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

45635

POPULAR COMMUNICATIONS

OCTOBER 2008

Analog Cellular Service Sunsets After 25 Years

- **Danger In The Air?— Tuning Iran,** p. 22
- **Tech Showcase: The Cobra 29 LTD BT CB With Bluetooth Wireless Technology,** p. 29

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PCR1500
R1500

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ICOM

PCR2500
R2500

The **Icom PCR2500** wideband computer receiver uses a similar form-factor to the PCR1500, but has several enhancements, including two powerful features: ***dual watch*** (the radio can receive two signals simultaneously) and ***diversity reception*** (two antennas can be connected at the same time and employed to provide stable reception). The optional UT-118 Digital Unit provides D-STAR® digital voice reception and the optional UT-121 supports APCO25 digital voice decoding. The R2500 is shown above. *#2501* **$699.95**

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Special Note: Prices shown for the R1500/PCR1500 and R2500/PCR2500 reflect the $20 Icom limited time mail-in rebate.

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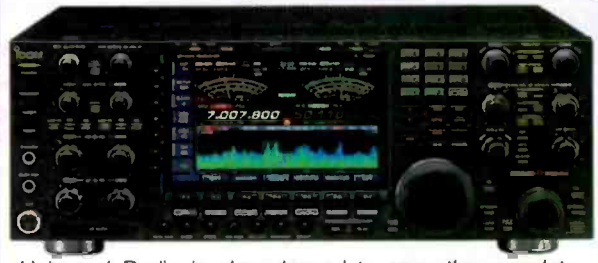

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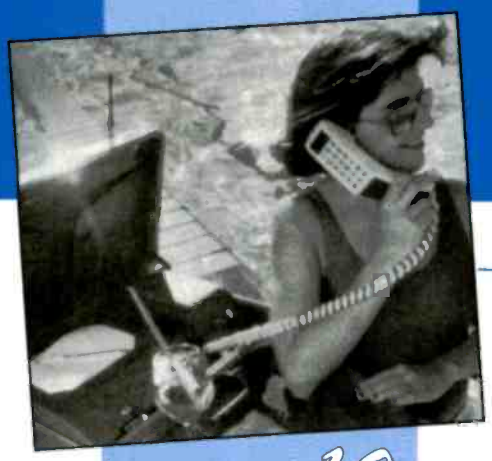

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Features

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On The Cover

The dawn of Advanced Mobile Phone Service about a quarter of a century ago began a revolution in personal telecommunications, and today, by some estimates, 84 percent of the U.S. population subscribes to cellular services. Those services are rapidly going all-digital with the FCC's nod to wireless service providers' retiring their existing analog cellular networks. See "Watching The Analog Sunset," starting on page 10, for more on the waning days of an era. (Cover by Larry Mulvehill, WB2ZPI)

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

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Eliminate power line noise!

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

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by Edith Lennon, N2ZRW, Editor

Mr. Congressman, Tear Down This Wall!

The Full Digitization Of Cellular Phone Service Should Mean The Decriminalization Of Monitoring The Entire Spectrum

It's time. The FCC has greenlighted cellular service providers retiring their analog system—the once so promising Advanced Mobile Phone Service (AMPS)—in favor of far more efficient, and profitable, digital modes. For once, the transition to digital communications, so often the bane of scanner monitors' existence, has presented us with a golden opportunity. As analog cellular service takes its place in communications history, it's time to reclaim what was taken from us beginning with the infamous Electronic Communications Privacy Act (ECPA) of 1986: our right to monitor the entire radio spectrum and to do so without fear of prosecution.

In a stellar example of aggressive political pressure and blatant hoodwinking, the Cellular Telephone Industry Association (CTIA), the lobbying arm of the Wireless Telecommunications Industry, managed to convince the public (Congress was probably easier) that their little slice of spectrum—the frequencies between 824–849 MHz and 869–894 MHz—could be walled off like Berlin, its privacy protected by draconian (did you know that simply listening to a cellular call is a felony punishable by up to five years in prison?), but unenforceable, laws.

Of course, cellular handsets are not your "grandfather's phones," tethered to privacy from all but government agencies by land lines. As readers of *Pop'Comm* well know, but the public was duped about, *cell phones are radios*. Their signals reach antennas the way a breeze does. It makes as much sense to criminalize winds between certain speeds.

The ECPA was just the start. Industry and government have been chipping away at our ability *to simply listen to* parts of the radio spectrum ever since. Today it's forbidden to sell new scanners capable of receiving these frequencies. There isn't enough space on this page to go into the twists, turns, and dangerous ruts of the road that got us here (that's the job of our cover story, "Watching The Analog Sunset"; it makes for fascinating, if maddening, reading).

But the "beauty," to use a word loosely, of where we are now is that we no longer have to debate individual freedom versus privacy or undue burden versus the CTIA's next argument. When the last analog cellular system shuts down, this absurd law will become something else: pointless. *Consumer-grade full-spectrum scanners can't demodulate the digital modes that are replacing analog cellular; any more than they can on the 1900 MHz PCS bands for which no monitoring restrictions exist.*

Don't get me wrong, this will still take a fight. Never underestimate the power of inertia or of a bad idea entrenched. But it is our best chance since the CTIA started reading off its wish list to its friends in Washington. Contact your Congressional representatives and tell them you want to see these senseless laws amended to respect the pre-1986 wording of the Communications Act of 1934, which served everyone's interest well and still makes sense. It forbade divulging, or profiting from, the contents of privileged non-broadcast radio communications.

We believe the government should never censor our radios or legislate our sense of hearing. Now the government has no reason to.

In Memoriam

Gene Costin, known to hobbyists as Gene Hughes, the name under which he published the renowned *Police Call*, has passed away. He was 80 years old.

A giant in the hobby, Gene's impact in his 41 years of producing *Police Call*, the "bible" of services monitoring, cannot be overestimated. We at *Pop'Comm* extend our deepest sympathies to his family and friends in the humble knowledge that we, too, owe him a great debt of gratitude. Thank you, Gene. ■

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by D. Prabakaran

News, Trends, And Short Takes

Voice Of America To Eliminate Seven Radio Language Services

The Voice of America plans to eliminate seven radio language services this year, reflecting the Bush administration's emphasis on outreach to the Muslim world. Among the cuts are the shortwave radio and TV broadcasts of the Russian service, along with radio broadcasts in Ukrainian, Serbian, Hindi, Macedonian, Bosnian, and Georgian.

Tish King, a spokeswoman for the Voice of America, was quoted as saying that the language services cuts are the result of "painful decisions" that reflect a focus on "places where, based on research, we can be most effective."

The administration has been seeking cuts to various language services for years, only to be rebuffed by Congress. In 2006, the administration's proposed budget for the Broadcasting Board of Governors (the agency that oversees VOA and Alhurra, an Arabic-language American satellite TV channel) included reductions or eliminations in "non-war on terror related language services." When the 2007 budget proposed reductions to even more services, Congress stepped in and provided funding to prevent it.

This time around, however, King said Congress is on board with the cuts, which were to become effective in September. Given that VOA's shortwave radio service in Russian has such a small audience—just two percent—King said broadcasting by Internet was the best option for VOA.

Tim Shamble, president of the American Federation of Government Employees (AFGE) Local 1812, the union representing VOA employees, said that eliminating the shortwave broadcasts was precisely the wrong move, since they reach the country with little danger of being blocked. Internet broadcasts are far more vulnerable, he said.

Journey To Common European Digital Radio Begins

For many decades, European radio listeners using one of the analog systems broadcast in the FM and AM frequency bands have been able to buy and use their radio receivers, in their home or car, anywhere in Europe. With the transition to digital broadcasting, this comfortable situation will change, unless action is taken.

Digital technology will offer much to radio listeners and broadcasters, including greater flexibility of sound quality, more choice of stations, and many other new features. The transition for radio, just as for television, is inevitable. However, up until now, European nations have been choosing different technical systems for their digital radio.

At the meeting of the European Broadcasting Union (EBU) Technical Assembly earlier this year it was agreed that the EBU must actively encourage convergence towards a common European radio receiver, which would allow a pan-European market. The objectives include offering the lowest costs for the consumer, the greatest choice, and high technical quality. The common radio may include some of the elements of the major systems. The EBU agreed to work together with the European Association of Consumer Electronics Manufacturers (EICTA) and WorldDMB, the group of companies encouraging DAB-based digital radio.

A meeting took place on July 10, 2008, at the EBU headquarters in Geneva during which broadcasters' needs for a common European digital radio were discussed. It may be possible to formulate, if not a single radio receiver for Europe, a limited number of compatible receivers, which each corresponding to different needs for radio as well as its requirements in combination with multimedia. The EBU hopes to make progress as rapidly as possible.

BBC World Service Closes Its Romanian Language Service

BBC World Service is to close its Romanian language service. The news and current affairs service proposed to cease broadcasting on August 1, 2008, after 68 years. BBC Romanian broadcasts for almost four hours a day on radio and also runs a complementary website. It is the last of the BBC's non-English language services specifically aimed at countries that are EU member states.

The change follows a review of BBC World Service's language service portfolio after its overall funding levels, for the three-year funding period between 2008/09 and 2010/11, were agreed upon with the UK government in October 2007. This will be BBC World Service's only language service closure during this current funding period.

The BBC says this decision, which has been endorsed by the BBC Trust and the FCO, comes after consideration of audience need, the changing media landscape in Romania, and the declining impact of the service. The changes are also made within the context of the very tight financial framework in which BBC World Service operates.

BBC World Service's funding settlement gave increased resources for new projects, such as television services for BBC Arabic and BBC Persian. But it also imposed a tough savings target of around 3 percent per annum to meet rising costs of existing services.

The BBC says that broadcasts in Romanian for the Republic of Moldova will also cease, as the Moldovan side of the operation cannot be sustained without the infrastructure of BBC Romanian. Romania will continue to be served by other BBC Global News services in English, such as BBC World Service radio, BBC World News television, and online.

The BBC's five local FM relays (four in Romania and one in the Republic of Moldova), which currently broadcast a mixture of Romanian and English programs, will broadcast English programs exclusively (plus Russian and Ukrainian in Moldova), subject to agreement with local regulators.

The closure will affect 46 staff (30 in Bucharest in Romania;

four in Chisinau in Moldova, and 12 in London) and will save £1.3 million per annum.

RFE/RL To End Its Broadcasts To Romania

After the BBC announced that it would close its Romanian service on August 1, Radio Free Europe/Radio Liberty announced that it would do likewise, also on August 1. However, unlike the BBC World Service, RFE/RL's Romanian-language broadcasts to Moldova and the Transdniester region will continue.

The Romanian Service began experimental broadcasting on July 14, 1950, and was fully operational by May 1, 1951. For years, its broadcasts were a thorn in the side of Romania's communist rulers who, according to a 2006 Romanian government report, may have been responsible for the deaths of three RFE/RL Romanian service directors.

In a 2006 address to Parliament, Romanian President Traian Basescu paid homage to the RFE/RL journalists who, he said, "fought with altruism and passion for the knowledge and utterance of the truth...Their unforgettable [Radio] Free Europe broadcasts were the moral conscience of Romanians."

European Broadcasters Go Green

The European Broadcasting Union (EBU) has launched a multimedia package of co-productions to promote greater awareness of climate change. The proposal was announced at the EBU's General Assembly in Budapest by the Director of Eurovision TV, Bjørn Erichsen.

Climate change and global warming are high on the international political agenda. This year's G8 summit sees climate change as one of its main topics of discussion. Public service broadcasters also have a key role to play in this field, as it is at the very heart of public service to inform citizens about environmental issues and possible solutions, it was stated.

The multimedia package dubbed "Green on Air" represents the EBU's contribution to the global warming campaign. The program—covering many genres including documentary, entertainment, children and youth, and online services—will be produced over the next 18 months and screened in December 2009 when the UN Global Summit on Environmental Issues is held in Copenhagen. "Green on Air" is a program package of 51 formats, compiled from 40 broadcasters and independent production companies in 14 European countries.

Flat-Screen TVs Contributing To Global Warming

It seems that the rising popularity of flat screen TVs has not been good for the environment. A gas used in their manufacture, nitrogen trifluoride (NF3), is being blamed for damaging the atmosphere, the Australian Broadcasting Corporation reports. Almost half of the TV sets sold around the world so far this year have plasma or LCD flat screens. The gas, estimated to be 17,000 times as powerful as carbon dioxide, is said to be accelerating global warming. NF3 is not covered by the Kyoto protocol as it was produced in only tiny amounts when the treaty was signed in 1997. Levels of this gas in the atmosphere have not been measured, but scientists say it is a concern and are calling for it to be included in any future emissions cutting agreement.

Polish Radio External Service Begins Longwave Broadcasting

On July 1, 2008, Polish Radio External Service started broadcasting on 198 kHz longwave. The 198 kHz LW frequency is shared with Polish Radio Parliament, which will continue to broadcast when parliament is in session. At all other times Polish Radio External Service transmits on this frequency.

Polish Radio External Service broadcasts in seven different languages: English, Hebrew, Russian, Ukrainian, Belarusian, German, and Polish. English language transmissions on 198 kHz are at 0700 and 1200 UTC, available when Radio Parliament is not broadcasting.

The 198 LW frequency can be picked up in Poland and is also able to reach Polish diaspora in neighboring countries, especially Germany, Ukraine, Belarus, and Russia, providing up-to-date information on what's going on in Poland. Shortwave, Internet, and satellite transmissions remain unaffected. ■

by Richard Fisher, KI6SN

Capitol Hill And FCC Actions Affecting Communications

FCC OKs Satellite Radio Merger

After months of anticipation, the Federal Communications Commission has approved the $3.3 billion buyout by Sirius Satellite Radio of XM Satellite Radio Holdings, clearing the way for the merger of the nation's two satellite radio providers. It was the final chapter in a 16-month drama that was closely scrutinized by Capitol Hill and Wall Street. More than 18 million subscribers will be able to receive both services.

The FCC voted 3-2 to approve the merger, with Commissioner Deborah Taylor Tate, a Republican, as the tie-breaker. According to published reports, Tate demanded that the companies settle charges that they violated FCC rules before she would approve the deal. The companies subsequently agreed to pay $19.7 million to the U.S. Treasury for violations related to ground-based signal repeaters and radio receivers.

The land-based radio industry had lobbied vigorously against the merger. Consumer groups, some members of Congress, and state attorneys general also opposed the buyout, arguing a satellite radio merger would hurt consumers and was not in the public interest.

"I hope they keep their edge and don't become a fat and happy monopoly," said Democratic FCC Commissioner Jonathan Adelstein in an Associated Press report. Adelstein voted against the buyout as did fellow Democrat Commissioner Michael Copps. Joining FCC chairman Kevin Martin and Tate in approving the deal was Republican Commissioner Robert McDowell.

Shock Hazard Prompts Recall Of RadioShack Power Supplies

A voluntary recall has been announced by RadioShack and the U.S. Consumer Product Safety Commission of certain of the company's 13.8-VDC power supplies. The CPSC said the recall involves RadioShack 13.8-VDC Power Supplies, manufactured in China, with catalog numbers 22-507 and 22-508 and with date codes from 08A04 through 01A08.

The date code format is MMAYY where MM is the month and YY is the year, the CPSC said. The commission said the catalog number and date code are located on the back of the power supply. About 160,000 units were produced. Power supplies with a green dot on the product and the product's packaging have already been repaired and are not included in the recall.

"Due to a manufacturing defect, the line-in connections to the PC board have been reversed," RadioShack reported. "This creates a potential electrocution and fire hazard. For your safety, RadioShack has decided to recall the two affected products."

"The CPSC said that consumers should stop using these power supplies immediately," according to a report on the American Radio Relay League's website. "No injuries have been reported in conjunction with the power supplies that were sold in RadioShack stores nationwide from October 2004–January 2008 for between $50 and $85," the report said. "The CPSC recommends for consumers to unplug the recalled power supply immediately and take it to any RadioShack store for a free repair."

For users whose power supply appears to be functioning normally, RadioShack cautions that, "the wiring is still incorrect and poses a potential electrocution and fire hazard. We recommend getting any recalled device repaired as soon as possible." A notice is being mailed to registered owners of the recalled power supplies. For additional information, contact RadioShack at 800-843-7422 anytime. The company's website is www.radioshack.com.

FCC Conducts TV White Spaces Testing

As part of its rulemaking to consider authorizing the operation of new low-power devices in the TV broadcast spectrum at locations where individual channels or frequencies are not being used for authorized services, the Federal Communication Commission's Office of Engineering and Technology (OET) began field testing the performance of prototype television white space devices (WSD), in mid-July. The test plan was initially released in January. The TV white spaces are used for wireless microphones, which makes the issue a concern not only for TV stations, but also for radio.

Test locations include suburban, residential, urban high-rise and rural areas, according to published reports. Two of the field tests were to be devoted to testing interference related to wireless microphones. During lab tests of proposed white spaces devices, many units did indeed cause interference, the report said.

FCC Meets With Radio Amateurs On BPL Remand

Members of the FCC's Office of Engineering and Technology met with representatives of the American Radio Relay League in Washington, D.C., in July to talk about a recent U.S. Court of Appeals decision regarding broadband over power lines (BPL) and "a possible regulatory approach" to BPL with the FCC. ARRL President Joel Harrison, W5ZN, Chief Executive Officer David Sumner, K1ZZ, and General Counsel Chris Imlay, W3KD, met on behalf of the League membership.

In the case, the Court of Appeals agreed with the ARRL on two major points and remanded the rules to the Commission. According to Imlay, suggestions put forth by ARRL "would address the needs and concerns of amateur radio operators in avoiding harmful interference from (BPL systems) while imposing the minimum necessary regulatory obligations on

(Continued on page 80)

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

Frequency Coverage:

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

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Watching The Analog Sunset

AMPS Analog Cellular Shutting Down After 25 Years

by Bernard Bates

Photo A. Motorola IMTS (pre-cellular) radiotelephone circa 1965; note the rotary dial. Only 11 VHF-HI and/or 12 UHF channels per system meant long wait times for a dial tone, and years of waiting for an account. This spurred demand for cellular phone systems with far greater capacity. Cellular was finally implemented in the mid-1980s.

Editor's Note: It's not often that Popular Communications *devotes so much space in a given issue to one topic, but this month we make an exception for our cover story's subject—the demise of analog cellular service—for two reasons. First, no recent technological development exemplifies the term "popular communications" better than the cellular phone. Second, this transition can—and should—have important consequences for radio hobbyists: rescinding the ban on full-coverage radio receivers and de-criminalizing the act of simply monitoring the full radio spectrum. What follows is an in-depth examination of how we arrived at this point in personal communications technology and the laws restricting radio hobbyists' activities, as well as suggestions about where we should go from here—and how to get there.*

Nearly every communications technology enthusiast who's been around awhile remembers the exciting advent of Advanced Mobile Phone Service (AMPS) in the mid-1980s. Cellular mobile radiotelephone service seemed like a new dawn in personal communications—and it truly was. Many of us can't imagine how we'd do without our ubiquitous cell phones today.

Now after 25 years, the FCC has given AMPS its last rites by ruling that wireless service providers could shut down their existing analog cellular networks after February 18, 2008.The wireless industry's term for this is the "Analog Sunset." Since that date, wireless carriers nationwide have been eagerly refarming that spectrum for all-*digital* mobile services to further increase their corporate profits.

The Analog Sunset marks the end of an era that has both enthused and vexed communications hobbyists for a quarter of a century. Let's take a retrospective look at the era of analog cellular, which encompassed some *very* interesting moments, and speculate about the future with respect to the monitoring hobby, looking at the pros and cons to this transition. Note that the terms AMPS and "Analog Cellular" will be used interchangeably.

Bernard Bates holds a degree in Telecommunications Engineering from Penn State University. His interests include volunteering, radio communications, being a catalyst, and lunar astronomy. He can be reached at bernies@2600.com.

A Dire Need For Cellular Radiotelephones

The need for expanded mobile radiotelephone "car phone" service became apparent in the 1970s when AMPS' non-cellular predecessor, Improved Mobile Telephone Service (IMTS) quickly reached and exceeded its capacity. Begun in 1969, IMTS was essentially a radiotelephone "party line" with only 11 VHF and 12 UHF FM channels per market—hardly enough for all the mobile phone calls in any metropolitan area. Car phone users had to vie for an open channel before placing a call through the single central base station, which usually covered a radius of about 25 miles. Users sometimes had to wait several minutes or longer for a mobile dial tone, while others literally waited years to get a mobile phone account because of the very limited system capacity resulting from the FCC's paltry frequency allocations.

Many IMTS phones used discrete transistor logic (no ICs) and had 25-watt transmitters, so they were big, heavy trunk-mounted affairs with a thick cable snaked to a control

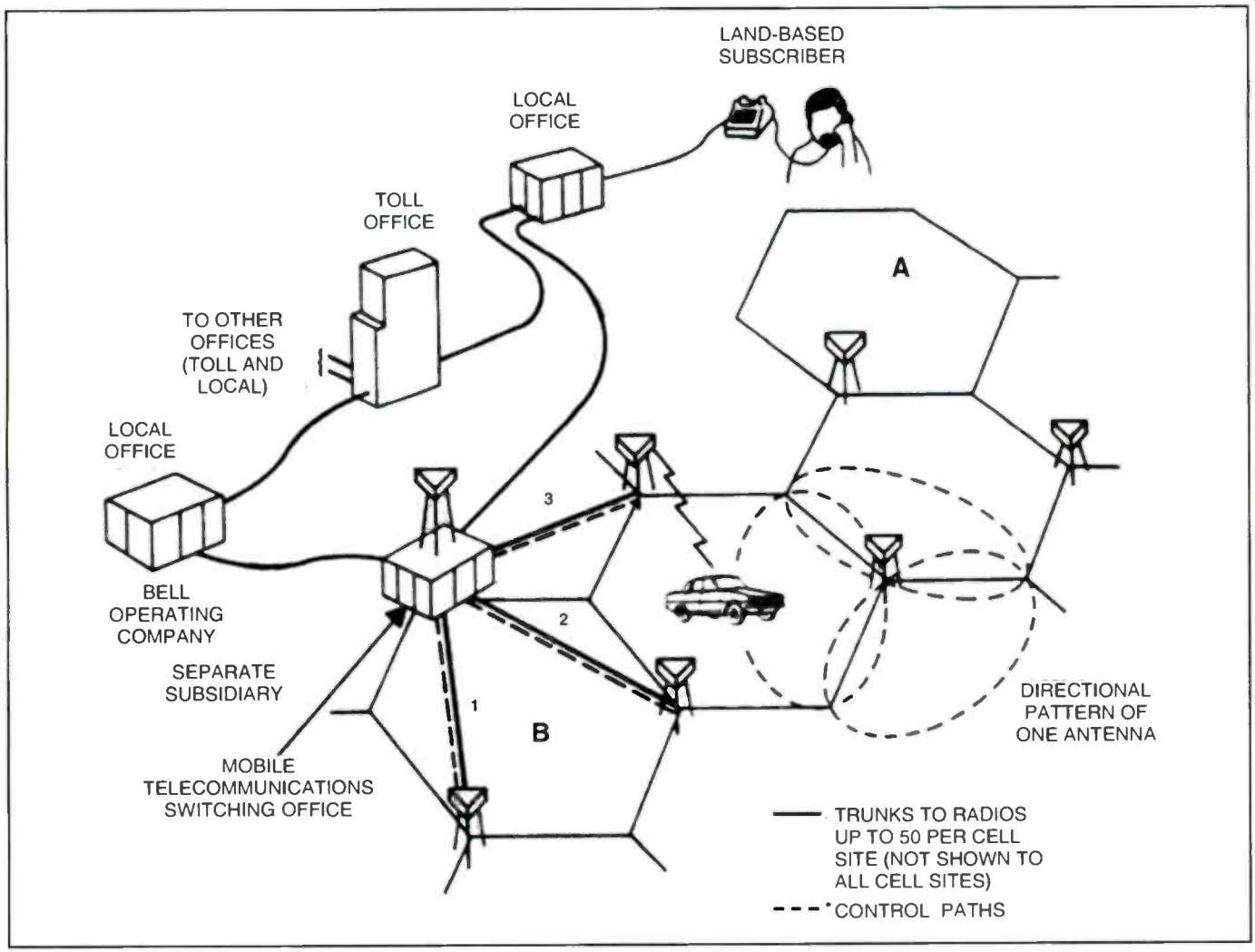

Figure 1. A 1984 Revised Bell System AMPS diagram, as first commercially deployed. Frequency re-use was possible due to constantly minimized low power RF transmissions, so cell site "A" could use the same set of up to 50 frequencies as cell site "B" without interference. Thus many thousands of simultaneous users could use the same 666 frequencies in one city

head/handset mounted by the driver's seat. Early IMTS car phones had a rotary dial (**Photo A**)! A VHF 150 MHz or UHF 450 MHz antenna was typically drill-mounted onto the roof or trunk of the subscriber's expensive car, as capacitive glass-mount mobile antennas had not yet been invented. You could drain your car battery by talking on your IMTS car phone too long with your engine off. The running joke was that you could only make two IMTS phone calls: a long call to your girlfriend (or someone else you wanted to impress), and a short call to the towing company to ask them to jump-start your car.

