However, they must also admit that with enough amplification the wireless signal might keep working for some time at speeds of nearly five words per minute. But then the French have always been a little crazy about frog's legs.

Q. When the Doolittle Raiders approached Japan aboard the aircraft carrier *Hornet* they ran into some Japanese fishing boats, which made them think their presence might be reported to the Japanese military. The fishing boats were sunk by gunfire from the *Hornet's* escorts and Doolittle took off earlier than initially planned (April 18, 1942). The fishing boat crews were civilians, weren't they? Was the attack really necessary?

A. Those weren't fishing boats. They were manned by civilians, including women and children, but they had been placed on picket duty by the Japanese to watch for American carriers. The sampans were 650 miles out to sea watching for American shipping. The 50 radio-

equipped picket boats were sent out that far because the Japanese knew that no carrier-based planes could attack Japan from that range. What the Japanese didn't plan on was that Doolittle wasn't flying conventional carrier-based bombers. And, yes, two of the Japanese picket boats got off complete radio messages that reported sighting the *Hornet* but didn't identify the type of bombers lashed to her deck.

Q. As we learn more and more about the physics of electronics and the science of propagation, aren't we losing the need to understand the early principles of radio as they have all become obsolete?

A. Not at all. Back on June 2, 1967, one of the U.S. Air Force's satellite research think tanks was asking for "additional information on spark-gap transmitter research." They didn't say a lot about why they wanted the information or what they were going to do with it...but those guys never do. In the long run, nothing really goes out of date. It just changes around a little and comes back in another form.

Q. I've been reading a lot of stuff about space and what might or might not come to pass. Why has nobody in the amateur radio community ever suggested putting an amateur radio repeater on the moon?

A. Well, back in the mid to late '60s there was a lot of talk about it. Some people got around to forming the NASTAR (Nassau Satellite Tracking Amateur Radio) club and stated that they wanted

to head up the project for a frequency translation station for amateur radio use to be operated from the moon. The project, called Moonray, was to be on UHF and VHF and would serve as a repeater that could pass traffic between any two stations that had the moon in sight simultaneously.

The original goal was to have it operational by about 1971, but somewhere along the line that ball was dropped and we're still trying to bounce our signals off the moon without even basic repeater technology. If NASA wants to get the average American citizen—at least the average ham—behind the Space Program again they might consider revisiting Moonray. But that, of course, would make too much sense.

Q. Is there anyone considered too handicapped to qualify for an amateur radio license?

A. That's kind of like the question "How many Psychiatrists does it take to change a light bulb? Only one, but the light bulb has to want to change." In 1966 the Houston Amateur Radio Club of Houston, Texas, had a program to go into the Veteran's Hospital to help paraplegics earn their amateur radio licenses. The project was successful and helped disabled veterans get their tickets. If a person has a good teacher who will stick with him or her, and the VEs are creative and understanding enough, anyone with sufficient motivation can earn the license. And that means *you!* ■

SPURIOUS SIGNALS

By Jason Togyer KB3CNM



Scott Air Force Base—Home To Air Mobility Command's Showcase Wing

In this issue's "Military Radio Monitoring" we travel to the heartland of America for a look at Scott Air Force Base. Scott AFB is located in Illinois about 20 miles east of St. Louis, Missouri, near Belleville, Illinois. Five separate headquarters within the Air Force call Scott AFB home, in particular the United States Transportation Command and the Air Mobility Command (AMC) whose primary mission is to manage our nation's domestic aeromedical evacuation system. The Air Mobility Command also commands and manages all operational support aircraft within the United States. The base also provides initial qualifications for the C-9 pilot training program. Additionally it's home to the 375th Airlift Wing of the Air Force Reserves, the 932nd Airlift Wing, and the 126th Air Refueling Wing of the Illinois Air National Guard. (See "Scott Air Force Base Units/Squadrons.")

The History Of Scott Air Force Base

It was in April of 1917 during World War I that the area of southwestern Illinois was chosen to be a training base and flying field for this midwestern region.

The base is named in honor of Corporal Frank S. Scott. Corporal Scott was the first enlisted man to be killed in an aviation crash, which occurred in 1912. It wasn't until five years

later on September 2, 1917, however, that the first aircraft took off from Scott Field; it was a Standard Trainer Biplane. The next year, two Jenny aircraft were modified at the base into two air ambulances to carry wounded servicemen. This was the humble beginning of aeromedical evacuation, which remains Scott's primary mission.

Today, Scott AFB is adjacent to the St. Louis-MidAmerica Airport, which opened in 1998 and is considered one complex. Scott occupies 3,230 acres with two runways, 14L/32R and 14R/32L. The 126th Air Refueling Wing of the Illinois Air National Guard moved from Chicago's O'Hare Airport to Scott in 1999. The wing's squadron, which is the 108th Air Refueling Squadron, flies eleven KC-135Es. It is the primary scheduling unit to operate in Aerial Refueling track AR-318, which runs from western Illinois across northern Missouri to northeastern Kansas.

While the 126th Aerial Refueling Wing's primary mission is aerial refueling, the 375th Airlift Wing is charged with four primary missions. First and foremost it provides aeromedical evacuation within the United States, while also providing operational airlift support for government officials and security needs for nations. Finally, they provide support for the other hosts units at Scott, creating command and control for the entire United States' military transportation system. There's



The 932nd AW Aeromedical Staging Squadron with C-40C on the left, C-9C on the right. (Photo courtesy of US DefenseLink)



932nd firefighters respond to a call. (Courtesy of Tech Sgt. Gerald Sonnenberg)



A McDonnell Douglas C-9A "Nightingale" flies over the runways at Scott AFB circa 1993.

certainly plenty of action to catch; see "Scanning Scott AFB/MidAmerica (KBLV)."

Flashback

Regarding my first article in the April 2008 issue of *Popular Communications* several sharp-eyed readers caught the mistake in the caption of our photo on page 58 which stated the craft pictured were two KC-135s. The plane to the right in the photo is a KC-135, but the plane below and to the left is actually a C-17 "Globemaster III." Thanks to John Cooper who was the first to point out to us the "camouflaged" aircraft.

Thanks for keeping us on our toes! You'll never know when I might sneak something like that in just to see if you all are paying attention!

Military Loggings

We have some military intercepts to pass along this month courtesy of Doug Bell from Canada. Doug has blown the dust off his trusted Sony ICF-2010 and is getting back into the swing of monitoring military communications on HF.

5649: USB 0129Z, CONDOR 234 (US Army Rapid Deployment Force) wkg Gander with a position of 51N 50W. Flight instructed to contact Gander radio on 122.37 VHF.

6761: USB 1241Z, OPEC 78 (KC10/AMC) calling REACH 5028 with a position report.

8843: USB 0327, OMAHA 73 (US Customs/DEA) wkg San Francisco Oceanic with a position report.

8864: USB 1956Z, EMPIRE 319 (Civil AirPatrol) wkg Gander with a position of 50N 50W and a SELCAL check.

8864: USB 1957Z, REACH 413

(C5/AMC) wkg Gander with a position of 52N 30W and fl 410. REACH 324 (C5/AMC) wkg Gander with a position of 51N 30W and fl 400.

8918: USB 2233Z, CONDOR 188 (US Army Rapid Deployment) wkg NY with a request for higher.



Seal of the 73rd AS.



Seal of the 932nd AW.

Scott Air Force Base Units/Squadrons

DESIGNATION	AIRCRAFT	CALLSIGN
375th AW		
11th AS	C-9A	
458th AS	C-12, C-21A	JOSA, SAME
375th AES	C-9A	
932nd AW		
73rd AS	C-9A	AVALON
932nd AES		
126th ARW		
108th ARS	KC-135E	CODER, HAPPY

Welcome sign at the Scott Air Force Base Belleville Gate. →



11232: USB 1545Z, SENTRY 30 (AWAC/EC3) thanking Trenton Military for their assistance.

11232: USB 1450Z, SENTRY 30 (AWAC/EC3) wkg RAYMOND 24 (Tinker AFB) with a long multi-digit coded transmission.

We thank Doug for his contribution this month and look forward to more. If you have any loggings you would like to report, whether on HF, VHF, or UHF please send them in to the email address listed in the column header. Please try to follow the format you see here and we will include them as part of the column. ■

Scanning Scott AFB/MidAmerica (KBLV)

AERONAUTICAL FREQUENCIES

118.650	Scott Tower East
119.200	Scott Ground West
119.875	Scott Ground East
121.750	Clearance Delivery
122.950	MidAmerica Unicom
125.200	St. Louis Approach/Departure
128.250	Scott Tower West
128.700	ATIS
130.650	375th AW Command Post
138.550	126th ARW Command Post
139.850	Pilot to Dispatcher
225.400	Clearance Delivery
236.600	Scott Tower Common
239.800	Metro (WX)
240.350	AR-318 Primary
251.075	Scott Tower East
251.925	JOSA Air Tactical
253.500	Scott Tower West
256.700	ATIS
260.600	AR-318 Secondary
263.035	Scott Ground East
271.300	Scott Tower
275.800	Scott Ground West
277.700	126th ARW Command Post
281.500	St. Louis Approach/Departure
336.000	Aeromed Operations
343.700	AR-318 Entry
353.500	AR-318 Exit
372.200	Pilot to Dispatcher
383.200	375th AW Command Post

SUPPORT OPERATIONS

Army Operations	
49.950	Army Reserve Operations
148.075	Command Post
148.525/150.350	Command Net
150.300/148.400	Security F1
149.535	Security F2
149.475	Flight Line Security
173.4375/165.0125	Command Net
173.5625	Fire/Crash F1

173.5875	375th Med Group (Abbott EMS)
413.1250	Command Net

SYSTEM:	Scott Air Force Base (SAFB)
TYPE:	Motorola Type II SmartZone (VHF)
VOICE:	APCO-25 Common Air Interface
SYSID:	B209

CUSTOM FREQUENCY TABLE

BASE:	137.000
SPACING:	12.5 kHz
OFFSET:	460

FREQUENCIES

138.1375*	138.2125	138.2625*	138.3125*
138.3375*	138.3625	138.3875	138.4125

TALKGROUP USE

112	126th ARW Aircraft Maintenance
544	Transient Alert
560	Ramp Net
816	Civil Engineering – Electrical
864	Fire/Crash
880	Fire/Crash TAC 2
896	Base Security
944	Elite Guard
1072	375th Communications Group Maintenance
1120	Aircraft Maintenance
1152	Logistics Control
1168	375th Transportation Operations
1312	Communications Group
1360	126th ARW Aircraft Maintenance
1792	Telemetry

Note: You may hear a lot of flights to and from Scott Air Force base using the designation JOSA, which stands for Joint Operational Support Airlift. These flights are primarily for airlifting Air Force executives and other governmental personnel. These flights mostly involve either the C-12 Huron or the C-21 aircraft which is the military designation of the Learjet 35.

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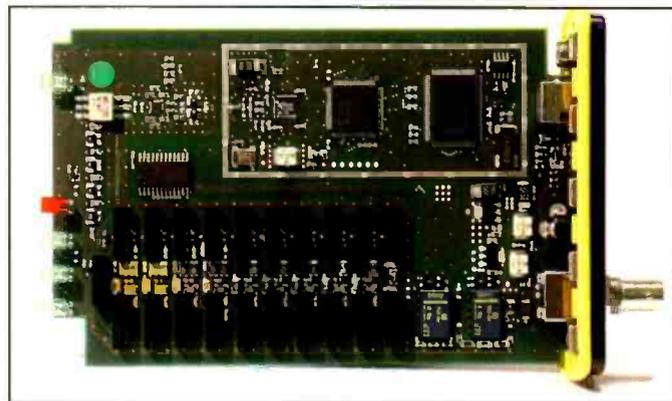
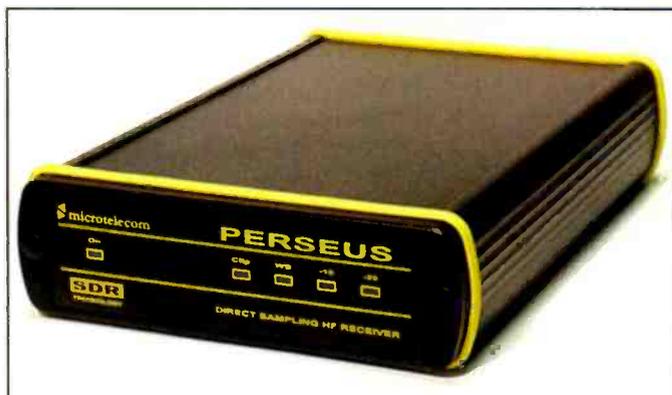
This listing is designed to help you hear more shortwave broadcasting stations. The list covers a variety of stations, including international broadcasters beaming programs to North America, others to other parts of the world, as well as local and regional shortwave stations. Many of the transmissions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

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

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	9400	Radio Bulgaria		0300	7210	Radio Fana, Ethiopia	Amharic
0000	5009v	Radio Cristal/Radio Pueblo, Dominican Republic	SS	0300	9780	HCJB, Ecuador	GG
0000	11710	Radio Argentina al Exterior	various	0300	4815	Radio Buen Pastor, Ecuador	SS
0030	4732	Radio Universitaria, Bolivia	SS	0300	3280	La Voz del Napo, Ecuador	SS
0030	12120	Radio Thailand		0300	4745	Voice of Greece	Greek
0030	9875	Radio Vilnius, Lithuania		0300	6010	La Voz de su Concencia, Colombia	SS
0100	11970	CVC-La Voz, Chile	SS	0300	7185	Adventist World Radio, USA, via Germany	Amharic
0100	4052.5	Radio Verdad, Guatemala	SS	0300	7325	Voice of Turkey, via Canada	
0100	11735	Voice of Korea, North Korea		0300	5915	Radio Zambia	
0100	6040	The Mighty KBC, Netherlands, via Lithuania		0300	4965	The Voice-Africa, Zambia	
0100	15720	Radio New Zealand		0300	9490	Radio Sweden	Swedish
0100	4824v	La Voz de la Selva, Peru	SS	0300	4976	Radio Uganda	
0100	3240	Radio Luz y Vida, Honduras	SS	0300	7440	Radio Ukraine International	UU
0100	5025	Radio Rebelde, Cuba	SS	0300	7215	Trans World Radio, Swaziland	Amharic
0100	6185	International Radio of Serbia	EE, Serbian	0300	7390	Channel Africa, South Africa	
0100	5035	Radio Aparecida, Brazil	PP	0300	3320	Radio Sondergrense, South Africa	Afrikaans
0130	11780	Radio Nacional Amazonia, Brazil	PP	0330	7425	Radio Tirana, Albania	
0200	5910	Marfil Estereo, Colombia	SS	0330	5010	Radio Madagaskara, Madagascar	FF
0200	3310	Radio Mosoj Chaski, Bolivia	SS	0330	6175	Voice of Vietnam, via Canada	
0200	6035	La Voz del Guaviare, Colombia	SS	0400	11690	Radio Okapi, Congo, (Dem. Rep.) via South Africa	various
0200	3340	Radio Misiones Internacionales, Honduras	SS/EE	0400	5980	Voice of the Tigray Revolution, Ethiopia	Amharic
0200	4800	Radio Buenas Nuevas, Guatemala	SS	0400	7175	Voice of the Broad Masses, Eritrea	unid
0200	9420	Voice of Greece	Greek	0400	4777	RTV Gabonaise, Gabon	FF
0200	6045	Radio Universidad, Mexico	SS	0400	9599v	Radio UNAM, Mexico	SS
0200	4790	Radio Vision, Peru	SS	0400	4960	Voice of America Relay, Sao Tome	
0200	11790	CVC, USA, via Uzbekistan		0400	7200	Republic of Sudan Radio	AA
0200	4717	Radio Yura, Bolivia	SS	0400	7275	RT Tunisienne, Tunisia	AA
0200	6973	Galei Zahal, Israel	HH	0500	4915	Radio Difusora Macapa, Brazil	PP
0230	7105	Voice of the Islamic Republic of Iran	unid	0500	5030	Radio Burkina, Burkina Faso	FF
0230	4828	Zimbabwe Broadcasting Corp.		0500	4905	Radio Anhanguera, Brazil	PP
0230	9860	Vatican Radio, via Russia		0500	5005	Radio Nacional, Equatorial Guinea	SS
0230	4835v	Radio Maranon, Peru	SS	0500	4770	Radio Nigeria	
0300	9690	China Radio International, via Spain		0500	7255	Voice of Nigeria	
0300	4950	Radio Nacional, Angola	PP	0500	6020	Radio Victoria, Peru	SS
0300	4930	Voice of America Relay, Botswana		0530	4905	RN Tchadienne, Chad	FF
0300	6090	University Network, Anguilla		0530	6250	Radio Nacional, Equatorial Guinea	SS
0300	9790	China Radio International, via Cuba		0600	6165	Voice of Croatia	
0300	4780	Radio Djibouti	AA	0600	7125	RTV Guineenne, Guinea	FF
0300	9780	KNLS, Alaska	GG	0600	4845	Radio Mauritania, Mauritania	AA
0300	9665	China Radio International, via Brazil	SS	0600	6185	Radio Educacion, Mexico	SS
0300	4885	Radio Clube do Para, Brazil	PP	0600	4760	ELWA, Liberia	
0300	7110	Radio Ethiopia	Amharic				

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0600	6165	Voice of Croatia	EE/Croatian	1500	15435	BSKSA, Saudi Arabia	aa
0700	6160	CKZN, Canada		1600	11785	Radio Cairo/Egyptian Radio	AA
0700	6010	Radio Mil. Mexico	SS	1600	9930	KWHR, Hawaii	
0800	9635	RTVM, Mali	FF	1600	9525	Voice of Indonesia	
0800	4835	ABC Northern Territories Service, Australia		1600	11690	Radio Jordan	
0900	7145	Radio New Zealand		1600	12135	Radio PMR, Pridnestrovie (Moldova)	various
0930	5020	Solomon Is. Broadcasting Corp.		1700	17830	BBC Relay, Ascension Is.	
0930	4990	Radio Apinte, Suriname	Dutch	1700	11755	BBC via South Africa	
1000	6020	Radio Australia	Tok Pisin	1700	11915	Adventist World Radio, USA, via South Africa	Swahili SS
1000	4747	Radio Huanta 2000, Peru	SS	1700	11730	Radio Pilipinas, Philippines	Tagalog
1000	4775	Radio Tarma, Peru	SS	1700	15235	Channel Africa, South Africa	
1100	3315	Radio Manus, Papua New Guinea	Tok Pisin	1700	11850	Radio Taiwan International, via France	
1100	3905	Radio New Ireland, Papua New Guinea	Tok Pisin	1800	17680	CVC-La Voz, Chile	SS
1100	6060	Radio Nacional, Venezuela, via Cuba	SS	1800	11785	Voice of Indonesia	GFerman
1100	3925	Radio Nikkei, Japan	JJ	1800	11725	Deutsche Welle, Germany, Rwanda Relay	GG
1100	9745	Voice of Han, Taiwan	CC	1800	11990	Radio Kuwait	
1130	3345	Radio Northern, Papua New Guinea	Tok Pisin	1800	9980	Voice of America, Sri Lanka Relay	FDarsi
1130	3335	Radio East Sepik, Papua New Guinea	Tok Pisin	1800	13570	WINB, Pennsylvania	SS
1130	9990	Radio Free Afghanistan, USA, via Sri Lanka	Dari	1800	12035	SW Radio Africa, England, via Norway	
1200	11730	Voice of the Islamic Republic of Iran, Iran	Pashto	1900	15365	Radio Canada International	FF
1200	13685	Voice of Turkey		1900	11815	Radio Algerienne, Algeria, via England	AA
1200	9840	Voice of Vietnam	VV	1900	13695	Radio France International	FF
1200	7225	Voice of America, Thailand Relay	KK	1900	13605	All India Radio	
1200	9650	KBS World Radio, South Korea		1900	11930	Radio Marti, USA	SS
1200	4905	Xizang PBS, China	TT	1900	15345	RTV Marocaine, Morocco	AA
1200	6130	Lao National Radio, Laos	LL	1900	11805	Radio Nederland, via South Africa	
1200	4605	Radio Republik Indonesia	II	1900	11860	Radio Jamahiriya, Libya	Hausa
1230	6150	Radio Singapore International		1900	15465	RDP International, Portugal	PP
1300	11700	Radio Bulgaria	RR	2000	15190	Radio Africa/Radio East Africa, Equatorial Guinea	
1300	4900	Voice of the Strait, China	CC	2000	15120	Voice of Nigeria	
1300	7150	CPBS, China	CC	2000	11940	Radio Romania International	GG
1300	15540	China Radio International, via Chile		2000	11735	Voice of Tanzania, Zanzibar	Swahili
1300	9580	Radio Australia		2000	12005	RT Tunisienne, Tunisia	AA
1300	7430	BBC via Tajikistan	Bengali	2000	9755	Vatican Radio	
1300	9660	Voice of the Islamic Republic of Iran, Iran	unid	2100	11620	All India Radio	
1300	7485	Trans World Radio, Guam	CC	2100	17605	Radio Nederland Bonaire Relay	DD
1300	9335	Voice of Korea, North Korea		2100	15345	RAE/Radio Nacional, Argentina	SS
1300	6100	Kyzyl Radio, Russia	RR	2100	17620	Radio France International, French Guiana Relay	FF
1300	9390	Voice of America, Sri Lanka Relay	Pashto/Dari	2100	9330	Radio Damascus, Syria	
1300	11935	Polish Radio, via Germany		2100	9580	Africa Number One, Gabon	FF
1330	15540	HCJB-Australia		2200	15320	Adventist World Radio, Guam	
1330	15240	Radio Sweden, via Canada		2200	7450	RS Makedonias, Greece	Greek
1400	13580	Radio Prague, Czech Republic		2200	11865	Deutsche Welle, Germany, via Portugal	GG
1400	9625	CBC Northern Service, Canada		2200	13740	Radio Free Asia, USA, via Northern Marianas	Khmer
1400	15680	Bible Voice, England		2200	7570	Voice of Korea, North Korea	
1400	9690	All India Radio		2200	15265	Radio Japan/NHK, via Bonaire	II
1400	7595	Radio Liberty, USA, via Sri Lanka	unid	2200	9705	La Voix du Sahel, Niger	FF
1400	17725	Radio Jamahiriya, Libya,	EE, others	2200	9630	Radio Exterior de Espana, Spain	SS
1400	11770	Radio Romania International	Romanian	2200	11715	BSKSA, Saudi Arabia	AA
1400	7400	Far East Broadcasting Co., Philippines	CC	2200	7811	AFRTS/AFN, Florida	SSB
1400	12035	Voice of Turkey		2230	5930	Cyprus Broadcasting Corp.	Greek; wknds
1400	15140	Radio Sultanate of Oman		2300	9465	Radio Cairo/Egyptian Radio	
1500	13775	Radio Austria International, via Canada		2300	11605	Radio Free Asia, USA, via Taiwan	VV
1500	13675	China Radio International, via Canada	CC	2300	9520	Radio Nederland, via Canada	
1500	17630	Africa Number One, Gabon	FF	2300	9690	Radio Taiwan International, via Florida	SS
1500	15410	Radio Farda, USA, via England	Farsi	2300	13640	Voice of America, via Northern Marianas	
1500	13750	Radio Nacional, Venezuela, via Cuba	SS	2330	9675	Radio Cancao Nova, Brazil	P
1500	15560	RDP International, Portugal	PP				
1500	17690	Sudan Radio Service, USA, via Portugal	AA				

New, Interesting, And Useful Communications Products



The Perseus software-defined radio HF receiver lets users store a segment of radio spectrum for later signal analysis, playback, and manipulation.

Perseus SDR

The Perseus software-defined radio (SDR) HF receiver, manufactured by Microtelecom s.r.l. of Italy and distributed by SSB-Electronic USA, covers 10 kHz–30 MHz (40 MHz with reduced sensitivity). It offers signal demodulation and processing performed entirely in the digital realm, allows up to 800 kHz of RF spectrum to be visually monitored in real time, and its direct digital recording features lets users store a segment of radio spectrum for later signal analysis, playback, and manipulation.

Offering SSB, CW, AM, Synchronous AM, and NBFM, it features direct digital sampling conversion using a 14-bit 80 MS/s analog-to-digital converter, a high-performance FPGA-based digital down-converter and a high-speed 480 Mbit/s USB 2.0 PC interface. Pertinent specifications include sensitivity: -131 dBm; selectivity: software defined (>100 dB stop band attenuation); dynamic range: 104 dB (CW, 500 Hz BW); spurious free dynamic range: 110 dB; blocking dynamic range: 125 dB (CW, 500 Hz BW); 3rd order IP: +31 dBm. Additional features include nine six-pole front-end bandpass filters to further prevent overload of the A/D converter; selectable 10, 20, or 30 dB three-step attenuator; and switchable ultra-low noise pre-

amplifier. Perseus control software and HF-Span software included; software upgradeable as new features are added.

For more information on the Perseus SDR (which sells for \$1299.95), see the product info on Microtelecom's website at www.microtelecom.it/perseus/index.html; SSB's English language website at www.ssb-electronic.com; SSB-Electronic USA's at www.ssbusa.com/ham.html; and Universal Radio's at www.universal-radio.com/catalog/commrxvr.html. You can also write to SSB-Electronic USA at 124 Cherrywood Drive, Mountaintop, PA 18707, or call them at 570-868-5643.

Two New Products From bhi Ltd.

The bhi CAT-MATE is an electronic "Y" splitter that enables more than one accessory to be used via the CAT port on Yaesu FT-817, FT-857, and FT-897 radios. Primarily designed to be used with the bhi Radio Mate compact keypad (see below), it can also be used as a standalone product.

The CAT-MATE can receive commands from either of its two CAT input ports and connect to a single Yaesu radio. The

Two new offerings from UK DSP noise cancellation specialist bhi Ltd. are the CAT-MATE (top), an electronic "Y" splitter for Yaesu FT-817, FT-857, and FT-897 radios, and the Radio Mate (bottom), a compact remote keypad for easy common function control of the same Yaesu series.



appropriate reply from the radio will then be directed to the port from which the command was issued. For greater flexibility the CAT-MATE has a built-in RS-232 (PC)-to-CAT interface that allows operation with PC control software programs, such as the FT-817 Commander, Ham Radio Deluxe, and FTBCAT. The RS-232 interface has an integrated Null Modem so that a special Null Modem cable is *not* required (just a standard nine-way D-type serial cable is needed), and a USB-to-serial adapter can be also used. The unit operates from power provided by the radio set and distributes this to the other two CAT ports.

The bhi Radio Mate for the Yaesu FT-817, FT-857, and FT-897 is a robust, compact remote keypad that enables many of the common functions of these radios to be used more easily. Portable, mobile, and handicapped operators will appreciate the added ease provided by the keypad's fast and effective shortcuts, including: easy band change; direct modulation mode selection; one-touch memory function (20 memory locations for frequency and mode; press to recall, press and hold to store); simple and intelligent direct frequency input; swap VFO A/B, VFO A=B, and split VFO selection; and tune function enabling up to a 10 second carrier for tuning an antenna tuner. The Radio Mate requires no external power, and connects to the DIN-8 ACC socket/CAT interface of the radios.

For more information on the CAT-MATE (\$79.95) and Radio Mate (\$199.95), contact U.S. distributor W4RT Electronics (www.w4rt.com).

Cygnett Groove Safari FM Transmitter/Charger For iPods

The Cygnett Groove Safari is a small FM transmitter and charger for your iPod. It lets you broadcast your favorite MP3s wirelessly from your iPod to any FM car/home stereo. Simple touch-sensitive keys let you easily navigate through channels. It recalls the last FM frequency used so you don't have to readjust settings. It offers superior sound quality, operates on a wide range of FM channels (87.6 MHz to 107.9 MHz), and is pocket-size, lightweight, and wireless for portable use. It requires no batteries and switches off automatically after 60 seconds when no signal is received.

For more information on the Cygnett Groove Safari, which is available for



The Cygnett Groove Safari is a small FM transmitter and charger that lets you broadcast MP3s wirelessly from an iPod to any FM car/home stereo.

around \$50, visit www.cygnett.com/products/fm_transmitters/g_safari.html.

MFJ Dual-Channel Speech Intelligibility Enhancer

The new MFJ-618 Speech Intelligibility Enhancer provides electronically enhanced audio for an improved listening experience. It offers the same the speech-enhancing features as the MFJ-616 but gives you separately adjustable frequency channels for your left and right ears. Designed to drive two identical high-quality speakers installed three or more feet apart, this configuration improves intelligibility, enhances frequency response, and dramatically increases spatial presence, which can greatly improve speech intelligibility by up to an additional 3 dB. The dual-channel MFJ-618 lets you compensate for deficiencies in your hearing, which may be dramatically different for each ear. By equalizing the frequency response of both ears, you vastly improve speech intelligibility.

The MFJ-618, which sells for \$219.95 and measures 3 x 10 x 6 inches (HWD), accepts 12 VDC or 110 VAC with the MFJ-1316 (\$21.95). To order, get a free catalog, or for your nearest dealer, contact MFJ Enterprises, 300 Industrial Park Road, Starkville, MS 39759; Phone: 800-647-1800; Web: www.mfjenterprises.com.



The MFJ-618 Speech Intelligibility Enhancer offers electronically enhanced audio through separately adjustable frequency channels for an improved listening experience.

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For Scanning, California Is The Place You Oughta Be

This month, by request, we feature California in our ongoing look at state police agencies. California, like many states with large areas to cover, uses a highway patrol as its state agency. Of course, the California Highway Patrol is a bit more famous—infamous?—than most because of the *CHiPs* series some years back. But that's television's version.

California's Highway Patrol was officially formed in 1929 about the time the automobile was getting popular enough to become a problem. The logo on the door of police cruisers that I've been able to find says 1948, and I haven't been able to find out why as of yet. If anyone knows that story, I'd be interested in hearing it!

The Highway Patrol is one of about 300 law enforcement agencies in the state, so California could become its own monthly column here in *Pop'Comm* just to keep track of them! According to RadioReference.com (great site) there are about

50 trunked systems in operation in just Los Angeles County, not to mention the state.

CHP has about 6,800 officers making it one of the largest in the country. It fulfills the traditional highway patrol duties of patrolling interstates and state highways, as well as more state police functions, like capitol security.

Since 9/11, CHP is also charged with security for sites that have been designated as likely terrorist targets, such as the bay bridge in San Francisco.

If you're interested in the history of the radio operations of the CHP, I'd highly recommend the site at www.mbay.net/~



California's 8 Highway Patrol divisions. (Map courtesy California Highway Patrol website. chp.ca.gov)



The door logo seems to show 1948 as the date of establishment, but all the other information indicates 1929. Can you shed some light on this? (Photo via Flickr/Jacob Botter)



The Los Angeles County Center, hub for the CHP in the LA area. (Photo courtesy CHP website)

Cal Trans

District 1 - Eureka

G-5 Humboldt	859.7375	146.2 PL
Mendocino/Lake	857.7125	123.0 PL
G-6 Mendocino/Lake	859.7375	156.7 PL
A-1 Mendocino/Lake	856.9875	110.9 PL
G-5 Eureka/Mendo/Lake	859.7375	146.2 PL
B-3 North Mendocino (Xband link)	860.7375	131.8 PL
B-4 Boonville	860.7375	136.5 PL
C-4 Ukiah/Willits	857.7375	136.5 PL
H-2 Ukiah	858.7375	123.0 PL
Q-1 Mendocino Coast (Xband link)	859.7625	110.9 PL
R-3 Lake County	860.7625	131.8 PL
C-6 Lakeport/Middletown	857.7375	156.7 PL
D-6 Lakeport Portable Repeater	856.7375	156.7 PL
Red Mtn. (East of Klamath)	856.7375	
Tompkins Hill (north of Fortuna)	856.7375	
Bottle Rock Power Plant (SW of Clearlake)	856.7375	
Eureka at District Office	856.7625	110.9 PL
Shelton Butte (north of Weitchpec)	856.7625	
Ukonom Mtn. (north of Somes Bar)	856.7625	
Milepost 18 SR 299	856.7625	
Pratt Mtn. (east of Gaberyville)	857.7375	
Horse Mtn. (SW of Willow Creek)	857.7375	
Hilton Road off U.S. 101 (Orick)	857.7375	
Cobb Mtn. (SW of Clearlake)	857.7375	156.7 PL
Camp Six Radio Site (SE of Gasquet)	857.7375	
18071 U.S. 199 (near OR border)	857.7375	
Milepost 30 U.S. 199	857.7375	
Tracy Radio Site (SE of Hiouchi)	857.7375	
Collier Tunnel Rest Stop	857.7625	
Milepost 26 U.S. 199	857.7625	
Crescent City Caltrans Maintenance Station	857.7625	
Hytree Radio Site (SE of Fort Dick)	857.7625	
Mathison Peak (east of Little River)	857.9875	
Milepost 30 U.S. 101 (Cal-Barrel Road at 101)	857.9875	
Crescent City Airport	857.9875	
Bald Hills (12 miles north of Hoopa)	858.7325	
Orleans Caltrans Maintenance Station	858.7325	131.8 PL
Milepost 113 U.S. 101 (Big Lagoon north of Public Works)	858.7375	
Rest Area east of Blue Lake on SR 299	858.7375	
90 West Lake north of Ukiah	858.9875	110.9 PL
Horse Flat Caltrans Maintenance Station	858.9875	
Milepost 23 U.S. 199	858.9875	
Milepost 11 U.S. 199	858.9875	
Crescent City Caltrans Maintenance Station	859.7375	
Red Mtn. (East of Klamath)	860.7375	
Mt. Pierce (west of Shively)	860.7375	
Somes Bar (hill NE of Ranger Station)	860.7625	

District 2 - Redding

I-5 at O'Brien	856.7375	
Tree Heaven Camp (SR 96 5 miles west of I-5)	856.7375	
Hoadley Peak (SE of Lewiston)	856.7625	
Antelope Mtn. (SW of Grenada, CA)	856.7625	
Gibson Road at I-5 (north of Gibson)	856.9875	
Flume Creek at I-5 (south of Castella)	856.9875	
Hatchet Mtn. (west of Burney)	856.9875	
Tuscan Butte (SE of Redding)	856.9875	
Surprise Valley Radio Site (east of Lake City, CA)	856.9875	
Shaffer Mtn. (NE of Susanville)	856.9875	
Beckwourth Peak (SE of Portola)	857.7375	
Sugarloaf Mtn. (NW of Lakehead)	857.7375	
Barnes Grade (NW of Alturas)	857.7375	

Beckwourth Peak (SE of Portola)	857.7375	
Denny Point (SE of Etna)	857.7625	
Round Mtn. (northwest of the town of Round Mtn.)	857.7625	
Black Mtn. (SW of Lake Almanor)	857.7625	
Haymaker Mountain (south of Keno, Oregon)	857.7625	
Rocky Gulch (SW of Hornbrook)	857.7625	
Haymaker Mountain	857.9875	
Antelope Peak. (NE of Susanville)	857.9875	
Slater Butte (north of Happy Camp)	857.9875	
Tuscan Butte (SE of Redding) (shared with D3)	858.7375	
Red Hill (north of Rich Bar)	858.7375	
Soda Ridge (NE of Dunsmuir)	858.7625	
Radio Hill (Quincy)	858.7625	
Platina (Mtn. Street at SR 36 in Platina)	858.7625	
Sheepy Ridge (near Oregon border NW of Tulelake, CA)	858.9875	
Likely Mtn. (SW of Likely)	858.9875	
Antelope Mtn. (SW of Grenada, CA)	859.7375	
South Fork Mtn. Lookout (north of Whiskeytown Lake)	859.7375	
Sugarloaf Mtn. (NW of Lakehead)	859.7625	
Mt. Hough (NE of Quincy)	859.7625	
Bass Mtn. Marker (I-5 just south of Shasta Lake Bridge)	859.7625	
Dyer Mtn. (east of Lake Almanor)	859.9875	
South Fork Mtn. Lookout (north of Whiskeytown Lake)	859.9875	
Shasta Bally Mtn. (west of Whiskeytown Lake)	859.9875	
Butcher Hill (SE side of Yreka)	860.7375	
Roop Mtn. (NW of Susanville)	860.7375	
Hayfork (Mtn. Street at Morgan Hill Road in Hayfork)	860.7625	
Red Hill (north of Rich Bar)	860.7625	
Soda Ridge (NE of Dunsmuir)	860.9875	
Antelope Peak (NE of Susanville)	860.9875	
Big Valley Mtn. (SW of Nubieber)	860.9875	
Gunsight Peak (west of Yreka)	860.9875	
Vina (CDF Helitack Base on SR 99 east of Corning)	860.9875	

District 3 - Marysville

Bloomer Hill (west of Berry Creek)	859.9875	123.0 PL
Platte Mtn. (north of Forest Ranch)	860.7375	131.8 PL
Colby Mtn. (north of Butte Meadows)	858.9875	156.7 PL
Bald Mtn. (NE of Brooks)	858.7375	110.9 PL
1416 Ninth Street, Sacramento	856.9875	146.2 PL
U.S. Highway 50 West (Pine Hill)	859.9875	136.5 PL
U.S. Highway 50 East (Union Hill)	858.7375	131.8 PL
U.S. Highway 50 Kyburz (Alder Hill)	858.9875	123.0 PL
Scout Peak (SW of Meyers)	860.7375	146.2 PL
Interstate 80 Auburn (Pilot Hill)	859.7375	123.0 PL
Interstate 80 (Banner Mtn)	860.7375	136.5 PL
Interstate 80 Baxter (Drum Forebay)	859.7375	136.5 PL
Interstate 80 Whitmore (Cisco Butte)	858.7375	136.5 PL
Donner Beacon (west of Donner Lake)	859.9875	110.9 PL
Ski Tow (south of Truckee)	859.7375	136.5 PL
Peavine Ridge (NW of Reno, NV)	856.9875	146.2 PL
Mt. Pluto (north of Tahoe City)	858.9875	146.2 PL
Snow Valley Peak (west of Carson City)	859.7375	131.8 PL
Nulaid Ranch (NW of Grass Valley)	859.7375	110.9 PL
Cal-Ida Peak (NE of Camptonville)	859.9875	156.7 PL
Galloway Ridge (south of Downieville)	856.7375	156.7 PL
Hilda Peak (SE of Sierra City)	858.7375	156.7 PL
Yuba Pass (NW of Sierraville)	859.7375	110.9 PL
Beckwourth Peak (SE of Portola)	858.9875	110.9 PL
Tuscan Butte (SE of Cottonwood)	858.7375	146.2 PL

Pulga Station (Pulga)	858.7375	123.0 PL
Interstate 5 Willows Mountain St. John	858.9875	131.8 PL
Downieville Caltrans Maint. Station	856.7375	
Hwys 20, 49, 174 - Nevada City (Banner Mtn)	857.7625	110.9 PL
10152 Keiser, Truckee	859.9875	
10152 Keiser, Truckee	859.7375	
Mt. Danaher (NE of Camino)	859.9875	
Mt. Danaher (NE of Camino)	858.7375	
Mt. Danaher (NE of Camino)	858.9875	
7445 Ice House Road, Pacific House	856.7375	
Echo Summit (SW of Meyers)	859.9875	
Echo Summit (SW of Meyers)	858.7375	
Echo Summit (SW of Meyers)	858.9875	

District 4 - Oakland

English Hill (SW of Sebastopol)	857.7375	131.8 PL
Mt. Saint Helena (NW of Calistoga)	856.9875	131.8 PL
Atlas Peak (NE of Yountville)	860.9875	123.0 PL
Sonoma Mtn. (east of Rohnert Park)	860.7375	123.0 PL
Mt. Tamalpais (NW of Mill Valley)	859.7375	136.5 PL
San Bruno Mtn. (SE of Daly City)	857.7375	123.0 PL
Vollmer Peak (east of Berkeley)	860.7375	123.0 PL
North Peak (west of Hillsborough)	856.7625	110.9 PL
Mt. Diablo (NE of Danville)	856.9875	110.9 PL
Pigeon Pt. (south of Pescadero)	858.7625	110.9 PL
La Honda (east of La Honda)	858.7375	110.9 PL
Loma Prieta (west of Morgan Hill)	856.9875	123.0 PL
Pacheco Peak (south of Pacheco Pass)	858.7375	110.9 PL
Mt. Diablo (NE of Danville)	860.7625	110.9 PL
Sunol Ridge (east of Union City)	860.7375	131.8 PL
Barnabe Mtn. (SE of Olema)	856.7375	131.8 PL
Seaview Ridge (SE of Fort Ross)	858.9875	110.9 PL
McCray Ridge (SW of Healdsburg)	860.7375	110.9 PL
Mt. Saint Helena (NW of Calistoga)	859.7375	131.8 PL
Kregor Peak (east of Clayton)	858.9875	146.2 PL
SR 24 at Fish Ranch Road (Caldecott Tunnel)	858.7375	
Mt. Allison (SE of Fremont)	860.9875	110.9 PL
Pise Mtn. (east of Half Moon Bay)	858.7375	123.0 PL
Loma Prieta (west of Morgan Hill)	859.7375	123.0 PL
Mt. Madonna (west of Gilroy)	860.7375	136.5 PL
Mt Saint Helena	856.9875	131.8 PL
Inverness (Point Reyes Lighthouse)	857.2625	110.9 PL
Mt Vaca	857.7375	110.9 PL
Loma Prieta Pk	859.7375	123.0 PL
Construction (Mt Vaca)	859.7375	146.2 PL

District 5 - San Luis Obispo

Eagle Rock (SE of Big Basin State Park HQ)	860.7375	
Ben Lomond Mtn. (NW of Boulder Creek)	859.7625	
Fremont Peak (NE of Salinas)	860.7625	
Cal Mtn. (NE of Pinnacles National Monument)	857.7625	
Eastside Radio Site (unnamed peak east of Chualar)	857.7375	
Mt. Toro (SW of Chualar)	856.7625	
Palo Escrito Peak (west of Soledad)	860.7375	
Pfeiffer Ridge	856.7625	
Little River Hill (NE of Point Sur)	858.9875	
2 Broadway Circle, King City	859.7375	
Calandra Lookout (Williams Hill) (east of Lockwood)	858.9875	
Point Piedras Blancas (NW of San Simeon)	860.7375	
Green Valley (along SR 46, 8-10 miles east of Cambria)	858.9875	
Mt. Lowe (NE of San Luis Obispo)	860.7375	
San Luis Obispo (at D5 District Office)	857.7625	

Plowshare Peak (NE of Santa Maria) (SR 166 Coverage)	859.7625
Mt. Solomon (south of Santa Maria)	860.9875
Santa Ynez Peak (NW of Goleta)	858.9875
Northbound Gaviota Rest Stop (north of Gaviota)	856.9875
Santa Barbara (3999 State Street)	857.7375

District 6 - Fresno

Breckenridge Mtn. (SW of Havilah)	856.9875
Oak Flat (NE of Bakersfield)	857.7375
Pelato Peak (south of Maricopa)	856.9875
Elk Hills (NE of Taft)	857.9875
Shirley Peak (west of Lake Isabella)	857.9875
Blue Ridge (east of Visalia)	857.7375
Joaquin Ridge (NW of Coalinga)	857.9875
Converse Mtn. (north of Pinehurst)	857.7375
Big Creek Maint. (near Huntington Lake)	856.7625
Musick Mtn. (north of Shaver Lake)	857.9875
Deadwood Peak (SW of Oakhurst)	857.7375
Meadow Lakes (NE of Prather)	856.9875
Deadwood Peak (SW of Oakhurst)	859.7375
Big Creek Maint. Station (south of Huntington Lake)	857.7625
Musick Mtn. (north of Shaver Lake)	856.7625
Black Mtn. (SE of Prather)	857.7625
Milepost 2.8 on SR 198 (west of Coalinga)	859.9875
Milepost 18.9 on SR 198 (SW of Coalinga)	859.9875
Smith Mtn. Lookout (SW of Coalinga on Fresno Co. line)	856.7625
Waterhole (rest area 6 miles north of Lebec)	859.9875

District 7 - Los Angeles

Sierra Peak (west of Corona)	856.9875	123.0 PL
Rolling Hills (Palos Verdes Peninsula)	866.0375	123.0 PL
Johnstone Peak (north of San Dimas)	860.9875	123.0 PL
Mt. Lukens (NE of Tujunga)	868.0375	110.9 PL
Los Pinetos Electronic Site (north of Sylmar)	860.9875	110.9 PL
South Mtn. (SE of Santa Paula)	857.9875	110.9 PL
Castro Peak (south of Westlake Village)	867.0375	110.9 PL
Red Mtn. (south of Lake Casitas)	859.9875	110.9 PL
Sisar Peak (NE of Ojai)	860.7375	110.9 PL
Hauser (NW of Acton)	857.7375	123.0 PL
Tejon Peak (NE of Gorman)	858.7375	110.9 PL
Waterhole (rest area 6 M north of Lebec)	858.9875	110.9 PL
Oat Mtn.(north of Chatsworth)	856.9875	131.8 PL
Geary Hill (SE of Point Magu)	860.9875	123.0 PL
Los Pinetos Electronic Site / Construction	859.7375	110.9 PL
Johnstone Peak (north of San Dimas)	859.7375	110.9 PL
D7 Office Complex (320 West 4th, L.A.)	856.9875	
Car to Car	856.9875	110.9 PL
Mt Lukens	858.9875	110.9 PL
Sunset 1	853.9125	203.5 PL
Sunset 2	853.9125	82.5 PL

District 8 - San Bernardino

Box Springs	866.0375	156.7 PL
Banning Caltrans Station (east of Banning)	859.7375	123.0 PL
Cactus Springs	868.0375	123.0 PL
Chuckwalla Peak	867.0375	136.5 PL
Blythe	860.7375	110.9 PL
Murrieta (Pabesu Road)	859.7375	146.2 PL
Frost Peak	868.0375	123.0 PL
Strawberry Peak	867.0375	136.5 PL
Keller Peak	868.0375	136.5 PL
Big Bear Sheriff's Station	856.9875	110.9 PL

Bear Mtn. (SE of Big Bear)	859.7375	131.8 PL	Mt. Oso Construction	859.7375	131.8 PL
Onyx Peak (SE of Big Bear)	867.0375	131.8 PL	Coronado Ave (Removed?)	858.9875	136.5 PL
Yucca Valley Hill	866.0375	131.8 PL	Mt. Bullion1	857.7625	123.0 PL
Donnell Hill	856.9875	131.8 PL	Mt. Bullion2	859.9875	146.2 PL
East Iron Mtn. (west of Vidal Junction)	858.9875	123.0 PL	Elizabeth	859.9875	131.8 PL
Vidal Junction (SR 62/U.S. 95 Junction)	859.7375	131.8 PL	Double Dome	859.9875	136.5 PL
Sacramento Mtn.	866.0375	110.9 PL	Hawkins Peak	860.7375	146.2 PL
Cajon Pass	866.0375	110.9 PL	Woodfords	857.7625	110.9 PL
Quartzite Mtn.	860.9875	146.2 PL	Topaz	856.9875	110.9 PL
Flash II	867.0375	123.0 PL	Liberty Hill	860.7625	131.8 PL
Rodman Mtn. (SE of Newberry Springs)	858.9875	136.5 PL	Calaveras Big Trees	856.7625	110.9 PL
East Bristol	860.9875	136.5 PL	Pine Hill	859.9875	136.5 PL
Goffs Butte	868.0375	131.8 PL	Scout Peak	860.7375	146.2 PL
Spirit Mtn.	858.9875	110.9 PL	Placerville	858.7375	131.8 PL
Turquoise Mtn.	866.0375	131.8 PL	Kyburz	858.9875	123.0 PL
Clark Mtn.	860.9875	131.8 PL	Joaquin Ridge	857.9875	110.9 PL
Flash II (north of Barstow)	857.7375		Emergency Roadside	859.7375	110.9 PL
Flash II (north of Barstow)	860.9875	146.2 PL	Ione Mtce Station	858.7625	110.9 PL
Flash II (north of Barstow)	858.9875		West Point	859.7625	110.9 PL
Onyx Peak (SE of Big Bear)	860.9875				
Onyx Peak (SE of Big Bear)	858.9875				
Black Peak (SE of Parker, AZ)	859.7375		<i>District 11 - San Diego</i>		
Temecula (roadside I-15 south of Temecula)	859.225		Metro	868.0375	
Santa Rosa Peak (west of Mecca)	859.225		Escondido	868.0375	
Car to Car	856.9875	110.9 PL	El Cajon	868.0375	
			El Centro	868.0375	
<i>District 9 - Bishop</i>			<i>District 12 - Orange</i>		
Crestview Electronic Site (SE of June Lake)	860.7375		Sierra Peak	856.9875	123.0 PL
Conway Summit - Maintenance (north of Lee Vining)	860.9875		Car to Car	856.9875	110.9 PL
Conway Summit - Construction	859.7375				
Sweetwater Elect. Site (NW of Bridgeport)	860.7375		<i>Statewide:</i>		
Leviathan Pk. - District 10 (west of Topaz Lake)	860.9875		Statewide	856.9875	
Breckenridge Mtn. - Dist 6 (SW of Havilah)	856.9875		Maintenance/Operations	860.7375	
Oak Peak	860.9875		Maintenance/Operations	857.7375	
Government Peak (south of Ridgecrest)	860.7375		Maintenance/Operations	856.7375	
Inyo/Kern Maintenance - Government Peak	860.7375		Maintenance/Operations	860.9875	
Inyo/Kern Construction - Government Peak	859.7375		Maintenance/Operations	859.9875	
Bear Peak (NW of Walker Pass)	860.9875		Statewide (Construction)	859.7375	
Cottonwood Elect. Site	860.7375		Maintenance/Operations	858.7375	
Turquoise Mtn. - District 8	866.0375		Maintenance/Operations	858.9875	
Tecopa Peak (SE of Tecopa)	856.9875		Maintenance/Operations	857.9875	
Death Valley Construction - Rogers Peak	859.7375		South	866.0375	
Death Valley Junction	868.0375		South	867.0375	
Furnace Creek - Rogers Peak	860.9875		South	868.0375	
Stovepipe Wells (Death Valley)	867.0375		North	856.7625	
Panamint Springs	866.0375		North	857.7625	
Car to Car Direct	856.9875		North	858.7625	
Bishop Maintenance - Silver Peak	860.9875		North	859.7625	
Bishop Construction - Silver Peak	859.7375		North	860.7625	
Queen Bee Hill (SE of Bodie State Park)	856.9875		Border Area	856.1	
Oak Peak (SE of Tehachapi)	860.7375		Border Area	857.1	
			Border Area	858.1	
			Border Area	859.1	
			Border Area	860.1	
			Border Area	855.225	
			Maintenance/Operations	857.2625	
<i>District 10 - Stockton</i>			Channel 1	47.02	
Stockton Maintenance (Mt. Oso)	860.7375	156.7 PL	Channel 2	47.04	
Mt. Zion	856.7375	110.9 PL	Channel 3	47.06	
HWY 152 (Basalt Hill)	860.7375	123.0 PL	Channel 4	47.08	
Mt. Bullion (NW of Mariposa)	857.7625	123.0 PL	Channel 5	47.1	
Fowler Peak (SW Angels Camp)	857.7625	136.5 PL	Channel 6	47.12	
Telegraph Hill (east of Columbia)	860.9875	123.0 PL	Channel 7	47.16	
Peddler Hill Maint. Station (on SR 88)	857.7625	146.2 PL	Channel 8	47.18	
Caples Lake Maint. Sta. (NE of Kirkwood)	860.7375	156.7 PL	Channel 9	47.2	
Cabbage Patch (SW of Ebetts Pass)	858.9875	131.8 PL	Channel 10	47.24	
Leviathan Pk. (west of Topaz Lake)	860.9875	110.9 PL			
Woodfords Maint. Station	857.7625	146.2 PL			
CDF Station, San Andreas	857.7375	136.5 PL			

wb6nvh/Motadata.htm. It's divided into three sections and details the early radio equipment used by the patrol (and probably most other agencies) from 1938 to 1946. There's a post-World War II page that details the shift from AM to FM and VHF, and then a modern era page starting with about 1963. Unfortunately, that page has way too many radios on it that I recognize.