Many monitoring hobbyists enjoyed listening to these colorful mobile phone conversations on their early scanners or tunable receivers, which was still legal to do until 1986. But virtually every IMTS user understood they were "on the air" with a two-way radio system, and sensible federal regulations prohibited disclosure of, or profiting from, anything that was overheard.

A Technological Solution

While the FCC delayed allocating sufficient mobile radiotelephone spectrum for well over a decade, technological advances in the late 1970s and early '80s, such as microprocessors, Digital Signal Processors (DSPs), and surface-mount assembly, began to make feasible the *cellular* radiotelephone system that AT&T's Bell Labs had envisioned and carefully designed starting around 1947. Their cellular plan required complex switching protocols that couldn't be implemented with the current technologies. But Bell System engineers forecast that by the time such a cellular radiotelephone system would be needed, and authorized by the FCC, the electronic technologies required to make it possible and feasible would then exist. They weren't too far off the mark.

In 1971 AT&T formally proposed to the FCC a *cellular* radiotelephone service to address the worsening problem of IMTS congestion. What followed was a decade of meetings, revisions, lawsuits, and hearings until the FCC finally adopted the Electronic Industries Association EIA-553 standard—also called AMPS. In 1982 the FCC allocated 666 FM channels, 30 kHz wide, on frequencies between 825 and 845 MHz and 870 and 890 MHz, by refarming spectrum formerly occupied by retired UHF TV channels 70 to 83.

The Cellular Concept—Increased Traffic Capacity

The AMPS system acquired the term "cellular" because of the honeycomb layout of cell sites across a service area. To

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increase usage density while reducing interference from other users, each cell site was designed with a radius of one to 10 miles (depending on traffic density) and used a different set of frequencies than neighboring cells, with a highly directional three-sided antenna array on the networked repeater at each cell intersection (see **Figure 1**).

The same set of up to 50 frequencies (channels) could be reused just a few cells away without interference, because the network would constantly monitor and optimize each mobile unit's channel and RF power to be as low as effectively possible—down to just a few milliwatts if very close to a repeater. This allowed efficient and simultaneous re-use of the hundreds of channels across a system area serving thousands of simultaneous users. Wireless carriers could erect new repeaters (cell sites) and subdivide heavily trafficked cells into three smaller ones to further increase density as needed, for theoretically unlimited system capacity.

Whenever the cell site handling a call saw a mobile unit's signal strength drop below a minimum handoff threshold (caused by its moving out of that cell) it would send a hand-off request through the network to the Mobile Telephone Switching Office (MTSO.) After some brief verifications, the mobile unit would be instructed to change channels and transparently handoff the call to an adjacent cell—all within a fraction of a second. A single phone call could be transferred through several cellsites and frequencies transparently, and the mobile user might not even notice the handoffs. But without a highly sophisticated computerized switching system, and a computer inside each mobile unit, this feat would be impossible. The cellular radiotelephone concept was technologically way ahead of its time, considering the design process started in 1947—only months before the first transistor was invented—also at AT&T's Bell Labs!

Spectrum Allocations And Rollout

The FCC carved up the United States into 306 metropolitan and 428 rural markets based on 1980 census data. To foster competition, the Commission decreed that each major market would be granted two cellular system operator licenses: one for a subsidiary of the local incumbent Bell Telephone operating company ("wireline") and one for an independent local competitor ("non-wireline"). Cellular channels 1 through 333 (Side A) would be allocated to the non-wireline carrier, and channels 334 through 666 (Side B) would be allocated to the wireline carrier. Shortly thereafter, in 1985, the FCC allocated 166 more cellular channels for a total of 832 (see **Figure 2**).

Wireline carriers got a head start building out their cellular networks, while the FCC held lotteries for the non-wireline licenses. Meanwhile, each wireline carrier was required to sell its system capacity at wholesale pricing to its competing non-wireline carrier until the latter's network was built out and tested. This way non-wireline carriers could immediately start (re)selling cellular service and building a subscriber base and revenue stream before turning up their own networks, thus ensuring early competition in each market.

The ceremonial first AMPS cellular phone call was placed in Chicago on October 13, 1983, from the president of Ameritech Mobile to the grandson of Alexander Graham Bell in Berlin, Germany. That AMPS system had been working in test/debug mode for five years, but not commercially. But on that historic date the general public could finally sign up for and use the new AMPS cellular phone service. Scores of other cellular systems soon turned up in other major markets, and the number of cellular subscribers grew quickly thanks to pent-up demand. It soon became a status symbol to have a cellular phone.

The Cellular Lottery Money Grab

When the FCC announced lotteries for the lucrative "Side A" independent cellular system licenses, speculators saw them as potential goldmines. Most knew little about building telecommunications systems, so they hired consultants to draft semi-plausible proposals just good enough to enter the FCC's cellular lotteries around the country. Outside investors were wooed to invest in shares of these *potential* licenses, with the hope that a lottery win would mean the license could be

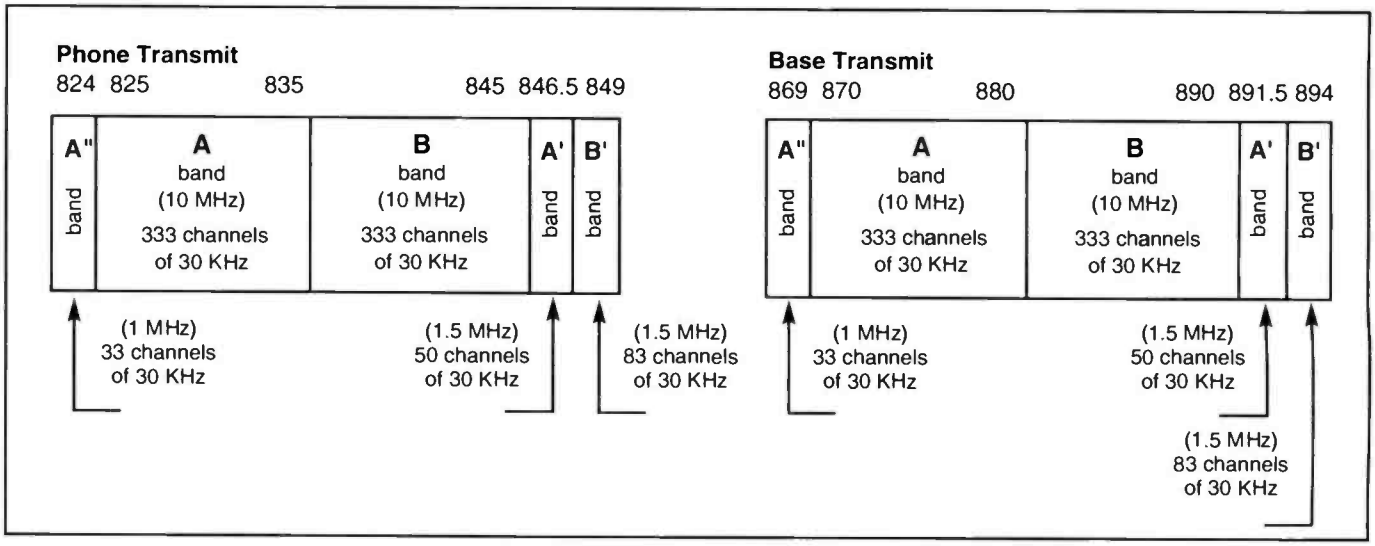


Figure 2. AMPS Cellular Frequency Allocations. This spectrum was "refarmed" from its former occupant, UHF TV channels 70 to 83. In 1985 the FCC expanded AMPS' frequency allocations from 666 channels to 832 in response to the cellular industry's dire warnings of future overcrowding. Now this spectrum is occupied by CDMA and GSM digital cellular signals with as much as 10x the call density as AMPS.

Photo B. A briefcase analog cellular phone circa 1985. Thirty pounds of pure communications sexiness—if you could afford the $3,000 price tag. This beauty was an early NEC cellular car phone stuffed into a metal briefcase with over 10 pounds of lead-acid batteries and a charge controller.

resold for huge profits to be divided among the investors.

This was not what the FCC intended, so it scrapped its problematic lottery system, and began *auctioning* off the remaining system licenses in what was to become a model for auctioning off public spectrum in the future. Of course, the higher the winning bids, the higher the fees the winners would charge the public for services using what was public spectrum to begin with. Ultimately this became yet another form of hidden public taxation that continues to be used today (witness the $3.2 billion recently paid for 62 MHz of public spectrum in the 700 MHz band freed up by cannibalizing still more TV channels).

Meanwhile, as new cellular systems were being built and deployed, cellular carriers scrambled to sign up as many new customers as possible to start generating revenue and brand loyalty, and to prevent the competition from signing them up first. To do this, carriers enlisted dealers and agents who were paid commissions of hundreds of dollars per new subscriber. Many unscrupulous agents signed up hundreds or thousands of fake subscribers without credit checks, then stashed or trashed the newly activated cellular transceivers while spending their commissions as fast as they could. Some carriers didn't seem to care as long as the number of new subscribers kept increasing and looking good to Wall Street.

Some cellular carriers exploited AMPS' "roaming" feature (which temporarily switched a call over to the other cellular system if the primary system's signal couldn't be received) to poach customers from their local competitor. Some roaming callers in their home markets found themselves automatically connected to a sales agent for the competing carrier, who would try persuading them to switch to the rival system (dubbed "cramming"). Still other cellular customers would be fraudulently switched to a competing carrier without even giving their approval (known as "slamming").

First Generation Cellular—Cool Phones Galore

Early first-generation AMPS-compliant cell phones were not much smaller than their giant IMTS predecessors and initially cost around $1,500 to $4,000. They were heavy trunk-mounted boxes with a control head/handset mounted near the driver's seat, but they gradually shrank in size and price as electronics technology advanced. The term "cellular phone" was new to most people in the mid-late 1980s, so "car phone" was a more common term. Cellular carriers did not initially subsidize the cost of car phones, so you simply shopped for and bought an AMPS-compliant model with the features and cosmetics you liked and then selected one of the two cellular carriers in your area. Every AMPS-compliant cell phone was compatible with every carrier's cellular network, and couldn't be "locked" to work only with one carrier as is routinely done by today's carriers (which now tightly control all features and functions of the cell phones they allow on their networks).

Because of the IEA-553 AMPS standard, all cellular phone transceivers generally had superb wideband FM audio quality, true full-duplex audio, a sensitive receiver (some with diversity), and a 3-watt RF output transmitter with potential range of tens of miles to distant cell sites. The cellular car phone was a high-end product with a high markup, and consumer choices were abundant with feature-rich models from over 50 brands, covering the alphabet from Alpine to Western Union. Some luxury automobile brands, such as Cadillac, Lincoln, and Mercedes, offered custom factory-installed cellular phones. Talk about consumer choices!

After you bought a cell phone the cellular dealer would sign you up for an account by calling the carrier you wanted (wireline or non-wireline) and giving the company your personal and billing info, plus your cell phone's unique Electronic Serial Number (ESN). A mobile phone number (MIN) would be issued for you, and a machine called a PROM programmer would be used to "burn" a blank 32x8-bit bipolar PROM chip with your MIN and any custom features you wanted (such as horn alert). Then the metal lid would be removed from your AMPS transceiver so the PROM chip could be inserted into the NAM (Number Assignment Module) socket.

A test call would be made with your new cell phone, which would then be installed into your vehicle. Installation typically took several hours and often involved removing your car seats and carpeting to snake a thick cable from the trunk-mounted transceiver to the dash or stalk-mounted control head/handset. A capacitive glass-mount or hole-mounted 800 MHz antenna was installed and connected via coaxial cable with a TNC connector, and a good installer would then use a bidirectional UHF wattmeter to properly adjust the antenna's SWR (Standing Wave Ratio) for maximum resonance and performance.

One standard, and amusing, feature

Photo C. This Motorola DynaTAC 8000X was the first handheld AMPS cellular phone to win FCC type-acceptance. It cost $4,000 in 1984 and its maximum RF power output was limited to 600 mW because of health concerns about microwave energy on the brain. Vehicular and transportable cell phones had a full 3-watt maximum RF output.

was the horn alert. If you wanted to hear your cell phone ring while away from your car, a 12-volt relay would close when an incoming call came in and blast your car horn. Then you'd have to run to your car to take the call! Some models from E.F. Johnson, GTE, and Western Union even generated a dial tone so users would feel right at home. The AMPS standard included the control head interface, so theoretically you could connect any manufacturer's control head to any transceiver.

As newer AMPS transceivers started weighing less than a small boat anchor, some entrepreneurs manufactured "portable" cell phones by mounting them inside large metal briefcases cases with a 12-volt bank of lead-acid batteries, and the control head mounted to a metal cover plate with a protruding 800 MHz cellular rubber duck antenna (**Photo B**). True, it all weighed up to 30 pounds, but it was amazing to have a telephone you could take *anywhere*. Opening that briefcase to make or take a phone call was sure to get surprised looks from passersby.

If cost was no object for you in 1984, you could spend $4,000 for the first *handheld* portable cellular phone: the Motorola DynaTAC 8000X (**Photo C**). It took Motorola over a decade and $100 million to develop this phone, which had the heft of a small dumbbell. It's outrageously huge and heavy by today's standards, but it's a nostalgic icon of the '80s.

As microprocessors and DSPs became more affordable, the number of components inside a cell phone decreased dramatically, and lighter transportable models or "bag phones" became available (**Photo D**). These units still had a full 3-watt RF output, a swiveling TNC-mount rubberized antenna, and weighed about five to 10 pounds including battery, which you could recharge through your vehicle's cigarette lighter jack. Bag phones were convenient, relatively inexpensive, and became very popular in the late 1980s. As technology advanced, handsets and prices shrank.

Cellular System Security (Or Lack Thereof)

In the early mid-1990s, cell phone "cloning" fraud became rampant because of cellular carriers' failure to implement adequate user authentication. Cloning fraud involved programming the illicitly obtained ESN/MIN pairs of unwitting subscribers and programming them into imposter cell phones to make phone calls on their accounts without permission.

Call-sell operations appeared in cities where street hucksters would let you use their cell phone to call anywhere in the world for a fixed discounted price. Naturally, the victims would get enormous cellular phone bills at the end of the month, while the crooks would move on to other victims. These ESN/MIN pairs were typically sold to other criminals by unscrupulous employees or agents of cellular carriers, or were decoded directly off the air from a modified scanner's discriminator output into a DDI (Digital Data Interpreter) interfaced to a personal computer to capture the 10 kbps overhead data stream on the

Photo D. A Panasonic transportable AMPS cellular radiotelephone circa 1992. Many manufacturers produced similar so-called "bag phones" that plugged into your vehicle's 12-volt power jack. These models typically had a 3-watt RF output and TNC connector for external antenna, were solidly built, relatively affordable, and very popular.

"reverse channels" transmitted by cell phones to cell site repeaters.

The U.S. Secret Service, which was given jurisdiction over telecom crimes, became alarmed that government wiretapping—which then required a target's phone number to be specified in the electronic surveillance search warrant—might become more difficult against targets who could change their numbers at will. So they cracked down hard—even imprisoning some individuals who offered free software to legitimate cellular subscribers for cloning *their own* cell phone's ESN/MIN into an unused phone to have an extension on their existing cellular "line."

No victims were alleged in some of these cases, so toll fraud was less of a concern to the SS than was the threat to the U.S. government's ease of wiretapping anyone at will. A few years later the United States gave itself the authority to perform roving wiretaps (without target phone number), and then warrantless wiretapping of cellular and all other electronic communications *en masse*, so maybe that eased their concerns.

In the mid-late 1990s some wireless carriers tried to deal with cloning fraud by forcing subscribers to enter a PIN code whenever making a call. Needless to say, putting the security burden on customers was unpopular. Shortly thereafter, digital cellular infrastructure and phones were deployed which incorporated more

robust authentication, effectively ending cellular cloning.

The ECPA And The CTIA's Anti-Scanner Campaign

On the topic of onerous government privacy policies on radiotelephone communications, probably one of the most reviled by U.S. monitoring hobbyists is the Electronic Communications Privacy Act (ECPA) of 1986. Language in that law created the dangerous precedent of actually criminalizing the act of listening to parts of the radio spectrum, specifically the 824 to 849 MHz and 869 to 894 MHz bands, thanks to the Cellular Telephone Industry Association (CTIA), the lobbying arm of the multibillion-dollar cellular telephone industry.

For the first time in U.S. history it became a criminal offense to merely listen to certain radio frequencies—as opposed to disclosing or profiting from the content of monitored communications, which the Communications Act of 1934 already sensibly prohibited. This piece of law reminded many veteran radio hobbyists of Soviet-era communist policies that criminalized their citizens' listening to certain radio frequencies. That it was virtually unenforceable was irrelevant; it was all intended as a CTIA propaganda tool and used as such for years to come.

Unfortunately, rational and well-reasoned pleas to Congress by radio hobbyists and scanner manufacturers to reconsider this ill-conceived law were drowned out by the sound of large bags of money being dropped onto federal legislators' desks by the CTIA and cash-rich cellular carriers, which effectively bought this law as a tool to dupe consumers into *believing* their cellular phone calls were private and secure because it was now illegal to monitor them. This head-in-the-sand approach to communications security did a great disservice to the public, putting it at even greater risk by deluding them into a false sense of security. The laws of physics dictate that unencrypted radio transmissions are inherently unsecure, regardless of whatever laws Congress makes.

The CTIA and the federal legislators were still not satisfied, and made further attempts to not only ban sales of cellular-capable receivers (i.e., scanners), but even to criminalize their possession. This despite the existence of millions of scanners and old TV sets that could readily receive the same frequencies by tuning through retired UHF TV channels 70 to 83.

After years of continued CTIA lobbying and campaign contributions, in 1992 Congress passed the Telecommunications Disclosure & Dispute Resolution Act with anti-cellular-receiver provisions attached. This vote was taken without public notice or floor debate. Radio equipment manufacturers, the radio hobby press, and the general public were kept uninformed of the bill's final, critical wording until after it was signed into law. Fortunately, the mere possession of cellular-capable receivers was not criminalized, ostensibly because Congress didn't want to turn tens of millions of senior citizens with old TV sets into federal criminals.

In 1993 the FCC followed its Congressional mandate and modified the longstanding Communications Act of 1934 to effectively ban the importation or sale of scanners or other radios capable of receiving frequencies between 824 and 849 MHz and 869 and 894 MHz—or being "capable of readily being altered" to do so. The ban on uncensored radios took effect in April 1994, after which no new cellular-capable scanners could be legally imported or sold in the United States to the general public (telecom companies and government agencies were exempted from this ban, of course).

Scanner Accessories Targeted

The CTIA's anti-scanner witch-hunt didn't spare manufacturers of scanner accessories, either. The FCC allegedly pressured companies to cease domestic sales of products that could merely make receiving cellular phone calls easier. In 1997 Optoelectronics, Inc., said the FCC had pressured them to stop selling its CF-802 bandpass filter/preamp, which dramatically increased receiver sensitivity between 825 and 845 MHz (the so-called RECC "reverse channel" frequencies that cellular phones transmit their ESN/MIN on). GRE America was reportedly pressured to stop selling its SuperConverter products, which enabled almost any scanner to receive cellular frequencies by downconverting them to the 400 MHz UHF band.

The perceived threat manufacturers might infer from an FCC "request" would be that future products could have their FCC type-acceptance certification delayed, which is required before offering them for sale in the United States. Sadly, some good companies were coerced into no longer offering radio hobbyists equipment that had perfectly legitimate and legal applications. Some hobbyists speculated the CTIA tapped some paid friends in Congress to ask the FCC to pressure certain radio equipment manufacturers.

RadioShack found itself in the contradictory position of selling cellular phones and the scanners and accessories with which they could be eavesdropped upon. They saved face by making this impossi-

Clipping A Diode, And *Voila!*

While passage of the anti-cellular-receiver provisions in 1992's Telecommunications Disclosure & Dispute Resolution Act prompted the FCC to require that all new consumer-grade radio receivers not be "capable of readily being altered" to receive 824 to 849 MHz and 869 to 894 MHz signals, large numbers of pre-existing "cellular-blocked" scanners could still be readily *unblocked* by techniques as simple as clipping a diode lead.

These techniques were widely circulated via radio hobby magazines and books, electronic bulletin board system (BBS) text files, word of mouth, and the Internet. Entrepreneurs and small companies began offering scanner modification services to unblock censored radios, but were eventually pressured by government officials to cease and desist. In 1997 the FCC officially banned this as a commercial practice when it issued notice DA 97-334 stating,

> The modification of scanners on a *substantial scale* [emphasis added] to receive cellular frequencies will be considered to constitute manufacture of such equipment in violation of FCC Rules. Entities engaged in such activity are cautioned to cease advertising and/or performing any such activity immediately...Willful or repeated violations may be subject to a monetary forfeiture of not more than $10,000 for each violation.

This drove such scanner modifications underground, and soon radio dealers outside the United States—in Canada, the UK, Finland, and elsewhere—did a brisk business with U.S. hobbyists who refused to buy government-censored radios on general principle and were able to import uncensored radios with few U.S. Customs problems.

ble for scanners right out of the box. But by merely clipping a diode or other such tricks, many of its pre-1994 scanners could readily tune in cellular phones. Then in 1997 RadioShack controversially banned sales of service manuals for its scanners, which included schematics hobbyists studied to "hack" scanners for receiving cellular calls. RadioShack claimed the FCC requested this, while the FCC denied ever making such a request.

A decade later, in a post-9/11 political climate, on August 15, 2002, Congress passed the "Cyber Electronic Security Act" which increased the offense for anyone who monitors a cellular telephone call from a misdemeanor to a federal felony. This effectively removed the safe harbor created during negotiations over the ECPA in 1985–1986 that ensured any monitoring hobbyist's first offense of listening would be a misdemeanor with a sentence not exceeding one year in prison. The new penalty became up to five years in federal prison. Yet cellular carriers continued carrying millions of unencrypted analog cell phone calls that were easily overheard with millions of scanners and old TV sets.

Cellular Privacy In The Media

Despite smokescreen laws held up by the cellular industry as "proof" of their customers' communications privacy, the mid-1990s saw a fair amount of media attention to the subject of cellular telephone users' privacy—or the lack thereof. AMPS' utter lack of communications security became widely known and was parodied in such films as *Pulp Fiction* (1994) where heroin dealer Lance (Eric Stoltz) tells Vincent (John Travolta), "Are you calling me on the *cellular* phone? I don't know you. Who is this? Don't come here, I'm hanging up the phone! Prank caller, prank caller!"