Radio Information

Of course, what's useful today is a current list of frequencies and there are tons at RadioReference.com, which was our extensive source for this month's information.

The Highway Patrol is still on low band like many statewide agencies, but a transition is in progress according to other information. It appears that a 700 MHz trunked system is being built for the CHP, but it's unknown exactly when it will be in widespread use, or if other agencies will be joining in on it as has been the case in many other statewide radio systems across the country.

If you live in or are visiting the area, check out the frequencies we've provided this month. Let us know what you hear.

Until next month, good listening! ■

Frequency Of The Month

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

Our most recent winner is **Robert Dickfoss of Anchorage, Alaska**. His entry was for 42.00, but he heard nothing on that frequency.

Our frequency this month will be **42.44** in honor of the CHP. Have a listen and see what you can catch. Let me know what you hear and we'll enter you in the drawing. Please put the frequency in the subject line of your email or on the envelope for correct routing.

Send to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126, or by email to radioken@earthlink.net.

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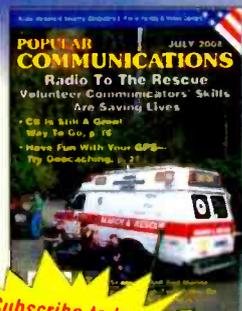
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News From Equatorial Guinea, WRNO, And Points South (Round Two...)

The Editor's Investigative Commission on Missing Content has handed down its judgment in the matter of the disappearing August "GIG" column, declaring it a case of "Pilot Error." Accused columnist Gerry Dexter readily admitted he was at fault, explaining that his weakened one-handed keyboarding ability, thanks to a broken wrist, had caused a wrong key combination to be struck which deleted all column text as well as log sections A and B. The EICMC issued no penalties other than the several hours required to rebuild the missing column while forced to listen to two hours of Brother Stair—wearing headphones (me, not B.S.).

Well, I guess it could have been worse. I confess that I don't know what went wrong; when I called the column up to continue work on it, it wasn't there! So now I have to try and recall what it was that I was going on about.

I remember that Equatorial Guinea demanded pride of place since Radio Africa/Radio East Africa from Bata has reappeared on 15190, still being brokered by Pan American Broadcasting and still carrying one gullible preacher after another, believing the PAB sales pitch that buying time on its facility means reaching millions of real live listeners. I don't have the schedule but it appears to be operating from around 1900 until 2300. Radio East Africa is essentially the same thing, renamed for the weekends. But the EQ news doesn't stop there: Radio Nacional-Bata has also resumed its transmissions on 5005. It goes on the air at 0500 and, during shorter daylight, can sometimes be pulled in around 2200. Programming is in Spanish. (To which I can only add "Bata Bing!")

What was left of WRNO got heavily messed with by Hurricane Katrina in 2005. The station has been "on its way back" ever since and now is claiming to have reached the land of "any day now." So, if you believe in leprechauns, trolls, or the tooth fairy, keep a check on 7505 and 15590 for tests. Those frequencies were vacated by the late KTBN-Salt Lake, which gave up on shortwave at the end of March.

That unidentified Costa Rica station continues to air tests on 5954 for about an hour each day, beginning at around 2230, or sometimes an hour or more earlier. No new clues on this mystery have turned up yet.

Throughout all the turmoil shortwave has experienced over the past few years, the Brazilians have remained fairly stable. Now there's word that old-timer Radio Clube Paranaense in Curitiba has ended its shortwave broadcasts. They were/are using 6045, 9725, and 11925. I say "are" because there have been one or two reports of them after the word about a close-down became known.

Reader Logs

Remember, your shortwave broadcast station logs are always very welcome. But please be sure to double or triple space between the items, list your logs separately according to the sta-



Here's Richard Parker at his shack in Pennsburg, Pennsylvania. Rich hears all kinds of Latins that don't show up for most of us. I wonder if the beer helps?

tion's home country, and include your last name and state abbreviation after each. Also much wanted are spare QSLs or good color copies you don't need returned, station schedules, brochures, pennants, station photos, and anything else you think would be of interest to your fellow SWLs.

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

ALASKA—KNLS, Anchor Point, 9780 in GG at 0310. (MacKenzie, CA) 11765 in Mandarin at 0810. (Patterson, Philippines)

ALBANIA—Radio Tirana, 6010 with letters at 0345 and 7345 at 0330 sign on. (Maxant, WV)

ALGERIA—RT Algerienne, 11815 via England at 1937 with Koran. (Brossell, WI)

ANGOLA—Radio Nacional, Mulenvos, 4950 heard at 0242 in PP with EE vocals. Full ID at 0300 f/by some Afro-pop. (Wood, TN) 0347 with EZL pop vocals, W with PP ID and news to 0415. (D'Angelo, PA) 0350 with deep-voiced M anncr, time pips, anmts and highlife. (Parker, PA)

ANGUILLA—Caribbean Beacon/University Network, 6090 at 0340 with Milissa Scott preaching. (Maxant, WV)

ARGENTINA—Radio Nacional/RAE, 11710.7 with PP service at 0055, IS and ID at 0059 leading to Top of the Hour. (Strawman, IA) 15345 at 2147 in SS with talk and some vocals. QRM from co-channel Morocco. (MacKenzie, CA) 11710 in SS at 1235 and 15345 in SS at 1809. (Charlton, ON)

ASCENSION IS—BBC South Atlantic Relay, 7160 at 0353 on power sharing in Algeria. (MacKenzie, CA) 17830 with headlines at 1713. (Ronda, OK)

AUSTRALIA—Radio Australia, 6020-Shepparton, at 1005 in Tok Pisin and 17715 to the Pacific at 0150-0158 close. (Parker, PA) 9580-Shepparton on Australian health care at 1339. (Charlton, ON) 9785-

Help Wanted

The "Global Information Guide" consistently presents more shortwave broadcast loggings than any other monthly SW publication! (A full 540 shortwave broadcast loggings were processed this month!*) Why not join your fellow SWLs, let us know what you're hearing, and also become eligible for our monthly shortwave book prize! Send your logs to Gerry Dexter, "Global Information Guide," 213 Forest St., Lake Geneva, WI 53147. Or e-mail them to gdex@genevaonline.com (please see the column text for basic formatting tips.) Come join the party—we look forward to hearing from you!

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

Darwin at 2326 with EZL vocals, IDs in II and EE at 2330. (Ronda, OK) 2335. (Patterson, Philippines) 13630-Shepparton at 2250, //11660, 12080-Brandon, 15515 and 17785. (MacKenzie, CA) 15240 on stage plays at 0120. (Maxant, WV)

ABC Northern Territories Service 2325, Tennant Creek, at 1141 with an apparent sporting event. (Strawman, IA) 2485, Katherine, at 0900 with interviews and pops. (Patterson, Philippines)

HCB-Australia, 15540-Kununurra, with religious pgm at 1345. (Charlton, ON)

A Guide To "GIG-Speak"

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

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

CVC, 15515-Darwin, with "The Edge" monitored at 0710. (Ng, Malaysia)

AUSTRIA—Radio Austria Intl, 13615 via Sackville at 1605. (Charlton, ON) 13775 via Canada at 1510 with "Austria Today." (Maxant WV) 17715 at 1245 with "Report From Austria." (Ng, Malaysia)

BOLIVIA—Radio San Miguel, Riberalta, 4699v at 1032 with time check 2 minutes off (1030). Seems an earlier sign on than most 60-meter Bolivians. (Wilkner FL)

Radio Eco. Reyes. 4409.7 at 0049 poor with UTE QRM. Best in Isb. (Wilkner, FL)

Radio Mosoj Chaski, Cochabamba, 3309.9 at 1020. (Wilkner FL) 0220 with W talk and into QQ at 0228. (Ronda, OK)

Radio Tacana. Tumupasa. 4781.5 heard at 1025 with M/W talk and music. (Wilkner, FL)

Radio Loyola, Sucre. 5996.3 in SS at 1000. (Wilkner, FL)

Radio Yura, Yura, 4716v at 0135 in SS with ballads and some CP music. (Alexander, PA) 1012 with sudden sign on with Andean flute. (Wilkner, FL)

Radio Pio Doce, Llalagua Siglo XX, 5952v at 0220 to 0232 close with local music, SS talk, and "Radio Kwai" signature tune. (Alexander, PA) 1105 in SS. (Wilkner, FL)

BOINAIRE—Radio Nederland Relay, 6165 heard at 0008. (Charlton, ON) 15315 in DD at 2140 and 17605 in DD at 2136. (MacKenzie, CA)

BOTSWANA—VOA Relay, Moepeng Hill, 4930 at 0303 with news. (Wood, TN) 0325 with news sound bites. (Parker, PA) 0330. (D'Angelo, PA) 1830. (Patterson, Philippines) 15580 with "Daybreak Africa" monitored at 0300. (Ng, Malaysia)

BRAZIL—(All in PP—gld) Radio Difusora Amazonas, Manaus, 4805 at 0256 with anners and echo effects. (Parker, PA)

Radio Alvorada, Londrina, 4865 at 0335 with talk by man. (Parker, PA)

Radio Aparecida, Aparecida, 9630 at 1957. (Charlton, ON)

Radio Anhanguera, Araguaina, 4905 with M and highlife music at 0555. (Parker, PA)

Radio Difusora, Macapa, 4915 at 0423 with mid-tempo romantic ballads, mentions of Macapa. (Wood, TN) 0505 with canned IDs, ranchero music and slow ballads. (Parker, PA)

Radio Difusora, Londrina, 4815 at 0245 with M anncr, slow music, classical guitar. (Parker, PA)

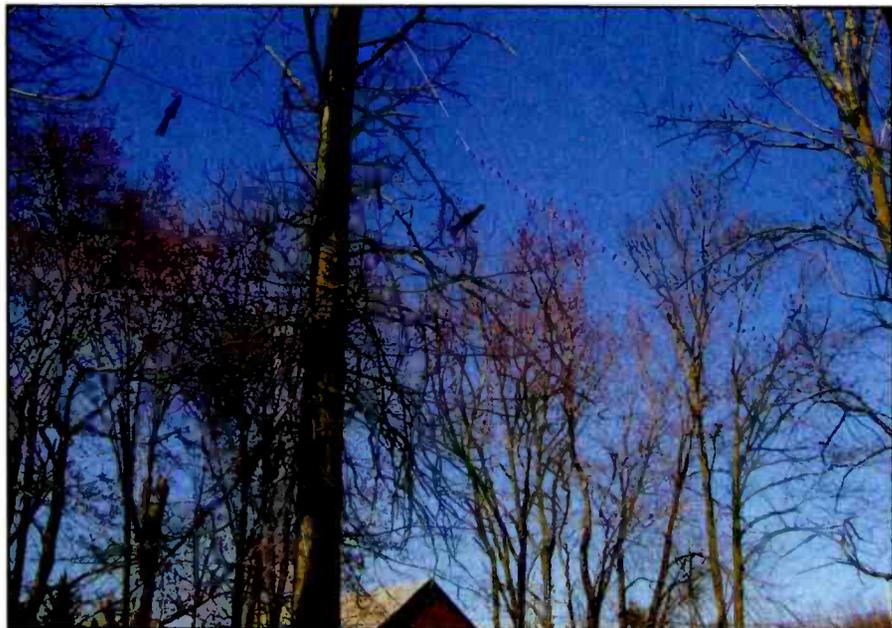
Radio Cultura Ondas Tropicais, Manaus, 4845.2 at 0147 with a possible live sports event, ID at 0200, cut in by another anncr, brief music and audio gone, but the carrier remained for another 5 minutes. (D'Angelo, PA)

Radio Clube do Para, Belem, 4895 at 0310 with M anncr and pops. (Parker, PA)

Radio Difusora do Amazonas, Manaus, 4805 at 0256 with two M anners and echo. (Parker, PA)

Radio Nacional Amazonia, 11780 at 0352 with Brazil-pops, M anncr and carrier cut at 0400. (D'Angelo, PA) 2346. (Charlton, ON)

BULGARIA—Radio Bulgaria, 9400 at 0011. (Charlton, ON) 11700 in RR at 1324.



Fancy antennas and feed lines run through the trees at Rich Parker's multi-acre location.

(Brossell, WI) 11800 in BB at 1935. (Patterson, Philippines)

BURKINA FASO—Radio Burkina, 5030 in FF with highlife music heard at 2235. (Brossell, WI)

CANADA—Radio Canada Intl, 9515 at 1645 on rich and influential Canadians. (Maxant, WV) 9610 in Bengali at 1534 and 15365 in FF at 1939. (Charlton, ON) 9690 in CC monitored at 0010. (Ng, Malaysia) 15445 in SS heard at 2225. (Patterson, Philippines)

CBC Northern Service, 9625 at 2125. (Maxant, WV) 1403. (Charlton, ON)

CHU, Ottawa, 7335 at 0335 with EE/FF time anmts. (Maxant, WV)

CHAD—RN Tchadienne, 4905 with FF talk heard at 0557. (Brossell, WI)

CHILE—CVC-La Voz, 11970 in SS with stuck record at 0120, corrected at 0128. (Barton, AZ) 15410 in SS at 1942 and 17680 in SS at 1836. (Charlton, ON)

CHINA—China Radio Intl, 7285 via Albania with "Easy FM" service from 2100–2200. (Alexander, PA) 9425 in CC at 2325, 9575 via Albania at 0335, 9665 via Brazil in SS at 0312, 9690 via Spain at 0308 and 9790 via Cuba at 0308. (MacKenzie, CA) 9570 via Albania at 0012, 13675 via Canada in CC at 1537, 13740 at 1541 and 13790-Urumqi at 1838. (Charlton, ON) 9440-Kunming in Khmer at 1235 and 11980-Kunming at 1306. (Strawman, IA) 13640-Jinhua in II at 2230. (Barton, AZ) 15540 via Chile at 1345. (Brossell, WI)

CPBS/China National Radio: PBS,

Xinjiang, 3990-Urumqi in listed Uighur service monitored at 1219. (Strawman, IA) 7150-Xi'an in CC at 1316. (Brossell, WI) 15500 at 0100 with ID for China Business Radio and into news in CC. (Ng, Malaysia)

Voice of Pujiang, Shanghai, 5075 in Mandarin at 1207 closing news, then possible ads and into talk. (Schiefelbein, MO) 9705 in CC at 1320. (Brossell, WI)

Voice of the Strait, Fuzhou, 4900 in listed Amoy heard at 1300. (Brossell, WI)

Firedrake music jammer, 6085 against Radio Taiwan at 1020. (Parker, PA) 7445 against Radio Taiwan at 1308. (Brossell, WI) 9335 against Radio Free Asia at 1810 and 11540 against RFA at 1848. //13625. (McKenzie, CA)

COLOMBIA—Marfil Estereo, Puerto Lleras, 5910 with SS pops at 0037. (Ronda, OK) 0220 with ballads. (Strawman, IA)

La Voz del Guaviare, SJ de Guaviare, 6035 at 0250 to 0300* with local music, SS anmts, NA at 0258. (Alexander, PA)

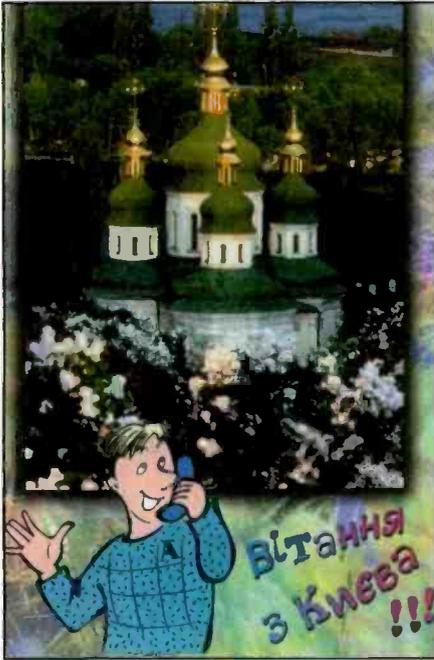
CROATIA—Croatian Radio/Voice of Croatia, 3985 at 0320 with light pops, ID 0330 and M with news in Croatian. Apparent SS news at 0340, //7285 via Germany. (D'Angelo, PA) 0353 in SS. (Strawman, IA) 6165 with 4-minute EE news at 0600, //9470 via Germany. (Alexander, PA) 11690 with ID at 0600 and into Croatian. (Ng, Malaysia)

CYPRUS—Cyprus Broadcasting Corp, 5930 (ex-6180) at 2215-2144 in Greek with a radio drama and Greek music. //7210 was mixing with CRI. (Alexander, PA)

In Times Past...

And now for some nostalgia. Here's a blast from the past.

CHILE—Radio Sociedad Nacional de Agricultura, Santiago, Chile, 12000 in SS at 0250 on 12/24/56 using 1 kW. (Dexter, IA)



Radio Ukraine International's QSL confirming its 7440 transmission for Rich D'Angelo, Pennsylvania.

CZECH REPUBLIC—Radio Prague, 6200-Litomyšl at 0115 to Central and North America with Czech financial news, ID, IS and off at 0127. (Parker, PA) 13580-Litomyšl at 1407. (Charlton, ON)

DJIBOUTI—Radio Djibouti, 4780 at 0300 with NA, opening anmts and into Koran. Then AA talk and HOA music at 0346. Radio Coatan was underneath until 0303. (Alexander, PA; D'Angelo, PA) 0325. (Parker, PA) 0350 in AA with HOA music. (Brossell, WI)

DOMINICAN REPUBLIC—Radio Cristal Intl/Radio Pueblo, Santo Domingo, 5009v, heard at 2345 with SS talk, anmts, promo, to 2359* (Alexander, PA) 2353-0002* with LA vocals and SS talk. Closed with call letters and ID. (D'Angelo, PA) 0000 varying sign off. (Wilkner, FL)

ECUADOR—HCJB, 3220 at 1000. (Wilkner, FL) 1027 in QQ with fast-paced music. Also 21455 in SS at 2055. (Parker, PA) 1055 with lively Andean music, anmts in QQ. (Ronda, OK) 9745 at 0315 in EE/SS and 9780 in GG at 0300. (MacKenzie, CA) 11960 in SS at 1407, 12020 in PP at 2305 and 15205 in PP at 1530. (Charlton, ON)

Radio Buen Pastor, Saraguro, 4815 in SS at 0258. (Parker, PA)

La Voz del Napo, Tena, 3279 in SS at 1025. (Wilkner, FL)

EGYPT—Radio Cairo/Egyptian Radio, 7279 at 0215. Very low modulation. (Maxant, WV) 9465-Zabaal at 2308. (Charlton, ON) 11785 with W and ME type music at 1620. (Barton, AZ) 15710-Abis in II monitored at 1255. (Patterson, Philippines)

ENGLAND—BBC, 6005 via South Africa with world news at 0305. Also 7430

via Tajikistan in listed Bengali at 1350. (Brossell, WI) 6005 at 0335. (Maxant, WV) 12080 via Australia at 2207. Listed for 10 kW. (Strawman, IA) 13865 monitored at 1848. (MacKenzie, CA)

Bible Voice Broadcasting, 15680 at 1400 with Gospel Crusade Ministry Program. (Ng, Malaysia)

EQUATORIAL GUINEA—Radio Africa, Bata, 15190 at 1900 improving to good strength by 2000. Various religious pgms, some quite distorted. Ran until past 2230. On a later date noted to 2250* (Alexander, PA) 1948 with various pgms, some special English-type pgms. Audible to past 2245. (Schiefelbein, MO)

Radio Nacional, Bata, 5005, 0517 to past 0600 with SS and vernacular talk. Afternoons noted to variable 2300 close. (Alexander, PA) 2234 with songs in SS. (Brossell, WI)

Radio Nacional, Malabo, 6250 noted as early as 2134 with local Afropops. Also at 0528 with light vocals, SS talk, local music and possible news at 0600. (Alexander, PA)

ERITREA—Voice of the Broad Masses (p) 7175.1 with Program 2 at *0400 abrupt sign on with talk in unid language. Usual IS at sign on wasn't used so maybe this is a jammer? (Alexander, PA)

ETHIOPIA—Radio Ethiopia (t), Gedja, 5989.9 at 0410 with local pops, Amharic talk, 7110 at 2045 to 2100* with NA, 9560.7 (t) with HOA music, no anmts. Perhaps a test? (Alexander, PA) 7110 at 0301 with presumed news. (Strawman, IA) 0401 with Amharic and HOA music. (Wood, TN)

Radio Fana, 6110 (p) at 0345 with HOA vocals, muffled audio. (Strawman, IA) 7209.9 at *0258 with opening ID and into HOA music. Amharic talk. (Alexander, PA)

Voice of the Tigray Revolution, 5980 heard at *0355 with IS, Amharic talk, occasional HOA music. Also 6170 at *0258 an hour earlier than usual. Amharic and HOA music. (Alexander, PA)

FRANCE—Radio France Intl, 7315 at 0410 anncing frequencies and into music. Also 15605 at 2008. (Maxant, WV) 7380 via Taiwan in listed VV at 1350 and 11705 at *1700 in FF. (Brossell, WI) 1843. (Charlton, ON) 11995-Issoudun in FF at 2005. (Patterson, Philippines) 13695 in FF at 1920 and 17620 in FF at 1913. (MacKenzie, CA)

FRENCH GUINA—RFI Relay, 17620 in FF at 2145. (MacKenzie, CA)

GABON—RTV Gabonaise/Radio Gabon, 4777 at *0458 with NA, opening anmts in FF, possible news at 0500. (Alexander, PA) 0550 in FF. (Brossell, WI) 0635 in FF. (Parker, PA)

Africa No. One, 9580 in FF at 2147 with M hosting highlife vocals, time pips at 2200 and news. (D'Angelo, PA) 2314. (MacKenzie, CA) 17630 in FF at 1513. (Charlton, ON)

GERMANY—Deutsche Welle, 5905 at 0435. (Maxant, WV) 9825 via Rwanda in GG at 0304, 11865 via Portugal in GG at 2208, 15205 via Rwanda at 2143, 15275 in GG at 1902 and 15420 in AA at 1915. (MacKenzie, CA) 9885 via Sri Lanka at 0030 and 15595 via

Sri Lanka at 0335. (Ng, Malaysia) 11690 via Wooferton in AA at 1842, 11725 via Rwanda in GG at 1844, 15275 via Rwanda in GG at 1910 and 15440 via Portugal in GG at 1943. (Charlton, ON) 11725 via Rwanda in GG at 1850. (Brossell, WI) 13790 via Portugal in AA at 1955. (Patterson, Philippines)

GREECE—Voice of Greece, 7475 in GG at 0315 and 9420 in GG/EE at 0205. (Maxant, WV) 15630-Avlis in GG at 1245. (Patterson, Philippines)

RS Makedonias, 7450 in Greek at 2250. (Brossell, WI)

GUAM—KTWR/Trans World Radio, 7485 in CC at 1310. (Brossell, WI) 11840 at 0815. (Patterson, Philippines)

KSDA/Adventist World Radio, 15320 with a mailbag pgm at 2245. (Barton, AZ)

GUATEMALA—Radio Buenas Nuevas, San Sebastian, 4799.9 at 0250 in SS with children's chorus, ID, marimbas. (Wilkner, FL) 0225 with SS anncr, pops, CODAR QRM. (Parker, PA) 0425 SS religious talk, closing anmts, 0432* (Alexander, PA)

Radio Verdad, Chiquimula, 4052.5 in SS at 0245 with M anncr, slow instrumentals. (Parker, PA)

GUINEA—RTV Guineenne, 7125 in FF at 1950. (Brossell, WI)

HAWAII—KWHR, 9930 with a sermon at 1650. (Brossell, WI) 17525 at 0207 with M and Christian rock/pop. (Parker, PA)

HONDURAS—Radio Misiones Intl, Tegucigalpa, 3340 at 0532 with EE sermon and SS translations. (Alexander, PA)

INDIA—All India Radio, 6165-Delhi in listed Sindi at 1252. (Strawman, IA) 7255-Aligarh in listed Dari at 1341, 7270-Chennai in listed Sinhala at 1320, 9425-Bangaluru at 1329 in Hindi and 9690-Bangaluru at 1400. (Brossell, WI) 9445 at 2120. (Maxant, WV) 11620-Aligarh at 1906. (Charlton, ON) 11985-Bangaluru in listed Kannada with Southeast Asian music, sparse anncr comments. (Schiefelbein, MO) 13605-Bangaluru at 1950. (Patterson, Philippines) 13695-Bangaluru in Tamil monitored at 1240. (Ng, Malaysia)

INDONESIA—RRI-Ternate (p) 3345 in II at 1156, 3976-Pontianak at 1159 with semi-classical music through TOH, 3987-Manokwari at 1202 with presumed news and 4605-Serui at 1220 with extended II talk. (Strawman, IA) 9529-Cimanggis at *1600 open in II. (Barton, AZ) 9680-Cimanggis in II at 1230. (Patterson, Philippines)

Voice of Indonesia, 11784.9 at 1937 in FF, into EE at 1959, news at 2002. Off abruptly at 2018 during EE talk. (Alexander, PA)

IRAN—VOIRI/Voice of Justice, 7105 at *0223 with NA at 0230, talk in unid Lang and Koran. Also (t) 7111.8 at 0135 in on Koran and unid Lang, next night at *0130 and 9495 at *0129 with NA EE anmts, Koran, news in EE. (Alexander, PA) 9660 in listed Kazakh at 1314. (Brossell, WI) 11730 in Pashto at 1248. (Strawman, IA) 15190-Klamabad in Mandarin at 1230. (Patterson, Philippines)

JAPAN—Radio Japan/NHK, 6090 in KK



RECEPTION REPORT from: Richard D'Angelo
Thank you for your reception report, which is verified as detailed below.