Then in 1995 veteran TV news journalist David Brinkley chastised Bob Grove—yes, that Bob Grove—on *This Week With David Brinkley* for offering a service to modify and unblock scanners to receive cellular frequencies, even though it was legal to do so and Bob had already stopped offering the service. Everyone knew cellular telephone privacy was a joke, but the mainstream news media didn't seem to get it. Perhaps they were blinded by cellular industry lobbying into believing that analog FM transmissions in the 800 MHz band were somehow inherently private, and blamed and demonized hobbyists who already owned equipment for receiving 800 MHz signals for "creating" a lack of privacy.

In 1997 Florida Democratic party activists John and Alice Martin claimed to have "accidentally" intercepted a cellular conference call between Speaker of the House Newt Gingrich, House Republican Majority Leader Dick Armey, and Republican Conference Chairman John Boehner. The call included a discussion of Gringrich's ethically questionable activities, including plans to renege on an agreement he made with the House Ethics Committee.

The Martins said they stumbled across the communications with their new, unmodified RadioShack scanner—a physical impossibility since RadioShack had long since stopped selling cellular-capable scanners—and then recorded it. They gave that recording to the highest-ranking Democrat on the House Ethics Committee, Jim McDermott, who played it for reporters from *The New York Times* and the *Atlanta Journal-Constitution*. This made the front page in nearly every newspaper in the country. Eventually the Martins plea-bargained and each paid a $500 fine for unlawfully intercepting a cellular radiotelephone call. Ironically, the RNC had years earlier banned the use of cellular phones at their national conventions for communications security reasons, but apparently someone on that conference call in Florida was using an analog cell phone.

Curiously, the Martins' audio recording had no cellular handoff data bursts, pilot tones, or other AMPS audio artifacts, which would be consistent with their claimed method of interception (setting aside the fact that a unmodified RadioShack scanner couldn't receive cel-

The OKI 900—The Holy Grail Of Cell Phones For Communications Hobbyists

In the early 1990s OKI released its model 900 handheld cellular phone (**Photo E**). Also sold as the AT&T 3730, the OKI 900—by accident or design—soon became the most popular cellular handset for phone phreaks, hackers, and communications hobbyists. OKI's engineers factory-installed extraordinary diagnostic test firmware into this phone, which among other things let enlightened users scan and monitor communications on all 832 cellular channels right out of the box (*if* you entered the correct secret code quickly enough; it displayed "good timing!" if you did). Then the monitoring fun began.

While illegal to listen, few people who had this phone and knew the trick could resist listening to any cellular call in their area. Phone phreaks and hackers designed PC interfaces and circulated free DOS programs that allowed specific phone numbers to be targeted, tracked, and recorded, and even logged dialed DTMF digits (i.e., voicemail, etc.). Illicit firmware modifications further allowed manual or randomized entry of up to five ESN/MIN pairs to change your phone's identity to anything of your choosing—or generate random ones.

Government wiretappers were not amused, because this encroached on their turf and empowered average people to change their cell phone numbers with a few keystrokes. One FBI agent publicly complained these so-called "magic phones" were "unattributable, unbillable, untraceable and untappable." Not really—the FBI has always had ways to get around such things.

Ironically, after the FCC banned importation and sales of cellular-capable scanners, people could still legally purchase the OKI 900—arguably the most capable cellular scanner ever.

Photo E. The infamous OKI 900 cell phone, phone could scan and monitor all 832 cellular channels right out of the box if you entered the correct secret code quickly enough. Firmware modifications allowed randomized or manual entry of up to five ESN/MIN pairs. Government wiretappers were not amused.

lular communications in the first place). However, certain government surveillance-grade cellular call monitoring equipment would *not* have recorded those audio artifacts. This fueled speculation in the monitoring community about what *really* happened. In another piece of irony, it's a safe bet that many politicians' cellular phone calls were monitored while they believed the ECPA (which they voted for) protected their privacy.

The Digital Cellular Takeover

By the mid-1990s AMPS analog cellular had enjoyed a good run of a dozen years, and cellular carriers were dreaming up new ways to increase their record profits from billions to even more. But their networks were reaching capacity as they continued intentionally oversubscribing more and more customers onto their finite slice of spectrum, while "Free Nights & Weekends" and "Free Minutes" promotions further strained system capacity to the point where existing subscribers couldn't reliably make or maintain calls without being frequently dropped. While airlines, hotels, and other industries are penalized for overbooking, there seems to be little accountability for cellular carriers who do it to their customers.

To increase profits further, cellular carriers needed a way to squeeze even more subscribers into their existing 25 MHz chunk of 800 MHz spectrum. They chose *digital* cellular modes such as CDMA (Code Division Multiple Access) and GSM (Groupe Spécial Mobile) to accomplish this. Instead of AMPS' nice wide 30 kHz FM full-duplex voice channels, these digital modes could squeeze up to 10 times as many voice channels into that same 30 kHz bandwidth, using highly compressed digital modulation schemes. Of course, when the human voice is digitized and reduced (vocoded) to a meager bitstream of only a few thousand bits per second, it doesn't sound good. Moreover, calls stop being truly full duplex, while digital latency makes it difficult to interject comments during a conversation. But cellular carrier profits seemed to trump cellular call quality. Welcome to the digital revolution.

Squeezing Subscribers: Less=Less For Consumers

Analog cellular customers were sold on the promise of "digital clarity" to convince them to switch to digital cellular and willingly give up 90 percent of the bandwidth they were enjoying, while not receiving any commensurate discount for this bait-and-switch. Granted, there are many good digital data services (SMS text messaging, email, Web browsing, etc.) that require digital cellular modes to accomplish. But it's not an either/or proposition: wireless carriers could *still* provide faster vocoder rates and reduced latency so calls don't sound so robotic and choppy. As customers continue to tolerate poorer digital call quality, their carriers will continue squeezing them into less bandwidth.

Cellular 911 Callers At Risk

On a separate, sad, and potentially dangerous note, the digital cellular takeover will render useless many millions of otherwise reliable unregistered emergency analog cell phones kept in vehicles and elsewhere without access to a landline. The FCC wisely required all analog cellular networks to carry 911 calls made from any AMPS phone, regardless of whether it had a current cellular account with any carrier.

Being able to make free 911 calls from retired or otherwise unregistered analog phones was a great safety net for many people who could not afford a monthly or prepaid cellular account. And because many of these phones were powerful 3-watt units, they had exceptional range and could usually summon first-responders from almost anywhere. But many among the millions of people who depend on them may not learn that until it's too late, and most of these millions of excellent emergency phones rapid becoming useless doorstops.

Beside the much lower power and shorter range of digital cellphones, the digital cellular takeover is endangering peoples' safety and lives because the FCC failed to require digital cellphones to seek *every* compatible network to complete a 911 call, as it did with analog cell phones. For example, if you were on the "A" side (non-wireline) of an AMPS system and called 911 but were out of range, the phone would automatically try to connect to 911 via the "B" side (wireline) carrier (or vice versa). But if you call 911 with a *digital* cell phone and are out of range from your home carrier's network, it won't try connecting to 911 through another compatible digital carrier. Most markets have more than one digital CDMA or GSM carrier, but that won't help you in an emergency until the FCC carries over and enforces its previous 911-failover mandate to digital cellphones and networks. Until that happens, you have less assurance that your all-digital cell phone will get through to 911.

The OnStar Dilemma

On the topic of cellular phones and safety, the most heavily promoted cellular-based safety program ever was General Motors' OnStar service. This vehicular AMPS-based telematics system consisted of a built-in cell phone with integrated Global Positioning System (GPS) receiver and multiple sensor inputs. Two pushbutton switches above the windshield summoned either help or advice from OnStar operators, who could contact first-responders if the system detected an airbag deployment or serious impact. Over 500,000 AMPS-based OnStar transceivers were factory installed in vehicles from GM, Acura, Audi, Subaru and Volkswagen, but only a small fraction of them were upgraded to digital (CDMA) cellular transceivers. So now the vast majority of installed OnStar safety systems

are useless because OnStar and wireless carriers have abandoned AMPS support.

Ironically, OnStar heavily advertised that phone calls made with OnStar could get through when digital cell phones could not, because it used a 3-watt AMPS transceiver with an outside antenna for exceptional range. Now OnStar's digital transceivers transmit 10 to 20 percent as much RF power, so their range is comparatively much less than their older analog transceivers.

Rural Cellular Subscribers Left Holding The Bag (Phone)

While over the last few years analog cellular usage has dwindled to a trickle as carriers pushed their users into digital modes (except for Sprint PCS and T-Mobile, which were all-digital to begin with), a fair number of subscribers still held onto their trusty "dual-mode" (CDMA+AMPS or GSM+AMPS) cell phones so they could use analog roaming service in many rural areas where carriers have no digital coverage. Unfortunately, for the vast majority of these subscribers, *analog roaming no longer works*. Soon after the February 18, 2008 "Analog Sunset" date, Verizon, AT&T, Dobson, CellularOne, and various other cellular carriers terminated analog service and their roaming agreements with other carriers. Both SprintPCS and T-Mobile (which never directly carried analog traffic) terminated their roaming agreements with analog carriers in late February, 2008.

If you're a customer of one of these carriers and try to make a call with your dual-mode phone in analog mode, you'll either get a "No Service" indication or may hear a message from American Roaming Network (ARN), which has billing agreements to carry outgoing-only calls from cell phones that aren't recognized as having valid accounts by those carriers. Either a major credit card or prepaid ARN calling code allows otherwise unauthorized phones to make calls for .25 to $1.00/min.

As of this writing there are still a few backwater analog carriers operating in remote areas where the *only* coverage is analog, and they aren't rushing to shut down AMPS or the modest revenue stream it generates. For instance, Plateau Wireless provides AMPS service in eastern New Mexico and west Texas, and says it will maintain its analog network parallel to its digital GSM network "for the foreseeable future." US Cellular says it will continue providing analog service until late 2008. Alltel will carry analog traffic near Death Valley National Park until October 2008. But in 2009 AMPS could become virtually extinct in the United States as its remaining holdouts transition to CDMA or GSM for greater efficiency and profits. AMPS is still used in parts of a few other countries, including Mexico and the Bahamas, but even there it's being rapidly phased out in favor of GSM or CDMA.

Rural Alternatives To AMPS—Going The Distance

AMPS has been a popular rural telephony technology because transceivers with 3 watts of RF output and vehicular or fixed gain antennas provided service many miles from the nearest cell site—much farther than digital handsets having only 10 to 20 percent of the RF power output and mediocre antennas. In fact, since its inception AMPS has been used as a fixed alternative to landlines in some homes and businesses where no landline service exists, often using directional 800 MHz Yagi antennas atop buildings and towers. Some of these remote cellular users will be severely affected by the demise of AMPS, because the effective range of digital handsets is far less. This could easily leave them without any telecommunications in areas not served by a CDMA or GSM carrier.

One of the few solutions to this rural post-AMPS dilemma is a pair of 10-pound digital "bag phones" from Motorola: the M800 (CDMA) and M930 (GSM). These look similar to the classic Motorola analog bag phones, except they have a cordless handset, SMS text-messaging, simple Web browser, and support low-speed connectivity through a USB PC interface. Unfortunately, they're not 3 watts. The M800 has only a 600-mW RF output and the M900 a 2-watt RF output, both apparently limited by FCC regulations. But an external RF amplifier like the Cyfre CA819 can boost either to 3-watts, and a vehicular gain antenna or fixed Yagi can be can connected to greatly increase the effective range.

However, digital cellular networks reportedly have a "hard limit" of approximately 20 miles from the mobile unit to the cell site (as determined by GPS) regardless of signal strength. If this is true, one workaround might be to disable the phone's GPS receiver hardware to reach those few critical extra miles.

Back To The Future

This long, strange trip through the history of analog cellular has come full circle and begs the question: When the last AMPS network in the United States is shut down, will monitoring hobbyists finally be able reclaim their long-held right to full-spectrum monitoring?

There are very good arguments for Congress to repeal its soon-to-be defunct prohibitions on new scanners receiving the entire 800 MHz band. The digital cellular modulation schemes now being used in lieu of AMPS—CDMA, GSM, and iDEN (Integrated Digital Enhanced Network)—cannot be intercepted *and* demodulated with any scanner available to non-government users, nor will the FCC ever grant type-acceptance to any consumer-grade scanner model capable of demodulating any of these modes.

Despite the fact that consumer-grade scanners capable of receiving the 1900 MHz PCS bands (which most major wireless carriers use in addition to the 800 MHz cellular band to carry digitally modulated calls) have been legally available for years, there has *never* been a single reported incident of anyone using a scanner to intercept *and* demodulate a digital cellular call on those frequencies. So when AMPS is gone there will be no increase in likelihood that anyone will be able to do so in the 800 MHz cellular band if scanners once again have unrestricted frequency coverage.

Simply put, after the last AMPS network in the United States is shut down, there will be no technical justification for not repealing the ban on using new, full-coverage scanning receivers to monitor the full, uncensored, radio spectrum.

Will your Congressional representatives sponsor legislation to repeal the 800 MHz receiver ban and de-criminalize full-spectrum monitoring after the last AMPS system in the United States goes off the air? You can find out by petitioning them to sponsor legislation to allow full-coverage scanners and receivers to again become legally available and legally used in the United States.

Perhaps analog cellular's silver anniversary will have a silver lining for radio monitoring hobbyists. ■

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.

Comms And The Military

Dear Editor:

It was an interesting article [on the Royal Signals Museum] by Roy Stevenson ["A Stroll Through Military Comms History," April 2008 *Popular Communications*]. I hope to visit it some time, as well as Bletchley Park.

When it was time for one of my mother's cousins, a lawyer, to start his compulsory military service in Belgium, sometime in the 1930s, he requested to go into Communications, because he was interested in electronics. He got his wish but instead of working with radios he was given responsibility for the carrier pigeons! Years ago, he showed me a manual he had kept . I remember it saying that in case of food shortage, he had to feed the pigeons first, then himself.

When it was my turn for military duty in 1960 I requested a military research lab and got it. Some of my fellow electronic engineering graduates were not so lucky. A couple of them who had requested Communications were put to work digging ditches and unrolling telephone wires in them, rather than playing with radio and radar.

Guy Olbrechts
NY7O, ex ON4JV

Hat Tip To Shannon

The following letter was sent in to us for Shannon Huniwell, "Shannon's Broadcast Classics" columnist...

Dear Shannon:

I read the Braille edition of *Popular Communications*, which is produced by the National Library Service for the Blind. I really enjoy your column, and look forward to reading it each month. You really have a wealth of radio broadcast knowledge, and it sure is great that you share it with your readers.

I have been an AM DXer for the last 30 years, as well as a ham radio operator, and I will continue to enjoy the radio hobby for the rest of my life.

Thanks again for such a great column.

John Glass
Palo Alto, CA

Reader Questions For Our Columnists

Dear Editor:

I am writing to you regarding the article on Andrews AFB ["Military Radio Monitoring," April 2008 *Popular Communications*] by Mark Meece. I have a question about how you would input the APCO system that's on page 59 and 60 in that issue in the Uniden 396T scanner. The system options that my scanner gives you are,

Motorola UHF Type II
Motorola APCO 25

Does it matter which one I choose for initial set up for the Andrews AFB system? The manual is a little vague regarding both systems. Since the article states that the system is DIGITAL APCO-25, my guess would to be to use either mode, but I'd rather ask first before inputting all the data and finding out later I'm wrong and wondering why I'm not picking up anything. I believe that no fleet MAP is required for this system, correct?

There is only one BASE and step frequency for the Andrews System noted. Normally there should be a total of three for set up—is this correct? My 396T is showing three slots for base and step frequencies ; do I need to fill in all three slots or just use the guidelines that are on page 59. Any help regarding this issue would be greatly appreciated.

John Pecoraro
Via email

Mark Meece responds...

Dear John:

Thank you for writing in. The Andrews AFB trunked system is not a "true digital" APCO-25 system. What that means is that it's still running at 3600 baud and but uses digital voice. A true APCO-25 would be running at 9600 baud.

I'm afraid I'm not that familiar with the 396, but the system should be set up as a Motorola UHF Type II system. Using that and the Base Frequency, Offset and step as outlined in my column should get you going on monitoring the system. Please send us any new talkgroups or other updates to this system your monitoring may discover.

Mark Meece, N8ICW

The following was sent to Kent Britain, our "Antenna Room" columnist. Kent responds below...

Dear Kent:

I always enjoy your articles. I have built some of your antennas using 1/8-inch brass welding rod.

In your May *Pop'Comm* article, in Photo A's caption you said that the Racal RA6790 was your favorite "SWL" radio. My question is, what is your favorite DX radio? I used to be very active in SW and DXing. I always wanted a Drake R7A or R8B receiver or the Big Dog, the R4245. A Racal would also be a dream. I did manage to buy an ICOM IC- R70 and did several mods to it. Just wondered.

Gary Hickerson
Via email

Dear Gary:

How do you define the difference between SWL and DX? I've generally considered BBC and the PRC to be DX. I guess my longtime favorite was the Clegg Interceptor with the HF converter. Oh...did that radio have filters!

I almost got an R70 at a recent hamfest. And I've kind of lusted after an R70 or R71 for years, but have never played with one. I do have three RadioShack DX394s, but they are either used as a microwave IF or listening to local talk radio. Yeah, they've had a lot of mods as well.

By the way, I did build an upconverter for my R-7000 and often use it.

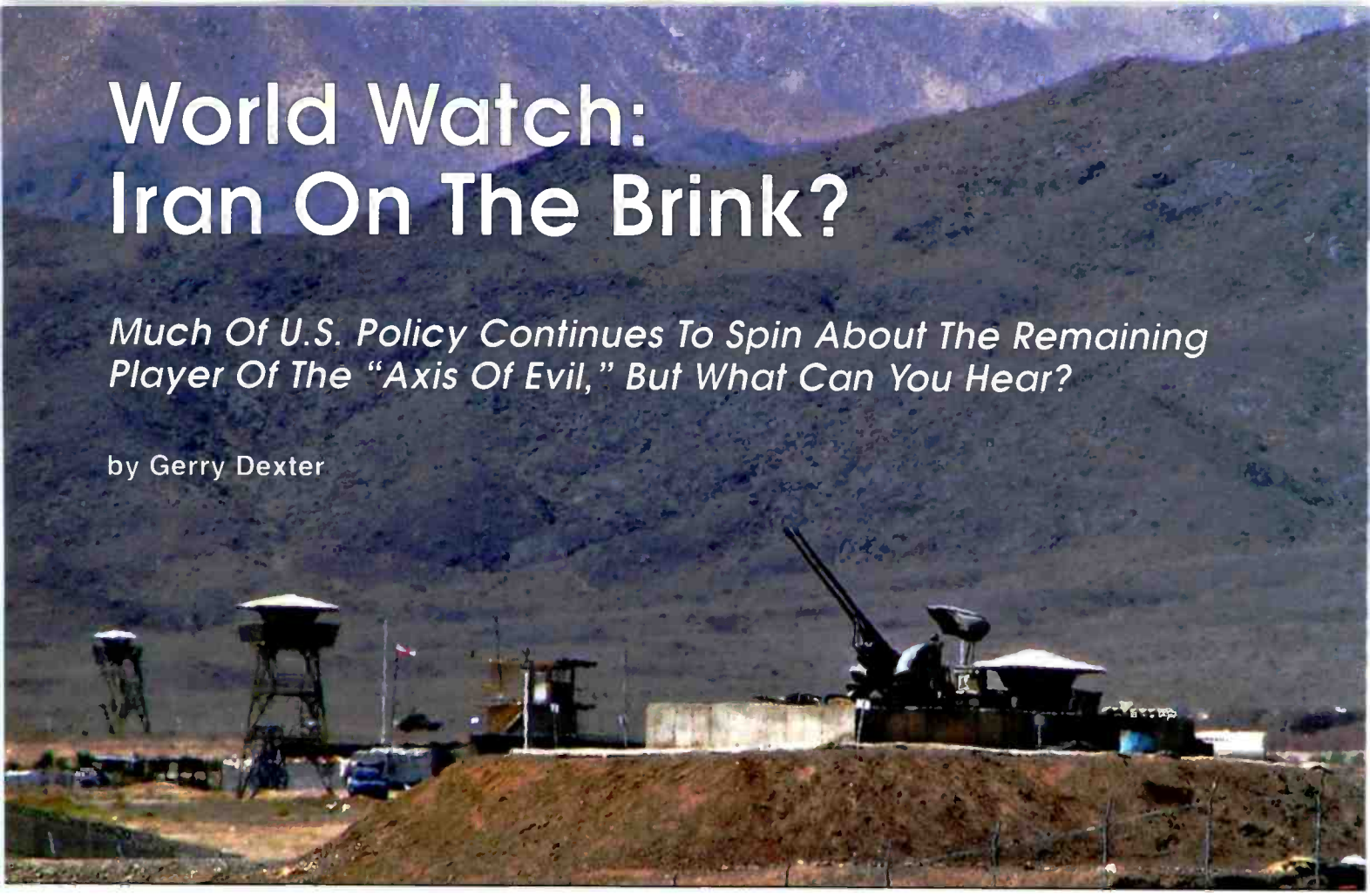
Kent, WA5VJB

I'd like to remind readers that our columnists welcome your input, questions, and column suggestions, so feel free to drop them a line. You can send an email to the address that appears in the header of the columns, or to me at the email or street address above, if one isn't given.—Editor

World Watch: Iran On The Brink?

Much Of U.S. Policy Continues To Spin About The Remaining Player Of The "Axis Of Evil," But What Can You Hear?

by Gerry Dexter



Anti-aircraft guns guarding Natanz Nuclear Facility, Iran. (Image via Wikipedia Commons)

If I recall correctly, my high school history book placed the beginning of civilization in Babylon, the area that, centuries later, became Persia and still later (1939) evolved (devolved?) into what is today Iran. (Pronounced "Ear-rahn," please, not "Eye-Ran.")

Fire up your imagination for a moment and imagine Civilization as an entity who, on a whim one day, took human form and went back to visit the place of its birth. Odds are at least even that the mentality and worldview of Iranian President Mahmoud Ahmadinejad, the radical mullahs, and their fellow purveyors of wrath and hatred, would have sent our friend Mr. Civilization running screaming into the desert night, tearing at his taqiyah.

"Civilized"? A state that funds terrorist organizations to the tune of millions of dollars every year while continually working to stir up more trouble in next door Iraq through its support of the insurgency there? On the sly, Iran tries to sneak down the road towards nuclear capability while refusing to comply with UN resolutions, even defying the EU.

And while all those Machiavellian pieces are moved about on the great world board, internally it also manages to look the other way in the face of the traffic in human lives it allows—most destined for the sex market others for regular slavery. They might as well be selling sugar beets in the bazaar for all the grief the perpetrators get from the authorities. Typically, the only people who run into trouble on that account are the victims themselves who are usually treated as criminals and subject to imprisonment, torture, even execution.

As a frosting on this "civilized" cake, Iran also acts as a virtual Interstate 80 for the transport of heroin into Europe.

Gerry Dexter is *Pop'Comm*'s "Global Information Guide" columnist and also provides our "Tuning Tips" each month.

Tortuous Road To A Tense Showdown

Relations have been on tenterhooks since the notorious seizing of the U.S. Embassy in Tehran in late 1979 and the 14 months the hostages taken at the time were kept prisoner (a college classmate of mine was among them). That international outrage was followed by the seemingly endless war fought between Iran and Saddam Hussein's Iraq during which 200,000 Iranians were killed and another 300,000 maimed.

More recently, Iran has dealt itself a hand in the Iraq situation thanks to the support (however vehemently denied) it gives to the opposition elements there (around $3.5 billion in one estimate). Iran is also a not-so-silent partner of Syria's pot stirring in Lebanon. It seems an easy path to trace this national mindset from the rise to power of the late Ayatollah Khomeini, who had safely hung out in France for several years campaigning against the excesses of the then Shah. After much groundwork and innumerable rants, plus help from a growing number of dissidents, Khomeini won the day, established a theocracy, and became the first leader of the renamed Islamic Republic of Iran. (What's that about a First Amendment?)