Date: Saturday, 23 February 2008
Frequency Short Wave (kHz): 13,850 & 13590
Time (UTC/GMT): 1653 - 1715
Language: English

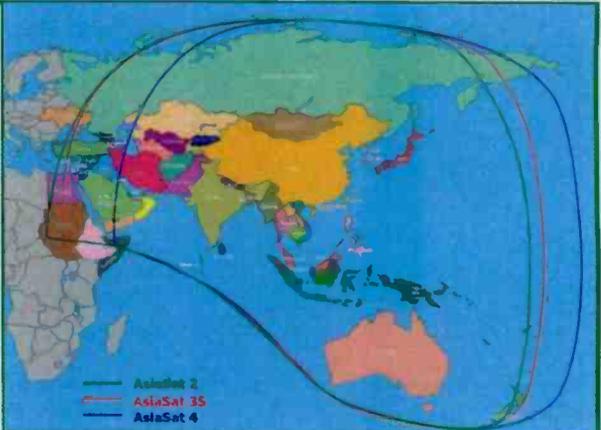
Postal Address:
PO Box 6361 Maroochy BC
Queensland 4558
Australia

Email Address: enquiries@cvc.tv

Site Address:
Cox Peninsula Transmitter Site
Via Darwin, Northern Territory
Australia

Power: 250kw
Antennae: 4x4 Curtain Array

via Lusaka, Zambia



— AsiaSat 2
— AsiaSat 3S
— AsiaSat 4

CVC International via Australia sent this nice card to D'Angelo.

at 1100. (Barton, AZ) 6120 via Canada at 1214 and 6145 via Canada at 0004. (Charlton, ON) 9835 in JJ at 1842, 11665 in JJ at 2306, 11895 via French Guiana in SS at 0516. 13640 in JJ at 2244, 13650 in CC at 2238 and 15265 via Bonaire in JJ at 2248. (MacKenzie, CA) 15590 at 0915. (Ng, Malaysia)

JORDAN—Radio Jordan, 9830 in EE at 1840, 11855 in AA at 1846. (Charlton, ON) 11690 with US pops at 1652. Annoying RTTY QRM. (Brossell, WI)

KUWAIT—Radio Kuwait, 11990 in EE at 1853. (Charlton, ON) 11990 at 1830 on baseball in Kuwait and 13620 in AA at 1720. (Maxant, WV) 15505 in AA at 1325. (Patterson, Philippines)

LIBERIA—ELWA, 4760 at 0556 with IS, opening anmts, EE sermon and religious music, (Alexander, PA) 2256–2302* with music, deep voice anncr, anthem at TOH. (Parker, PA)

LIBYA—Radio Jamahiriya/Voice of Africa, 11860. //11965 in listed Hausa heard at 1940. (Brossell, WI) 17725, ex-17600 at 1405 in EE; Into FF at 1602. (Alexander, PA) 17725-Sabrata at 1412. (Charlton, ON) 1416 with ME music. (D'Angelo, PA)

MADAGASCAR—Radio Madagascar, 5010 at 0310 with a religious service in presumed Malagasy. (Brossell, WI) 0328 weak but in the clear, W with jingles reminiscent of Top 40 stations. M anncr mentioning several African countries. (Wood, TN) 2225 to past 2230 on late again but gone at 2255 recheck. (Anderson, PA)

MALAYSIA—RT Malaysia/Traxx FM, 7295 at 1245 weak with pops until covered by a nearby ham. (Strawman, IA)

MALI—RTV Maliene, 9635 at *0800 with FF ID anmts, short bit of local music. FF and vernacular talk. (Alexander, PA)

MAURITANIA—Radio Mauritanie, 4845 in AA with Koran at 0553. (Brossell, WI) 0616 in AA with Koran. (Parker, PA)

MEXICO—XEXQ/Radio Universidad. San Luis Potosi. (t)6044.9 at 0240 poor with classical music, too weak for an ID. (Alexander, PA)

Radio UNAM, 9599 at 0443 with SS and wonderful pgm of classical music. Full ID at TOH including web address and phone number. (Wood, TN)

Radio Educacion, 6185 at 0054 with classical piano. ID at 0101. (Ronda, OK)

MOROCCO—RTV Marocaine, 15345 at 1847 in AA. (Charlton, ON) 1900 with W anncr in AA, ME music. (Barton, AZ)

MYANMAR—Myanmar Radio, 9730 in EE with pop song heard at 0725. (Ng, Malaysia)

NETHERLANDS—Radio Nederland, 9520 via Canada in DD at 2310, 11655 via Madagascar at 1944, 11805 via South Africa at 1946, 12050 via South Africa at 1950 and 17810 via South Africa at 1954. (Charlton, ON) 9895 via Madagascar in DD at 2254. (MacKenzie, CA) 15640 in Indonesian at 1250. (Patterson, Philippines)

The Mighty KBC, 6040 via Lithuania monitored at 0100–0159 with several IDs at beginning and Wolfman Jack pgm. (D'Angelo, PA)

NEW ZEALAND—Radio New Zealand Intl, 7145 at 0040.

(Patterson, Philippines) 1033. (Ronda, OK) 9615 at 1725. (Maxant, WV) 15720 at 0134 with Dateline Pacific. (Parker, PA)

NIGER—La Voix du Sahel, 9705 at 2215 with FF/vernacular talk, local tribal music, Koran at 2254 to close. (Alexander, PA)

NIGERIA—Voice of Nigeria, 7255 at 2243 in listed Hausa, also 15120 at 1732. (Brossell, WI) 7255 in Hausa at 2254. (Ronda, OK) 9690 at 0816 in Hausa. (D'Angelo, PA) 1650 with vocals and drums. (Maxant, WV) 15120 at 1953. (Charlton, ON)

Radio Nigeria, Kaduna, 4770 with prayer service at 0552. (Brossell, WI) 0640 in possible EE with M/W talks. (Parker, PA)

NORTH KOREA—Voice of Korea, 7570, 1 with IS, SS ID and into SS program at 2203. (Alexander, PA) 9335 at 1305 with martial music and M/W anncrs with blunt propaganda. (Schieffelbein, MO) 11710 in FF at 1431. (Brossell, WI) 11735 at 0125 on bird flu. (Maxant, WV)

OPPOSITION—Radio Free Afghanistan, 15615 via Kuwait in Dari at 0805. (Patterson, Philippines)

Radio Solh, 15265 at 1345 in vernacular. (Brossell, WI)

Radio Marti, 11930-Greenville in SS at 1917. (Charlton, ON)

Radio Farda, 15410 via Wooferton in Farsi at 1515 with ME music and rap. (Barton, AZ)

Radio Free Asia, 11605 via Taiwan in VV and 13740 via Northern Marianas in Khmer at 2236. (MacKenzie, CA) 13675 via Northern Marianas in Burmese at 1230. (Ng, Malaysia)

Radio Liberty, 7595 via Sri Lanka in listed Tajik heard at 1425. (Brossell, WI)

PALAU—KHBN/High Adventure Ministries, 15725 in VV at 0940. (Patterson, Philippines)

PAPUA NEW GUINEA—Radio Manus (Admiralty Is), 3315 at 1110 with vernacular, F anncr. (Barton, AZ)

Radio Milne Bay (t) (New Guinea) 3365 emerging from noise at 1205 about 15 minutes before dawn. Unheard for the past several months. (Schieffelbein, MO)

Radio Northern (New Guinea), 3345 at 1153 with pops/island music, anmts in Tok Pisin. Switched to national feed at TOH. (Schieffelbein, MO)

PERU—Radio Municipal, Pano, 3172.9 in SS at 1010. Off suddenly at 1025 with possible transmitter problems. (Wilkner, FL)

Radio Huanta 2000, Huanta, in SS at 1015. Not on every day. (Wilkner, FL)

Radio Ondas del Suroriente, Quillabamba, 5120.3 at 0050. Needs lsb to avoid the UTE there. (Wilkner, FL)

Radio Luz y Sonido, Huanuco, 3234.9 at 1022 with man in SS talking about music. (Wilkner, FL)

Ondas del Huallaga, Huanuco, 3329.7 in SS at 1045. Not on daily and sign on time varies. (Wilkner, FL)

Radio Victoria, Lima, 6019.5 at 0455 with SS religious talk, NA at 0502, local religious music an emotional preacher. //9720 which was weak. (Alexander, PA)

La Voz de la Selva, Iquitos, 4824.4 SS talk at 2305. (Parker, PA)
Radio Tarma, Tarma, 4775 at 0250 with SS anncr, slow ballad.
(Parker, PA)

Radio Vision, Chiclayo, 4790.2 at 0255 with preacher. (Parker, PA)
PHILIPPINES—Radio Pilipinas, 11730 at *1730 with clear IDs,
pgm in Taglish and Tagalog. (Barton, AZ) 15510, //11880 in EE moni-
tored at 0215. (Patterson, Philippines)

FEBC Intl, 7400 in CC at 1423. (Brossell, WI) 9435 in II at 2320.
(MacKenzie, CA)

PIRATES—WBNY, 6925lb at 2310 with novelty songs, distort-
ed voices. No address. Possibly an imitation. (Zeller, OH) In USB with
high-pitched voices at 2322. (Gay, KY)

WWW (?) 6925u at 0029 with rock, dead air, Al Jolson song.
(Hassig, IL)

Uncle Bob Radio, 6925u at 0138 playing ragtime and very old pop,
short religious parody heard at 0143. (Hassig, IL; Wood, TN)

Voice of Hell, 6925u at *2158-2334. Instls, clear multiple IDs.
QSLs mentioned but did not copy an address. (Zeller, OH)

Random Radio, 6925u at 0025-0037*, 0206-0219. Preacher hawk-
ing a product for \$3.73. No address. (Zeller, OH)

Victory Radio, 6925u at 0134-0153* with cowboy songs by local
Austin TX groups. (Zeller, OH)

UC Essex Relay Service, 6925u from 0040-0051* with M hosting
blues. No address. (Zeller, OH)

WHYP, 6925 at 2315-2341* with James Brownyard and Uncle
Schkelstien with IDs and promise to return soon. (Zeller, OH)

Ann Hofer Radio, 6925u to 2251*. W playing guitar and singing.
Closed with "73." (Guy, KY)

Mash Up Radio, 6925u at *2323-2351* and 2340-2351 with rock
and disco. No address. (Zeller, OH)

Common Man Radio, 6925u monitored at 0018-0020 anncd as a
test and played the "Common Man" fanfare piece. (Zeller, OH)

The Crystal Ship, 3429.6, (t) //6700 at 0030 with no anmts, several
numbers and dropouts. (Hassig, IL) 3431.2 at 0010 with rock, ID,
Belfast contact info. Said they were running 150 watts. (Alexander,
PA) 5385 at 0031 and 2353. Rock, politics, once in a while a Tarzan
yell. (Zeller, OH) 6700 at 0010 and 0110 with novelty songs and pro-
marijuana talk. (Alexander, PA)

Relaxation Radio, 6925u at 0058-0111. Old Woody Woodpecker
sound effect used as the IS and songs from the 1940s-50s. No address.
(Zeller, OH)

Maple Leaf Radio, 6925u, 0023-0025* 2128-2129*, 2139-2156,
2205-2206, 2207-2217, 2331-2344. "O Canada" at sign on, rock,
request for repots via the FRN. (Zeller, OH)

Special Ed, 6925u monitored at 2318-0000*. Many cowboy num-
bers and short audio clips from western movies. (D'Angelo, PA)

Long Range Radio, 6925u at 0119-0205 with pgm of rock and new
age. Others have been IDing this as Wolverine Radio but I had two
clear IDs for "Long Range." No address anncd. (Zeller, OH)

MAC Radio, 6850 at 0054 with "Ultraman" DJ rambling on about
topics of interest to a young boy and playing rock. Address as mac-
shortwave@ yahoo.com. (Hassig, IL; Wood, TN)

Psycho Radio, 6925u at 2300 with a replay of a WBNY pgm. (Gay,
KY)

Radio Caroline Relay, 6925u monitored at 0005 with British anncr
hosting blues. Tech problems had transmitter off the air several times.
(Alexander, PA) Obscure songs, several DJs mentioned. An apparent
relay of their satellite service. (Zeller, OH)

RadioCobain, 6925 at 2250 with Thrash metal and Nirvana. (Wood,
TN)

The Wave, 6925u, 2034, 2219, 2237 with rock and some new age
things. No address. (Zeller, OH) 2235 with pop/rock. (Alexander, PA)

Voice of the Abnormal, 6925u at 2206 with obscure, dissonant rock.
Voice seemed intentionally distorted. Gave now defunct Elkhorn
address. (Zeller, OH)

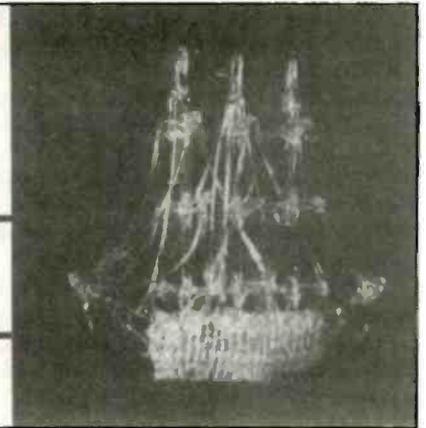
Wolverine Radio, 6925u at 0200 some soft rock, reggae, muffled
ID. (Hassig, IL) (*See Long Range Radio.—gld*)

United Patriot Militia Bingo, 6925 monitored at 2355. Bingo games
being called amid parody sketches and clips. (Schiefelbein, MO)

The Crystal Ship

QSL

Shortwave



*The Crystal Ship pirate station has been very active on several fre-
quencies over the last several months. (Thanks Mike Adams, FL)*

Radio Metallica Worldwide, 6925 at 2235. An apparent relay of
this famous pirate. (Wood, TN)

Pirate Numbers Station, 6925u, opening at 2159, 2211, 2213, 2214,
2215, 2216, 2221, 2226, 2234, with M reading a series of numbers with
the number of digits varying. W heard at 2234. No ID or address,
(Zeller, OH)

WTCR, 6925u with Beatles at 0000. (Gay, KY) *0030 with usual
movie fanfare theme, oldies and classic rock. "Your source of music
from the 1900s" by M anncr. Off at 0132. (Zeller, OH) 0055. QSL via
Belfast. (Hassig, IL)

PRIDNESTROVE (Moldova)—Radio PMR, 6040 at 2206-2345
on with test tone, EE pgmng at 2215, later into FF, then EE again at
2300 and back to FF. 12135 (new) at 1615 EE news on Russia-Moldova
relations. (Alexander, PA)

PORTUGAL—(*All in PP—gld*) RDP Intl, 11620 at 2024, 15465
at 1950 and 15560 at 1547. (Charlton, ON)

ROMANIA—Radio Romania Intl, 11779 at 1429 in RR. (Brossell,
WI) 11940-Tiganesti in GG heard at 2051. (Charlton, ON)

RUSSIA—Voice of Russia, 9435-Petropavlovsk with old 78rpm
records from the 1920s at 0344, 9860 via Vatican at 0258. (MacKenzie,
CA) 12030-Irkutsk in RR at 1308 and 12065-Chita in Cantonese at
1310. (Strawman, IA)

Yakutsk Radio, 7200 in RR at 0545. (Brossell, WI)
Kyzyl Radio, 6100 heard at *1300 with "Goverit Radio Kyzyl."
(Brossell, WI)

SAO TOME—VOA Relay, Pinheira, 4960 at 0420 with news.
(Parker, PA) 6080 at 2136 with country hits to 2201*. (D'Angelo, PA)
7220 in Amharic at 0322. (Strawman, IA)

SAUDI ARABIA—BSKSA, 11715 at 2214 with M in AA and long
Koran recitations to 2259* (D'Angelo, PA) 15435 in AA at 1538.
(Charlton, ON) 17615 with Koran monitored at 0905. (Ng, Malaysia)

SEYCHELLES—BBC Indian Ocean Relay, Mahe, 21470 at 0900.
(Patterson, Philippines)

SINGAPORE—Media Corp. Radio, 7275 in Tamil at 9445. (Ng,
Malaysia)

SOLOMON IS—SIBC, Honiara, 5019.9 at 0950. (Wilkner, FL)

SOUTH AFRICA—Channel Africa, 6160 at 0715, 7390 at 0330,
15235 with African news at 1715. (Maxant, WV) 7390 at 0356 sign
on in FF/EE, f/by drumming. (Wood, TN) 9625 at 1414 and 17770 at
1518. (Charlton, ON)

SOUTH KOREA—KBS World Radio, 9650 via Canada at 1216.
(Charlton, ON)

SPAIN—Radio Exterior de Espana, 6055 in SS at 0348. Also 17850
Costa Rica in SS at 1906. (MacKenzie, CA) 9630 with soccer in SS at
2230, closing at TOH. (Barton, AZ) 9630 at 1922, 17595 at 1539,
17755 at 1541 and 17850 Costa Rica at 1956, all in SS. (Charlton, ON)
11945 in SS at 0050. (Patterson, Philippines)

SURINAME—Radio Apinte, Paramaribo, 4990 heard at 0930.
(Wilkner, FL)

SWEDEN—Radio Sweden, 9490 via Canada in Swedish at 0322. (MacKenzie, CA) 9530 at 1315 with talks in RR. (Brossell, WI) 13820 at 1440 on AIDS in Sweden. (Ng, Malaysia) 15240 via Canada at 1350. (Charlton, ON) 15240-Horby at 1235. (Patterson, Philippines)

SWAZILAND—Trans World Radio, 3240 at *0256 with hand bell IS, several IDs and into Shona at 0300. (D'Angelo, PA) 4775 at 0348 in listed Lomwe. (Brossell, WI) 0340 in EE. Also 7215 at 0331 in Amharic. (Parker, PA)

SYRIA—Radio Damascus, 9330-Adra at 2150. (Patterson, Philippines)

TANZANIA—Voice of Tanzania, 11735-Dole (Zanzibar) in Swahili at 2001. (Charlton, ON)

TAIWAN—Radio Taiwan Intl, 9690 via Okeechobee in SS at 2322. (Charlton, ON) 11635 in CC at 2347. (MacKenzie, CA) 11850 via France at 1710. (Alexander, PA)

THAILAND—Radio Thailand, 9570-Udon Thani in EE heard at 0254. (Patterson, Philippines), 12120. ex-12095, heard at 0030. RTTY QRM. (Alexander, PA)

TURKEY—Voice of Turkey, 7170 at 2106 and 13685 with press review at 1246. (Ng, Malaysia) 7325 at 0335. (MacKenzie, CA) 12035 at 1405. (Charlton, ON) 15450-Emirler at 1240. (Patterson, Philippines)

TUNISIA—RT Tunisienne, 12005-Sfax in AA at 1655. (Brossell, WI) 2003. (Charlton, ON)

UGANDA—Radio Uganda, 4976 with hip-hop heard at 0355. (Brossell, WI)

UKRAINE—Radio Ukraine Intl, 7440 at 0115 on Ukraine music and composers. (Maxant, WV) 0328 in Ukrainian. (MacKenzie, CA)

UNITED STATES—University Network, 7375-Costa Rica at 0010. (Maxant, WV)

Sudan Radio Service, 17690 via Portugal at 1505 in AA with some EE. 1600*. (Alexander, PA)

Adventist World Radio, 7185 via Germany in Amharic at 0320. (Parker, PA) 11915 via South Africa with hymns in listed Swahili at 1755. (Brossell, WI)

Pan American Broadcasting, 15565 via Julich heard at 1538. (Charlton, ON)

WHRI, 9495 new monitored at 1937. (Alexander, PA)

WYFR/Family Radio, 9310 via Kazakhstan in listed Burmese at 1327. (Brossell, WI)

WINB, Red Lion, 13570 in SS/EE at 1842. (McKenzie, CA)

CVC Intl, 11790 via Uzbekistan at 0206. (Schiefelbein, MO) 15515-Uzbekistan at 0755. (Charlton, ON)

Voice of America, 6110-Tinian in Mandarin at 1222. 7225-Thailand Relay in KK at 1209, 9780-Sri Lanka Relay at 0148 and 12110-Lampertheim at 1312. (Strawman, IA) 9390 in presumed Pashto/Dari at 1313 and 9980-Sri Lanka Relay in listed Farsi at 1848. (Brossell, WI) 9535 Thailand Relay in II at 0010. (Patterson, Philippines) 9785-Germany at 1913, 11725-Philippines Relay at 2310, 13735 in FF at 2010, 13775 in CC at 2225 and 15410 at 11910. (MacKenzie, CA) 13640-Northern Marianas Relay at 2311. (Barton, AZ) 13740-Thailand Relay in CC at 0730 and 15560, Thailand at 0030. (Ng, Malaysia)

VATICAN—Vatican Radio, 9600 in Mandarin heard at 2225. (Patterson, Philippines) 9660 at 0320. Into a break at 0326 and returned in Swahili at 0330. (D'Angelo, PA) 9755 at 2010 at 13765 at 1546. (Chandler, ON) 11625 at 1745. (Maxant, WV)

VENEZUELA—Radio Nacional, 6060 at 1106 with EE features. Into SS at 1112. (D'Angelo, PA) 11670 in SS at 1830 and 15290 in SS at 1906. (MacKenzie, CA) 13750 in SS at 1545 and 15290 in SS at 1937. (Charlton, ON) (All via Cuba.—gld)

VIETNAM—Voice of Vietnam, 7210 in VV at 0850. (Ng, Malaysia) 9840v (p) at 1218 weak with SE Asian vocals. (Strawman, IA) 2335 with news, features. (Schiefelbein, MO)

ZAMBIA—ZNBC, 5910 at 0340 in vernacular with Afro-pops, chatting with studio audience. (D'Angelo, PA)

The Voice-Africa, 4965 with hymns at 0307. (Brossell, WI)

ZIMBABWE—ZBC, 4828 at 0303 with long songs and no anmts. (Parker, PA) (p) at 0308. (Wood, TN)

And, once again, order is restored! Unlimited thank-you's to those good guys who joined in this time: Robert Wilkner, Pompano Beach, FL (welcome!); Stewart MacKenzie, Huntington Beach, CA; Brian Alexander, Mechanicsburg, PA; Rich D'Angelo, Wyomissing, PA; T.C. Patterson, Cebu, Philippines; George Zeller, Cleveland, OH; Robert Charlton, Windsor, ON; Jim Ronda, Tulsa, OK; Mark Schiefelbein, Springfield, MO; Joe Wood, Greenback, TN; Jerry Strawman, Des Moines, IA; Peter Ng, Malaysia; Robert Brossell, Pewaukee, WI; Charles Maxant, Hinton, WV; Richard Parker, Pennsburg, PA; Rick Barton, Phoenix, AZ; William Hassig, Mt. Prospect, IL; and Chris Gay, Lexington, KY. Thanks to each of you.

Until next month, good listening! ■

This Month's Winner

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

This month's prizewinner is **Rick Barton of Phoenix, Arizona**, who gets a copy of the 2008 edition of *The World Radio TV Handbook*, published by Billboard Publications and available at all major bookstores and SWL suppliers. The *WRTH* is a "must-have" reference that belongs on your DX desk. Period!