Another issue making for a very high antagonistic reading of the current situation is the nuclear question. At the moment there is much worry as to what the West may or may not do to

Iranian President Mahmoud Ahmadinejad at Columbia University. (Image via Wikipedia Commons)

try to prevent Iran from taking the dangerous step toward becoming a nuclear power and just how far Iran will push the envelope in that direction.

There are some "moderates" in today's Iran who are trying to claw their way towards a more open, less rigid society where women have full rights (what a concept!), children are not subject to execution, and one doesn't have to get married in order to keep a job at one state-owned company, according to a recent BBC report. But you'd almost need an ear trumpet and a magnifying glass to hear or see the reformists. At the moment, the once-clamorous student demonstrations are largely in limbo. They and other would-be reformers will face many rough spots and setbacks in the road ahead before their efforts can even begin to prod the regime.

Not surprisingly, the United States and Iran do not have diplomatic relations, and haven't since the hostage taking nearly 30 years ago. U.S interests in Iran are handled—as they are in Cuba—by the American Interest Section at the Swiss Embassy in Tehran. Reciprocally, Iran has a similar office in the Pakistan Embassy on Wisconsin Avenue in Washington, D.C.

Broadcasters' Inside Story

Listen to the English broadcasts from the state-run Iranian radio and you'll mostly hear large doses of reasonableness, much as you get from Cuba, China, and other human rights flouters who have learned to smooth out their pitch, despite the horrors they may have hidden behind their collective microphones.

The Voice of the Islamic Republic of Iran (VOIRI), is the foreign service of IRIB, the Islamic Republic of Iran Broadcasting, and is one of the largest state-run broadcasters in the Middle East. It employs five high-power sites (at Ahwaz, Kalamabad, Mashad, Sirjan, and Zahedan), each with multiple transmitters pumping out 100 to 500 kW. The IRIB sends out some 30 languages, including the world's most spoken: German, French, English, Spanish, and Chinese. The rest of the pack runs the alphabet from Azeri to Uzbek. A quick look at the list makes it plain that the non-major languages in the group are targeted to listeners in various Central Asian nations, as well as to Iran's Middle East neighbors. That includes arch hate target Israel, though IRIB allots the Israelis a mere one-hour per day in Hebrew, which on an Importance Scale puts it on a par with the Republic of Georgia.

IRIB's shortwave usage stretches over more than 100 different frequencies at various times for various target areas. Domestically, IRIB operates about 70 high-power outlets fed by some 10 networks to serve, at a guesstimate, some 20 million radios (the number was placed at 17 million in 1997). For television there are five operative channels plus an Arabic language news channel, intended for viewers in Iraq.

Shortwave service to the "Great Satan" (that's us) also involves just an hour a day, scheduled at 0130 to 0230, and currently on 9495 (from Kalamabad) and 9790 (Sirjan). This service is the oddly named "Voice of Justice," which makes you want to ask "whose?" Other English segments are scheduled at 1030 to 1130 to the Mideast, South and West Asia on 15600 and 17660. At 1530 to 1630 VOIRI is active to South Asia on 7375 and 9600 and from 1930 to 2030 they broadcast to Central and Southern Africa on 9800 and 9925. Also during that hour they beam to Europe on 6205, 7260, and 7285. The use of 7260 represents a rare and recent out-of-country relay excursion; it's transmitted via Sitkuani, Lithuania.

Note that times and frequencies are subject to change at any time. Scheduled changes of frequencies and sites occur in late October and again in late March. You can stay up to date by checking one of the online sources: EiBi, Aoiki, or HFCC. A simple Google search will turn them up. We've encountered considerable trouble gaining access to IRIB websites so don't expect too much in the way of schedule information from them.

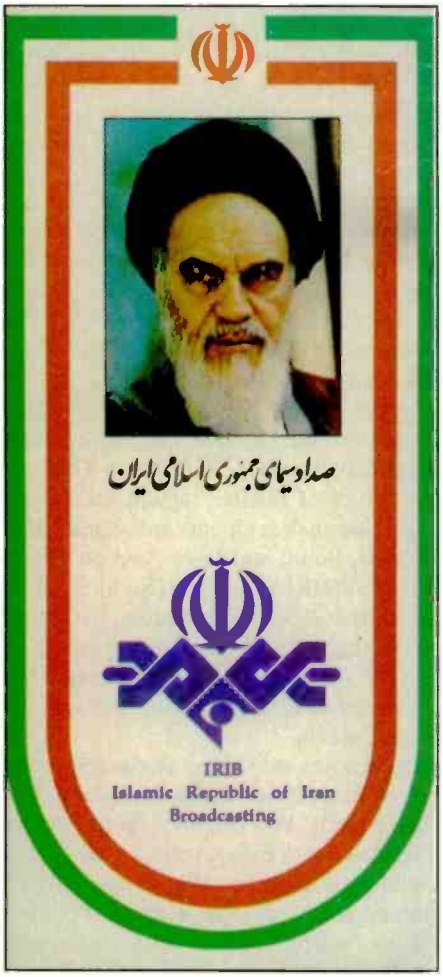
Reception reports for IRIB in English can be emailed to englishradio@irib.ir. Using the same email address format you can substitute the language heard for the English part of the email address (i.e., germanradio@irib.ir). For reports via regular mail use P.O. Box 19395-333, Tehran, Islamic Republic of Iran. One thing you do have to give them: they are fairly good repliers to reception reports, although there are some conditions involved (they require you to submit program details taken over at least two separate transmissions covering more than one day).

Things have definitely crossed the border into the land of worry and rhetoric continues to escalate, so you may want to monitor the war of words from both sides. It's worth checking VOIRI's "Voice of Justice" service to pick up their English broadcast for North America (frequencies noted earlier). If you're not able to get clear reception try a download of their English programming from www.irib.ir/worldservice, but you may find getting that to work a bit tricky itself.

Ham Radio In Iran

Hearing Iranian ham operators—or working them if you're a ham—isn't exactly a casual pursuit, either, no matter where you live. There are only a handful of native licensees and even fewer authorized stations. Since the 1979 Iranian Revolution, the country's "hard-line theocratic regime" has mostly ignored the plight of engineers and potential hobbyists when it comes to communicating by radio. But it wasn't always so.

Before 1979, when the country was governed by Shah Pahlavi and family, working a station in present-day Persia was much easier. The 1970s was the heyday, with thousands of military advisors and contractors from the United States and else-



The Ayatollah Khomeini graced the QSL card of VOIRI for a time. Unfortunately that was not his only claim to fame.

As a DX-crazed teenage ham operator in the late 1970s, I proudly displayed EP2SN's blazingly bright QSL card among my most-treasured QSLs on the wall beside my transceiver—even if I didn't contact the station in faraway Iran myself! I received the card in a sample pack from a prominent QSL card printer. I wasn't licensed until a year after EP2SN wrapped things up. More than 30 years later I still glance at the card every now and then as a reminder that I still haven't worked a station in Iran! This sought-after QSL confirmed contacts with EP2SN, in Tehran, from 1974 to 1976. The operator, Norm Styer, AI2C, now of Leesburg, Virginia, was an U.S. Army communications specialist who was an advisor to the Iranian government on radio communication issues. More than 13,000 lucky hams worked EP2SN.—NTØZ

where working in Iran to build and update civilian and military infrastructure. Plenty of these foreigners were hams, and the official methods of getting a ham license were often circumvented by a trip to the PTT office in Tehran in the company of someone who was "connected" to the royal family or otherwise known to telecommunications officials.

Today, ham operation in Iran is minimal at best and, as of figures compiled in 2001, no new private station licenses had been issued since 1979! The on-air activity of three to five regulars (appropriately licensed before the Revolution) is enhanced by the occasional foreign ham—often a governmental or diplomatic visitor—who has obtained permission for limited operation (probably only from the ham station in the government PTT building). One such ham is JH1NBN (a Japanese op), who operates in Iran as EP3BN. According to the July 17, 2008, edition of the *ARRL DX Bulletin*, Yuki's stay is indeterminate.

Recent DX Summit on-air spots showed EP2FF, EP2HF, and EP2FM (the president of the Amateur Radio Society of Iran) working DX on 20-meter CW in May of 2008.

Adding to the difficulty of hearing EP hams, the sunspot cycle is bottomed out at the time of this writing, which can make a truly challenging intercept literally impossible. When conditions perk up, however, the best place to hear an EP station will be on 20 meters, which coincidentally, was (and probably still is) the only band allocated for use by EP hams. Good starting places will be 14.170 MHz

← *Kerman (Province) TV (left) and Mahabad TV in West Azerbaijan Province, part of National Iranian Radio-TV.* ↓

This rather ugly QSL from 1982 claimed "war is ugly, but to be dominated by aliens is even uglier."

SSB and 14.010 MHz CW. EP ops will be running 100 watts or less, so you'll have to dig deep. The ITU-allocated callsign prefix range for Iran is EPA through EQZ, but if you're ever lucky enough to hear or work an Iranian station, the op will probably have an "EP" prefix.

For additional information—much of it from prior to 1999, however—point your Web browsers to EP2FM's ARSI site at www.qsl.net/ep2fm/AmateurRadioInIran.htm.

Online Sources

For news fixes when you can't pull anything out of the radio spectrum there are some good websites that can supply you with all the stories from and about Iran you can handle. Payvand News of Iran (payvand.com/news) offers an excellent summary on a full range of Iranian subjects and even occasional links to YouTube videos. Other sources you can check include www.iran-daily.com (offered by the newspaper of that name), iranfocus.com and farsinet.com/news (about half the content of the latter's content is in Farsi).

In The Hopes Of A Bright Resolution

Iran's National Day, the equivalent of our July 4th, is April 1—yes, April Fool's Day. If one of these years the mullahs decide to play a "trick" on the West, let's hope all we gain from their effort is a good laugh. ■

Thanks NTØZ for the amateur radio info and QSL card.

The Great Martian Radio Invasions

This Month Marks The 70th Anniversary Of Broadcasting's First—But Not Last—"Red Scare"

by R.B. Sturtevant, AD7IL

It was really all about ratings. In the years just before the United States entered World War II, the most popular radio program on Sundays at 8 p.m. was the "Chase and Sanborn Hour" featuring Edgar Bergen and a piece of lumber named Charlie McCarthy. Opposite the famous ventriloquist was Orson Welles' "The Mercury Theatre on the Air," which the 23-year-old created for CBS and its affiliates. To entice listeners away from the comedy of Bergen and the caustic McCarthy, the Mercury players offered adaptations of famous books like Robert Louis Stevenson's *Treasure Island*, Daniel Defoe's *Robinson Crusoe*, and H.G. Wells' *The War of the Worlds*. That last one, of course, sent shockwaves out from radio speakers on October 30, 1938.

Both "Chase and Sanborn" and "The Mercury Theatre" ran for an hour starting at 8 p.m. People were used to tuning into "Chase and Sanborn" and listening to the opening then, at about 8:12, when a musical selection began, they would tune across the band to find something else of interest—just as we channel surf today on television. On this particular evening, by the time the audience found "The Mercury Theatre," they had missed the announcement that it was a drama updated from Victorian England to modern day New Jersey. Because of the format of news items interrupting musical programs most people had no idea what was really going on "at the scene."

What was really going on within the audience was panic. By 8:15 calls were already pouring in to the police, radio stations, and newspapers, particularly in the New Jersey and New England area. A mass hysteria had started, and it was spreading—people were convinced Martians had landed at Grover's Mill, New Jersey, near Princeton.

Two hysterical women called a New York theater where their husbands were attending a play and had them called to the phone. Panic spread through the entire audience, and the theater was quickly evacuated. Families brought children to police stations to be evacuated. Men with guns went out to find the Martians and shot to pieces a newly erected water tower outside the Grover's Mill. The *New York Times* received a phone call from a man in Dayton, Ohio, who asked "what time will it be the end of the world?" Doctors and nurses in the area wanted to know where emergency services were being established so they could volunteer. The Brooklyn Navy Yard cancelled all leaves and passes to keep the sailors with their ships. The order to "get us steam" was passed. It was thought the Navy's big guns might be needed in New York Harbor to repel Martians moving against the population centers of New Jersey and New York.

H.G. Wells, author of the novel The War of the Worlds, *and Orson Welles, director and narrator of its infamous radio adaptation.*

Elsewhere people jumped into their cars and jammed the roads in an attempt to flee their homes. Some poured into churches, seeking out comfort from ministers and priests. Many improvised gas masks with wet towels or demanded the real thing from the police. Miscarriages and early births were reported; there were also unconfirmed reports of associated deaths. Reportedly, several suicides were stopped when the truth finally became known.

By 9:30 the panic was mostly over. Many people were embarrassed, but even more were angry. Lawsuits blossomed like spring flowers, and everyone agreed it would never be allowed

R.B. Sturtevant is *Pop'Comm*'s "Trivia" columnist and has written many radio history features for the magazine as well.

to happen again. And, because Orson Welles, chief instigator of the terror, was off to Hollywood, it didn't—at least not within our borders.

A Second Martian Landing

Eleven years later Radio Quito in Ecuador's capital wanted to do something to let everyone in that Andean country know that they had their own radio station. Program Director Leonardo Paez and Dramatic Director Eduardo Alcaraz had heard of the famous Martian Invasion broadcast, but they must not have known too many of the details surrounding it. Like Welles, they adapted *The War of the Worlds* to a modern setting—naturally in Ecuador—and aired the program on February 12, 1949.

Immediately after the evening news Radio Quito usually put on a musical program, but on this occasion the announcer suddenly broke in with "Here is an urgent piece of late news!" He told the audience of a Martian landing 20 miles south of Quito at a place called Latacunga, which had been totally destroyed by the invaders. Soon his listeners also heard that an Air Force Base at Mariscal Sucre was being overrun by the Martians. Actors playing the minister of the interior, the mayor of Quito, and a priest directed listeners to prepare to defend their city, protect their families, and pray for deliverance. Countless people rushed from the city to hide in the mountains after the priest was interrupted by a report that the Martians were entering the city.

The noise in the street was the first sign of panic the Radio Quito staff heard. Immediately they cancelled the rest of their program and told everyone that they had been broadcasting a dramatization of a book. Their appeals for calm did nothing to

The brilliant Welles knew how to use the power of radio to great effect, terrifying an audience—and launching his career.


The New York Times.

HEAD STANDS PAT AS A NEW DEALER IN BID FOR SENATE

Radio Listeners in Panic, Taking War Drama as Fact

OUSTED JEWS FIND REFUGE IN POLAND AFTER BORDER STAY

Fake 'War' On Radio Spreads Panic Over U.S.

By GEORGE DIXON.

Real news of the day follows the fictional news of the Martian invasion.

quell what had now become a mob. Thousands surrounded the radio station and began throwing stones. Most of the hundred or so people in the building were able to escape, but some were forced to take refuge on the third floor. Police and military authorities were called on but they were unavailable; they had gone south to fight the Martians.

Gasoline and flammable materials were thrown into the station. Some of the trapped staff tried to climb down a chain, which broke under the strain. When the police and military finally did arrive on the scene, it took tanks and tear gas to break up the mob. The building and its contents were completely destroyed, but that was nothing compared to this human cost: Tragically 20 people died in the fire or trying to escape from it and 15 more were injured.

The next day Radio Quito tried to pick up the pieces and rebuild. Alcaraz and Paez, however, were under indictment. Gradually Radio Quito regained its position as a respected media outlet in South America. In 1980, when the station celebrated its 40th anniversary, the infamous Martian broadcast went unmentioned.

Unbelievably, Martians Storm A Third Continent

On Friday, October 30, 1998, it happened *again*. Antena 3, a radio station in Lisbon, decided to celebrate the 60th anniversary of the original Orson Welles broadcast of the radio drama. The original script was translated into Portuguese and—you guessed it—the locations were changed to places recognizable by that audience. So far so good.

At 7 a.m. the station announced its intention to broadcast the radio play one hour later, during its morning show. The play started and Antena 3 announced that Martians had landed near the town of Palma and were headed for Lisbon. Military forces were reported as powerless against the Martian's onslaught. The radio station's switchboard looked like a Christmas tree. Hundreds called in a panic demanding to know more about the invasion. Some people fled their work places. Medical emergencies related to shock and hysteria occurred among the radio station's listeners. No one recalled hearing the 7 a.m. announcement, but they all remember the 8 a.m. panic.

The Power Of Radio— A Lesson Not Learned?

Maybe, after the third panic caused by an "entertainment program," people will realize that there are just certain things that should not be done on the radio—it's just too powerful. Better to go to a movie or watch something on TV. It's safer. ■

by Jeffrey Reed

The Cobra 29 LTD BT With Bluetooth Wireless Technology

You knew it would happen: old technology meets new technology, wrapped inside the most popular communications mode prior to cell phones and the Internet. And it's no surprise that Cobra Electronics, a communications industry leader, is the first to merge the CB radio and Bluetooth technology.

In February, Cobra first announced the release of its revolutionary CB-Bluetooth twinning. It's kind of like Godzilla meets King Kong: two giant communication modes combined, offering a thrilling ride—that is, an exciting way to keep in touch while on the road.

And what better radio to infuse with Bluetooth than an old favorite: the Cobra 29 LTD 40-channel CB radio? In fact, aesthetically speaking, this new radio is just as easy on the eyes as it is tough. It's a versatile little performer, too.

Groundbreaking Addition

A global leader in the design and marketing of communication and navigation products, Cobra proves that it can still surprise us with outstanding new radios. Since entering the CB category 40 years ago, Cobra has introduced several new technologies, including Night Watch—electroluminescent technology that allows for easy night viewing—and SoundTracker noise reduction, which cuts static by up to 90 percent without reducing signal strength or quality.

Enter the Cobra 29 LTD BT. At first glance, it simply looks like an updated version of the Cobra 29 LTD Classic. Think again. Take a closer look at the noise-canceling microphone, and you'll see a button bearing the Bluetooth symbol.

Not familiar with Bluetooth? Where have you been hiding, under your antenna tower? In a nutshell, Bluetooth is now a common inclusion in cell phones, computers, and MP3 players that allows wireless transfer voice communications, music, photos, and other files within short range. Some phones come bundled with a headset that operates on Bluetooth technology—as does the Cobra 29 LTD BT—and it is also sold separately.

Here's how Bluetooth works with the Cobra 29 LTD BT. Mobile phone calls are synched with the CB radio. The noise-canceling microphone allows calls to be heard loud and clear, even over a noisy engine. Incoming audio is routed through the radio's 5-watt CB speaker, making it easier for a driver to hear a caller. The Bluetooth feature also gives you the ability to

Jeffrey Reed is a leading Canadian freelance journalist and a life-long communications hobbyist.

The Cobra 29 LTD BT 40-channel AM CB radio has more bells and whistles than a high-tech Swiss Army Knife. Bluetooth technology, and a blue channelindicator, make this a cool addition to Cobra's already strong stable of transceivers.

answer and terminate calls by pushing the blue button on the CB microphone, allowing you to stay focused on the road. And, a new auto redial feature also allows for one-touch redialing of the last phone number called.

First, though, you'll need to pair the Cobra 29 LTD BT with your cell phone. With the CB power on, press and hold the Bluetooth button for six seconds to enter Standby mode. A tone will sound and the Bluetooth LED will flash for one minute to confirm entry to Standby. From Standby, press and hold the Bluetooth button for four seconds to enter Pairing mode.

If it's the first time you are pairing with a cell phone, a tone will sound and the Bluetooth LED will flash rapidly to confirm Pairing mode. Follow the cell phone manufacturer's instructions to enable its Bluetooth function, and enter the Cobra-provided PIN number. Successful pairing will be indicated by a tone and brief flashing of the Bluetooth LED to confirm entry to Connected mode. A pair record will also be established for subsequent connections.

Something Old, Something New

The old adage, "If it ain't broke, don't fix it," certainly applies to this attractive radio. The classic Cobra 29 LTD look remains, with a Bluetooth twist, of course. The front panel includes the familiar three-function meter, displaying transmit and receive power, plus SWR reading. These meters are rarely large enough, but with today's vehicles more compact, we don't want to revert to the mobile CB radio sizes of the 1960s!

Also along the front panel are some other old friends. I like the front-panel microphone connector—an improvement over side-panel connections—which makes it easier to install in or under the dashboard. Separate volume/squelch control, Dynamike, RF Gain, Delta Tune, SWR calibration and Talk Back are all here. The Talk Back feature is used to adjust the desired amount of modulation talk back that is present at the speaker during transmit.

The new Cobra 29 LTD BT also features a number of other old standbys on its front panel: switchable S/RF/SWR/CAL; NB/ANL/ANL/OFF; CB/PA; a bright/dim switch; normal or instant Channel 9 for emergency contact; bright RX/TX and Antenna Warning indicators; and a cool new blue channel indicator with blue illumination.

The microphone cord with this radio is a standard nine feet, but I have always thought a longer cord would be more convenient. I really like the tactile controls with this radio; it lets you feel where the dial is in its rotation so you don't have to take your eyes off the road. At 4 watts AM RF power output, this CB radio utilizes the maximum power allowed by law—no sur-

The tactile controls included with the Cobra 29 LTD BT CB radio make mobile communications safer, because you can feel where the dial is without taking your eyes off the road.

With Bluetooth technology right at your fingertip, communicating via cell phone is as easy pressing the blue button on the noise cancelling microphone. It's a safe and easy way to keep in touch on the road.

prise there. What is a surprise, though, is the reasonably affordable MSRP price of $189.95, even with Bluetooth included.

The Cobra 29 LTD BT back panel includes the typical extension speaker and PA speaker jacks, but there is also a jack for an external (separate) Bluetooth microphone. And as per usual, an antenna connector rounds out the rear panel features. The crystal clear 5-watt speaker sits at the bottom of the unit. This speaker is a good one, but I always like connecting an external speaker for flexibility in reception.

Here's The Skinny

The Cobra 29 LTD BT measures 8.625 x 6.25 x 2.25 inches, just slightly smaller than the 29 LTD Classic (which, by the way, is now available from Cobra in a new LTD CHR edition with chrome cabinet and microphone, plus blue channel display). Inside the box are a mounting C-bracket and thumbscrews, microphone bracket and hardware, detachable power cord plus the always-handy instruction manual (this one is actually written in easy-to-understand English, unlike the instructions included with the last lawnmower I purchased).

This radio actually made its debut at the 2008 Mid-America Trucking Show in Louisville, Kentucky—how fitting, since professional drivers remain the No. 1 users of CB radio communications. Cobra's senior vice president of sales and marketing, Tony Mirabelli, says Cobra is "thrilled to offer the first CB radio with Bluetooth technology, which will help drivers communicate more safely and conveniently."

"The bottom line on the Cobra 29 LTD BT? Just like its predecessor, the 29 LTD Classic, it's a winner, inside and out."

The bottom line on the Cobra 29 LTD BT? Just like its predecessor, the 29 LTD Classic, it's a winner, inside and out. And with Cobra's outside-the-box thinking with the addition of Bluetooth technology, you can't go wrong by owning this nice-looking, high-tech transceiver.

If you're in the market for a new, upper-end CB mobile radio, I would suggest giving this one consideration. It has all the bells and whistles you'll need, other than SSB communications and a frequency display. And with Bluetooth technology at your fingertips—or rather at your microphone—it's a multi-tasking radio ready to roll on the roads and highways during your next trip.

For more information on this radio and others from Cobra, visit the company website, www.cobra.com or call them at 773-889-8870. ■

A Nine-Year-Old CB Radio Hero

By Taking The Wheel Of Unconscious Dad's Semi, Pint-Size Matty Lovo Averted Tragedy And Receives REACT "Radio Hero Award"

by Ron McCracken, KG4CVL/WPZX486

He acted within a split second. Young Matty Lovo, using his radio skills and quick wits, prevented what could have been an enormous tragedy just about a year ago. That fast action recently earned him the REACT "Radio Hero Award."

Suddenly, one summer day last August, Matty's dad, Matthew Sr., collapsed at the wheel. This was the wheel of a big rig. And, it was pulling a pup trailer. The unit was hauling 104,000 pounds of lumber through the town of St. Helen's, Oregon, on the Columbia River.

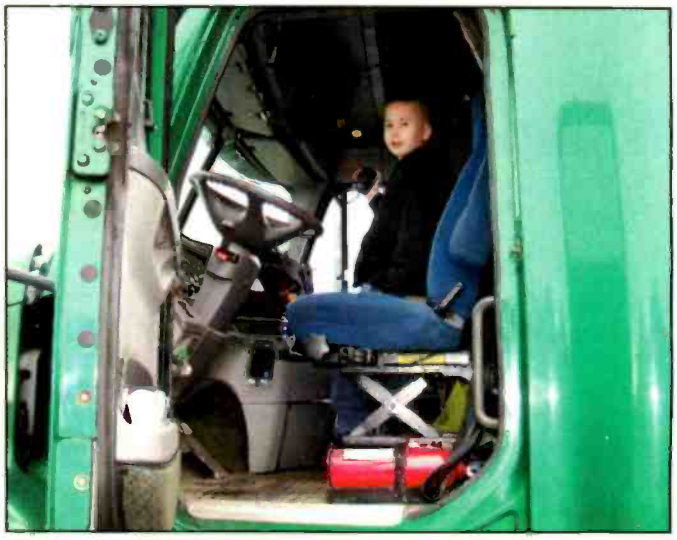
The 1999 Freightliner began to drift across several lanes of on-coming traffic as it rolled out of control along U.S. 30. Pint-size Matty had been "riding shotgun" with his dad as he did most days since school was out. He quickly struggled to push his dad out of the way and grabbed the wheel—just in time. Matty was able to maneuver the huge transport so that it only grazed a power pole in its path.

CB Helper

The nine-year-old began to wrestle the massive rig and its load back across the road into its own lane. As he did, he reached for his dad's CB radio and called, "Help!" Another driver answered immediately. Matty asked him how to stop the monster truck. "Turn off the ignition key," came back the driver's instructions. Matty did as directed and the 18-wheeler began to slow.

A nearby motorist, Christopher Howard, spotted Matty at the wheel and instantly realized that something was dreadfully wrong. He chased the runaway rig on foot, clambered up onto the running board, and made his way into the cab. While Matty continued to steer, Howard operated the brakes Matty couldn't reach. Together they brought the unit to a halt on the side of the road.

St. Helen's police chief Steven Salle had nothing but praise for Matty. He even commented on how well Matty had parked the huge truck; it was lined up on the shoulder of the road like the boy had been driving for years. Matty had never been behind the wheel before.



Mighty small Matty Lovo, in his dad's mighty big Freightliner cab, shows the CB radio he used when his father collapsed. Matty steered the huge rig away from a power pole and back to its own side of the road. Police credit Matty with averting a tragedy. His actions have earned him the REACT Radio Hero Award. (Photos: Allen Geizler)

The results could have been quite tragic, Chief Salle noted, but for Matty's alertness and courage. The outcome could have been very different, too, if Lovo, Sr., had collapsed moments later—just a few miles down the road, the massive rig would have been rolling at highway speed. Instead, the only trace of the ordeal was a minor scratch on the left side of the cab where it had grazed the power pole.

Bravery Honored

Naturally, Matty's sharp thinking and fast action attracted major media attention. All the TV networks covered the story. CNN interviewed Matty and his dad at length. Word of the incident soon reached REACT International, Inc., headquarters in Suitland, Maryland, and the radio organization's Awards Committee went to work gathering documentation on the event.

Ron McCracken is a freelance journalist whose writings have appeared in numerous publications. He is also a past Chairman and CEO of REACT International, Inc., and *Pop'Comm*'s "REACT In Action" columnist.

Matty Lovo's family poses proudly with him as he holds his Radio Hero Award from REACT International, Inc. His father holds the GMRS/FRS radio system and the CB radio Cobra Electronics awarded to Matty for his bravery and fast action. His quick wits also earned him a complimentary subscription to Pop'Comm.

Matty Lovo, Rainier REACT Radio Watch members, and Matty's father pose in front of the huge rig configured just as it was the day it became a runaway. Matty gets help to hold the REACT plaque and Cobra radios his quick actions brought.

At the onset of REACT Month (May) 2008, Frank Jennings, a past board chairman of REACT International, Inc., travelled with Team members to a truck stop near the Lovo home. There Jennings met Matty and his family to present him with the REACT Radio Hero Award.

The Radio Hero Award has been presented only once before. The first award went to Sgt. William Ward of the Henry County Sheriff's Department in Indiana. His monitoring of CB radio in his cruiser led to the arrest of two teenage murderers. They had killed a professor and his wife in the northeast and fled by hitchhiking across the country.

Sgt. Ward heard a driver asking fellow professional drivers on CB about a ride farther west for his two passengers. Quick-thinking deputy Ward offered a ride and said he would meet the two at the truck stop checkout counter. He called for backup and in short order the dangerous pair was in custody. Matty

Pop'Comm October 2008 Reader Survey Questions

This month we'd like to ask you about the Electronic Communications Privacy Act (ECPA) and related legislation and your hobby. Please use the Reader Survey Card and circle all appropriate numbers. Thanks for participating.

What did you think of the ECPA (and related subsequent rulings) when it was first enacted in 1986?

I thought it was completely wrong and unfair to scanner listeners.....1
I thought it was an acceptable compromise between the interests of the cellular industry and scanner listeners.....2
I thought it was a good law and made perfect sense.....3
I have no opinion on it I never heard of the ECPA.....4

Has the ECPA changed how you feel about the monitoring hobby?

Yes, it's not the same with all.....5
No, it makes no difference.....6

The Communications Act of 1934 forbade divulging or profiting from the contents of radio communications, without restricting listening. In 1986 it was amended to restrict listening. Are you in favor of bringing it back to its pre-1986 language?

Yes, bring back unrestricted radio monitoring.....7
No, let the government dictate what I can listen to.....8

REACT International, Inc. past chairman Frank Jennings (right) presents young Matty Lovo (center) with the REACT Radio Hero Award. Matty took the wheel when his father (left) collapsed last year. He used CB to get instructions on how to stop the runaway rig.

is in very good company with his deputy sheriff counterpart, Sgt. Bill Ward.

Bravery Rewarded

Matty was given a beautiful handcrafted wall plaque and a gift subscription to *The REACTer*, from REACT International, Inc., in honor of his achievement. Cobra Electronics presented Matty with a GMRS/FRS radio system as well as a Cobra XL-29 CB radio to further his radio career. And *Popular Communications* also recognized Matty with a complimentary subscription. Both *Pop'Comm* and Cobra Electronics partnered with REACT when the Radio Hero Award was created and each has lent its prestige to the award and have contributed to it.

Hopefully, his life-saving experience with radio, and these well-deserved prizes, will spark a long-term interest in the radio hobby for Matty. Congratulations and well done, Matty Lovo. You can be justly proud of yourself. No doubt your parents certainly are. And we are too.

Could there be more Radio Hero Awards in the wings? Perhaps. At press time, two other candidates were under consideration by the REACT Awards Committee. There could be more award excitement in store. Stay tuned. ■

Honor A Hero

When you learn of a person who has demonstrated the qualities of a Matty Lovo or Deputy Sheriff Sgt. William Ward, by all means nominate him or her for the REACT Radio Hero Award. REACT will appreciate your help in advising it of a candidate you deem worthy of the award and who perhaps has not come to its attention.

It's easy. Just send a newspaper clipping or other news documentation about the incident to REACT International, Inc. You can mail, fax, or email the information as an attachment. You may be able to help REACT make a Radio Hero Award happen.

Contact the organization at REACT International, Inc., 4035210 Auth Road, Suitland, MD 20746; Phone: 301-316-2900; Fax 301-316-2903; Web: REACT.HQ@REACT.ntl.org.

by Ken Reiss, radioken@earthlink.net

Solving Reception Problems

The proliferation of higher-frequency trunked systems has led to a dilemma for scanner listeners located outside the area of coverage. The 800 and 900 MHz frequencies don't travel as far or as well as their VHF counterparts, and so those listeners (including myself) located just outside the city may find reception a bit more challenging. If you're behind a hill or other geographic feature that may block a UHF signal you may also experience this, whereas a VHF signal would make the trip with no problem.

It's tempting to think that some kind of signal preamplifier might be in order to boost those weak signals out of the mud. Be aware however, that you may cause unwanted side effects in other parts of the spectrum if your radio can't handle the boosted signal. Let's take a look at some things you might consider adding to your antenna system to help things along.

Antenna First!

The very first thing to consider is the antenna that's attached to your radio. An antenna specifically tuned to the band that you're interested in, while not as glamorous as some of the other solutions, is probably the best and most efficient. If you can find a directional antenna with some gain that can be pointed straight at a weak signal of the desired band you can dramatically improve your reception. Of course, the trade off will be weaker performance for frequencies outside the range of the antenna. A dedicated radio might make it possible to ignore this problem; having one radio dedicated to the problem band could be configured in a optimal way for that band, and another could be used for general reception.

Another possible solution might be a filter for the specific band that you're interested in (a pass filter) or a filter that can reject a signal that's causing interference (reject and notch filters). These all work by helping to shape the type of signals that actually reach your radio for processing.

Believe it or not, sometimes reducing the signal in one part of the spectrum can actually help reception in another. Filters help with this process, but there are also attenuators that can just reduce the overall amount of signal that reaches your antenna jack. These are usually only necessary in very urban settings where all the signals are strong, but it's not uncommon to use both a filter and an attenuator.

If that doesn't work, or if you need to use the radio for other things, then you may need to consider a preamplifier. Preamps, as they're often called, boost the incoming signal, but with some consequences.

Accessories For Reception

Preamps, filters, and attenuators are all gizmos that get added to the signal processing capabilities of your radio in the hopes of curing some reception problem or another. Some folks will swear by one or the other, while others swear at them. The truth is, most folks have never tried any of them, but still seem to harbor strong opinions on their use and functionality.

What's all the fuss about? Well, a lot of it has to do with misunderstanding how the radio works, and some of it has to do with misunderstanding how these accessory devices work and what exactly they're intended to do. And the rest of it has to do with the physical location that the person using or swearing at the device happens in. The bottom line is that if they work for you, great! If they don't then take them out of your system.

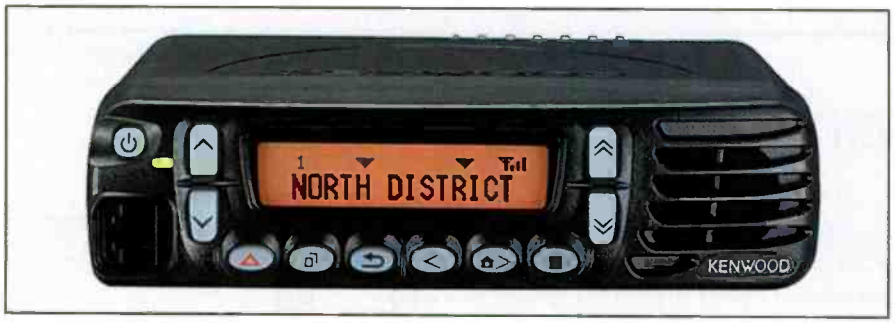
Amplifier Equals More Signal, Right?

A preamp seems to be the device everyone wants to add first. As a result, preamps seem to be the cause of more problems than the other devices. What a preamp does is amplify the signal before the receiver gets to process it at all (pre-amplify). Preamps can be placed inline at the receiver end of the coax, or better still, up at the antenna. Having the amplifier at the bottom of the coax allows for weaker signals (because of losses in the coax) and noise to creep in, and the amplifier amplifies this noise right along with the signal! Putting it up at the antenna eliminates this problem so that you're amplifying the strongest signal possible. While this sounds like a good idea, and should in theory make more signals available to your receiver, it rarely works out that way.

The Kenwood NX-200 provides both conventional FM as well as narrowband FM (required very soon) and NXDN technology (see sidebar) in one unit. For a forward-thinking business, these radios would be very versatile for a long time to come!

Unfortunately, the preamp can't tell what's important and what's not, so it tends to amplify everything equally. Unless you're in an area where there are weak signals from everywhere, a preamp will probably be more trouble than it's worth. Unfortunately, in these days of RF sprawl, there are very few places in the country that don't have at least some strong signals.

There are two problems that preamps tend to cause. One is overload, where you hear pagers and other signals in places on the band where they don't belong. If you're in any kind of an urban area, a preamp is very likely to cause this problem. If your receiver is not absolutely top notch, it may not be able to handle the



This mobile unit also provides compatibility with current systems with an eye toward the future. Some trunking options are even available as add-ons.

resultant amplified signal correctly. The other is desensitization, or desense, where the radio just doesn't hear anything so it's worse than before the preamp.

To understand what's happening, it's useful to remember just what the radio is designed to accomplish. All sorts of signals are arriving at the antenna at the same time. It's the job of the receiver to convert the signals into something we can hear, but only one signal, the one on the frequency to which we are tuned, is of interest at any time. The receiver uses a series of filters and conversions, based on the tuner's frequency, to separate out the one signal, or conversation, we're interested in.

Overload is simply strong signals overwhelming and getting through the radio's internal filtering process and showing up in places where they shouldn't be. By putting an amplifier in the circuit, you increase the chances of overload if there are strong signals already present on the antenna.

Desensitization happens when a strong signal near the frequency that the receiver is tuned to causes the receiver's radio frequency amplifiers to shut down. The amount of amplification necessary to process an incoming signal varies widely, and there are circuits in the receiver designed to figure out how much amplification is necessary for the signal that we're currently tuned to. If a weak signal hits the antenna, the amplifiers step up to make the signal stronger for processing by the rest of the receiver. If a strong signal arrives, the amplifiers drop down to provide the following stages with a more appropriate signal level and to help prevent overload.

The problem occurs if the signal you're trying to hear is a relatively weak one, but a strong signal is nearby, say 15 or 30 kHz away. Because the strong signal is so strong, and so close in frequency, the receiver may not be able to tell that it's not the right one, and the amplifiers will drop down in response to that. But the signal you *want* is now gone because the amplifiers have dropped to a level too low for it to be heard. Bummer. That's desensitization and it can be a major problem with preamplifiers used with less than ideal receivers.

If you think about it, the job of the preamp is to amplify. And the preamp will amplify the strong signals along with everything else. Not a good situation. To make matters worse, most consumer-grade scanners don't have enough filtering, or high enough quality components to adequately deal with strong signals. Overload and adjacent channel interference are the frequent outcomes of these shortcomings. Here's one of the biggest reasons for the "communications" grade receivers like the ICOM IC-R8500 or AOR AR5000 (or much more expensive stuff used by government agencies!).

NXDN—Next In Line?

Kenwood and ICOM have joined with four other companies (Trident Datacom, Daniels Electronics, and Aeroflex Wichita) to establish a forum to facilitate the development of the next generation of digital radio for business purposes, in what has been dubbed the NXDN protocol. Of course, this may have some spillover to public safety in the long run, but for now it's just in the formative stages.

Standards are absolutely essential as we move forward into digital communications. Under the current system of analog FM, one could buy a transceiver for a business radio system wherever the best deal could be found. However, the public safety sector soon realized that once you had committed to a digital system, you were in essence stuck with equipment from that manufacturer and there was no way to get competitive bids on equipment from any other supplier. This was the essential push behind the APCO-25 standard that we have today for digital public safety communications.

APCO-25 works well, but it is tailored to the unique needs of the public safety sector. Business band radio does not require as many fail-safe systems (although there are some businesses that provide essential services that probably should be held to the same standard). The intent behind the NXDN protocol is to offer lower cost land mobile radio systems to the business world while maintaining interoperability with other manufacturer systems.

Based on jointly conducted research, Kenwood and ICOM both have radio systems in development that are moving in this direction. ICOM, using the name D-Star (look for an upcoming feature on this), has some information on their product available for the ham market at www.icom america.com/en/products/amateur/dstar/id1/default.aspx. Information on the Kenwood system can be found at www.kenwoodusa.com/Communications/NEXEDGE/, though this appears to be more business oriented at this time.

Currently no official standard exists, and most digital systems are adapted from cellular or public safety technology. One interesting requirement of the new system is that analog amplifiers and other equipment will still be compatible, reducing the cost of implementation by quite a bit.

The FCC is mandating the switch to digital in the business bands—just like it is everywhere else—for spectrum efficiency. Many business radio systems are likely to be replaced with cell phones or something like the Nextel network, as a lot of small businesses could get by just fine and probably for less money using one of those systems. Those who need a complete two-way radio system, however, will be looking at replacement with a digital system in the not too distant future. Hopefully NXDN will provide a platform for competitive pricing and reliable communications in the digital age.

Preamplifiers are useful in certain circumstances, however. If you're trying to hear a weak signal and there aren't strong signals around, one may help. If you're away from a city in a situation where all of the signals are weak, then you're a good candidate for a preamp.

It may also be appropriate to use preamps in combination with filters for specific reception problems. We'll talk more about this option in a bit, but for most of us, we want the radio to hear everything, on any frequency that the receiver can tune to. So filters are not what we're after either, but, in the interest of better understanding, let's discuss how they work.

Filters

Filters come in essentially five varieties, but they all do the same job, which is to pass on to the receiver the signals of interest while blocking or greatly reducing others. It's helpful to think of a fence analogy, with the filter essentially providing a sort of a gate through it, open to allow certain signals, or closed to other signals. The gate can be very wide, covering many MHz of spectrum, or as narrow as a few kHz either side of a particular frequency. Of course, filters aren't perfect either, so a sufficiently strong signal may make it through even when it's not supposed to.

The first type of filter we'll look at provides a wide fence, so to speak, that's closed for several MHz of frequencies, but open everywhere else. This can be extremely useful if there's a group of signals that you can identify as a problem and want to eliminate. A common example of a "band reject" filter is an FM broadcast band filter, sometimes called an "FM trap." This filter is designed to block signals in the 88 to 108 MHz frequency range, and it can do a great job of eliminating that type of interference if you're troubled by broadcasters. There are also band reject filters for the AM aircraft band if you have trouble with airplanes comms making their way into your scanner in places where they shouldn't.

A variation of the band reject filter is the band pass filter, and it does exactly the opposite. Instead of *blocking* a particular range of frequencies, a band pass filter *allows* only those frequencies to pass through and blocks everything else. This makes a great front end to a receiver that only has one band of frequencies, but they tend not to be built into scanners because the frequency range of coverage is too broad. The ideal situation would be to have a band pass filter that could be switched in and out for each range of frequencies that we listen to, but that would require a lot more circuitry and expensive components than most of us are willing to pay for in a scanner.

You can, however, add band pass filters to the antenna line if you happen to be only interested in signals in a particular band. For practical reasons, band pass filters aren't common among scanner enthusiasts, unless they're willing to dedicate a particular receiver to a specific function (say, aircraft or trunked 800 MHz systems only) and need maximum performance from that receiver.

Another type of filter is one that has only one "end" and is known as a high pass or low pass filter. These filters have a cutoff point which dictates where the filter is used, and depending on the type of filter anything above or below the cutoff point is passed or rejected.

A good example of this type of filter is one that hams have used for years and have correctly called a low pass filter. This filter usually has a cutoff point of about 30 MHz or so, and anything above that frequency is blocked, thereby allowing only the low frequency signals to pass. These are used on transmitters to help prevent harmonic frequencies and other transmitter anomalies from escaping through the antenna and causing interference to nearby televisions and radios.

The amateur (ham) version of this ICOM radio provides a great ham transmitter as well as a broadband receiver covering 118–174, 375–550, and 810–999 MHz. It works in both conventional and digital modes if you can find someone to talk to—and have a license, of course.

There are, however, pass filters with other cutoff points for different applications. For instance, your scanner might benefit from a high pass filter that blocks signals below 30 MHz if you're having trouble with nearby ham or CB transmitters, but otherwise these filters are not used much for scanners.

A high pass filter with a cutoff of about 152 MHz or so might be useful in eliminating VHF pager signals from showing up in the higher VHF portions of the band. However, a band reject filter for the pager ranges might accomplish the same thing and still leave the VHF low band available for you to receive. The high pass filter we just described would eliminate everything below 152 MHz.

Finally, we come to the filter that's probably the most desirable for scanner listeners: the notch. A notch filter is designed to eliminate a very narrow range of frequencies (usually only a few kHz wide, as opposed to a band reject filter which can cover many MHz). If you have interference getting into your receiver, it's likely that it's from one source and probably nearby. A notch filter allows you to restrict the signal from that source from passing through to the receiver. Without the signal hitting the receiver, it's unlikely there will be any interference.

Notch filters come in all shapes and sizes. Some are tunable across a wide range of frequencies to help you eliminate any type of interference that you might come across, while others are designed to notch only a very narrow range of frequencies. These special frequency notch filters tend to be most effective and provide very deep notches, which means that they will eliminate very strong signals on their assigned frequency, but allow signals to pass through almost untouched just a few kHz away.

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 **Don Wilkins of Frisco, Texas**. Congratulations, Don.

Our frequency this month will be **118.4** since it's been a while since we were down in the aviation band. Have a listen and let me know what you hear. You can send your entry via email to radioken@earthlink.net, or by more traditional methods to Ken Reiss, 9051 Watson Rd. #309. St. Louis, MO 63126. Please be sure to put the frequency in the subject line or on the envelope so it can be routed correctly.

The removable control unit makes this a great rig for mobile use.

They are tunable but only for a very narrow range on either side of their designed center frequency.

Finally, a band pass filter combined with a preamp can sometimes work wonders. If you have an amplifier after the filter, so that only signals from the particular frequency range of interest are being amplified, performance can be enhanced significantly, but at the expense of everything else.

Attenuators

An attenuator is the opposite of a preamp; that is it reduces the signal on some radios, or in very strong signal areas, it may make your reception "clearer." Or you might find the interference goes away if you switch in an attenuator. Most scanner listeners in metropolitan areas are much more likely to benefit from an attenuator than from the other devices we've discussed. The reason for this has to do with the design of the typical scanner receiver and the amount of strong RF present in a town of almost any size.

Some of the newer radios will let you switch an attenuator on and off by channel. That's a nice feature if you're in a metro area, or if you only experience problems on one band. This is usually controlled from the front panel (particularly if it's something you can turn on and off by channel). Other radios just have an on/off switch so the attenuator affects all signals (these are usually located near the antenna jack on the rear of the radio). There are also add-on attenuators available that go in line with the coax just before the radio, and they work on all signals too.

How do you know if you need an attenuator? Well, that's kind of a tough call. A lot of radios built in the last several years already offer one, so the easiest thing to do is simply try it to see if any interference you're experiencing goes away. Most switchable attenuators are set at 10 dB or so, which shouldn't kill the signal you want to hear, but might help the interference.

Another thing to check for (especially if you have a radio that just has an on/off switch for the attenuator) is to see if the background "hiss" gets any better or worse with the attenuator turned on. If it tends to clear up with the attenuator turned on, it probably means you're experiencing some form of desensitization, and you might very well find that your receiver runs better with that attenuator on all the time. But there's something psychologically difficult about intentionally putting something on your radio to *reduce* the signal that gets to the receiver.

Think Before You Act

The bottom line with all of these devices is that they can help your scanner listening, or they can just about destroy it. Keep in mind that the radios that we use for scanners are not built to commercial or military specs, and they aren't going to handle lots of strong signals without breaking down. This isn't a physical breakdown, but rather an electronic failure that results in your listening to interference and other annoying features that will detract from what you're trying to accomplish. You can do an awful lot with just antennas, and that's the place where you should probably start before diving in with any of these devices. I recommend trying a back-of-the-set or indoor antenna for a few days to see if the interference gets better or worse. It might help you pinpoint what type of problem your radio is having.

Filters, particularly notch and band reject filters, can help eliminate interference from an otherwise great performing antenna system. If you're not sure what you need, see if you can find someone knowledgeable to take a look at your system and give you some advice. Of course, free advice is often worth exactly what you pay for it, but sometimes two heads are indeed better than one. You can always remove any of these devices from your system later on if they don't improve the situation.