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Antenna Tips For Great AM DX

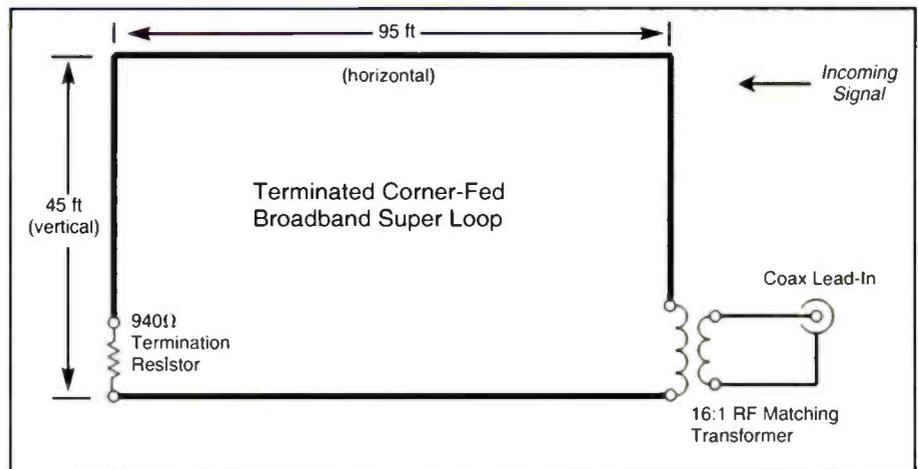
August is antenna month at “Broadcast Technology.” In past issues, we’ve discussed various outdoor broadband loop and random wire antennas for long-distance AM broadcast reception applications. Over the past year the focus has been on terminated broadband loop antennas, such as the Delta, Flag, Pennant, and SuperLoop designs (August 2007 and January 2008).

These antennas provide a wide cardioid beam for unidirectional reception with the advantages of a ground-independent or “floating” loop design, specifically low-noise characteristics and a relatively compact size versus the long wavelength of AM broadcast frequencies. The antennas also have another thing in common: They all require an RF matching transformer with ground isolation to match the high impedance of the antenna to the typical low-impedance coaxial lead-in and input of a communications receiver. This has resulted in a number of inquiries about the how, what, where, and why of RF matching transformers—how to build them, what they are, where to buy them, and why they’re necessary.

Antenna Matching 101

Anyone who’s worked with amateur and CB radio antennas knows about the importance of antenna impedance matching. Impedance is a natural electrical property of all antennas in relation to frequency, essentially the combination of capacitance and inductance that determines the resonant frequency of the antenna or the frequency at which the antenna matches the wavelength or some harmonic of a desired frequency. When working a specific frequency, the lead-in and antenna can be cut to resonate with the wavelength of the specific frequency for a perfect match.

This, however, is impractical for AM broadcast reception over a wide range where operation from 150 kHz to 30 MHz covering long, medium, and shortwave frequencies is desired. An antenna tuner connected at the receiver can be used to force an antenna and lead-in to resonate, but then the antenna lead-in becomes part of the receiving antenna, which can result



The SuperLoop outdoor wire loop antenna with a 16:1 RF matching transformer.

in noise pickup and compromise the beam of the antenna. To prevent noise pickup and maximize efficiency of the system (receiver, lead-in, and antenna), the antenna needs to be impedance-matched where it connects to the lead-in, thus making the lead-in invisible to the system. While there is no perfect broadband solution, an RF matching transformer at the antenna is the best overall approach for low-noise, low-loss performance. The RF matching transformer isolates the antenna from the rest of the system so the lead-in becomes part of the receiver instead of the antenna. This is the basis for any noise-reduced outdoor wire antenna design.

Balun Or Unun?

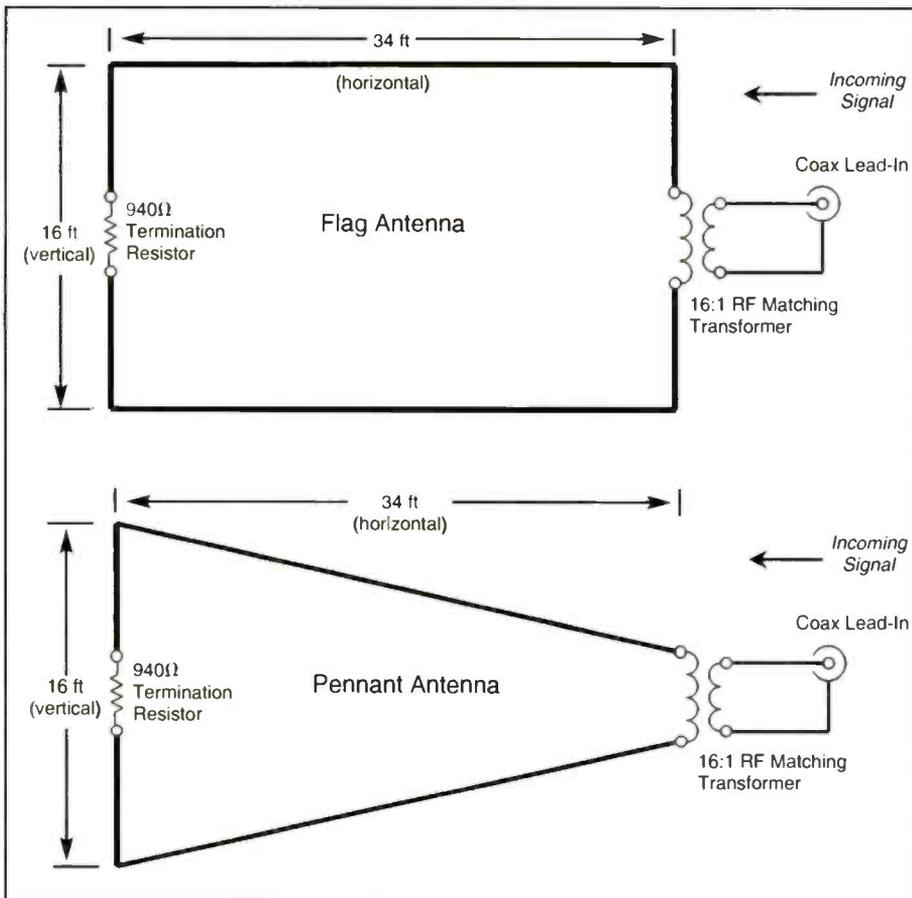
What’s the difference between a balun, unun, and RF matching transformer? There are basically two types of antennas: balanced and unbalanced. A loop antenna is an example of a balanced antenna. With no hardwired connection to earth ground, a loop “floats” and therefore can be installed just about anywhere. A random wire, vertical whip, or Beverage are examples of unbalanced antennas that require some kind of earth ground reference, whether it’s a ground plane, ground termination, ground rod, and/or radials to maintain “balance,” for lack of a better term.

The typical communications receiver antenna input is unbalanced, usually a two-conductor 50-ohm low-impedance coaxial connection with a center “live” connection and a ground shield connection. Both the balun and unun are RF matching transformers. A balun matches a balanced antenna to an unbalanced receiver input, while an unun matches an unbalanced antenna to an unbalanced receiver input. Often there’s no difference in the design of a balun or unun matching transformer, as the terminology refers to how the transformer is applied.

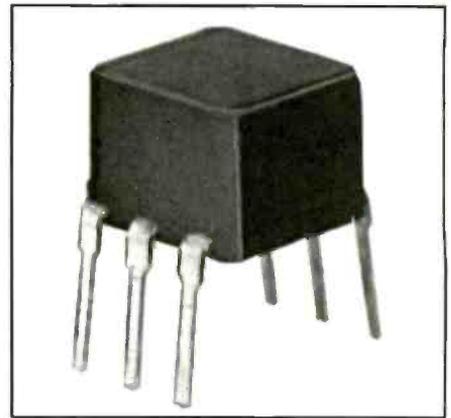
Whether it’s a balun or an unun, those commercially available off the shelf RF matching transformers from amateur and shortwave radio retailers are not designed for our noise-reduced outdoor wire antenna applications. Many are specified for operation above 1.5 MHz, and I have yet to find any that don’t have an internally hardwired ground connection between the antenna and coax. So the only option is to hire a custom RF transformer manufacturer, of which there are many on the Internet, or do it yourself.

DIY RF Transformer Assembly

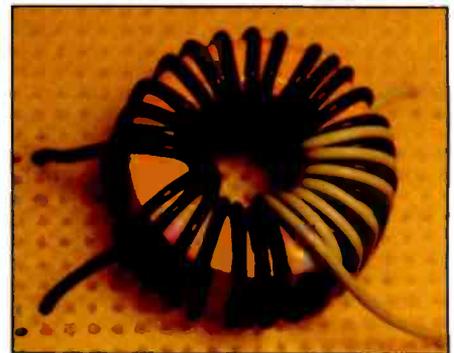
There are a couple of different options to consider when contemplating the assembly of your own RF matching transformer. The easiest option is to pur-



Flag and Pennant broadband loop antennas with a 16:1 RF matching transformer.



Mini-Circuits wideband RF transformer in a tiny 6-pin dual in-line package.



A 16:1 toroidal RF matching transformer with overlapping windings.

chase a complete transformer component from Mini-Circuits (www.minicircuits.com). The alternative is to wind your own transformer on a ferrite core. In either case, final assembly in a custom weatherproof chassis is required.

RF matching transformers are specified in terms of impedance ratio. A 9:1 (9-to-1) impedance ratio will match a Beverage and most random wire antennas with an impedance of 450 ohms to the 50 ohms of a receiver input ($50 \times 9 = 450$). A 16:1 ratio is required to match the typically higher impedance of a terminated broadband loop antenna.

Mini-Circuits offers DC-to-daylight wideband RF transformers in a variety of impedance ratios and package styles. The type most suitable for our application comes in a 6-pin dual in-line package (DIP) that looks like an integrated circuit. These RF transformers are specified for operation over a wide range with a maximum insertion loss of 3 dB. Model T9-1-X65 is specified with an 9:1 impedance ratio and 2 dB insertion loss from 300 kHz to 150 MHz. Model T16-6T-X65 is 16:1 with an amazing 1 dB insertion loss 100 kHz to 20 MHz. The broadband performance of these transformers far exceeds

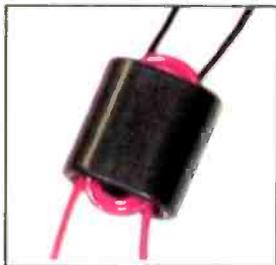
anything else available for long, medium, and shortwave reception, but at the expense of reliability. The transformers are so tiny to achieve wideband performance that they can be easily damaged by static electricity and are susceptible to overload in strong signal areas. So the Mini-Circuits option may not be the best for a location close to a high-power AM radio station or where frequent lightning occurs.

Winding your own transformer isn't as hard as you might expect. All you need is a ferrite core and wire to get started. Light gauge solid hook-up wire or enamel-coated magnet wire, 30 AWG, will do the job. Ferrite cores best suited for the job are binocular (multi-aperture) and toroidal styles made of Type 75 or Type J material. A binocular core is shaped like a pair of binoculars, and a toroid looks like a donut. Use Amidon (www.amidoncorp.com) toroid model FT-114-J, or Fair-Rite (www.fair-rite.com) binocular model 2873000202. There are a number of different methods of toroidal transformer winding, including overlapping, multifilar, and opposite-side windings. Overlapping and multifilar windings are most efficient. Opposite-side windings

exhibit increased insertion loss, especially at higher frequencies, but with less capacitive coupling, which may improve low-noise performance of terminated broadband loop antennas. Use of a binocular core with overlapping windings may further improve efficiency with less capacitive coupling than the overlapping and multifilar toroid designs, thus offering less noise and a best bet for most broadband antenna applications.

Assembly of an overlapping binocular transformer or toroidal transformer with overlapping or opposite-side windings is easy. Always wind the larger number of turns on the core first. To obtain a 16:1 impedance ratio, use a 4:1 winding ratio; 12 turns for the high-impedance winding and three turns for the low-impedance winding on a binocular core, or 28 turns for the high-impedance winding and seven turns for the low-impedance winding on a toroid. For a 9:1 impedance ratio the winding ratio is 3:1; simply decrease the high-impedance windings by three on the binocular core or by seven on the toroid. Binocular windings are wrapped around the inside center with the high-impedance windings in and out of one end and the low-impedance windings in and

RF matching transformer wound on a binocular core. (Mark Connelly photo)



out of the opposite end. Toroidal high- and low-impedance windings may overlap for better coupling, or they may be separated with the high-impedance winding around one half of the donut and the low-impedance winding around the opposite half.

The Mini-Circuits or do-it-yourself RF transformers need to be mounted in a chassis with appropriate connectors to complete the assembly. A plastic food storage container makes for a simple weatherproof chassis. Mount a coax connector for the lead-in and two binding posts for the antenna connections on the plastic container; solder the transformer to the connectors with hook-up wire, then seal any holes with caulk. Remember that the high-impedance winding (largest number of turns of wire on the binocular or toroidal core) is connected to the antenna, and the low-impedance winding to the coaxial lead-in.

The number of windings for the do-it-yourself binocular and toroidal designs can vary as long as the winding ratio is maintained. For example, 32 high-impedance windings and eight low-impedance windings might improve performance in terms of coupling and loss for an opposite-side toroidal design with a 16:1 impedance ratio (4:1 turns ratio). The numbers suggested here are based on ease of winding for the core sizes.



RF matching transformer assembled in a weatherproof food storage container.

There are many technical papers covering the topic available online. Two that specifically address AM broadcast reception applications are well worth reading. "Broadband Receiving Antenna Matching" by Mark Connelly at www.qsl.net/wa1ion outlines test results with a variety of transformer and antenna types. "Impedance Matching Transformers for Receiving Antennas at Medium and Lower Shortwave Frequencies" by Bill Bowers, John Bryant, and Nick Hall-Patch at www.dxing.info investigates all aspects of toroidal RF transformer design.

Broadcast Loggings

The dog days of summer don't necessarily mean that AM DX must go to the dogs. Here's what some of our readers are hearing. All times are UTC.

675 Radio Maria, Lopik, Netherlands, at 0033 a man in Dutch and Radio Maria ID into a folk-style female vocal; to good peak. (Connelly-MA)

740 KVOX Fargo, North Dakota, received business card in 86 days, with verification statement handwritten on back, signed Tank McNamara-PD. Address: 1020 South 25th Street, Fargo ND 58103. ND QSL #18. (Martin-OR)

840 4VEH Cap Haitien, Haiti, at 0059 five notes (reminiscent of a part of "Jingle Bells"), then "Vous écoutez 4VEH, la voix..." Folk guitar followed. Over Brazil, others. (Connelly-MA)

950 KKFN Denver, Colorado, monitored at 0300 with ID, "Sports Radio 950, the home of the Denver Nuggets." (Barton-AZ)

1070 KVKK Verndale, Minnesota, a friendly QSL letter received in 7 days for a CD report, signed by Adam VanConant, AM 1070 KVKK Morning Show personality. Also enclosed day coverage map, mentioning 10,000 watts day and 5000 watts night. Address: 11 S.E. Bryant Avenue, Wadena MN 56482. MW QSL 2990. (Martin-OR)

1089 TalkSport, United Kingdom, at 2331 a car insurance advert, "comparethemarket.com," and ID, "On 1089 and 1053 AM and DAB digital radio, TalkSport"; loud. (Connelly-MA)

1110 YVQT Carúpano, Venezuela, at 0000 a boisterous ID, "¡En Venezuela, Carúpano!" Good, way over others. (Connelly-MA)

1140 KHTK Sacramento, California, at 1230 a weekend fishing pro-

gram sponsored by "Elkhorn Bait and Tackle." (Barton-AZ)

1179 ERA Thessaloniki, Greece, at 0001 talk by a man with an Elleniki Radiophonia mention; briefly over Canaries-Spain. (Connelly-MA)

1210 KGYN Guymon, Oklahoma, at 0407 with local weather into "The Horse Show." A good signal, but began mixing with an unidentified Mexican station after 0426. (Barton-AZ)

1240 WTPS Petersburg, Virginia, at 0800 a clear ID, "News/Talk 1240 WTPS Petersburg, News/Talk 1240 AM, Petersburg's station." Second time logged on this crowded frequency. 490 miles. (Conti-NH)

1330 WLOL Minneapolis-St. Paul, Minnesota, received a WLOL Relevant Radio QSL card for a November 2005 reception report. QSL had full details including transmitter locations, day and night coverage map; three towers, two patterns, 9700 watts day, 5100 watts night. Signed Paul Sadek, OM. Address: 919 Lilac Drive, North Golden Valley MN 55422. (Martin-OR)

1332 Radio Tehran, Iran, at 0048 a Mideast male vocal and mandolin-like instrument, then violins; to good peak. (Connelly-MA)

1395 Big L, Trintelhaven, Netherlands, at 0046 a Big L "Solid Gold Rock 'n' Roll" jingle, DJ mentioned that he was on air from 1 to 4 a.m. Beatles-influenced vocal followed. Briefly good. (Connelly-MA)

1539 Radio Aap Ki Dunyaa, Al Dhabiya, United Arab Emirates, at 0115 an amazingly good solid signal; a woman and man in Urdu with news/talk parallel 7145 kHz. (Conti-NH)

1550 RASD Rabouni, Algeria, at 2348 politically oriented Spanish talk, Saharai mention, segment of rustic North African music; over others. (Connelly-MA)

1575 Radio Farda, Al Dhabiya, United Arab Emirates, at 0135 signal best in USB to avoid WQEW HD interference; man and woman with news/talk in Farsi, then pop music, parallel 5860 kHz. (Conti-NH)

Thanks to Rick Barton, Mark Connelly, and Patrick Martin. Late August into early September can sometimes produce the best AM DX conditions of the year. So get your antennas primed and your receivers tuned up, then let us know what you're hearing.

Until next time, 73 and Good DX! ■

The Summer Anomaly

Are the daytime Maximum Usable Frequencies (MUFs) on signal paths spanning daylight regions higher during the summer than during the winter? With more hours of daylight, wouldn't the increased exposure to solar radiation cause greater ionization? The surprising answer is that, no, that is not generally the case. A look at many signal paths reveals that there are higher peaks during the winter daytime than during the summer daytime. However, during the summer night, those same paths may have higher MUFs than during the winter nights. This is known as "the summer anomaly."

It was believed that this anomaly was in part caused by temperature differences. This model held that during the Northern Hemisphere winter months the atmosphere is cold and therefore denser, and that because the Earth is closer to the sun more intense daytime ionization occurs; thus, winter daytime critical frequencies are high. During the long hours of winter darkness, on the other hand, the ionosphere has more time to recombine, and nighttime critical frequencies fall to very low levels. Conversely, in the summer the F_2 layer heats up, causing it to expand during the daylight hours. This results in a lower ionization density than is observed during the winter. This, it was

believed, creates summer daytime F_2 -layer critical frequencies that are lower than winter values. Moreover, because of the longer hours of daylight during the summer, recombination does not occur to the extent that it does in winter. This would mean that nighttime F_2 -layer critical frequencies during the summer months are significantly higher than they are during the winter months.

As scientists continue to explore, our understanding of how the ionosphere works becomes ever more accurate and clear. Research has revealed that the reason summer MUFs are lower during the day is due only in part to temperature differences. The rest of the story lies in ion chemistry, not a thinning of the ionosphere. (An interesting side-note: You can now take a virtual tour of the ionosphere by using free software available from NASA and Google.com. See **Figure 1**.)

In the lower part of our atmosphere, below 100 km, atoms and molecules are well mixed by wind and temperature. Above 100 km, atoms and molecules are distributed vertically by gravity according to their atomic weights. The heaviest atoms (argon) settle toward the bottom of the ionospheric layers, while the lightest atoms (hydrogen) extend to the greatest heights. The

The Ap Index And Understanding Propagation Terminology

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

Classification of A indices is as follows:

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

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

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

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

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

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

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

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

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

exact composition depends on temperature. In the winter, when atoms and molecules are colder, they move lower, in part causing the ionosphere to contain a greater density of oxygen atoms. During the summer, they move to greater heights as they warm up, and the ionosphere becomes dominated by a more even mixture of nitrogen and oxygen molecules. In this upper atmosphere, ionization is more affected by the geomagnetic field than by atmospheric turbulence.

Ionization is the creation of ions by atoms losing their electrons. This is caused by the energy of photons from sunlight breaking the electron away from the atom. In the absence of sunlight, these free electrons recombine with whatever nearby molecule or atom happens to be available.

Electrons do not always recombine with the relatively small number of positive ions available, and they may also become attached to some of the far more numerous neutral molecules, forming negative ions. This is a great thing for those who DX the lower part of the HF spectrum, as these electrons are not dissociated from the negative ions very quickly during the morning sunlight. Since these negative ions are more massive than electrons and positive ions, they do not absorb radio energy. This makes a morning window for low-band DXing.

During the summer, then, the ratio of atoms to molecules is less than the ratio during the winter. The make-up of the ionosphere during the winter favors the production of electrons from oxygen atoms over the losses of electrons by recombination in molecular interactions. Since the summer ionosphere has a mixture of nitrogen and oxygen molecules, more recombination takes place, and the ionosphere loses some of its ionization. If one looks at a given summertime signal path and compares it with the same path during the winter, it's clear that the MUF will generally peak higher in the winter. However, the nighttime critical frequencies will generally be higher than in summer nighttime.

When I ran a series of different path analysis in ACE-HF Pro, using February and then again using August of this year, with the same smoothed sunspot number for each month, the same general result proved that this summertime anomaly exists. I did note, however, that paths crossing the North Pole region did have higher MUFs in the summer (due in part to the lack of any darkness at the

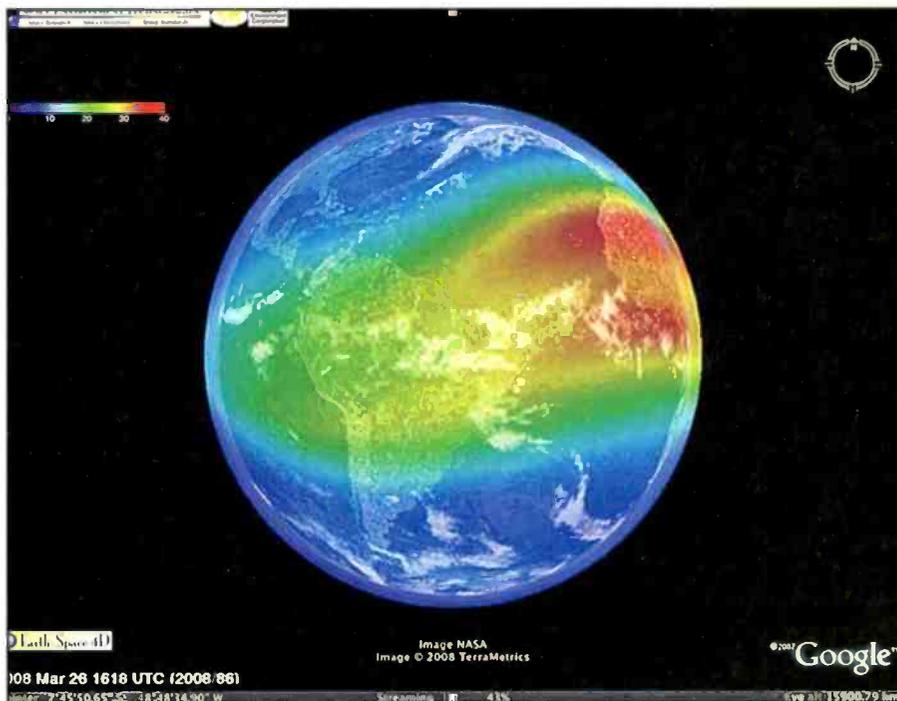


Figure 1. You can now take a virtual tour of the ionosphere using Google Earth (see <http://pack.google.com>). Without leaving home, anyone can fly through the layer of ionized gas that encircles the Earth at the edge of space itself. All that's required is a connection to the Internet. Check out http://science.nasa.gov/headlines/y2008/30apr_4dionosphere.htm for more information.

pole during the summer, as compared to no sunlight during the winter). It also appears that some paths that span the equator and exist in both the winter hemisphere as well as the summer hemisphere averaged about the same for both months in question. (See Figure 2 for a side-by-side comparison from February and August.)

Current Solar Cycle 23 Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for April 2008 is 2.9, down from March's 9.3. The lowest daily sunspot value recorded was zero (0) on April 5–12, 15–18, 20, 21, and 25–30. The highest daily sunspot count was 16 on April 1. The 12-month running smoothed sunspot number centered on October 2007 is 6.1. A smoothed sunspot count of 7, give or take 1 point lower to 2 points higher, is expected for August 2008.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 70.3 for April 2008. The 12-month smoothed 10.7-cm flux centered on October 2007 is 71.5. The

predicted smoothed 10.7-cm solar flux for August 2008 is 64, give or take about 4 points.

The observed monthly mean planetary A-Index (A_p) for April 2008 is 9. The 12-month smoothed A_p index centered on October 2007 is 7.9. Expect the overall geomagnetic activity to vary greatly between quiet to disturbed during most days in August.

HF Propagation

Propagation on the higher frequencies will fluctuate less drastically during August, as the hours of sunlight are quite long and the ionosphere has very little time to recombine during the hours of darkness. Higher HF frequencies are going to be unusable over most paths, but when sporadic-E (E_s) openings occur, expect good domestic signals. These E_s openings will be strong at times, and fairly common, but might be short-lived.

Nineteen and 22 meters will compete with 16 for the best daytime DX band during August. Broadcasters know that the summer daytime MUFs are higher than during the winter, so they move their scheduled broadcasts up in frequency. These bands will open for DX just before sunrise and should remain open from all

Optimum Working Frequencies (MHz) - For August 2008- Flux = 75, Created by NW7US

UTC TO/FROM US WEST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	22	21	21	20	18	17	15	14	13	12	11	11	11	13	15	17	18	19	20	21	21	21	22	22
NORTHERN SOUTH AMERICA	28	27	27	25	23	21	19	18	16	15	15	14	13	15	18	20	22	24	25	26	26	27	27	28
CENTRAL SOUTH AMERICA	28	25	23	21	19	18	17	16	15	14	13	15	15	17	20	22	24	26	27	28	29	29	29	29
SOUTHERN SOUTH AMERICA	25	22	19	17	16	15	15	14	13	13	12	12	12	14	17	20	22	24	25	26	27	28	28	27
WESTERN EUROPE	13	10	9	9	9	13	14	11	10	10	13	15	16	17	18	18	19	19	19	18	18	17	16	15
EASTERN EUROPE	9	9	8	8	12	14	14	10	10	9	9	12	15	16	17	18	18	18	17	16	15	13	10	9
EASTERN NORTH AMERICA	25	24	24	23	21	19	18	16	15	14	13	12	14	17	19	21	22	23	24	25	25	25	25	25
CENTRAL NORTH AMERICA	14	14	13	13	12	11	10	10	9	8	8	7	7	8	10	11	12	13	13	14	14	14	14	14
WESTERN NORTH AMERICA	7	7	7	7	7	6	6	5	5	4	4	4	3	3	5	5	6	6	7	7	7	7	7	7
SOUTHERN NORTH AMERICA	23	23	22	22	21	20	18	16	15	14	13	12	11	12	15	17	18	20	21	21	22	23	23	23
HAWAII	19	19	19	19	19	19	18	17	16	14	13	12	11	10	10	10	11	13	14	16	17	17	18	19
NORTHERN AFRICA	14	13	12	11	11	10	13	11	10	10	13	15	16	17	18	19	19	20	20	19	18	17	15	15
CENTRAL AFRICA	16	15	14	13	12	13	14	13	10	12	14	15	16	17	17	18	18	18	19	19	19	19	19	18
SOUTH AFRICA	17	16	15	14	13	13	14	15	14	13	12	13	17	19	21	22	23	24	24	24	23	21	20	18
MIDDLE EAST	12	11	10	11	14	15	13	10	10	9	9	14	15	17	17	18	19	19	19	18	16	15	13	12
JAPAN	20	20	20	20	19	18	17	15	13	12	11	11	10	11	12	11	10	10	10	13	15	17	18	19
CENTRAL ASIA	20	20	20	20	19	19	18	17	15	13	12	11	11	10	12	15	16	15	14	13	12	13	16	19
INDIA	16	17	17	17	17	16	15	13	10	9	9	9	12	9	9	8	8	8	8	10	13	14	15	16
THAILAND	16	18	20	19	19	18	18	17	15	13	11	11	10	10	14	16	17	15	14	13	13	12	14	14
AUSTRALIA	27	28	29	30	29	29	28	26	24	22	20	19	17	16	15	15	15	14	14	13	15	20	23	25
CHINA	19	19	19	19	19	18	17	17	15	13	11	10	10	13	14	13	12	11	11	10	11	15	16	18
SOUTH PACIFIC	29	29	29	29	28	27	25	22	19	17	16	15	14	14	13	13	12	12	12	20	24	26	28	29

UTC TO/FROM US MIDWEST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	25	24	24	22	20	19	17	16	15	14	13	12	13	16	18	19	21	22	23	24	24	24	25	25
NORTHERN SOUTH AMERICA	25	25	25	22	20	19	17	16	15	14	13	13	12	15	17	19	21	22	23	24	24	25	25	25
CENTRAL SOUTH AMERICA	28	25	23	21	19	18	17	16	15	14	13	14	16	19	21	23	25	26	27	28	28	29	29	28
SOUTHERN SOUTH AMERICA	25	21	19	18	17	15	15	14	13	13	12	12	14	16	19	21	23	25	26	27	28	28	28	27
WESTERN EUROPE	15	14	11	10	12	12	11	10	10	11	14	16	17	18	19	19	19	18	18	17	16	17	17	16
EASTERN EUROPE	9	9	9	8	8	13	11	10	10	13	15	16	17	18	18	19	19	18	18	17	16	15	14	10
EASTERN NORTH AMERICA	18	18	17	16	15	14	12	12	11	10	9	9	11	13	14	15	16	17	18	18	18	18	18	18
CENTRAL NORTH AMERICA	8	8	8	8	7	6	6	5	5	4	4	4	5	6	7	7	8	8	8	8	8	8	8	8
WESTERN NORTH AMERICA	14	14	14	13	13	12	11	10	9	8	8	7	7	8	10	11	12	13	13	14	14	14	14	14
SOUTHERN NORTH AMERICA	16	16	16	15	14	13	12	11	10	9	9	8	8	9	11	12	13	14	15	15	16	16	16	16
HAWAII	22	23	23	23	22	21	20	18	16	15	14	13	12	11	12	11	13	15	17	18	19	20	21	22
NORTHERN AFRICA	18	17	15	14	13	13	12	11	10	10	13	15	17	18	19	20	20	20	21	21	21	20	20	20
CENTRAL AFRICA	17	15	14	13	13	12	12	11	10	10	13	16	17	18	19	20	20	20	21	21	21	20	20	18
SOUTH AFRICA	17	16	15	14	13	13	13	18	17	15	15	17	20	23	25	26	27	28	27	25	23	21	19	18
MIDDLE EAST	12	11	11	10	12	12	11	10	10	12	15	16	17	18	19	19	20	20	19	18	17	16	14	13
JAPAN	20	20	19	19	18	17	16	13	12	11	11	10	11	14	13	12	11	10	10	13	16	17	18	19
CENTRAL ASIA	20	20	19	19	18	17	15	13	12	11	10	10	13	15	17	18	17	15	14	13	13	13	16	19
INDIA	11	13	14	15	16	15	13	10	10	10	14	15	16	16	15	14	13	11	9	9	9	8	8	8
THAILAND	16	18	19	18	17	17	15	13	11	10	10	13	15	16	17	18	19	17	16	15	14	13	12	14
AUSTRALIA	28	29	30	29	28	27	25	23	21	19	18	17	16	15	16	16	15	14	13	13	16	20	24	26
CHINA	19	19	19	18	17	16	15	13	11	10	10	13	15	16	15	13	12	11	11	10	12	15	16	18
SOUTH PACIFIC	29	29	29	29	28	26	24	19	17	16	15	14	14	13	13	12	12	12	14	22	25	27	28	29

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

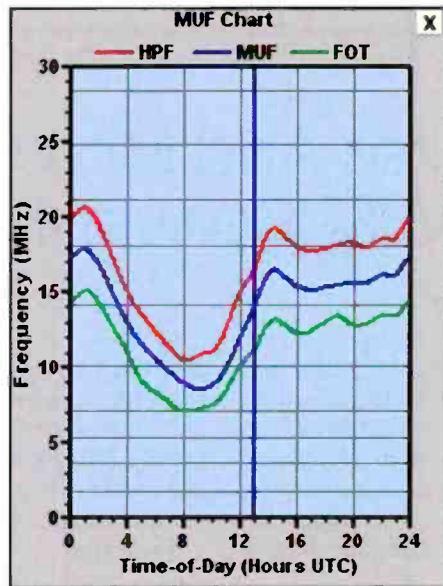
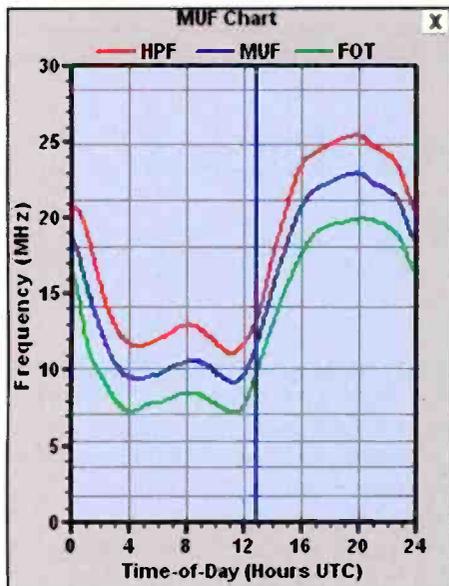


Figure 2a and b. An example of a path between Montana and a station on the East Coast of the United States. The MUF chart on the left is for February, while the chart on the right is for August. Both charts are plotted with the same parameters (power, smoothed sunspot number, antenna, and so forth). Notice how the Winter (February) chart reveals a generally higher MUF than for the same times in August? (Source: Author, using ACE-HF Pro v. 2.05)

directions throughout the day, with a peak in the afternoon. Nighttime conditions will favor openings from the south and tropical areas. Look for gray-line propagation from Asia, with long-path common from southern Asia, the Middle East, and northeastern Africa as well as the Indian Ocean region via the North Pole.

The 25- and 31-meter bands have an incredible amount of activity since many broadcasters target their audiences during prime times (morning and early evenings) in the target areas. Expect 11 MHz to be an excellent band for medium-distance (500 to 1,500 miles) reception during the daylight hours. Longer-distance reception (up to 2,000 to 3,000 miles) should be possible for an hour or two after local sunrise, and again during the late afternoon and early evening. Heavy congestion will occur here, too, as many international and domestic broadcasters make use of 25 meters.

The backbone of worldwide shortwave broadcasting, 31 and 41 meters, will provide medium-distance daytime reception ranging between 400 and 1,200 miles. During August, reception up to 2,500 miles is possible during the hours of darkness, and until two to three hours after local sunrise. Forty-one and 49 meters should be still best for worldwide DX from sunset to sunrise. Early evening and into darkness, increasingly longer paths develop, up to several thousand miles. As propagation conditions don't change much on the

lower HF bands through the solar cycle, a high number of HF broadcasters rely on these bands. International and domestic broadcasts compete with amateurs on the 41-meter band and with each other on both. This makes for a lot of interference, especially during the late afternoon and evening hours, making reception of weak, exotic signals a bit more of a challenge.

Don't expect any improvement in nighttime DX conditions on 41 through 120 meters during August, since we are not yet close enough to the seasonal decrease in the static levels of winter. The 5, 3, and 2 MHz shortwave bands are used mostly in designated tropical areas for domestic broadcasting. The entire 4 MHz band is set aside for domestic broadcasting in Asia, and some of this band is used throughout Europe. On all of these bands, during daylight, reception should be possible from up to 500 miles away. After sunset until an hour or so after sunrise, reception of signals from 1,000 to a possible 2,000 miles away is possible. There will still be a high level of static during August, so these bands will be a challenge to those looking for long-distance DX of exotic tropical stations. The best time to search for these would be just before sunrise and an hour or so after daylight.

VHF Conditions

E_s propagation is still expected to provide DX on the lower VHF spectrum.

Statistical studies show that a sharp increase in E_s propagation takes place at mid-latitudes during July and August. Short-skip propagation over distances ranging between approximately 600 and 1,300 miles should be possible on as high as 50 MHz and an occasional surprise E_s opening as high as 150 MHz could happen during periods of intense E_s ionization, bringing in stations up to 1,300 miles away. While E_s short-skip openings can take place at just about any time of the day or night, statistics indicate that conditions should peak for a few hours before noon and again during the late afternoon and early evening. Openings may last from a few minutes up to hours.

I'd Like To Hear From You

Please take a look at what's new at my propagation website located at <http://propagation.hfradio.org/>. It is now running on a very fast, new server computer. An overhaul of the design of the site is also taking place and should be finished during July. Included on the site is an up-to-the-day Last Minute Forecast that you may use to access the latest forecast for the month. In addition, if you have a cell phone with Internet capabilities, try <http://wap.hfradio.org/>.

Do you have a question that you'd like me to tackle in this column? Drop me an email or send me a letter, and I'll be sure to cover it. I'd love to hear any feedback you might have on what I have written. ■

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Reno Earthquakes And More Hot-Topics For EMCOMMWEST Convention

Emergency communicators were seen sporting hard hats at the recent Reno, Nevada, Emergency Communications conference. Even ARRL Emergency Preparedness and Response Manager, Dennis Dura, K2DCD, featured speaker, was prepared to take cover. The week prior to the conference, the Reno area had been rocked by over 300 seismic jolts, making earthquake disaster communications readiness a hot topic for this conference.

“Over the past decade, EMCOMMWEST has become the premier regional emergency communications conference, starting in northern California, and moving to Nevada in 2003,” said Dick Flanagan, K7VC, conference president.

“EMCOMMWEST was the place where emergency communicators came to hone their skills, learn from each other, and prepare to serve their nation, state, and local community. This

conference is the heartbeat of amateur radio,” said Don Carlson, KQ6FM, Nevada section EC/RACES officer, and ARRL PIO.

“We drew close to 400 premier emergency communicators, many in full uniform, with some bringing along their outstanding, specially equipped vehicles for the outside display,” said this event’s manager, Kevin Marriott, KE7BQX.

Friday night was the Welcome-to-Reno barbecue, hosted by Reno’s local Salvation Army communications team. The Salvation Army ham group (SATERN) was in full uniform and did an outstanding job of feeding the troops! Scanner enthusiasts, shortwave listeners, and licensed hams were joined by area public safety officials for great burgers and hot dogs with all the trimmings, plus Don Carlson’s famous fire-mouth chili that ARRL Pacific Division director, Bob Vallio, W6RGG, couldn’t get enough of! The chili is an annual Don Carlson event!



Rescue communications unit vehicle and TW 2010 antenna.



A Blue Sky pole from W4RT.



Early a.m. attendees. A terrific sunrise radio swap was an irresistible draw for many.

On Saturday morning, ARRL's Dura drew a round of applause when he stated, "...emergency communications cannot stand alone. As an organization, we must have disaster plans in place, and know what we must do to continue operations when these plans are impacted. As licensed ham radio emergency communicators, we stay on the air no matter what!"

An Awful Lot To Learn And Enjoy

There were over 20 one-hour "break-out sessions," with each individual room packed with enthusiastic emergency communicators. Many topics were addressed, including:

- Public Relations During Disasters
- EMCOMM 101
- Agencies Served
- Education and Recruiting
- Go-Kits
- CERT and Ham Radio Relationships
- MARS
- "You just wouldn't understand—unless you have done it" (the story of the Oregon Weather Disaster Dec 2007)
- Mini Weather Spotter
- Disaster Intelligence
- Net Control
- Local Government Emergency Management and Ham Radio's Role
- HF Pack 101
- Message Handling 1 and 2

- Voice over IP
- Search and Rescue
- Inside Exhibits/Swap Meet

Highlights

The most popular topics were EmComm "go kits," traffic-handling, search and rescue, digital comms, CERT, and a National Weather Service weather-spotter class. Simultaneously, the hotel-reserved parking area hosted 12 different ham radio communications vehicles, along with a fabulous sunrise radio swap meet.

"My job, as the swap meet manager was to arrive early, at 4:45 a.m., and double check that hotel security was on scene, ready to open the lot. They were all set for us!" said Gary Grant, K7VY.

"Everyone in our ham security team worked hard allowing swappers, emergency vehicles, and ham buyers to find their positions in certain parking lot sections," added Grant. "We were sure happy to see the Salvation Army canteen coming in, loaded with coffee, hot chocolate, and plenty of doughnuts. SATERN, in Reno, was terrific."

"We had emergency vehicles from Lyon County, Washoe County Sheriff, Gordo and Suzy's emergency van and cat, and the University of Reno Police Department who brought in their new van with a telescoping, zooming surveillance television camera, scoping out everyone in

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the lot. Raffle tickets were on sale, and everyone, Saturday morning, loaded up with all kinds of electronic devices and parts they couldn't live without," said Grant, holding a few new swap meet treasures of his own.

While the outside swap area was in full swing, ham radio vendors also filled a large room with exhibits and products for sale, specifically suited for emergency communication needs.

I was pleased to present a half serious/half entertaining banquet talk, sharing audio clips of hair-raising emergency traffic from earthquake and hurricane-ravaged areas, and a little bit of humor when one of our swap meet "special bargains" appeared to light up and begin to smoke violently near the end of the presentation (hidden vegetable oil smoke machine).

By Sunday afternoon, the hourly prize drawing was boosted to Grand Prize finale, and a wonderful ham radio system went to one lucky emergency communicator.

Unshakable Volunteers

If we had any earthquakes during the Conference, I didn't feel anything other than a couple of committee members jumping up and down during a break, when they hit a few jackpots at the Circus Circus hotel gaming area! ■

IF Stage Alignment For Beginners

Lafayette Radio's 1960s era HE-10 communications receiver again segues into this month's discussion of IF stage alignment techniques for tube receivers. When electron tubes reigned supreme radio equipment was service friendly. Most radio amateurs and electronic hobbyists were more hands on and inclined to tear into their equipment when they had to deal with the day-to-day maintenance and alignment issues. The operating manuals commonly included complete schematics and detailed alignment procedures; this is something you'd expect to pay extra for these days.

Whenever I bring home a new radio orphan, I always invest in a copy of the manual if the original is missing. Since the HE-10 lacked the manual, I ordered one from my favorite vintage manual supplier: Peter Markavage, WA2CWA, otherwise known to his customers as the "Manualman".¹ I opted for the manual for the KT-200 on the chance that the information might be a bit more detailed than what accompanied the factory-assembled HE-10. If any of my readers can help out, I'm seeking an HE-10, HE-30, KT-200, or a KT-220 parts set that has

good original knobs. If you can, I'd like to hear from you. I may do an HE-10 column detailing the mechanical restoration details, and those parts are needed.

The accompanying Figure is a partial scan of the schematic for the HE-10/KT-200 receiver. This will allow you to follow along as I mention various test points in the circuit. Let's begin by doing the IF alignment per the directions provided by Lafayette on page 23 of the KT-200 manual. Later I'll show more advanced techniques to better deal with the more troublesome alignment problems, especially for sets with multiple IF stages that have been severely misaligned!

Safety First!

While the Lafayette HE-10 is transformer powered, please, always use an isolation transformer when doing service work on any radio! *This is especially critical for AC line-operated sets with hot chassis designs!* Always take the safest and most prudent course whenever electricity is involved, especially

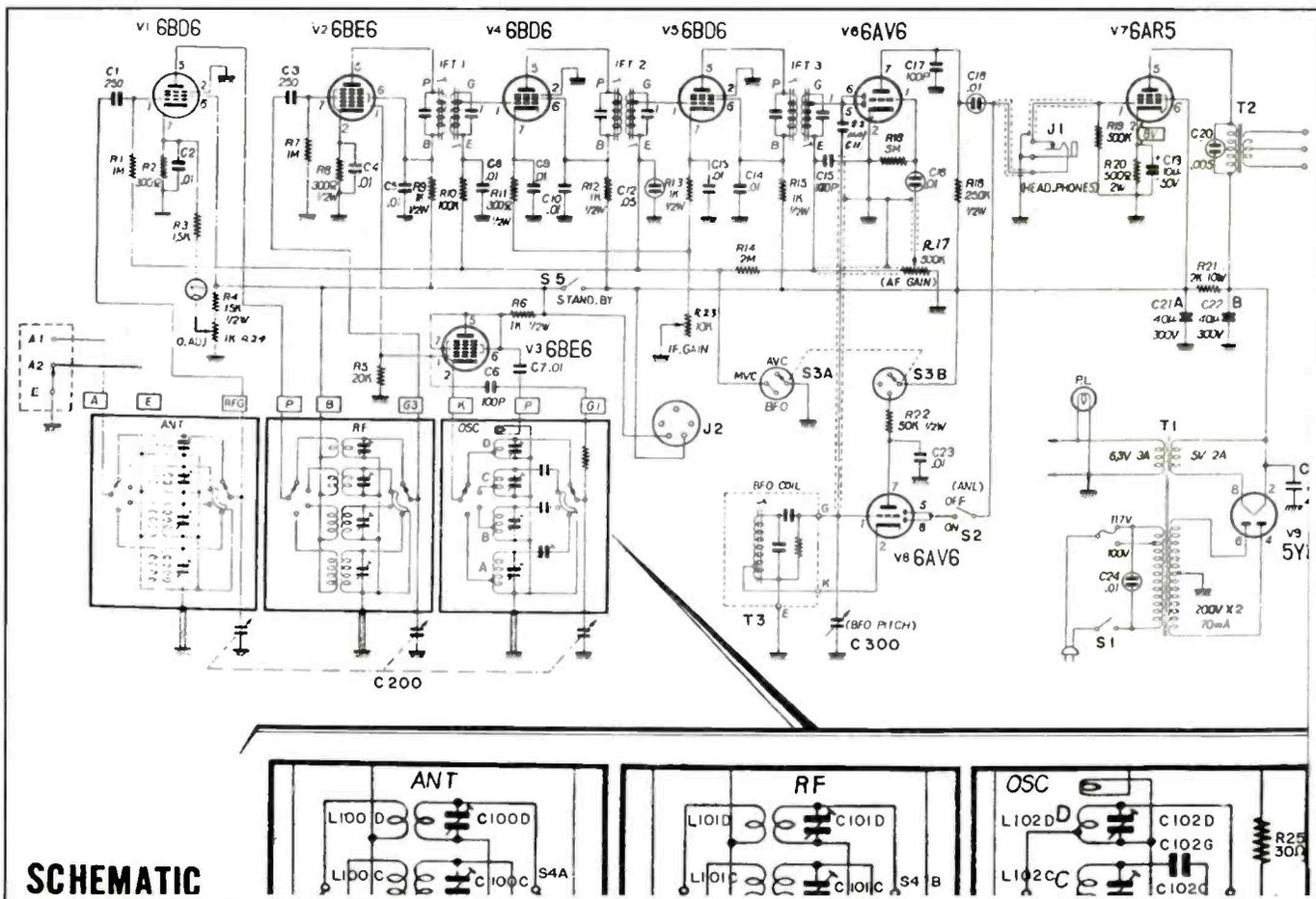


Figure. This is a scanned copy of the schematic for the Lafayette HE-10 and KT-200 communications receiver. The sheet was rather large for my scanner, and some unrelated sections may have been clipped in the process.



Photo A. Our speaker test jig project is teamed with a Heath IM-21 AC VTVM to monitor the recovered signal generator audio on the HE-10 speaker terminals.

when working around potentially deadly voltages.

Lafayette's IF Alignment Method

I'm going to embellish on the Lafayette factory directions, as their instructions were rather terse for a beginner.

1. Start by removing V3, the 6BE6 local oscillator (LO) tube. This reduces the likelihood of tuning the IF stages to an internally generated spurious response that falls on the IF frequency. Note that the HE-10 uses a second 6BE6 as the mixer—in many designs a single 6BE6 will do double duty, both as mixer and LO. In those instances, I suggest disabling the LO by connecting a jumper across the LO coil.

2. Next, switch the BFO-MVC-AVC control to the MVC (Manual Volume Control) position. This disables the set's automatic gain (AVC). Lafayette's suggested IF alignment procedure measures the receiver audio voltage level (recovered from the signal generator's internal

tone modulator, measured at the speaker terminals) to perform the IF stage alignment. Disabling the AGC causes a greater variation for a small change in signal strength. As the IF stages are tuned to resonance the amount of recovered audio increases, as measured on a sensitive AC meter across the speaker terminals. This requires constant adjustment of the signal generator output level as each stage is peaked for maximum response to avoid over driving the IF stages.

3. Lafayette suggests setting the receiver IF gain control to three-quarters full clockwise rotation, and the audio gain (AF) control set to full clockwise (maximum audio.) I'd keep the audio level a tad lower to start off with, perhaps at mid range.

4. A sensitive AC voltmeter is needed to measure the recovered audio level across the speaker terminals. This is a good application for our recent speaker test jig project, used with my Heath IM-21 AC vacuum tube voltmeter (VTVM) as shown in **Photo A**. While Lafayette suggests using the 10 VAC meter range, I feel a 300 mV (.03) VAC or lower range setting is more than adequate. Since we'll hear the

tone in the loudspeaker, keeping the levels lower will be less grating on the ears. I also suggest using an analog meter, such as the IM-21, instead of a digital-type meter. Small voltage changes are much easier to interpret on an analog meter.

5. Connect the signal generator output between pin seven of V2 (6BE6 mixer tube socket) and chassis ground using a length of shielded RF cable, such as RG-58. I *strongly* advise adding a .001 μ Fd, 630-volt Mylar capacitor in series with the signal generator output as shown in **Photo B**. This is *very important*, since inadvertently touching the signal generator center conductor directly to a voltage source can cause serious, instant, and irreparable damage to a signal generator's precision attenuator system!

I used an adapter cable that converted the BNC coaxial fitting to two tiny "mini-ball"-type clip-on test lead connectors. The "braid" or ground side of the coax, is connected to the HE-10 chassis via the black mini ball, while the hot side (red mini ball) is connected to a .001 μ Fd DC blocking capacitor (the yellow jacketed capacitor shown in the photo). Watch the lead dress when injecting the signal to avoid unwanted feedback coupling between the IF stage input and output, otherwise the stage may become regenerative and self oscillate.

6. Set the signal generator to internal modulation (either 1000 or 400 Hz) with a modulation level of at least 30 percent, or higher. Set the signal generator frequency to 455 kHz (the IF frequency of the HE-10) and set the output level high enough so the modulated signal generator signal can be heard in the receiver speaker. In **Photo C** my Boonton model 102F signal generator is shown set to the desired 455 kHz IF frequency, being modulated by the internal tone generator that is set for about 70 percent modulation level with a 400 Hz tone.

7. Adjust the slugs of the IF transformers (starting with IFT-3, IFT-2, and IFT-1, in that order) for peak readings on the AC VTVM. Note that each IF transformer has two adjustments for the tuning slugs, one on the top and bottom of each IF transformer can. Reduce the signal generator output to the minimum signal needed to produce a measurable voltage reading at the speaker terminals as the alignment progresses. Go back and carefully repeat each IF stage until no further improvement is noted. For my receiver a signal generator level of about 10 microvolts on pin seven of V2 was audible when the alignment was



Photo B. A .001 μ Fd mylar capacitor with a 630 volt rating is connected in series with the output of the center conductor from signal generator's output cable. This protects the generator's precision 50-ohm attenuator from being damaged in case the output is accidentally connected to a voltage source.

completed. Note that the absolute signal generator level reading is a bit arbitrary, since the actual RF level on the signal generator output can be up to twice the level shown on the attenuator when the instrument is terminated by an impedance that is much higher than 50 ohms.