If you've been having reception problems and try any of these approaches, please drop me a line and let me know how you made out.

Your Questions And Comments Are Welcome

If you have any questions relating to scanning, don't hesitate to send them in. And, of course, we're always looking for photos of your shack. You can send your questions, info, or photos directly to me at Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126 or via e-mail at radio ken@earthlink.net.

Until next time, good listening. ■

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

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

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

UTC	Freq.	Station/Country	Notes
0000	9570	China Radio International, via Albania	
0000	13760	Radio Havana Cuba	SS
0000	9440	Radio Prague, Czech Republic	
0000	11700	Radio Bulgaria	BB
0000	9775	Radio Romania International	
0000	9490	Radio Sweden International, via Canada	
0000	6190	International Radio of Serbia	
0000	9700	Radio Bulgaria	BB
0000	9735	Radio Cairo, Egypt	AA
0000	9955	WRMI, Miami, Florida	
0100	4915	Radio Difusora, Macapa, Brazil	PP
0100	11710	Radio Argentina al Exterior	
0100	4755	Radio Imaculada Conceicao, Campo Grande, Brazil	PP
0100	4915	Radio Anhanguera, Goiania, Brazil	PP
0100	11780	Radio Nacional Amazonas, Rio de Janeiro, Brazil	PP
0100	3280	La Voz del Napo, Tena, Ecuador	SS
0100	11920	HCJB, Ecuador	PP
0100	11630	RDP International, Portugal	PP
0100	9665	Voice of Russia, via Moldova	
0100	15260	Hmong World Christian Radio, via WHRI	Hmong
0100	6175	Voice of Vietnam, via Canada	
0100	4940v	Radio Amazonas, Puerto Ayacucho, Venezuela	SS; irregular
0100	11680	Radio Espana Exterior, Spain	SS
0130	6135	Radio Santa Cruz, Santa Cruz, Bolivia	SS
0130	9495	Voice of Islamic Republic of Iran	
0130	5035	Radio Aparecida, Aparecida, Brazil	PP
0200	6160	CKZN, St. Johns, Newfoundland	
0200	9955	Radio Prague, Czech Republic	EE/SS
0200	7400	Radio Bulgaria	FF
0200	3250v	Radio Luz y Vida, San Pedro Sula, Honduras	SS
0200	4780	Radio Cultural Coatan, San Sebastan, Guatemala	SS
0200	6145	Radio Budapest, Hungary	HH
0200	9480	Voice of Russia, via Germany	
0200	9510	Radio Farda, USA, via Germany	Farsi
0200	4965	The Voice-Africa, Zambia	
0200	7230	Radio Slovakia International	SS
0200	7115	International Radio of Serbia	
0200	4815	Radio el Buen Pastor, Saraguro, Ecuador	SS
0230	7270	Radio Cairo, Egypt	AA
0230	7305	Vatican Radio	FF
0230	7440	Radio Ukraine International	UU
0300	5025	Radio Rebelde, Cuba	SS
0300	4780	Radio Djibouti	FF
0300	4950	Radio Nacional, Angola	PP
0300	4985	Radio Brazil Central, Goiania, Brazil	PP
0300	6973	Galei Zahal, Israel	HH
0300	9420	Voice of Greece	Greek
0300	3340	R. Misiones Internacional, Tegucigalpa, Honduras	SS
0300	6005	BBC, via South Africa	
0300	9745	HCJB, Ecuador	SS
0300	7110	Radio Ethiopia	Amharic
0300	9860	Voice of Russia, via Vatican	
0300	6030	Radio Marti, USA	SS
0300	5010	Radio Madagaskara, Madagascar	Malagasy
0300	9600v	Radio UNAM, Mexico	SS
0300	5975	Voice of Turkey	
0300	9720	RT Tunisienne, Tunisia	AA
0300	7325	Voice of Turkey, via Canada	TT
0300	12133.5u	AFN/AFRTS, Florida	
0300	9780	Republic of Yemen Radio	AA
0300	4828	Zimbabwe Broadcasting Corporation	
0300	4976	Radio Uganda	
0300	6110	Radio Fana, Ethiopia	Amharic
0300	6170	Voice of the Tigray Revolution, Eritrea	Amharic
0330	9704	Radio Ethiopia	Amharic
0330	4775	Trans World Radio, Swaziland	
0400	9790	China Radio International, via Cuba	CC
0400	7150	Radio Algerienne, Algeria, via Portugal	AA
0400	6165	Radio Nederland, via Bonaire	
0400	10320	AFN/AFRTS, Hawaii	
0400	4052.5	Radio Verdad, Chiquimula, Guatemala	SS
0400	7100	Voice of the Broad Masses, Eritrea	Amharic
0400	7135	Radio France International	FF
0400	7125	Radio Liberty, USA, via Germany	RR
0400	7275	RT Tunisienne, Tunisia	AA
0400	11980	Voice of Turkey	TT
0400	3320	Radio Sondergrense, South Africa	Afrikaans
0430	7120	Radio Nacional Tchadienne, Chad	FF
0430	7245	Deutsche Welle, Germany, Rwanda Relay	
0430	4770	Radio Nigeria, Kaduna	
0500	7160	BBC Relay, Ascension Is.	
0500	9675	Radio Cancao Nova, Cachoeira Paulista, Brazil	PP
0500	4930	Voice of America Relay, Botswana	
0500	5910	Marfil Estereo, Puerto Lleras, Colombia	SS
0500	6250	Radio Nacional, Malabo, Equatorial Guinea	SS
0500	4777	Radio Gabon	FF

UTC	Freq.	Station/Country	Notes
0500	6110	Radio Japan/NHK via Canada	
0500	4790	Radio Vision, Chiclayo, Peru	SS
0500	9615	Radio New Zealand International	
0500	7255	Voice of Nigeria	EE/Hausa
0500	6095	Voice of America Rely, Sao Tome	
0500	9680	Radio Taiwan International, via Florida	
0500	6020	Radio Victoria, Lima, Peru	SS
0500	7305	RT Algerienne, Algeria	
0500	5005	Radio Nacional, Bata, Equatorial Guinea	SS
0530	5955	Radio Nederland, via Portugal	DD
0600	5995	RT Malienne, Mali	FF
0600	6045	KBS World Radio, South Korea, via Canada	SS
0630	4760	ELWA, Monrovia, Liberia	
0700	4800	Radio Transcontinental/XERTA, Mexico City	SS
0700	7235	Media Corp. Radio, Singapore	Malay
0700	6010	Radio Mil, Mexico City	SS
0800	11765	KNLS, Anchor Point, Alaska	CC
0900	3385	Radio East New Britain, Papua New Guinea	Pidgin
0900	3220	HCJB, Ecuador	QQ
0900	6110	CVC International, Chile	PP
1000	6890	KNLS, Anchor Point, Alaska	
1100	6020	Radio Australia	Tok Pisin
1100	15540	Adventist World Radio, Guam	
1100	6055	Radio Nikkei, Japan	JJ
1100	9615	Radio Veritas Asia, Philippines	CC
1100	9430	FEBC Radio, Philippines	CC
1100	11695	Radio Voice of the People, to Zimbabwe	EE, vernacular
1100	13650	Voice of Korea, North Korea	FF
1100	7145	Radio New Zealand International	
1100	9840v	Voice of Vietnam	JJ
1100	7260	Radio Thailand	various
1100	15330	FEBC Radio, Philippines	
1130	9740	BBC, Singapore Relay	
1200	9685	China Radio International, Urumqi, China	RR
1200	13730	Radio Austria International	GG
1200	12130	KWHR, Hawaii	
1200	9910	Trans World Radio/KTWR, Guam	CC
1200	9525	Polish Radio, via Germany	
1200	9965	KHBN/Voice of Hope, Palau	CC
1200	12075	Radio Rossii, Russia	RR
1200	15180	Voice of Korea, North Korea	
1200	6285	Korean Central Broadcasting Station, North Korea	KK
1200	6160	Voice of America Philippines Relay	CC
1230	9740	BBC, Singapore Relay	
1230	9880	Adventist World Radio/KSDA, Guam	Korean
1230	9650	KBS World Radio, South Korea, via Canada	
1300	9525v	Voice of Indonesia	various
1300	9450	Polish Radio, via Germany	
1330	11705	Radio Japan	
1400	13640	Radio Tirana, Albania	
1500	9580	Radio Australia	
1500	13775	Radio Austria International, via Canada	
1500	21695	Radio Jamahiriya/Voice of Africa, Libya	
1500	11680	Radio Nacional, Venezuela, via Cuba	SS
1500	13590	CVC International, Australia, via Zambia	
1500	17690	Sudan Radio Service, USA, via Portugal	
1530	15595	Vatican Radio	AA
1600	11690	Radio Jordan	
1600	12040	Voice of Russia, Moscow	FF
1600	13710	Broadcasting Svc. of the Kingdom of Saudi Arabia	AA
1700	9515	Radio Canada Internacional	FF
1700	15630	Voice of Greece	Greek
1700	17560	Broadcasting Svc. of the Kingdom of Saudi Arabia	AA
1700	15235	Channel Africa, South Africa	
1700	15190	Radio Africa, Malabo, Equatorial Guinea	
1730	11985	IBRA Radio, Sweden, via Germany	Swahili
1800	11775	Caribbean Beacon/University Network, Anguilla	
1800	15475	Africa No. One, Gabon	FF
1800	12035	SW Radio Africa (to Zimbabwe)	
1830	11990	Radio Kuwait	
1900	17860	Deutsche Welle, Germany, via Portugal	
1900	11715	All India Radio	
1900	11620	All India Radio	
1900	9830	Radio Jordan	AA
1900	15345	RT Marocaine, Morocco	AA
1900	15205	Adventist World Radio, USA, via Germany	
1900	11955	Adventist World Radio, USA, via South Africa	
1900	17850	Radio Exterior de Espana, Spain, Costa Rica Relay	SS
1900	11735	Radio Tanzania, Zanzibar	Swahili
1900	9300	Radio Cairo, Egypt	
1930	9915	BBC Cyprus Relay	AA
2000	13600	Radio Tirana, Albania	
2000	17680	CVC international, Santiago, Chile	SS
2000	9790	Radio France International	FF
2000	15295	RDP International, Portugal	PP
2000	11940	Radio Romania International	
2000	17650	Voice of Biafra International, via WHRI	
2100	13630	China Radio International, via Mali	
2100	15580	Voice of America, Botswana Relay	
2100	15785	Galei Zahal, Israel	HH
2100	17620	Radio France International, French Guiana Relay	FF
2100	15495	Radio Kuwait	AA
2100	6065	Radio Sweden International	
2130	9250	Radio Wadi el-Nil, Egypt	AA
2130	11600	Radio Prague, Czech Republic	
2200	11840	China Radio International, via Canada	
2200	9925	Croatian Radio	
2200	15345	Radio Argentina al Exterior	SS
2200	15540	Radio Nederland, via Bonaire	DD
2200	11865	Deutsche Welle, Germany, Rwanda Relay	GG
2230	15265	Radio Japan/NHK, via Bonaire	JJ
2230	13775	Voice of America Thailand Relay	CC
2230	11750	Radio Nacional, Venezuela, via Cuba	SS
2230	15110	Radio Exterior Espana, Spain	SS
2300	15410	CVC International, Santiago, Chile	PP
2300	5010	Radio Cristal/Pueblo, S. Domingo, Dominican Rep.	SS
2300	9280	Radio Cairo, Egypt	
2300	9580	Radio Medi Un, Morocco	AA
2300	6300	Radio RASD,Rabuni, Algeria	SS
2300	9435	Radio Tirana, Albania	Albanian
2300	7510	Radio Ukraine International	GG
2300	4845	Radio Mauritanie, Mauritania	AA
2330	9875	Radio Vilnius, Lithuania	

New, Interesting, And Useful Communications Products

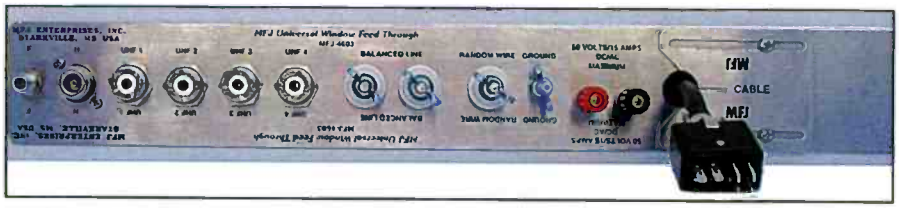
Etón FR500

The Etón FR500 is a self-powered and solar-powered AM/FM/shortwave radio with NOAA weatherband, flashlight, siren, emergency beacon, and cell phone charger built in. Its compact size lets you take it anywhere, and its powering options make it ideal for emergency situations (it can be powered by its hand crank or solar panels; battery power and AC power are also options).

The FR500 features include coverage of AM (520–1700 kHz), FM (88–108 MHz), shortwave (6000–12100 kHz); NOAA weather, all seven channels plus "Alert"; built-in hand crank power generator to recharge internal rechargeable NiMH battery and cell phone batteries; solar power panels that are waterproof, shatterproof, and high performance with built-in UV inhibitors to reduce possibility of heat damage; solar cells function whenever the sun is shining and produce enough power (even in overcast weather) for direct play; four different power source options; four white LEDs, one red LED lights with magnifying lens for brighter, more powerful light source; emergency/SOS siren; rotary all-band selector knob; analog frequency dial and large, easy-to-read digital display, with green LED-illuminated backlighting; digital clock function; and connectors, with rubber gaskets/plugs to seal out moisture, for headphones, DC-in, USB phone charger, USB iPod charger. Dimensions are 8 1/2 x 7 3/4 x 2 1/2 inches (HWD); weight: 1.9 lbs.

The Etón FR500 sells for $80. For more information, visit www.etoncorp.com.

The Etón FR500 AM/FM/shortwave radio with NOAA weatherband offers four powering options, including hand crank and solar, as well as several other features for emergency situations.



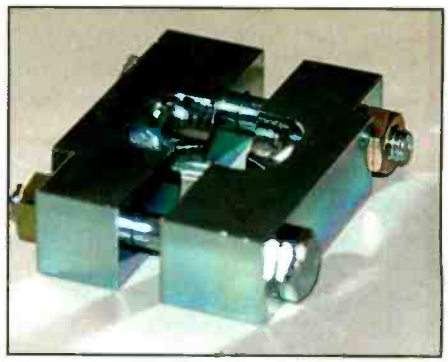
MFJ Weather-Proof Antenna Feedthrough Panels (MFJ-4603 shown) fit in any window up to 48 inches to let you bring all your antenna connections into your listening post without drilling holes through walls.

MFJ Weather-Proof Antenna Feedthrough Panels

MFJ Weather-Proof Antenna Feedthrough Panels mount on your windowsill and let you bring all your antenna connections into your listening post without drilling holes through walls—simply place the Panels on the sill and close the window. Suitable for any window up to 48 inches, they can be used horizontally or vertically. Made of high-quality pressure-treated 3/4-inch-thick wood for efficient insulation, the Panels are painted with a heavy coat of long-lasting white outdoor enamel and the edges are sealed with weather-stripping. Inside/outside stainless steel plates bond all coax shields together to ground connection; stainless steel ground post brings outside ground connection inside.

There are five models to choose from: the MFJ-4602 ($69.95) with three SO-239 Teflon coax connectors for HF/VHF/UHF antennas; the MFJ-4601 ($59.95) with six Teflon SO-239 connectors, handles full 1500 watt legal limit; the MFJ-4603 ($89.95) with four 50 Ohm Teflon SO-239 coax connectors for full legal power limit; the MFJ-4604 ($99.95) with five Adaptive Cable Feedthrus; and the MFJ-4605 ($159.95), which combines the MFJ-4603 and MFJ-4604.

For more information, contact MFJ at 300 Industrial Park Road, Starkville, MS 397591; Phone: 800-647-1800; Web: www.mfjenterprises.com.



The K4AVU Coax Crimper makes soldering the "shield" connections on standard PL-259 coax cable connectors a snap.

K4AVU Coax Crimper

An alternative for hobbyists who struggle to solder the "shield" connections on standard PL-259 coax cable connectors is available with the K4AVU Coax Crimper. The device fits around the part of the connector where the solder holes for the shield are located and crimps the body of the connector firmly in place. Simply solder the center pin connection, twist on the connector's coupling ring, and you're set. The K4AVU Coax Crimper works with nearly all types of 1/2-inch diameter coax cables and also when using standard UG-175 and UG-176 reducers for smaller diameter

coax cables, such as RG-58, RG-59, and RG-8X. Dimensions are 2 1/2 x 1 1/2 x 5/8 inches.

The K4AVU Coax Crimper sells for $37 shipped. For more information or to place an order, contact Paul Marsha, K4AVU, at 200 Garden Trail Lane, Lexington, SC 29072; Email: k4avu@yahoo.com.

The i2Telecom VoiceStick inserts directly into the USB port of desktop or notebook computers, PDAs, and smart devices and lets the user call any telephone in the world via VoIP at a fraction of normal long-distance rates.

i2Telecom VoiceStick

The i2Telecom VoiceStick is a plug-and-play, portable keychain-sized device that inserts directly into the USB port of desktop or notebook computers, PDAs, and smart devices. The VoiceStick instantly allows the user to make domestic and international long-distance calls via the Internet with the use of an included headset. Once the VoiceStick is inserted into a USB port, a dial pad display enables the user to call any telephone in the world directly from the computer, using Voice-over-Internet Protocol (VoIP) technology, at a fraction of normal long-distance rates.

For more information and pricing, visit www.voicestick.com.

SOLO's Vintage Laptop Backpack

The Vintage Laptop Backpack from SOLO provides stylish comfort and functionality. It is made of distressed Colombian leather that is durable yet soft to the touch, with polished antique brass details and blue interior. It has soft, padded shoulder straps, a dedicated laptop section, and convenient zip down front organizers so you can safely and conveniently carry all of your essentials.

The Vintage Laptop Backpack from SOLO accommodates a 15.4-inch laptop and is made of distressed Colombian leather.

The Vintage Laptop Backpack accommodates a 15.4-inch laptop and features a Ride Along Pocket on the back that unzips and can be slipped over the handle of any rolling case for consolidated transport; top zipper closure; and nail head detailing to strengthen stress points.

The Vintage Laptop Backpack has an MSRP of $185.00. For more information, visit www.solocases.com.

Energizer AAAA Batteries

Energizer has expanded its line of batteries with a AAAA offering to better meet the needs of a consumer electronics market trending toward smaller, lighter, and more compact devices. With its decreased size and weight, the Energizer AAAA alkaline battery provides a power source for today's smaller electronic devices. Compared to AAA batteries, the Energizer AAAA weighs 43 percent less, is 40 percent smaller in volume, and is 20 percent thinner. Compared to lithium ion rechargeable batteries, the AAAA offers a lower cost solution, while also eliminating the need to recharge. Rated at approximately 1.5 volts, 625 mAh, the Energizer AAAA works with a number of electronic devices, including Bluetooth headsets; noise canceling headsets; LED flashlights; audio accessories; flash audio players; computer accessories; and MP3 players.

Currently available in the U.S. in drug, mass, and consumer channels such as Walgreen's, Target, and Best Buy, the suggested retail price is $1.75 per pack of two AAAA batteries. For more information, visit www.energizerAAAA.com.

by Mark Meece, N8ICW, ohioscan@gmail.com

From Wright To Might—Pope Air Force Base And Fort Bragg

Of the 50 United States arguably North Carolina can lay claim to being the richest in terms of military history. With an extensive shoreline along the Atlantic and backed by ancient mountains to the west, the state offers a wide variety of terrain and climate—and military monitoring.

North Carolina was home to the first English colony in the Americas. Roanoke Island in Dare County was the site of Sir Walter Raleigh's Roanoke Colony in the late 16th century. The settlers became more famously known as "The Lost Colony," as their disappearance has never been explained, even some 400 years later. Some 100 years after that first settlement North Carolina became one of the original Thirteen Colonies. On May 20, 1861, it became the last confederate state to secede from the Union and was readmitted seven years later on July 4, 1868. But enough general history—let's move on to its military story.

Over 100 Years Of Tar Heel Aviation

At Kill Devil Hills, near Kitty Hawk, the first successful controlled powered flight for a heavier-than-air craft took place on December 17, 1903. Of course, it was brothers Wilbur and Orville Wright behind that historic achievement.

Today, heirs to that watershed event are located on the northern edge of Fayetteville in Cumberland County, where Pope Air Force Base and the adjacent Fort Bragg Military Reservation

New tail flashing on one of the 440th Airwing's C-130s. (Photo Courtesy of U.S. DefenseLink)

Members of the 43rd AES (Aeromedical Evacuation Squadron) provide security for patient evacuation during training at Fort Bragg. (Photo Courtesy of Master Sgt. Jack Braden)

together make up one of the world's largest military installations. Pope Air Force Base itself covers some 2,194 acres; Pope's jurisdiction includes 1,893 acres for the main base, Laketree Site and Railroad Yards (112 acres), New Munitions Storage Area (173 acres), Localizer Site (less than one acre), Middle Marker (two acres), Outer Marker (two acres), the MARS Station (less than one acre) and the Old Munitions Storage (10 acres). In all there are 460 buildings on the base, which supports a population of 4,700 military personnel and 1,150 dependents.

Pope falls under the Air Mobility Command (AMC) and specializes as Rapid Global Mobility, in addition to its support duties for Fort Bragg's Airborne and Special Operations Paratroopers. Its C-130 aircraft are ready to go at a moment's notice to provide support of people, equipment, and supplies anywhere in the world. The aircraft and personnel assigned to Pope not only provide support for combat operations, but also time and again provide humanitarian relief during disasters.

A Rich Military History

Congress created Camp Bragg in 1918 as an Army field artillery site. It was named for Confederate General Braxton Bragg, a former artillery officer from North Carolina. One year later an aviation landing field was constructed. "Pope Field" was officially established by the War Department in 1919 making it one of the oldest facilities in the Air Force. The field was named in honor of First Lieutenant Harley Halbert Pope who died when the JN-4 Jenny he was flying crashed into the Cape Fear River on January 7, 1919.

A few years later, in 1922, Camp Bragg became a permanent Army post and was renamed to Fort Bragg. It was here in 1934 that the first military parachute jump took place and, in 1942, that the first airborne units began preparing for the country's entry into World War II.

Over the years Pope has seen periods of major expansion, starting back in the 1930s, but it was not until 1940 that its open dirt fields became paved runways. The base was a major troop carrier training site after the outbreak of World War II, and as Bragg's paratrooper training program began, it was said that Pope put the "Air" in "Airborne." Pope Field became Pope Air Force Base with the creation of the U.S. Air Force on September 18, 1947.

Nearly 50 years later, on April 1, 1997, the 43rd Airwing activated at Pope, becoming the host unit for the base. The 43rd Wing's subordinate units, the 2nd and 41st Airlift Squadrons,

Current Flying Units At Pope AFB

440th AIRLIFT WING
2nd AIRLIFT SQUADRON (LANCERS)
95th AIRLIFT SQUADRON (SWEET)

A-10 Thunderbolts from the 23rd Fighter Group at Pope arrive at Shaw Air Force Base. (Photo Courtesy of Staff Sgt. Nathan Bevier)

COMMUNICATIONS

Today Fort Bragg/Pope Air Force Base share a two-site trunked radio system using a mix of analog and digital voice.