This should complete the IF alignment for the HE-10 receiver using the factory suggested method.

Lafayette's method, detailed above, measures the AC speaker voltage. The other option is to use the receiver's AGC level to monitor the signal strength. As the IF stages are tuned, the AGC bus voltage level will increase in a negative direction. This method requires that the BFO-MVC-AGC switch be set to AGC. Again, the signal level must be constantly reduced to keep the AGC action as low as possible to prevent overload and possibly misleading readings. The AGC voltage level should be sampled at point "E" on IFT-2 (refer to the Figure). The AGC voltage at this point is after the low pass filter formed by the action of R14 (2 megohms) and capacitor C12 (.05 μ Fd.) This simple RC filter serves to remove any remnants of the recovered audio and rectified IF signal artifacts from the AGC bus—leaving only a pure, well-filtered DC voltage to control the IF stage gain.

Again, an analog DC voltmeter will provide better guidance than a digital meter. Typical AGC voltages will be between 0 and -7 volts. It's best to keep the AGC voltage as low as possible by lowering the signal generator level as each IF stage is peaked. The point where the AGC action just becomes noticeable is best. Either method will produce com-

parable results; use the one that works best for you.

How I Prefer To Do IF Alignments

This is how I would suggest doing an alignment in a set with more than a single IF stage. We start by aligning the last IF stages first! Let me explain.

If some previous miscreant has "diddled" the alignment so all the stages are grossly misaligned it may be impossible to force a signal through to the detector. Indeed, if the generator output is set high enough, the stray radiation may be sufficient to *blow* by the intermediate IF stages straight to the detector, making alignment an impossible task.

Here's how to get around that problem. Instead of injecting the 455 kHz IF signal from the signal generator output to pin seven of V2 (6BE6), start by injecting the signal at pin one of V5 (the 6BD6 second IF stage tube). This will allow you to align both stages in IFT-3, the last IF transformer feeding the diode detector in tube V6 (6AV6). Once IFT-3 is aligned, move the signal injection back to pin one of V4, the 6BD6 in the first IF stage. This will allow tuning the primary and secondary windings in IF transformer IFT-2. Once IFT-2 is aligned, carefully recheck the alignment for IFT-3. Repeat until no further improvement is noted. Now that we have the last two IF transformers tuned, we can move the generator back to pin seven of V2 (6BE6,) and alignment for



Photo C. The shop's Boonton 102F is set and phase-locked to the HE-10 receiver's IF frequency of 455 kHz. The generator is set for AM modulation, and is modulated with a 400 Hz tone at about 70 percent modulation.

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the primary and secondary windings on IF transformer IFT-1 should be easy to perform. This method will also help to locate a stage with a problem; for instance an IF transformer with a defective winding, or a tube stage that isn't amplifying.

Here's one more trick for you that I'll throw in; try it to see if it's useful to you. Use a very small capacitor, say 5 to 10 pF, to couple the signal generator into the high-impedance control grid of an IF stage (for example pin one of V5). The small capacitor provides an impedance match between the low impedance output of the signal generator and high impedance of the tuned IF circuit, and it keeps the generator from loading the Q of the tuned circuit so resonance can be seen.

This permits aligning the IF tuned circuit associated with that grid (the secondary of IFT-2) to rough resonance (the cap will detune it a bit). Also, the preceding winding for the plate of the stage behind it (the primary of IFT-2) can be tuned for a *dip* at resonance. That tuned circuit acts like a *suck out* trap in this instance. This simple trick gives you a leg up in aligning that transformer before the signal generator is moved back to pin one of V4.

You can do the same thing to pretune IFT-1 as well: peak the secondary, and

look for a dip in AGC voltage when tuning the primary. Sometimes the dip is shallow and hard to spot, so that step might be best skipped. Move the IF injection to pin seven of V2, and do the finishing touchups for the fine-tuning on IFT-1, which should already be pretty close. If my memory serves me regarding the Lafayette IF transformers, the bottom slug adjustment is for the primary winding, while the top slug adjustment is for the secondary winding.

Your Feedback Requested

Well, that's it for this time! In the meantime keep those soldering irons warm and those old tubes glowing! Let me know if the information in this column was useful to you or not! I always enjoy reading your suggestions. On a sadder note, our long-time companion (for almost 15 years!) in the "Wireless Connection" workshop, Midnite the Wonder Lab, is no longer with us. So long old friend!

Reference

1. Manualman, P.A. Markavage, 27 Walling St., Sayerville, NJ 08872-1818; Phone: (732) 238-8964; Email: manualman@juno.com; Web: www.manualman.com.



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A Visit To RAWNY Aboard USS Little Rock

This month, "Utility Communications Digest" goes on the road, paying a visit to the Radio Association of Western New York (RAWNY) aboard the *USS Little Rock* at the Buffalo Naval and Servicemen's Park in Buffalo, New York. The club's annual open house aboard this vessel corresponded with research I'm doing for a future feature article on ham stations aboard museum ships, but the visit produced more than enough material on this particular station than I will need for the article, so I've decided to share some of the "overflow" with our readers this month.

The *Little Rock*, CG-4, was originally launched on August 27, 1944, as a Cleveland-class light cruiser and later converted to a Galveston-class guided missile cruiser. It served as the flagship of the U.S. Sixth Fleet in 1962, 1969 to 1970, and from November 1970 to the spring of 1971. Among those who served aboard her were Ray Mabus (who subsequently served as Governor of Mississippi), George McCorkle (founding guitarist of the Marshall Tucker Band), Carl E. Mundy, Jr. (eventual Commandant of the Marine Corps and member of the Joint Chiefs of Staff and now on the board of directors of General Dynamics), Vic Voltaggio (a memorable Major League Baseball umpire), and James Elliott Williams, the most highly decorated enlisted man in the history of the U.S. Navy.

Shortly after arriving at the picturesque waterfront park in the midst of a light rain, we were greeted by RAWNY's public relations chairperson, Lee, KC2RBL (see **Photo A**). Lee led us down a gangplank and onto the deck of the *USS Croaker*, an historic World War II submarine that was credited with sinking over 19,000 tons of Japanese shipping during the war. From there we walked with Lee across the deck of the *Croaker* and up another gangplank onto the *Little Rock*, following Lee through a hatchway and into the interior of the vessel and eventually arriving in what once was the atomic strike room aboard the ship. It's here and in two nearby rooms that RAWNY has its club ham station, call-sign W2PE, aboard the ship.



Photo A. RAWNY PR chairperson Lee, KC2RBL, braved the rain to serve as a one-person welcoming committee at the gangplank. (KC2HMZ photo)

Upon stepping into the former strike room, you can tell that the old standard "I can neither confirm nor deny the existence of nuclear weapons aboard any U.S. Navy vessel" is at odds with what the eye can see. Directly above the heavy steel door (protected by a combination lock and guarded by two U.S. Marines during active duty days) you see a circuit breaker box labeled "atomic strike" and numerous red panels (the color indicates that they provided access to classified systems) offering further evidence of what the room's purpose once was: control of the nuclear capable Talos surface-to-air missiles once carried aboard the ship.

Delightfully, there are even more original artifacts aboard *Little Rock*, and some of them are still in working order. For example, in what used to be the flag plot message room, I noticed the callsign plate of Navy MARS station NNN0NLR (see **Photo B**). I have to apologize for the quality of the photo, which I had to take through a Plexiglas window since the room was padlocked; however, you can also see part of an original WRT-2 transmitter, which is in working condition.

There are additional usable WRT-2s elsewhere aboard the ship and entire equipment racks complete with antenna tuners in excellent condition, including back in the former strike room where I also found a working AN/UCG-6 RTTY setup. This setup was moved into RAWNY's station area from the original radioteletype room located one deck down, directly below the strike room, and restored by a club member. Today, RAWNY uses it to make RTTY contacts on the ham bands during Field Day and other events, such as the annual "Museum Ships On The Air" weekend.

I was also able to see the components of an original, military diversity receiving setup, which is visible in **Photo C** along with the transmitter for the aforementioned AN/UCG-6 RTTY unit. The terminal for this RTTY unit can be seen in **Photo D**.

Also in the strike room is a Yaesu FT-757GX HF ham station, which was operated by several club members and even a few visiting non-member hams during our tour. In addition, at some point since taking up residence on the vessel,

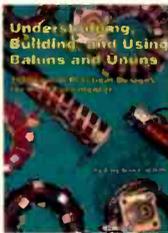
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Photo B. Callsign plate of Navy MARS station NNNONLR and part of ship's original WRT-2 transmitter. (KC2HMZ photo)



Photo C. Some of the original equipment aboard USS Little Rock still in working order. (KC2HMZ photo)

RAWNY outgrew the room and was permitted to remove a bulk head between this room and an adjacent room to provide more space. Two stations are now set up there, an ICOM IC-745 HF station and an ICOM IC-3210A VHF station, which during our visit were being used, at the invitation of RAWNY, by members of another area club to conduct one of its regular weekly club nets. Furthermore, in another room directly across from the strike room are two additional HF stations: a Kenwood TS-530S that serves as a CW station and a Heathkit HW-101 in

mint condition that's used as an additional phone station.

While W2PE is of course a ham station and not a utility station (although the Navy MARS station a few dozen steps away certainly is), there's no telling how many readers may have logged the *Little Rock* in years gone by, when it was on active duty and would certainly have qualified as a UTE, and perhaps some of you have logged NNNONLR recently. Beyond that, our visit afforded us a close-up look at some original military radio equipment, in good, usable condition,



Photo D. Terminal for the AN/UCG-6 RTTY unit at W2PE aboard USS Little Rock used for RTTY contacts in the ham bands. (KC2HMZ photo)

and still in its natural habitat. Standing aboard ship, it's easy to imagine the nuclear-armed vessel prowling the waters of the Mediterranean, ready to defend freedom against all enemies, while the various compartments in which radios and other electronic equipment were located bristled with activity.

I'll have more on this and other ham stations aboard museum ships in my upcoming feature article on the subject. In the meantime, we also have something more closely related to utility to relate.

Something To HAARP About, Part Deux

Those of you who read my column a few months back concerning the HAARP moon bounce test earlier in the year, and especially those of you who missed the event, may appreciate a look at the QSL received by reader Mike Adams, N3JW. Mike, who operates from the Gulf coast of the Florida panhandle, copied the moon bounce "echoes" on both frequencies using his ICOM IC-756PRO and an attic dipole antenna. He then duplicated the feat while operating mobile, using an ICOM IC-706MKIIG and a Hamstick antenna.

Mike scanned the QSLs he subsequently received and has kindly shared them with us. The scan is the front of one card and the back of the second, and is shown in **Photo E**. Mike, congratulations on a job well done, and many thanks for this as well as the kind words in your email.

Reader Logs

And now on with those logs, which this month come to us from Al Stern, Satellite Beach, FL (ALS); Steven Jones, Lexington, KY (SJ/KY); Glenn Valenta, Lakewood, CO (GV/CO); Mark Cleary, Charleston, SC (MC/SC); and Spencer Sholly, Killeen, TX (SH/TX).

2054.0: Unid automated maritime weather station, suspect VAJ or JNX, in USB at 0710Z. (GV/CO)

2872.0: Gander Radio wkg various unheard aircraft for flight reports and SELCAL checks in USB at 0647Z. (GV/CO)

2899.0: Gander Radio wkg "Giant 812" for POSREP of 55N, 50 W, FL 330, in USB at 0657Z; Gander wkg American 78 for POSREP of 55N, 40W, in USB at 0701Z; Gander tells unid airliner to contact on freq 8891 or 5616, in USB at 0701Z. (ALS)

3282.0: Unid speech inversion, switching to clear Spanish, in USB at 0347Z. (GV/CO)

3320.5: NNN0GBS, NNN0JOP, NNN0KCT in USN/USMC MARS South Carolina net, in USB at 0014Z. (MC/SC)

3449.8: OK pirate beacon, actual freq 3449.85, in CW monitored at 0338Z. (GV/CO)

3455.0: New York Radio handing off unid airliner to Santa Maria on 5598, in USB at 0705Z. (ALS)

4003.0: AAA4TN in US Army MARS Tennessee Net, in LSB at 0021Z. (MC/SC)

4028.0: Cuban ENIGMA V2A numbers station, YL/SS w/5N groups, mushy audio, in AM at 0115Z. (SJ/KY)

4038.5: NNN0TBK, NNN0RBD, AAR4TN in USN/USMC MARS net, in USB at 0108Z. (MC/SC)

4149.0: WPE Jacksonville (Crowley Maritime) wkg WBN-3014 (tugboat *Patriarch*) for formatted report in USB at 0514Z; WPE wkg WBN-3013 (tugboat *Sentry*) for formatted report in USB monitored at 0516Z. (ALS)

4173.0: Unid stations w/weak traffic, SELCAL VYXS (0719) for unlisted Brazilian station plus repeated "AQUI PORTO SANTO FAVOR, PODERIA ME INFORMAR ME NUMERO" in SITOR-A at 0817-0834Z; More weak early morning traffic in Portuguese here

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N3JW/M

MIKE ADAMS

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PANAMA CITY, FL

32401

73' FROM HAARP!

Photo E. N3JW received these QSLs after participating in the HAARP moon bounce experiment earlier this year.

2 days later, including same SELCAL, "DEVIDO AGUARDAR AUTORIZACAO...PARA APROXIMAR" ("Due to wait for authorization...to approach"), also CONFIRM, OBRIGADO ("Thanks"), "P-25" and "P-53," possibly supply vessels for Brazil's PETROBRAS offshore oil platforms numbered P-##, in SITOR-A from 0351-0652Z; Again over several days w/early morning traffic, included the same SELCAL, "P-35," NAVEGANDO. BOM DIA. DIESEL, CONSUMIDO, in SITOR-A from 0700-0910Z. (SJ/KY)

4177.0: Unid. vessel w/repeated weak SELCAL VYXS (0719) for unlisted station in Brazil, similar traffic heard a few months ago here and regularly this month on 4173.0 kHz, probably PETROBRAS supply vessels for Brazilian offshore oil platforms, in SITOR-A monitored at 0415Z. (SJ/KY)

4189.0: Unid station w/poor handsent L&N traffic using a keyer, in CW at 0949Z. (SJ/KY)

4207.7: NMG, USCG New Orleans, LA transmitting remotely on wrong freq again, parallel to much stronger standard freq 4317.9 kHz, in FAX at 0120Z. (SJ/KY)

4212.5: Unid station idling for long period in SITOR-B from 0112 to past 1100Z the next morning; here again next day idling, in SITOR-B from 0449 to 0947Z. (SJ/KY)

4426.0: NMN (USCG CAMSLANT), manual reading of storm warnings in USB at 0529Z. (GV/CO)

4476.0: SHADO or SHADOW 42 and AKILA 98 relaying coordinates of medium to large forest fire to unid recipient, in USB at 0318Z. (GV/CO)

4500.0: AFA2YR in USAF MARS 2S1 Net, in USB monitored at 0033Z. (MC/SC)

4585.0: KITTY HAWK, SAND LAPPER, JEFFERSON, and HILL CAP callsigns in Civil Air Patrol Middle East Region Command Net, in USB at 0039Z. (MC/SC)

4772.0: Link-11 data transmission at 1447Z. (MC/SC)

4865.0: Link-11 data transmission at 0011Z. (MC/SC)

5696.0: CG1702 calling CAMSPAC and raising CAMSLANT to pass msg to Group Honolulu that they are on Maui, in USB monitored at 0544Z. (GV/CO)

5800.0: Cuban V2A numbers station in CW at 0629Z. (GV/CO)

6201.0: ENIGMA M51 w/extended steady and fast machine-sent 5L groups, headers for several successive groups with format "BT NR 69 A 15 06:04:15 1980 BT," NR sequence from 69 to 74, time stamps 2 hours and a few seconds ahead of UTC, "A 15" would be April 15, heard on April 19, strong signal w/occasional deep fades, very similar

Glossary Of Utility Terms And Acronyms

AFB—Air Force Base

ALE—Automatic Link Establishment, a link control system that includes automatic scanning, selective calling, sounding, and channel selection, without human intervention using processor control.

AM—Amplitude Modulation

ANDVT—Advanced Narrowband Digital Voice Terminal, a secure voice mode used by the military.

ATC—Air Traffic Control

CAMSLANT—Communications Area Master Station Atlantic, the U.S. Coast Guard's primary HF radio station for the Atlantic region, located at Portsmouth, Virginia.

CAMSPAC—Communications Area Master Station Pacific, the U.S. Coast Guard's primary HF radio station for the Pacific region, located at Pt. Reyes, California.

COMMSTA—Communications Station, for example: COMMSTA Kodiak, a communications station of the U.S. Coast Guard, located at Kodiak, Alaska.

CGAS—Coast Guard Air Station

Cut Numbers—The use of letters in place of numbers when sending a long string of numbers, for brevity's sake. This is often done by "numbers" stations, such as sending one long dash instead of five normal dashes to indicate a zero, or the letter N instead of the number nine, etc.

CW—Continuous Wave (Morse code)

DE—The Morse code operating prosign DE, meaning "from," as in DE NMN, meaning from station NMN

D-Layer Absorption—A phenomenon where the sun's rays ionize the D layer of the atmosphere causing it to absorb, rather than propagate (reflect/bounce), radio signals at certain frequencies.

Duplex—A means of radio communication where a station can both transmit and receive at the same time.

EAM—Emergency Action Message, coded instructions commonly sent by U.S. military stations. Despite the name, they usually aren't emergency traffic at all.

EHF—Extremely High Frequency (30-300 GHz)

FAX—Facsimile, a transmission mode used to send maps, charts, and other non-textual material.

FEMA—Federal Emergency Management Agency, a part of the Department of Homeland Security.

FM—Frequency Modulation

Ham Station—A licensed station operating in the Amateur Radio Service under the control of an operator who is licensed to operate the station.

HF—High Frequency (3-30 MHz)

LINK-11—Also called TADIL-A for TACTical Digital Link, a secure digital data mode used by the military. Utilizes a 16-tone data modem to allow assets to share digital information, such as radar data.

M/V—Merchant Vessel

NAS—Naval Air Station

Propagation—The means by which radio signals get from one place to another; some forms are quite simple (such as line of sight) while others are much more complex (such as EME, or earth-moon-earth).

QRM—Man-made interference to radio signals

QRN—Natural interference to radio signals, such as the static crashes often heard due to thunderstorms

QSO—A contact between two or more stations

QSY—Change frequency.

QTH—Location

RTTY—Radio TeleTYpe

SELCAL—SElective CALLing, a method for activating a radio or data terminal at one station without disturbing other stations that are monitoring the same frequency.

Simplex—A means of radio communication where a station may transmit or receive at any given time, but not do both at the same time.

SITOR—Simplex Teletype Over Radio, a transmission mode used to transmit text messages over radio. There are two SITOR modes: SITOR-A (also called AMTOR) uses Automatic Repeat Request (ARQ); SITOR-B uses Forward Error Correction (FEC).

SWL—Shortwave Listener, a person who enjoys listening to short-wave radio stations.

UHF—Ultra-High Frequency (300-3000 MHz)

USAF—United States Air Force

USB—Upper Sideband

USCG—United States Coast Guard

USMC—United States Marine Corps

USN—United States Navy

UTC—Coordinated Universal Time, formerly known as Greenwich Mean Time, and also commonly referred to as ZULU time and abbreviated as in 1200Z.

UTE—Utility Station

Utility Station—Stations transmitting material that is not intended for reception by the general public and is not originating from an amateur (ham) station.

VHF—Very High Frequency (30-300 MHz)

VOLMET—Station that transmits aeronautical weather information. Comes from a French term that literally means, "flying weather."

traffic heard June 15 and 17, 2007, on 6950.0 kHz, July 18, 2007, on 5420.0 kHz and again 2 days later this month on 9141.0 kHz, in CW here at 0404Z to past 0517Z. (SJ/KY)

6265.5: S6NK6, EAGLE TAMPA, 107,123-ton Singapore-registered crude oil tanker w/MMSI to WLO, Shipcom R., Mobile, AL in SITOR-A at 1402Z. VRZ08, IVS KANDA, 32,621-ton Hong Kong-registered bulk carrier w/MMSI in SITOR-A at 1832Z. (SJ/KY)

6266.5: Unid vessel w/5-digit SELCAL 49892 and abbreviated ID "ETK1," first traffic heard on this frequency, probably to KLB, Seattle Marine R., Marysville, WA on paired frequency 6318.0 kHz picking up slack for the northeast Pacific since the USCG closed AMVER and OBS services at NOJ, USCG COMMSTA, Kodiak, Alaska on April 1, in SITOR-A at 2357Z. (SJ/KY)

6318.0: KLB, Seattle Marine R., Marysville, WA w/idle marker, first time heard here, in CW+SITOR-A at 0225Z. (SJ/KY)

6586.0: New York Radio w/kg Jet Blue 727 for POSREP "over KRAFT" at FL390; hands off to San Juan on VHF, in USB at 0714Z. (ALS)

6604.0: North Atlantic Volmet, unsure if Gander or NY, w/aviation WX in USB at 0530Z. (SS/TX)

6637.0: New York LDOC w/kg "FL West 722" for phone patch, in USB at 0145Z. (ALS)

6700.4: Unid dasher beacon, actual frequency 6700.42, suspect southern Mojave desert dasher that was thought dead, good levels in CW at 0606Z. (GV/CO)

6754.0: Trenton Military w/aviation WX in USB at 0540Z. (SS/TX)

6754.0: Trenton VOLMET, aviation weather broadcast, in USB at 2321Z. (MC/SC)

6761.0: REACH 195 coordinating air refuel with ETHYL 43, in USB at 2215Z. (MC/SC)

6963.0: ENIGMA M51 w/extended steady and fast machine-sent 5L groups, headers for several successive groups in same format as a few days earlier on 6201.0 and 9141.0 kHz, in CW at 0310Z and continuing to past 0400Z. (SJ/KY)

7529.5: USAF MARS station AFA2QG in USAF MARS Manned Transcon Digital Net in MFSK-16 at 0109Z. (GV/CO)

8356.5: Unid California fishermen discussing their suspicions concerning FDA being bribed to allow bad imported fish into country, in USB at 0528Z. (GV/CO)

8379.0: WDD3768, RESERVE TIDE, U.S.-registered offshore tug/supply ship w/callsign and vessel name in SITOR-A at 1404Z; 3EEB5, ETERNAL DILIGENCE, 74,994-ton Panama-registered oil products tanker w/MMSI and abbreviated ID "DIL" in SITOR-A at 1659Z. (SJ/KY)

8381.0: VRCG2, TI GUARDIAN, 290,927-ton Hong Kong-registered very large crude carrier w/MMSI, abbreviated ID "VRCG" and TEST command in SITOR-A at 0319Z. (SJ/KY)

8383.5: V7IM5, BALDER, 48,184-ton Marshall Islands-registered self-discharging bulk carrier w/open text test msg, abbreviated ID "BALD" and 5-digit SELCAL 53800 in SITOR-A at 1526Z. (SJ/KY)

8388.0: Unid vessel w/SELCAL XVSY (1097) attempting to contact NMN, USCG CAMSLANT, Chesapeake, VA on paired frequency 8428.0 kHz. SITOR operations at NMN were terminated on all frequencies a day earlier with minimal notice, in SITOR-A at 1904Z. Another unid vessel w/same 5 days after NMN shutdown, in SITOR-A at 0308Z, and another vessel 18 days after shutdown, in SITOR-A at 0240Z. (SJ/KY)

8391.5: Unid vessel w/traffic in English to UAT, Moscow R., Russia on paired frequency 8431.5 kHz: "TEST PLS ACK MY MSG." Moscow also heard but weaker, in SITOR-A at 0242Z. (SJ/KY)

8395.0: C6VU4, BREEZY VICTORIA, 40,964-ton Bahamas-registered oil products tanker w/SELCAL QVXY (2017) for XSQ, Guangzhou R., China plus MMSI and abbreviated ID "BREE," in SITOR-A at 2230Z. (SJ/KY)

8431.5: UAT, Moscow R., Russia w/weak idle frequency marker "DE UAT" in CW+SITOR-A. 0307Z. (SJ/KY)

8605.0: Unid station, carrier seems to be on 8604.78, modulated digitally at regular intervals w/repeated sequences of several transmission modes, usually has a bit of polar flutter, same again 2 nights later w/same transmission sequence except one longer period (80 seconds) of scrambled voice. In multiple modes at 2314Z. (SJ/KY)

8983.0: USCG CAMSLANT Chesapeake w/kg CG Rescue 2114 (HU-25D Falcon Jet, CGAS Miami) regarding finishing SAR pattern and then refueling, in USB at 1846Z; CAMSLANT w/kg CG-2121 (HU-25A Falcon Jet out of CG ATC Mobile) in USB at 1948Z. (ALS)

8903.0: KENYA AIRWAYS 519 working Kinshasa ATC, Dem Rep Congo w/position report in USB at 2336Z. (SJ/KY)

8983.0: SWORDFISH 28 (HU-25, CGAS Miami), postrep to CAMSLANT from benchmark PEARL, in USB at 2233Z. (MC/SC)

8998.0: Link-11 data transmission at 2320Z. (MC/SC)