SYSTEM:	Fort Bragg/Pope AFB
TYPE:	Motorola Type II SmartZone
SYSID:	7705
DIGITAL TYPE:	APCO-25 Common Air Interface
BASE:	407.000 MHz
SPACING:	12.5 kHz
OFFSET:	380

FREQUENCIES

SITE 001 Honeycutt

407.0750c	407.4750a	407.5500a	407.5625a	407.8125
407.8625	407.8875	408.0875	408.1250	408.5750
409.0250	409.1250	409.5625	409.8750	410.1500
410.5500	410.7000	410.9000		

SITE 002 Sandstone

407.2500	407.5000	408.0500c	408.4250a	408.62500a
409.5125	409.7000a	410.1625	410.3625	410.7625

c - denotes primary control channels
a - denotes alternate control channels

TALK GROUPS

32	911 Center	
80	Air Show 2005 - Air Boss	Pope AFB
592	Parachute Drop Zones	Pope AFB
752	Game Warden/Wildlife	
976	Headquarters	Pope AFB
992	EMS Rescue	Fort Bragg
1008	EMS Dispatch	Fort Bragg
1024	EMS Talk-Around/Tactical	Fort Bragg
1312	Live Fire Control 1	Fort Bragg
1360	Live Fire Control 2	Fort Bragg
1472	Drop Zone Safety Officer (DZSO) 1	Fort Bragg
3248	Military Police Panther Base	Fort Bragg
3552	Drop Zone Safety Officer (DZSO) 2	Fort Bragg
3968	Drop Zone Command	Fort Bragg
5600	Natural Resources	
7312	Live Fire Control 3	Fort Bragg
7328	Building Maint. Electricians	Fort Bragg
7360	EMS Dispatch	Fort Bragg
7376	Ambulance to Hospital	Fort Bragg
7408	Military Police Simmons Army Airfield	Fort Bragg
8192	Military Police Tactical 1	Fort Bragg
8208	Military Police Tactical 2/CID	Fort Bragg
8400	Military Police 503	Fort Bragg
12032	Military Police	Pope AFB
17600	Field Training	Fort Bragg
22512	Field Maneuvers	Fort Bragg
27216	Camp Mackall Tower	Fort Bragg
27232	Camp Mackall Air Traffic Control	Fort Bragg
30400	Range Control	Fort Bragg
48144	Range Control 3	Fort Bragg
48176	Range Control 1	Fort Bragg
48192	Fire 2	Pope AFB
51200	EMS Medical Tent Special Events	Pope AFB
51296	Fire Tac 1	Pope AFB
51312	Fire Tac 2	Pope AFB
51328	Range Control 2	Fort Bragg
51360	Maintenance 2	Pope AFB
51392	Fire 1	Pope AFB
51824	Aircraft Maintenance	Pope AFB
51888	Maintenance 1	Pope AFB
51904	Fuel 1	Pope AFB
51936	Fuel 2	Pope AFB
51968	Ground 2	Pope AFB
52064	Ground 3	Pope AFB
52128	Ground 1	Pope AFB
52800	Security/Checkpoints	Fort Bragg

POPE AIR FORCE BASE (KPOB)

AERONAUTICAL OPERATIONS

124.550	POPE GROUND
125.175	FAYETTEVILLE APPROACH/ DEPARTURE NORTH
132.300	ATIS
133.000	FAYETTEVILLE APPROACH/ DEPARTURE SOUTH
134.100	COMMAND POST
135.025	POPE TOWER
138.450	AIR TACTICAL
140.000	GROUND CONTROLLED APPROACH (GCA)
140.200	AIR TACTICAL
141.800	AIR TACTICAL
236.600	POPE TOWER
257.100	COMMAND POST
275.800	CLEARANCE DELIVERY/GROUND
291.100	POPE TOWER
295.000	FAYETTEVILLE APPROACH/DEPARTURE
297.000	AIR TACTICAL
297.200	GCA
303.000	AIR TACTICAL
319.400	COMMAND POST
340.800	COMMAND POST
343.000	SUPERVISOR OF FLYING
344.600	METRO (WX)
353.725	ATIS
359.300	GCA
372.200	DISPATCHER
376.100	440th AW OPERATIONS
381.300	COMMAND POST

SIMMONS ARMY AIRFIELD (KFBG)

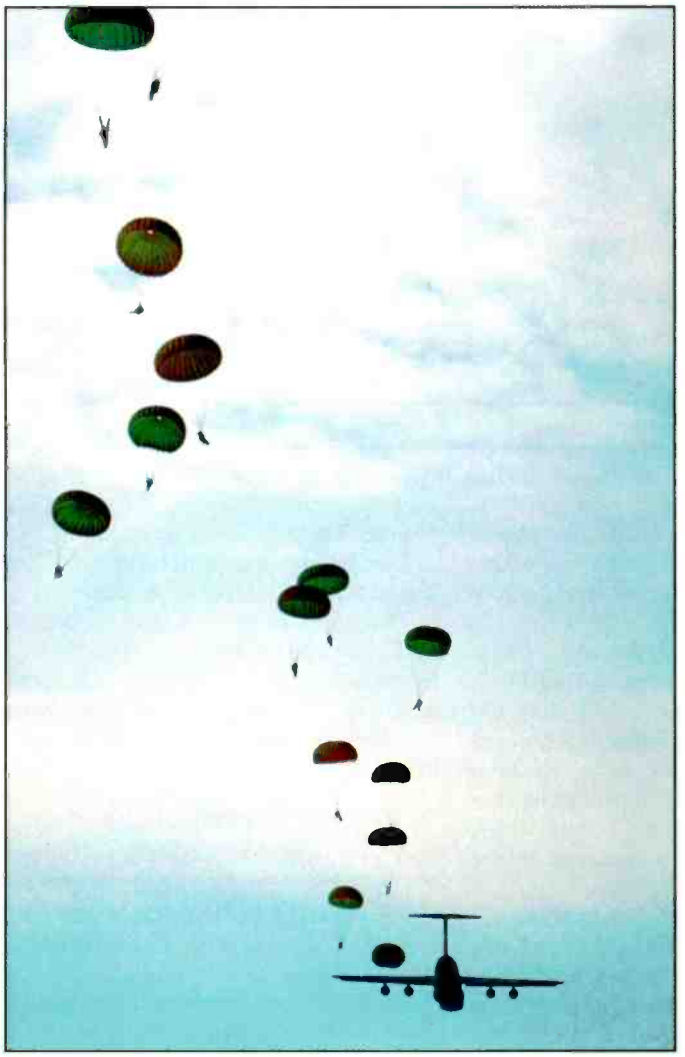
AERONAUTICAL OPERATIONS

120.800	GCA
121.900	CLEARANCE/GROUND
125.900	SIMMONS TOWER
133.000	FAYETTEVILLE APPROACH/DEPARTURE
139.250	ATIS
141.250	METRO (WX)
142.350	BASE OPERATIONS
229.400	CLEARANCE/GROUND
240.625	SIMMONS TOWER
245.500	BASE OPERATIONS
265.600	METRO (WX)

MACKALL ARMY AIRFIELD (KHFF)

38.900	RANGE CONTROL
41.750	GROUND
127.800	MACKALL TOWER
128.350	GROUND
139.350	RANGE CONTROL
141.400	BASE OPERATIONS
249.900	RANGE CONTROL
251.050	GROUND
254.400	RANGE CONTROL

The final C-130E from Pope taxis to the runway for its flight to Little Rock AFB—this is its final mission with the 43rd Airwing. (Photo Courtesy of 2nd Lt. Chris Hoyler)



Paratroopers in Training at Fort Bragg. (Public Domain photo)

Barrack for the 1st Brigade at Fort Bragg. (Public Domain photo)

fly the C-130 Hercules for the Air Mobility Command. Currently Pope has one rather short runway, 5/23, which is only 7,501 feet long.

The Installation Today—And In The Future

Fort Bragg is the home of the United States' only Airborne Corps and Airborne Division, the "Green Berets" of the Special Operations Command, also the Army's largest support command. In terms of population Fort Bragg is the largest Army installation in the world and there are 43,000 military and 8,000 civilians that work there every day.

The 43rd Airwing is a part of the 21st Air Force. The 2nd Airlift Squadron flies the C-130 identified by its blue-green

Pope tail stripe. it has been deployed for such operations as "Operation Joint Endeavor" in Bosnia and "Operation Southern Watch" in Southwest Asia.

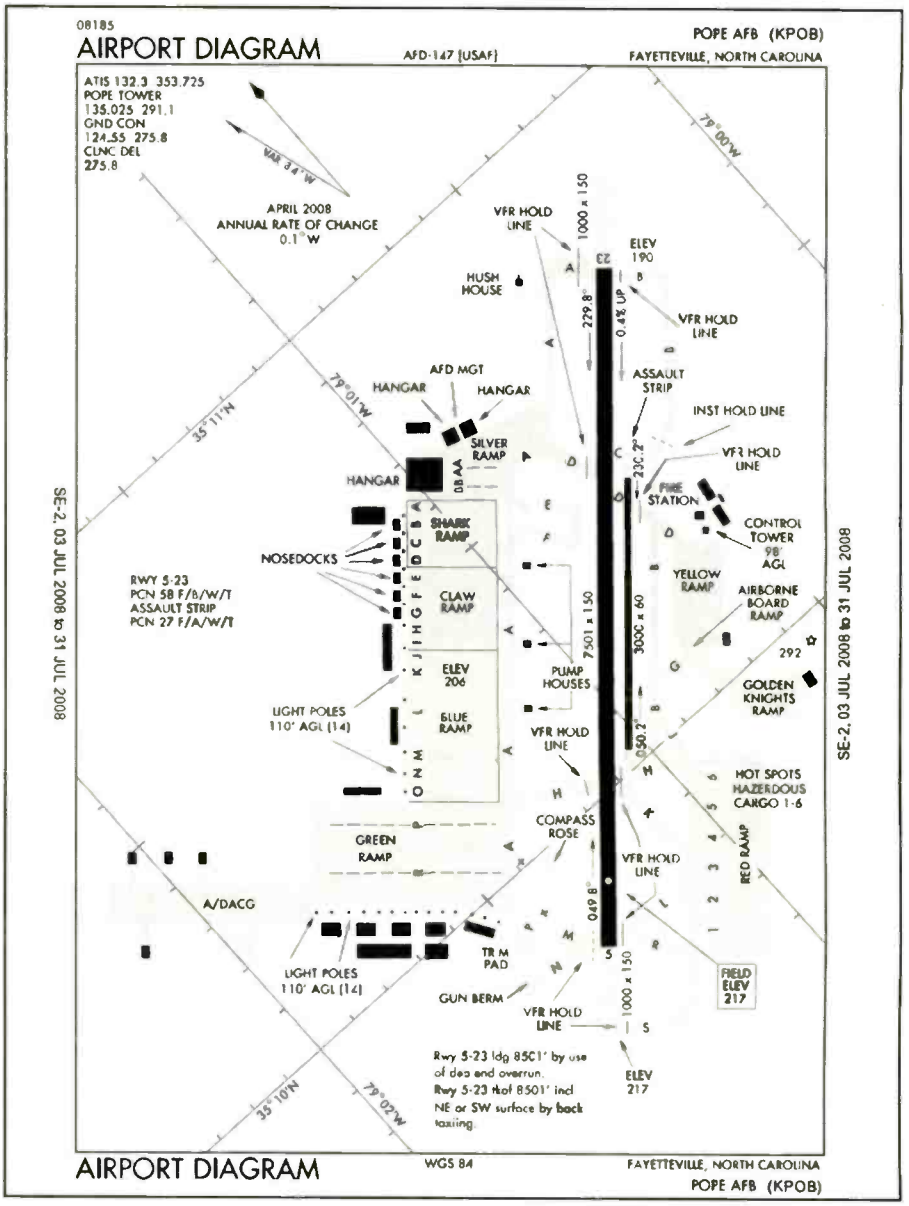
Recently Pope Air Force base was included on the Department of Defense's (DoD) 2005 Base Realignment and Closure (BRAC) plan. The plan called for Pope to be realigned by moving the 43rd Airlift Wing's 25 C-130Es to Little Rock Air Force Base in Arkansas and the 23rd Fighter Group's 36 A-10 Thunderbolt II aircraft to Moody Air Force Base in Georgia. The base would then be absorbed by Fort Bragg expansion.

The Air Force would retain a presence at Pope in the form of several squadrons, most notably the 43rd Aeromedical Evacuation Squadron. Other units will be 3rd Aerial Port Squadron, 18th Air Support Operations Group, 14th Air Support Operations Squadron, and Detachment 1 of the 373rd Training Squadron. Also as part of the 2005 BRAC, the 440th Airlift Wing, formerly based at General Mitchell IAP in Milwaukee, Wisconsin, will relocate to Pope to provide the primary airlift mission. It will become the first Air Force Reserve Wing to host an active duty associate squadron as the 2nd Airlift Squadron will share airlift operations along with the 440th Airlift Wing's 95th Airlift Squadron. This new arrangement will provide 16 C-130s.

In addition to the flying units, transferring to Pope will be several Army command headquarters units, including the United States Army Forces Command and the United States Army Reserve Command. Currently these units are based at Fort McPherson, Georgia, which is slated to close in accordance to the 2005 BRAC.

Other expansion plans include lengthening the 7501-foot runway at Pope by an additional 3,000 feet at a cost of $50 million. The Army is expanding the Green Ramp area at Pope where troops and equipment are loaded and unloaded, and will spend around $103 million on that project. The Air Force is spending $33 million for improvements to the explosive and hazardous cargo fueling area.

Despite all of the unit movements and shake-ups you can be assured that the area in and around Fort Bragg/Pope Air Force base will continue providing some great scanner monitoring for a long time to come.



FAA Airport diagram. (Courtesy of the FAA)

An Invitation To Our Readers

We have no loggings to report this time around. If you have anything you'd like to pass along, please drop us a message at the email listed in the column header and remember to place "*Pop'Comm*" in the subject line. We look forward to hearing from you. ■

by Gerry L. Dexter, gdex@genevaonline.com

Okeechobee Silent For RTI, Welcome Radio Symban, And A Big Congrats For Radio Sweden International

What's this? Radio Taiwan International no longer relayed by WYFR-Okeechobee? So when you tune to 5950, 9680, and the other usual haunts RTI won't come pounding through your speaker as though the transmitter was in your next door neighbor's garage? Is this reduction only for English to North America? Or does it also apply to Chinese/Mandarin to North America, or Spanish to South America? How about WYFR's relays to Asian targets via Taiwan? Stay tuned!

A new station is Radio Symban, near Sydney, Australia, now active on 2368.5 with just 1 kW from a place called Peats Ridge.

Another new entity is Sawtu Linjilla, operated by the Lutheran World Federation. It broadcasts in the Fulfulde language to Cameroon from 1830 to 1900 via Wertachtal on 9655. It can be addressed through the mail at B.P. 02, Ngaoundere, Cameroon.

Our congratulations to Radio Sweden International, celebrating its 70th birthday this year. With broadcasters collapsing all around we're glad Radio Sweden is still plugging away! The "Global Information Guide" wishes you many more birthdays!

We can figure on a couple of new slots out of Canada shortly. The CBC is planning to make use of 7310, 7325, and 7345, although this would only be in effect for certain times of the year and then only for a few hours per day. There remains a formality or two before the change is implemented, but it very likely will get the okay and maybe already has.

Reader Logs

Remember, your shortwave broadcast station logs are always welcome. But *please* be sure to double or triple space between the items, list each one by its *originating* country, and include your last name and state abbreviation after each. Also much wanted are spare QSLs you don't need returned, station schedules, brochures, pennants, station photos, and anything else you think would be of interest. I look forward to hearing from you.

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 indicated then English (EE) is assumed.

ALASKA—KNLS, Anchor Point, 7355 with "DX Corner" at 1430 and 11765 in CC at 0800. (Ng, Malaysia)

ALBANIA—Radio Tirana, 9390-Shijak ending EE at 0159. (Parker, PA) 13600-Shijak in EE at 2000. (Charlton, ON) 13640 at 1435. (Fraser, ME)

ALGERIA—RTV Algerienne, 7150 via Portugal in AA at 0401. (Parker, PA)

ANGOLA—Radio Nacional, 4950 in PP at 0251. (Brossell, WI)

ANGUILLA—Caribbean Beacon/University Network, 11775 with Dr. Scott at 0527. (MacKenzie, CA) 1845 with Melissa Scott preaching. (Maxant, WV)

Rich D'Angelo got this "new-style" card from Radio New Ireland, Papua New Guinea, on 3905.

ARGENTINA—Radio Nacional/RAE, 11710 sign on with multilingual IDs and into PP. Also 15345 at 2201 in SS. (Alexander, PA) 11710 piano music, new CD releases. (Paszkiewicz, WI) Argentine songs at 0327. Also 15345 in SS to Europe at 2245. (Parker, PA) 15345 in SS at 1755. (Maxant, WV) 2120 in GG. (Charlton, ON) SS at 2230 (MacKenzie, CA)

ASCENSION IS.—BBC South Atlantic Relay, 7160 at 0340. (MacKenzie, CA) 15400 at 1620. (Wood, TN) 7160 to West and Central Africa at 0536, 15400 at 2133, 17830 with soccer coverage at 1742 and 21470 to South Africa with "Sports World" at 1540. (Parker, PA) 15400 at 2009 and 17830 at 1920. (Charlton, ON)

AUSTRALIA—Radio Australia (Shepparton site except where noted), 6020 to PNG in Pidgin at 1050. (Fraser, ME) 0930 in Pidgin, also 11660-Brandon at 2059. (D'Angelo, PA) 9475 at 1225. (Strawman, IA) 9475 at 1200 and 17715 at 0030. (Ronda, OK) 9580 at 1810, 12010-Darwin at 2305, 12080 at 2220, 13630 at 2208, 15160 with sports coverage at 0550, 15515 at 0428 and 17785 at 2207. (MacKenzie, CA) 9590 at 1057 and 17785 at 2305. (Charlton, ON) 9660-Brandon at 0545, 13690 at 2304, 15230 with the "Breakfast Club" at 2239, 15240 at 0240, 15515 at 2158 and 17785 at 2315. (Parker, PA) 15515 with football at 0417. (Wood, TN) 11660 at 1845, 15240 at 0330 and 17750 at 2345. (Maxant, WV) 21725 with rugby report at 0205. (Ng, Malaysia)

ABC Northern Territories Service: 3210-Alice Springs at 0900 and 4835 at 0830. Also 4910-Tennant Creek at 0830. (Wilkner, FL) 2485-Katherine just above the noise level at 1139. (Brossell, WI)

CVC-Australia, 4930 via Zambia at 0504. (Parker, PA) 13590 via Zambia at 1550. (Charlton, ON) 1700. (Linonis, PA) 15680 via Germany at 1540. (Maxant, WV)

AUSTRIA—Radio Austria International, 13730 in GG at 1240. (Brossell, WI) 13775 at 1505 with "Austria Today." (Maxant, WV) 1659 in GG. (Charlton, ON)

BOLIVIA—Radio Santa Cruz, 6135 at 0050 with CP music, SS anmts, many IDs. (Alexander, PA) 0102 in SS with ranchero music

Help Wanted

The "Global Information Guide" consistently presents more shortwave broadcast loggings than any other monthly SW publication! (A whopping 653 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.*

and audience noise. Closed at 0138. (Strawman, IA) 0125 in SS with several IDs. (Ronda, OK)

Radio San Miguel, Riberalta, 4699v at 0145 with SS talks, ad string, jingles, promos and abrupt close monitored at 0214. (Alexander, PA)

Radio Mosoj Chaski, Cochabamba, 3310 at 1012 just above noise threshold in SS with Latin guitar. (Wood, TN) 0125 with vocal, one annt in QQ. (Ronda, OK)

BONAIRE—Radio Nederland Relay, 6165 in EE to 0457*, 15315 to West Africa at

A Guide To "GIG-Speak"

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

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

Radio Educacion, Mexico, 6185. QSLed with this attractive reply. (Thanks Rich D'Angelo, PA)

2124, 15540 to South America in DD at 2202, 17605 in DD to South America at 2228 and 17810 to West Africa at 2041. (Parker, PA) 9845 at 0035 and 17810 at 2002. (Charlton, ON) 17605 in DD at 2215. (MacKenzie, CA) 17810 in GG at 2100. (Paradis, ME)

BOTSWANA—Voice of America Relay, Moepeng Hill, 4930 at 0351, 12080 to East Africa at 0427, 15580 at 2102 and 17895 with highlife music pgm at 2028. (Parker, PA) 15580 at 1441. (Charlton, ON)

BRAZIL (*All in PP—gld*)—Radio Difusora, Macapa, 4915 at 0211. (Brossell, WI) 0215. (Ronda, OK) 0301. (Strawman, IA)

Radio Imaculda Conceicao, Campo Grande, 4755 with W talk at 0110. (Ronda, OK)

Radio Anhanguera, Araguaina, 4905 at 0150 with Christian music, closing anmts at 0300 and off at 0301. At 0112 this was noted parallel to Radio Anhuanguera, Goiania, on 4915. (Alexander, PA) 0205 (Ronda, OK) 0208. (Brossell, WI)

Radio Guaruja Paulista, Guaruja, 5940 with W annor at 0542 but deteriorated quickly. (Parker, PA)

Radio Cancao Nova, Cachoeira Paulista, 4825 at 0230 with religious talk. //9675. (Alexander, PA) 4825 at 0155, also 9675 at 0551. (Parker, PA)

Radio Novas de Paz, Curitiba, 9515 with religious music at 0224. (Parker, PA)

Radio Clube Paranaemse, Curitiba, 6040 at 0210 with PP pops and ballads. Covered by Vatican monitored at 0230. (Alexander, PA)

Radio Bandeirantes, Sao Paulo, 9645 poor at 0135, //11925 was threshold. (Alexander, PA) 9645 at 0538 battling presumed Radio Vaticana. (Parker, PA) 11925 at 0312, //9645. (Paszkiewicz, WI)

Radio Brazil Central, Goiania, 4985 at 0040. (Parker, PA) 0053. (Ronda, OK) 0315. (Brossell, WI)

Radio Aparecida, 9630 monitored at 0125 with talk and religious music. //s 6135 fair and 11855 weak under WYFR. (Alexander, PA)

Radio Nacional da Amazonia, Rio, 6180 at 2255 with talk, several IDs. (Ronda, OK)

11780 at 1223. (Brossell, WI)

Radio Gaucha, Porto Alegre, 11915 at 0215 with rapid talk, sound effects. (Paszkiewicz, WI)

Radio Tupi, Curitiba, 9565 with possible sermon at 0320. (Paszkiewicz, WI)

BULGARIA—Radio Bulgaria, 7400 in FF at 0238. (Brossell, WI) 9400 in BB at 1800. (Linonis, PA) 9700 and 11700 at 2305. (Charlton, ON) 9700 at 2300. (Paradis, ME) 2340. (Fraser, ME) 11600-Plovdiv in SS at 0117 and 11700-Plovdiv at 0023. (Parker, PA)

CANADA—Radio Canada Intl, 9515 at 1510. (Maxant, WV) 1717. (Charlton, ON) 11790 via Madagascar in AA to ME at 0344, 13650 via Skelton in FF at 2115, 13725-Sackville at 0000 in SS, 15180 via Rampisham in AA to ME at 1945, 15235-Sackville at 2002, 15330 in FF at 2130, 15455-Sackville in SS at 2307, 17735 in FF to Africa at 2101 and 17765 in PP at 1955. (Parker, PA)

CKZN, St. John's (Newfoundland) 6160 with CBC talk show and network ID from 0257 tune. (Paszkiewicz, WI)

CBC Northern Quebec Service, 9625 monitored at 1510. (Maxant, WV) 1717. (Charlton, ON)

CHU time station, Ottawa, 3330 at 0415, 7335 at 1510 and 14670 heard at 1505. (Maxant, WV)

CHAD—RN Tchadienne, 4905 coming up out of the mud at 2231 just in time for ID and NA at 2232*. Also noted at 0433 sign on. (Alexander, PA) *0427. (D'Angelo, PA) 7120 noted at 2232 close and again at 0433 abrupt sign on. (Alexander, PA)

CHILE—CVC, La Voz, 11665 in SS at 0318, 11745 in PP at 0045, 15410 in PP at 2137 and 17680 in SS at 2222. (Parker, PA) 15410 in PP at 2310 and 17680 in SS at 1708. (Charlton, ON) 17680 in SS heard at 2030. (Paradis, ME)

CHINA—China Radio International, 6090-Geermu in CC at 1204, 7190-Jinhua in CC at 1215, 7290-Shijiazhuang in RR at 1153, 9540-Kunming in Mandarin at 1238, 9685-Urumqi in RR at 1224 and 13665 via Albania at 1237. (Brossell, WI) 6145 via Canada at 2356, 9570 at 0008. 9665 via Brazil in SS at 0336, //9560 via Canada with QRM from Russia, 9745 via Bonaire in SS at 0002, 9790 via Cuba in CC at 0452, 12085 in CC at 2318, 13610 in CC at 2335, 13700 via Canada in SS at 2245 and 15170 in CC at 0552. (MacKenzie, CA) 9570 via Albania at 0040 and 11840 via Canada at 2307. (Charlton, ON) 9600-Kashi at 2100. (Paradis, ME) 11840 via Canada at 2230. (Fraser, ME) 13600 in RR with CC lessons at 1245. (Ng, Malaysia) 13630 via Mali at 2136 and 15785-Xi'an at 0309. (Parker, PA) 13650 via Albania at 1101. (D'Angelo, PA) 13790-Urumqi at 1300 and 15160-Jinhua in Mandarin at 0320. (Ronda, OK) 15440 via Chile in CC at 1252. (Strawman, IA)

CPBS/China National Radio: Voice of the Strait, 4900 with CC phone-in requests at 1345. Also 13610-Nanning in CC at 0310. (Ng, Malaysia)

Firedrake Music Jammer, 15430 against RFA-Tinian at 2301, 15485 vs. Radio Free Asia at 2311, 15585 fighting RFA at 2316 and 17765 against VOA Philippines at 0203. (Parker, PA)

COLOMBIA—La Voz del Guaviare, SJ de Guaviare, 6035 at 0250 with local ballads. Off with NA heard at 0300. (Alexander, PA)

Marfil Estereo, Puerto Lleras, 5910 in SS heard at 0526 with songs and ID. (Parker, PA)

CROATIA—Croatian Radio, 9925 with EE news at 2215. (Fraser, ME)

CUBA—Radio Havana Cuba, 6180 at 0635 colliding with VOA and 13760 in SS at 0008. (Parker, PA) 2333 in SS. (MacKenzie, CA) 15370 in SS at 1446. (Charlton, ON)

Radio Rebelde, 5025 heard at 1028 with SS ID and wake up show, DJ patter. (Wood, TN) 0200 with possible "beisbol" game. (Linonis, PA)

CZECH REPUBLIC—Radio Prague, 7345 at 0000 with pgm "One on One." (Paradis, ME) 9440 at 0012 noting that the Czech Symphony won a football game with their BBC equivalents. (Fraser, ME) 0025. (Charlton, ON) 9955 WRMI Relay at 0230. (Paszkiewicz, WI) 11600 from 2129 sign on with news and mailbox pgm. (D'Angelo, PA)

DJIBOUTI—Radio Djibouti, 4780 monitored at *0258 with NA, opening ID and anmts by W in AA f/by Koran. (D'Angelo, PA) *0259 local music heard at 0325.