9007.0: Trenton Military w/kg SHUCK 81 (E-3 AWACS, Tinker AFB 552ACW) after QSY from 11232 kHz, for phone patch to Tinker AFB in USB at 2053Z; then patch to DSN number for Tinker AFB "RAYMOND 24"; passes coded report; then patch to DSN number for Tinker AFB "Scout Ops"; tells them to call commercial number and pass aircraft tail number, in USB at 2104Z. (ALS)

9141.0: ENIGMA M51 w/extended steady and fast machine-sent 5L groups, headers for several successive groups with format "BT NR 46 A 22 02:00:00 1980 BT," NR headers from 46 to 50, time stamps were UTC plus 2 hours, same station heard previously and recently at different times on 5420.0, 6201.0 and 6950.0 kHz, in CW here at 0141 to past

0200Z. Again 2 days later on 6963.0 kHz. (SJ/KY)

9161.7: Two unid males plus a young child in casual simplex QSO in Spanish, actual center frequency 9161.75, in USB at 2320Z. (SJ/KY)

9251.0: ENIGMA E03, British M15 "Lincolnshire Poacher" w/fair signal, YL/EE w/5N groups, parallel 8464.0 kHz jammed, in USB at 2136Z, again at 2200Z. (SJ/KY)

11175.0: HF-GCS Station ANDREWS w/kg PELICAN 711 (P-3C, NAS Jacksonville VP-45 squadron) for phone patch to DSN number for NAS Jax TSC "FIDDLE," is assisting USCG in SAR for vessel with heart attack victim aboard; USCG wants to coordinate with NAF Mayport for helo to assist, in USB at 1813Z. (ALS)

11175.0: HF-GCS Station ANDREWS w/kg HAMMER 01 for phone patch to DSN number at Key West, in USB at 1827Z; USAF HF-GCS Station OFFUTT with test count in USB at 2149Z; USAF HF-GCS Station PUERTO RICO with test count in USB at 2159Z. (ALS)

11175.0: USAF HF-GCS Station ANDREWS w/kg SAM 2352 (Andrews 89AW acft) in USB at 1535Z; HF-GCS Station PUERTO RICO w/kg REACH 4134 (McGuire AFB 305AMW C-17A #04-4134) for radio check in USB at 2232Z. (ALS)

11175.0: HF-GCS Station MCCLELLAN w/kg SPECTRE 69 (AC-130U, Hurlburt AFB 16SOW) for phone patch to Hilda Metro (Scott AFB); gets WX for 1900Z arrival at Hurlburt, in USB at 1607Z; then patch to DSN number for Hurlburt CP; reports as acft 69-6570, ETA Hurlburt 1900Z, A-1 maintenance status, in USB at 1610Z. (ALS)

11175.0: USAF HF-GCS Station OFFUTT w/kg TEAM 10 (KC-10A, McGuire AFB 305AMW), phone patch to CP, asks status of receiver SENTRY 05 (E-3 AWACS, Tinker AFB); is told SENTRY 05 has cancelled, in USB at 1633Z; REACH 448 calls any station with no joy, in USB at 1723Z; OFFUTT in radio check with ANDREWS in USB at 1840Z. (ALS)

11175.0: USAF HF-GCS Station ANDREWS w/kg REACH 580 for phone patch to DSN number at USAF Sembach Metro, then alternate DSN, in USB at 1847Z; USAF HF-GCS Station PUERTO RICO w/kg LF-161 (P-3C, NAS Jacksonville VP-16 "War Eagles") for phone patch to DSN number for NAS Jacksonville TSC "FIDDLE" in USB at 1930Z. (ALS)

11232.0: Trenton Military w/kg C-130 KING 24 for phone patch to DSN number for Robins AFB "GUNRUNNER"; reports departed KLF1 (Langley AFB) 1815Z, in USB at 1826Z; Trenton Military w/kg CANFORCE 2186, passes "Ops Normal" message; gets phone patch to Ops; reports inbound in a few hours with 21 crew, 14 pax; will need forklift, in USB at 1908Z. (ALS)

11232.0: Trenton Military w/kg CANFORCE 2367 for WX; notes 9007 is secondary HF freq today, in USB at 1625Z;

Trenton Military wkg CANFORCE 3115; inbound with 8 crew, 48 pax, 14,000 pounds fuel; needs Customs, gets WX for Ottawa and SELCAL check, in USB at 2120Z. (ALS)

11330.0: New York Radio working Delta 57, American 2052, Continental 187, US Air 791, US Air 898, N725TA, for position reports and/or SELCAL checks in USB from 2145Z through 2152Z. (ALS)

12479.0: P3BN8, HANJIN KAOHSI-UNG, 43,925-ton Cyprus-registered container ship w/AMVER/PR, MMSI and abbreviated ID "HAKS," 175 miles southeast of Norfolk, VA to arrive there in just over 10 hours, in SITOR-A at 1557Z. V7FG7, SABINE (former HEIDMAR SABINE), 78,655-ton Marshall Islands-registered crude oil tanker w/AMVER/PR 1,000 miles east of Norfolk, VA en route to Gibraltar, arrive in 9 days, MMSI and abbreviated ID "HSAB," in SITOR-A at 1726Z. 3EHA5, ALERCE N, 21,304-ton Panama-registered bulk carrier w/AMVER/PR 180 miles east of Tampico, Mexico, and due to arrive there next morning, in SITOR-A at 1800Z; vessel heard again 5 days later near same position sailing at 13 knots in the other direction toward Tampa, FL arrive in 2 days, in SITOR-A at 1810Z. VRCK5, YA LONG WAN, 5,900-ton Hong Kong-registered newbuilt COSCO asphalt carrier w/MMSI and abbreviated ID "YALW" in SITOR-A at 2047Z. H9XX, MAPLE RIDGE, 76,633-ton Panama-registered bulk carrier w/MMSI and abbreviated ID "MVRI" in SITOR-A at 2110Z. (SJ/KY)

12490.0: Unid vessel w/SELCAL XVSY (1097) attempting to contact NMN, USCG CAMSLANT, Chesapeake, VA on paired frequency 12592.5 kHz 22 days after termination of SITOR operations there, in SITOR-A at 1710Z. (SJ/KY)

12492.0: Unid vessel w/SELCAL MCPV

(4650) for A9M, Hamala R., Bahrain in SITOR-A at 2330Z. (SJ/KY)

12492.5: Unid vessel w/SELCAL KPCV (3560) for CUL, Lisbon R., Portugal in SITOR-A at 0219Z. (SJ/KY)

12497.5: Unid vessel w/SELCAL XVSC (1096) for NMC, USCG CAMSPAC, Pt. Reyes, CA on paired frequency 12600.0 kHz, this is an On Request frequency not regularly monitored by NMC, in SITOR-A at 1945Z. Same again briefly the next night at 2208Z. (SJ/KY)

12540.5: Unid vessel w/SELCAL QVXV (2010) for XSG, Shanghai R., China, good signal here but no contact, in SITOR-A at 1918Z. (SJ/KY)

12788.0: NMN (USCG CAMSLANT Chesapeake) with automated announcements about its services, just ending, in USB at 2204Z. (GV/CO)

13270.0: New York VOLMET, just ending, Gander unheard, in USB at 0051Z. (GV/CO)

13927.0: USAF MARS Operator AFA6AY (California) wkg REACH 7032 for M&W phone patch; will be on the ground in a couple of hours, in USB at 2055Z; SPAR 76 via USAF MARS for patch to commercial number in Texas to make hotel reservations in USB at 1905Z. (ALS)

13927.0: SHARK 67 (Coronet Oak C-130) via USAF MAR, M&W patch to commercial number in Puerto Rico, arriving at 5:30 p.m., in USB at 2026Z; USAF MARS Operator AFA1QW (Greenwood, IN) wkg TEAL 42 (WC-130J, Keesler AFB) for phone patch to confirm cargo drop, in USB at 1555Z. (ALS)

13927.0: USAF MARS Operator AFA6AY wkg KILLER 01 (B-1B, Dyess AFB 7BW) for phone patch to DSN number for Killer Ops at Dyess, advises RTB to Dyess; ETA 2400Z; rqsts WX for that time of arrival,

in USB at 2236Z; AFA6AY wkg RAMA 52 (Ellsworth AFB B-1B) for patch to Ellsworth AFB to report ETA and obtain arrival WX, in USB at 2255Z. (ALS)

13927.0: USAF MARS Operator AFA6PF (Los Angeles) wkg SHARK 21 (Coronet Oak C-130, 60 miles north of Panama), phone patch to DSN number for Keesler CP, reports departed SKBO (Bogota, Colombia) at 1616Z, ETA Keesler 2220Z, requests Customs, needs transport to Gulfport for three Ravens (USAF Security Force personnel) with their weapons, in USB at 1755Z. (ALS)

13927.0: EVAC 66158 (C-17A #06-6158, Travis AFB 60AMW) calling any MARS station with no joy in USB at 2247Z; USAF MARS Station AFA6AY wkg EVAC 61393 (C-130H #86-1393, MO ANG, Rosecrans MAP, St Joseph MO) for phone patch in USB at 2252Z; USAF MARS Station AFA4DD (Darryl, TX) wkg AFA1EN (Ray-Shelbyville IN) regarding radio problems, propagation, etc; AFA1YV (Dick-Binghamton NY) checks into the net, in USB at 1952Z. (ALS)

13927.0: USAF MARS Operator AFA1EN wkg REACH 55142 (March AFB 452AMW C-17A #05-5142) over MT for phone patch to 206 Area Code (WA) in USB at 2034Z; USAF MARS Station AGA2PA (Nelson-FL) wkg AFA6AY (Travis AFB); AGA2PA at "21st Annual Vietnam and All Veterans Reunion" in Melbourne FL, in USB at 2000Z. (ALS)

13927.0: USAF MARS Operator AFA6AY wkg VOLT 39 (C-17A, Charleston AFB 437AW) for patch to Charleston AFB Command Post, in USB at 2217Z; USAF MARS Operator AFA1QW wkg REACH 135 for phone patch to DSN number at McGuire AFB, in USB at 1634Z. (ALS)

15000.0: WWVH, Hawaii completely overriding much closer but inaudible WWV in Colorado, in AM at 0310Z. (SJ/KY)

16178.0: Strong carrier w/minimal fading, possibly Cuban ENIGMA V2A, 1637 to 1657Z s/off. (SJ/KY)

16685.5: ZCBF3, POWER, 32,207-ton Bermuda-registered container ship w/garbled AMVER/PR in SITOR-A at 1708Z. 3FMM6, NAPARIMA, 30,947-ton Panama-registered chemical/oil products tanker w/MMSI, abbreviated ID "NAPA" and repeated request to send a Direct Telex to MOLTANK EUROPE via WLO, Shipcom R., Mobile, AL in SITOR-A at 2215Z. (SJ/KY)

16696.5: Unid vessel w/SELCAL XVSY (1097) attempting to contact NMN, USCG CAMSLANT in Chesapeake, VA 21 days after termination of AMVER/OBS services there, in SITOR-A at 1840Z. (SJ/KY)

16804.5: NMO, USCG COMMSTA Honolulu, Hawaii w/idle frequency marker remotely keyed up on wrong frequency (freq assigned for GMDSS DSC traffic), in CW and SITOR-A at 0130Z. (SJ/KY)

16809.0: IAR, Rome R., Italy w/idle marker on unlisted frequency, regular 16820.0 kHz also active, same heard 9 days earlier, in CW+SITOR-A at 2047Z. (SJ/KY) ■

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As I write this month's column, a strong aftershock has just struck the countryside of Western China, a region already devastated by powerful earthquakes, landslides, and tremendous loss of life. I haven't heard whether Chinese hams played a role in the aftermath, but I'm keeping an eye on the situation from the relative safety of "Tornado Alley."

Not too far away from the quake zone, a cyclone killed thousands in Myanmar last week, and international relief agencies still can't get into the affected areas to distribute food and medicine. I don't think hams helped in that disaster (other than to donate money to relief agencies), as ham radio—just like everything else—is mostly locked down and outlawed in a country ruled by a hard-line dictatorship.

The fire season has just begun in California and other burn-prone parts of the West. Which will be the first to flare up? By the time you read this in August, you'll probably know the answer.

Closer to home, more than 50 tornadoes ripped through the Midwest this weekend, killing several people and destroying hundreds of homes. One jumbo twister slashed through Hugo, Minnesota, a bit to the north of my Rochester QTH, scouring more than 30 homes from their foundations. This year is off the charts when it comes to twister activity—especially the widespread outbreaks in the winter and early spring. I can't remember *any* previous winter tornadoes, much less a rash of them.

If you add the specter of global warming, which is forecast to bring sea level increases, warmer temperatures in the biggest oceans (with more and bigger hurricanes and cyclones), etc., it's difficult to imagine things settling down anytime soon.



Ever wonder what you might see through your car window as a SKYWARN member? On Tuesday, September 18, 2007, at about 6 p.m., Don Blalock photographed these waterspouts about seven miles from Marco Island, Florida. On that particular day, several spouts appeared around the coastline of Collier County. The photo is from www.colliergov.net, where you can see other tornadoes photographed by SKYWARN spotters. For more information on SKYWARN and how to get started, visit www.skywarn.org.

And, although each situation is unique, on the whole, cell phones, satellite phones, and commercial communication systems and even the Internet haven't made ham radio obsolete when it comes to providing public safety and disaster communications. We're still needed. *You're* still needed.

Just ask Motorola. During the post-Katrina chaos in Louisiana, Motorola brought in its newest whiz-bang inter-agency "mega repeater," designed to keep everyone in touch with everyone else during disaster clean-up efforts. Although it worked in the lab, it didn't work in the field. At all. But the hams in the field did just fine (notice a pattern here?).

Hams, as licensed members of the Amateur Radio Service, are fulfilling

their public service duties like never before.

Yes, from the government's point of view, ham radio is a service. It doesn't give us big chunks of spectrum (it could otherwise auction off) for nothing! We have various roles to play, and one of the largest is filling in the gaps when traditional communications fail. Served agencies everywhere will always welcome the services of trained, expert volunteers—hams—to assist in emergencies.

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yard. And when that happens, it's too late to prepare. That's why the best place to start learning about and preparing for emergencies is your local ham club. Chances are good that the topic's come up before! Your club may also be affiliated with local, regional, and national emergency preparedness organizations.

Local clubs often provide non-emergency communications for local events, such as parades, races, sporting events, and marathons. These public service communications, while not earth shattering in their importance, provide excellent training for "the real thing."

You can learn a lot from participating in these events, which often require only a VHF/UHF transceiver and a willingness to volunteer to get started. After you've cut your teeth locally, you'll be prepared to get involved with regional and national emergency communication groups, most of which are coordinated through your local ham club's affiliation with ARES and RACES.

ARES And RACES

Although they may sound like Greek gods, ARES (Amateur Radio Emergency Service) and RACES (Radio Amateur Civil Emergency Service) are the two major emergency communication organizations in the United States. ARES is coordinated by the American Radio Relay League at the national, regional, and local level. RACES is administered by local, county, and state emergency management agencies and is supported by the Federal Emergency Management Agency (FEMA) of the United States government. It's a part of the amateur radio service that provides radio communications for civil-preparedness purposes *only*, during periods of local, regional, or national civil emergencies. These emergencies are not limited to war-related activities, but can include natural disasters like fires, floods, and earthquakes.

It's important to note that RACES operation is authorized by emergency management officials only, and this operation is strictly limited to official civil-preparedness activity in the event of an emergency-communications situation. ARES operation can be initiated locally for a variety of public service communications that don't necessarily involve declared emergencies.

Most public service-oriented hams are members of ARES and RACES simulta-



Once you've completed your SKYWARN training, sponsored by the National Weather Service and held at dozens of local and regional SKYWARN offices nationwide, you can add a patch like this one, from www.skywarnsupply.com, to your spotter's vest.

neously. They work, learn, and train under local ARES coordination, and when needed for larger-scale emergency comms they are activated and coordinated via RACES.

It's actually more difficult to describe than it is to join and understand! The League's website at www.arrl.org has plenty of information about both groups. Perhaps the best place to start is by reading the League's online *Public Service Communications Manual* at www.arrl.org/FandES/field/pscm/index.html.

Other resources available from the ARRL or your favorite ham radio book-seller include *The ARRL Emergency Communication Handbook*, *The ARRL Emergency Communication Library* (CD-ROM), and *Emergency Power for Radio Communications*, by Michael Bryce, WB8VGE.

Disaster Communication Principles

Whether you're a lone wolf or are learning emergency communications techniques with your local club, every ham should at least be familiar with the basics. These are excerpted from the *PSCM*, referenced above:

- Keep QRM to a minimum. In a disaster, many important, on-site stations will have weak signals, and it's essential that other listening stations remain silent unless

they're asked to join in. Don't transmit unless you are sure you can help by doing so.

- Monitor established disaster frequencies. Many localities and some geographical areas have established disaster frequencies where someone is always (or nearly always) monitoring for possible calls.

- Avoid spreading rumors. During and after a disaster situation, especially on the phone bands, you may hear rumors, misinformation and completely false statements! All transmissions should be officially authenticated as to their source, and these transmissions should be repeated word for word, if at all, and only when specifically authorized.

- Authenticate all messages. Every message that purports to be official should be written and signed. Whenever possible, amateurs should avoid initiating disaster or emergency traffic themselves. We do the communicating, while the agency officials we serve supply the content.

- Strive for efficiency. During the chaos of an emergency situation, resist the urge to man your station "round the clock" at the expense of your health and operating efficiency. It's much better to work in shifts at a designated and well-equipped emergency station. You'll work with other qualified (relief) operators, which reduces interference and boosts efficiency.

- Select the band and mode best suited to the needs at hand (and not necessarily your favorites). There is, of course, no alternative to using what happens to be available, but there are ways to optimize available communications. Long experience suggests that CW has excellent range for any given power level, requires the simplest transmitting equipment, and is relatively difficult for non-hams to intercept. Voice modes, on the other hand, are more practical for mobile and portable work, are faster for tactical or command purposes, and are accessible by a wider variety of operators and non-hams alike.

- Use all communications channels intelligently. While the prime objective of emergency communications is to save lives and property, amateur radio is a secondary communications means. If you can get a message through in less time via telephone, text messaging or other "normal channels," set your radio aside for the moment and do so!

- Don't "broadcast." Some amateur emergency stations emulate "broadcast" techniques. Although the general public may be listening, our transmissions are not and should not be made for that purpose. Our job is to communicate for, not with, the general public.

In the tumultuous, tempestuous early part of the new century, there are more ways to carry out our civic ham radio duties than ever before. To steal an adage from the Boy Scouts: Be Prepared! ■

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Come Fly With Me...

Cannot find server. There is no dial tone. The lawn is two feet tall and has gone to seed. The ferrets are fine, the cats are fine, one of the rats (pets, that is) had escaped and our good friends and ad hoc pet feeders were not adept at recapturing a rat that likes exploring what is laughingly called my "office." Food and water had been left out for him. He was glad to see me when he reappeared.

It has been years since we have left the stately Price manse here in Cowfield County for two whole weeks. But our son was just married and we got to spend some wonderful time with friends who have become family. We have sworn to retire to the desert just as soon as we can vacate "Humid World."

I have missed you readers during this away time, particularly because my "Gimme That Old Time Radio" column drew more reader response than any other in the dozen or so years I've been privileged to be here on this back page. (Also, I was away from all Internet connections save for one evening). Yes, I get the hint; there will be more to come. I'm going to nag some of the sources of recorded old-time radio to advertise in the pages of *Pop'Comm* so that all of you can take advantage of some of the wonderful enjoyment I've found. Enough about that for now.

As many of you know, although I have a lovely SSB rig complete with all the trimmings, courtesy of Norm, I have not been on the air since sometime before Eisenhower was a sergeant. I have also not owned a 2 meter rig since the demise of a wonderful antique radio given to me by W1JR, perhaps one of the smartest engineers I know and someone who would probably try to remain anonymous except that he can't have an unlisted callsign.

So it was off to Utah with nothing more than a cell phone, which I'm sorry to say has replaced the need (not the want) for a 2 meter rig while traveling. No chatty QSOs, no meeting a few readers on some repeaters I've never signed onto before, but at least some communication.

Utah is apparently divided into two communication areas: "The Valley," which runs down the center of the state and has cell service, and "The Rest of the State," which has a cell site or two here and there if anyone happens to live nearby, or if I-80 passes through.

I should add that that's not the fault of the people; our government owns most of what's not populated, and it frowns on people just building a house or town on *its* land. I always thought we created the government to do our bidding, but I must have missed something along the way.

The difficult parts of the trip were going to, from, and through airports. I used to fly to and from the southwest quite frequently when selling television transmitters and translators through the '80s and beyond. Flying was easy then, and I got a free duffel bag every time I rented a Town Car for \$39.95 a day. That was then.

It was surprisingly easy* to take four handguns and ammunition onto my flights in each direction. Not so for my har-

"It was surprisingly easy to take four handguns and ammunition onto my flights in each direction. Not so for my harmonicas..."

monicas, which were carry-on luggage. TSA was okay with my doing a bit of target shooting at my destination, but those evil-looking chromatic harmonicas caused quite a stir. And although my insulated camera bag held only one digital camera, it was stuffed with batteries, re-chargers, medicine, gaffer tape, memory chips, and enough densely packed electronics to cause a delay and require examination. The ice surrounding my insulin was an issue, so I just dumped it at the checkpoint and got fresh ice inside the secure area rather than measuring to see if it exceeded the 8-ounce limit and whether it might be considered a liquid or a gel, depending on how long I'd been waiting in line.

Onboard the plane, the security announcements informed me that I could turn on cell phones and two way pagers so long as the transmit function was not turned on. I didn't quite know how to do that, and I wasn't interested in setting a new DX record with my cell phone from 40-some-odd thousand feet, so I didn't try. What bothered me most was that my pocket Sudoku game from Mega-Lo-Mart was not on the approved electronic device list, so I hesitated to use it lest we fly in circles and use up all our fuel over Iowa. I found a pencil-friendly version in the seat pocket that I kept finishing, erasing, and re-solving until I wore holes through the page; it's an advantage of having completely lost my short-term memory. I also hide my own Easter eggs.

My digital camera was not on the approved electronic device list either, but the flight attendant assured me it was okay to use. Did you know that since most digital still cameras record short movies and sound clips (and play them back) that you can use one as an MP3 player? I discovered it accidentally while I experimented with using a camera's memory chip to transfer some files from home to work and vice-versa. I was lucky to have a camera with a headphone jack; however, it does not offer stereo playback, nor does it have what you'd call a wide range of audio controls. I haven't yet figured why cameras and such don't use the ever-cheaper memory sticks, but I've always been a conspiracy theorist and I'm sure they're all in cahoots with each other to get as much of my money as they can. They're probably owned by the phone company and big oil.

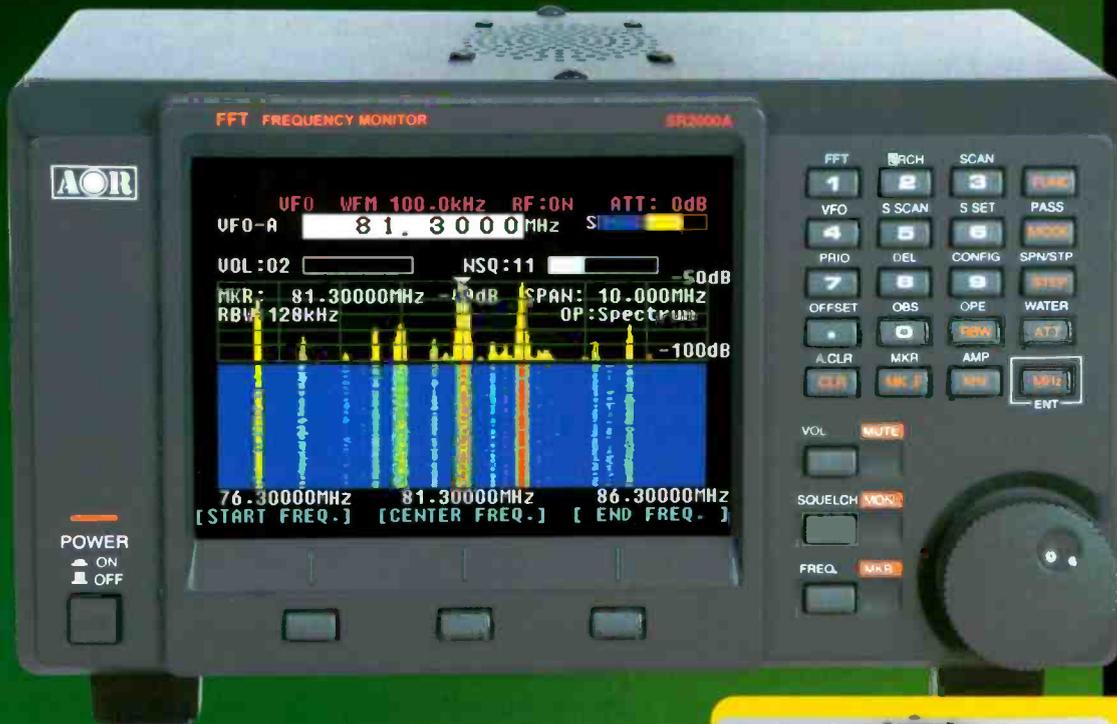
Only one other word of advice for those of you who are not what you'd call "frequent-fliers": Even though it's not against regulations to wear an aluminum-foil hat to keep out the "voices" while flying, be advised that it'll usually be cause for at least a strip-search, if not a big delay.

**Really. Go to the TSA website and your airline's website for details and follow them scrupulously!*

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