It's unlikely this little guy on a Radio Prague QSL has yet tuned in to a University Network or Overcomer broadcast. (Thanks Rich D'Angelo)

(Alexander, PA) 0303 with ME music and AA. (Wood, TN)

DOMINICAN REPUBLIC—Radio Cristal/Pueblo, (p) 5010 with SS talks, local music at 2345 to 2359* close. (Alexander, PA)

ECUADOR—HCJB, 3220 at 0928 with flute music, time pips and ID at 0930, QQ talks. (D'Angelo, PA) 9745 in SS at 0454, 11920 in PP at 2305, 12040 in GG at 2300 and 21455u in SS at 2352. (MacKenzie, CA) 11920 in PP at 0055 and 21455u at 2020. (Parker, PA)

Esculas Radiofonicas, Riobamba, 5010 in SS at 0213. (Brossell, WI)

EGYPT—Radio Cairo/Egyptian Radio, 7270 at 0235 with songs in AA and anmts in EE. (Brossell, WI) 9280 with news at 2315. (Fraser, ME) 2321. (Charlton, ON)

Radio Wadi el-Nil, 9280 with ME music, AA talks, anthem heard at 2200 and off. (Alexander, PA)

ENGLAND—BBC, 3255 via South Africa at 0309. (Brossell, WI) 9410-Rampisham in EE to Russia at 0407. (Parker, PA) 6005 via South Africa at 0305. 9410 via Cyprus at 0513. (MacKenzie, CA) 6005 via South Africa at 2246 to abrupt close at 2304. (D'Angelo, PA) 9410 Thailand Relay at 0100 with "The World in Brief." (Ng, Malaysia) 9550 Rwanda Relay in AA at 1946 and 9740 Singapore Relay at 1145. (Ronda, OK) 9740 via Singapore relay at 1255. This is always a good propagation indicator. Also 9915 Cyprus Relay in AA at 1954. (Strawman, IA) 9915 Cyprus Relay in AA at 2020. (Charlton, ON) 15400 to Africa at 2200. (Linonis, PA)

EQUATORIAL GUINEA—Radio Nacional Malabo, 6250 from *0519 with abrupt sign on with local music, Afro-pops, SS anmts. (Alexander, PA)

ERITREA—Voice of the Broad Masses, 7100 monitored at *0354, talk at 0400 and HOA music, //7175 was under Radio Liberty. These two frequencies used to run separate programming but were in parallel on this occasion. Both hit by noise jammers at different times. (Alexander, PA)

ETHIOPIA—Radio Ethiopia, Gedja, 7110 with *0259 IS, opening IDs, chimes at 0300 and into Amharic talk. 9704 was weak with very low modulation. Listed //5990 was not heard. (Alexander, PA) 9560 in AA at 1505. (Maxant, WV) 9704.1 with local flute and vernacular talk at 0345. (Strawman, IA)

Voice of the Tigray Revolution, 5950 at 0310 surprisingly strong, completely covering Taiwan via Okeechobee, //6170 was poor to fair. (Alexander, PA) 0314 with non-stop African instls to 0330 ID and W talk. (D'Angelo, PA)

FRANCE—Radio France Intl, 7135-Issoudun in FF to Central Africa at 0415, 17620 in FF to West Africa at 2106 and 17630 in PP to Central America at 2102. (Parker, PA) 9790-Issoudun in FF at 2201. (Charlton, ON)

GABON—Radio Gabon, 4777 from *0458 abrupt sign on with opening ID, anmts, local drums and into FF talk. (Alexander, PA)

Africa Number One, 15475 in FF at 1738. (Charlton, ON) 1800. (Linonis, PA) 17630 in FF at 1243. (Brossell, WI)

GERMANY—Deutsche Welle, 7225 via Rampisham to East Africa at 0436, 7245 Rwanda Relay at 0445, 13770 via Novosibirsk at 0327, 15205 Rwanda Relay at 2117, 15445 at 2041 with (p) GG/AA lesson, 17860 Rwanda Relay in FF at 1745 and 21780 Rwanda Relay in FF at 1601. (Parker, PA) 9775 Rwanda Relay in GG at 2337 and 9825 Rwanda in GG at 0325 and 11865 Portugal Relay in GG at 2230. (MacKenzie, CA) 11865 at 1845. (Maxant, WV) 15275 Rwanda Relay in GG at 1444 and 17860 Portugal Relay at 1908. (Charlton, ON) 13770 via Novosibirsk at 0300 sign on. (Ronda, OK) 15205 Rwanda Relay at 2132. (Fraser, ME) 15440 Rwanda Relay in listed Hausa at 1345. (Brossell, WI)

GREECE—Voice of Greece, 9420 in Greek at 0215. (Parker, PA) 2315, also 15630 in Greek at 1747. (Charlton, ON) 9420 at 0250 and 1210 in Greek at 1545. (Maxant, WV)

GUAM—Trans World Radio/KTWR, 9910 with CC at 1223. (Strawman, IA) 12130 in Cantonese monitored at 2216 with QRM from a "clicking" UTE. (MacKenzie, CA)

Adventist World Radio/KSDA, 9880 in Korean at 1239. (Strawman, IA) 15540 with "Wavescan" at 1130. (Ng, Malaysia)

Radio Cultural Coatan, San Sebastian, 4780 in SS at 0115. Still going an hour later with ranchero music. (Ronda, OK) 1139. (Brossell, WI)

Radio Buenas Nuevas, San Sebastian, 4800 heard at 0305 with SS ballads and MOR things, some sounding a little like Afro-pops. (Wood, TN)

Radio Verdad, 4052.5 at 0412 in SS. Full ID in SS/EE with frequency and postal address. (Wood, TN)

HAWAII—KWHR, 12130 with a sermon at 1326. (Brossell, WI)

AFN/AFRTS, Pearl Harbor, 10320u at 0435. (Parker, PA)

HONDURAS—Radio Luz y Vida, Sao Luis, 3249 at 0055 with gospel songs in SS. (Ronda, OK)

Radio Misiones Intl, 3340 with SS hymns at 0315. (Brossell, WI) (p) 0402 with inspirational talk, lots of dead air. (Wood, TN)

HUNGARY—Radio Budapest, 6145 in HH at 0220. (Brossell, WI)

INDIA—All India Radio, 7270-Chennai in listed Sinhala at 1212. (Brossell, WI) 11620-Aligarh at 1911. (Charlton, ON) 11735-Aligarh in presumed listed Dari at 0335. (Parker, PA) 11985-Bengaluru at 0238 in listed Kannada, off at 0300 per sked. Also (p) 15075 Bangaluru in listed Kannada at 0240. Gone by 0255. (Ronda, OK) 11715 at 1910 and 13605 at 1945. (Maxant, WV)

IRAN—VOIRI, 7205 at 1950. (Ng, Malaysia) 9495 with EE service at 0136. (Strawman, IA) 9495-Kalamabad with "Voice of Justice" pgm and several IDs to 0228 close. (Ronda, OK) 9495 to North America at 0203, 11655-Zahedan in AA at 0312 and 15085-Kalamabad to Europe in GG at 1753. (Parker, PA)

INDONESIA—Voice of Indonesia, 9525 with pops at 1218. (Strawman, IA) In II with soft island vocals at 1235. (Brossell, WI)

Radio Republik Indonesia, 4870-Wamena in II at 1313. (Brossell, WI)

In Times Past...

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

Opposition—Radio Chechnya Svoboda (Radio Free Chechnya), St. Petersburg, Russia, 12045 in Chechnyan at 0402 on August 22, 2000. (Dexter-WI)

QSLs from Radio Taiwan International may be a bit rarer now that they're no longer relayed by WYFR facilities. (Thanks David Weronka, NC)

ISRAEL—Galei Zahal, 6973 in HH with news at 0333. (Wood, TN) 15785 in HH to Europe at 2105. (Parker, PA)

JAPAN—Radio Japan/NHK, 5960 via Canada in JJ monitored at 0310, 6110 via Canada at 0520, 9835 in JJ at 1823, 11715 in RR at 0544, 11935 via Bonaire in JJ at 0330, 13640 in JJ at 2340, 13650 in CC at 2255 and 15265 via Bonaire in JJ at 2253. (MacKenzie, CA) 11705-Yamata in II at 1330. (Ng, Malaysia) 11705 via Canada at 1421 and 17605 via Bonaire in JJ at 2340. (Charlton, ON) 15265 via Bonaire in JJ at 2249. (Parker, PA) 17870 via Ascension Is. in FF at 1245. (Brossell, WI)

Radio Nikkei, 6055 in JJ at 1125. (Strawman, IA)

JORDAN—Radio Jordan, 9830 in AA at 1958.with an off frequency RTTY signal causing substantial QRM. (Strawman, IA) 11690 with news at 1600 and local FM relay. (Maxant, WV) (t) 1650 in possible EE. Lots of QRM. (Linonis, PA)

KUWAIT—Radio Kuwait, 9855 in AA at 1950 and 11990 in EE at 1805. (Maxant, WV) 11990 in EE at 1815. (Charlton, ON) 1848 with pops and EE pgm. (D'Angelo, PA) 2153 with AA talks. (Parker, PA)

LIBERIA—ELWA, 4760 at 0634 with EE religious pgm, canned ID and new pgm on the hour. (D'Angelo, PA)

LIBYA—Radio Jamahiriya, 21695-Sabratha at 1547. Clear "Voice of Africa" ID by W at 1552. (Parker, PA)

LITHUANIA—Radio Vilnius, 9875-Sitkunai at 2330. (Paradis, ME) 2347 to 2359 close. (D'Angelo, PA) 2330 and 11690-Sitkuani at 0047. (Charlton, ON) 0016 in Lithuanian to North America, with EE at 0030. (Parker, PA)

MADAGASCAR—Radio Madagaskara, 5010 at 0305 with reduced carrier USB with local religious programming; chorals, religious talk. (Alexander, PA) 0338 with long talk in Malagasy, ID and program change at 0359. (D'Angelo, PA)

MALI—RT Malienne, 5995 at *0555 with guitar IS, NA, flute IS and into opening FF ID. (Alexander, PA)

MALAYSIA—RT Malaysia, 7130-Kuching at 0010 with press review. (Ng, Malaysia)

MOROCCO—RTV Marocaine, 15345 in AA at 1618 with mentions of the Internet and their SW frequencies. (Wood, TN) 1859 in AA. (Chandler, ON) 2025 in AA. (Parker, PA)

Radio Medi Un, 9575 at 0258 in AA with W anncr and AA music. (Parker, PA)

MEXICO—XERTA/Radio Transcontinental, 4800 at 0710 with W and SS and music. Loud "blob" noise began around 0725 ruining further reception. (D'Angelo, PA) 0909 with full SS ID by W. (Wilkner, FL)

Radio UNAM, 9599 at 0335 with SS talk and vocal. (Maxant, WV)

NETHERLANDS—Radio Nederland, 5995 via Sines at 0547 in DD to Europe. (Parker, PA) 6040 in DD at 2120. Site unknown. (Fraser, ME)

NEW ZEALAND—Radio New Zealand Intl, 5950 at 1305. (Brossell, WI) 7145 at 1959 with classical music. (Fraser, ME) 7145 at 1000. Switched to 9655 at 1100. (Linonis, PA) 9615 to the Pacific at 0525, 13730 with news at 0606 and 15720 at 0303. (Parker, PA) 9615 at 0515, 11725 at 2000 and 15720 at 0405. (Maxant, WV) 13730 at 2118. (Ronda, OK) 2210, also 15720 at 0424. (MacKenzie, CA) 13840 at 2309. (Charlton, ON)

NIGERIA—Voice of Nigeria, 7255-Ikorodu at 2233 with M/W conversation in Hausa. (Ronda, OK) 15120-Ikorodu at 1916 (Charlton, ON) 1935 to North Africa and Europe. (Parker, PA)

Radio Nigeria, Kaduna, 4770 with tribal vocals, ID heard at 0500 and news in EE. (D'Angelo, PA)

NORTH KOREA—Voice of Korea, 11710 at 1050 ending EE at 1055, weaker on //11735, 13650 and 15180. (Alexander, PA) 1525. (Maxant, WV) 15180 with female group vocals. Anthem and off at 1249. (Strawman, IA) 13650 in FF at 1105. (Ng, Malaysia)

Korean Central Broadcast Station, 6285 in KK at 1209. (Brossell, WI)

OPPOSITION—Voice of Biafra, 17650 via WHRI at 2043 in heavily accented EE. Anthem at 2056 and ID at 2058. (Parker, PA)

Radio Farda (to Iran), 5860 via Kuwait at 0220 in listed Farsi, Euro pop/techno pop, ME pops. 7280 and 9510, both via Germany. (Alexander, PA) 9510 at 0208 with rap and techno dance. (Parker, PA)

Radio Free Asia, 13740 via Saipan in VV monitored at 2354 and 17615 via Saipan in CC at 0420. (MacKenzie, CA) 15635 via Irkutsk in Mandarin at 0340. (Ronda, OK)

Radio Solh (to Afghanistan), 17700 via Rampisham at 1722 in either Pashto or Dari. M anncr and Afghan music. (Parker, PA)

Radio RASD, Algeria (to Morocco), 6300 at 0017 in SS. (Ronda, OK)

Radio Liberty, 7175 via Lampertheim to Europe in RR at 0425. (Parker, PA)

Voice of Tibet, 17560 via Tajikistan in CC with news at 1245. (Ng, Malaysia)

Hmong World Christian Radio, 15260 probably via Taiwan with EE preaching, Hmong translations monitored at 0110. (Ng, Malaysia)

SW Radio Africa (to Zimbabwe), 12035 at 1852 to 1859*, ID at 1855 f/by tribal vocals. (D'Angelo, PA)

Radio Voice of the People (to Zimbabwe), 11695 at *1100 with vernacular talk, some African music and some EE after 1140. (Alexander, PA)

Sudan Radio Service, 17690 via Sines at 1500 with EE discussions on elections and human rights. EE broadcasts may be only Sat/Sun. (Alexander, PA)

Radio Marti (to Cuba), 6030-Greenville in SS at 0357. (Parker, PA)

PALAU—KHBN/Voice of Hope, 9965 in CC at 1243. (Brossell, WI)

PAPUA NEW GUINEA—Radio East New Britain (New Britain Is.), 3385 at 0849 with M/W discussion f/by island music, news at 0900. (D'Angelo, PA)

PERU—Radio Vision, Chiclayo, 4790 heard at 0542 with continuous vocals. (McKenzie, CA)

PHILIPPINES—Radio Veritas Asia, 9615 at 1135 in listed Mandarin. Short bits of classical music, closing EE anmts at 1155. (Alexander, PA)

FEBC Radio, 9430 in CC at 1157. (Brossell, WI)

PIRATES—The Wave, 6925u heard various times at: 2304, *2318, 2037, *2112, *2147, *2212, *2229 and 2309. IDs as "96.5—The Wave." Belfast address, old rock, "Anchors Aweigh" at sign on. (Zeller, OH) 0010–0018. (D'Angelo, PA)

WBNY, 6925u at 0219 with Commander Bunny for President bit. (Wood, TN) *2257

DIRECTORATE GENERAL
ALL INDIA RADIO
Akashvani Bhawan, Sansad Marg
New Delhi - 110001, INDIA

No. 3/1/2008- EIII / 834 Dated 21/05/08

Dear Sir/Madam

We gratefully acknowledge and confirm your Reception Report.

Date 13/01/08 Frequency 7270 kHz

Time 1320-1340 (~~UTC~~) (GMT) Station Chennai

Yours faithfully

(V.P. SINGH)

Director (Spectrum management & Synergy)
E-mail:spectrum-manager@air.org.in
Website : www.allindiaradio.gov.in

All India Radio site QSLs are always a challenge, but Bob Brossell managed this one from the Chennai outlet on 7270. (Thanks Bob Brossell)

and *2347 with the "People Power" jingle ID, and Commander Bunny bits. (Zeller, OH)

The Crystal Ship, 5385.5 at *0141 and 0258 with "The Poet" and classic rock. Anncd //6700 but not heard there. Gave tcsshortwave@yahoo.com but also uses unannounced Belfast. (Zeller, OH) 7575.1 at 0248 with 80s pop, //5385.5. (Alexander, PA) 0325 with rock, ID at 0341. (D'Angelo, PA)

WTCR, 6925u at 0145 with 20th Century Fox theme at sign on, old rock/pops. Seemed like the same transmitter as Maple Leaf Radio. (Alexander, PA; D'Angelo, PA)

Northwoods Radio, 6925u variously at *2132, *2205 and *2352. Novelty tunes, squealing noises and some garbled talk, claimed to be broadcasting from the Great Lakes. (Zeller, OH) 0030 with heavy metal. (Alexander, PA)

Maple Leaf Radio, 6925u at 0118 opened and closed with "O Canada," several IDs (D'Angelo, PA) 0132 ancng that they only play Canadian music. Sign off with "O Canada." (Alexander, PA) *2236 with "O Canada." Off suddenly at 2350, returned at *0000. No address anncd. (Zeller, OH)

Mash Up Radio, 6925u at 2359 same transmitter as WBNY and WKLH (below) rock and several IDs but no address. Off at 0016. (Zeller, OH)

WKLH Relay, 6925u at 2236–2347 with clips of numerous classic rock things, a variety of WKLH-96.5 IDs and drive time traffic reports for Milwaukee. This was not live, based on the WKLH website. (Zeller, OH)

MAC Shortwave, 6850.8 at 0139 with themes from old TV shows, old commercial jingles, Yahoo email address. Off with National Anthem. (Alexander, PA)

Relaxation Radio, 6925u heard at 0105 with oldies pop, ID. (Alexander, PA)

Wolverine Radio, 6925u at 0223 with classic rock. (D'Angelo, PA)

International Shortwave, 6925u at 0206 with a couple of IDs and lots of unidentified selections. (Wood, TN)

Syco Radio, 6925.5u with rock and ID from 0055 to 0100. (Alexander, PA)

POLAND—Polish Radio, 9450 via Germany at 1315 with review of Polish media. (Linonis, PA) 9525 via Germany at 1200. (Alexander, PA)

PORTUGAL—RDP Intl, 7240 in PP at 0637, 11630 in PP to South America, 15195 to Africa at 1950 and 15295 in PP to South America at 2009. (Parker, PA) 15560 in PP at 1448. (Charlton, ON)

ROMANIA—Radio Romania Intl, 9520 in SS to South America at 0241. (Parker, PA) 9775 at 0032 and 11940 at 2032. (Charlton, ON)

RUSSIA—Voice of Russia, 6240 via Moldova with "Moscow Mailbag" at 0220. (Brossell, WI) 7125 via Moldova RR at 0413, 9480 via Wertachtal at 0240, 13635-Petropavlovsk to North America at 0314 and 15425-Petropavlosk to North America at 0249. (Parker, PA) 9665 via Moldova at 0142, 12065-Komosomolsk-na-Amur at 0330 and 12065-Chita at 1205. (Ronda, OK) 9665 via Moldova at 0115 with "Russia and the World" ancd 12070 at 2050 with "Musical Tales." (Fraser, ME) 9860 via Vatican at 0320 and 13635-Petropavlovsk heard at 0440. (MacKenzie, CA) 9665 via Moldova at 0150 and 15465-Krasnodar in FF at 2000. (Strawman, IA) 9890 closing at 2056. (Paradis, ME) 12040-Moscow in FF at 1610. (Wood, TN)

Radio Rossii, 7320-Magadan in RR at 1154 and 12075-Moscow in RR at 1232. (Ronda, OK)

Kamchatka Radio, Petrropavlovsk-Kamchatka, 6075 in RR at 1302. (Brossell, WI)

Kyzyl Radio, 6100 with apparent RR news at 1205. (Brossell, WI)

SAO TOME—VOA Relay, Pinheira, 6035 in FF at 0604, 6080 with "Daybreak Africa" at 0618 and 6095 in FF at 0625. (Parker, PA)

Time pips at 2100. (D'Angelo, PA) 13710 in AA at 1656 and 17560 in AA at 1706. (Chandler, ON) 17560 in AA at 1717. (Parker, PA) 21640 in AA at 1300. (Ng, Malaysia)

SINGAPORE—Media Corp. Radio, Kranji, 7235 in Malay at 0710. (Ng, Malaysia)

SERBIA—Intl Radio of Serbia, 6190 (ex-6185) at 0000 with news in EE. (Fraser, ME) 0129 in Serbian. (Ronda, OK) 2330 in Serbian, into EE at 0000. (Alexander, PA) 7115 at 0228 ending EE broadcast. (Brossell, WI)

SLOVAKIA—Radio Slovakia Intl, 7230 in SS heard at 0234. (Brossell, WI)

NEXUS-IRRS, 15725 at 1417 with EE religious talk (Sundays only). (Alexander, PA)

SOUTH AFRICA—Channel Africa, 15235 in EE at 1733. (Charlton, ON)

Radio Sondergrense, 3320 in Afrikaans at 0355, news, ID, more news. (Wood, TN)

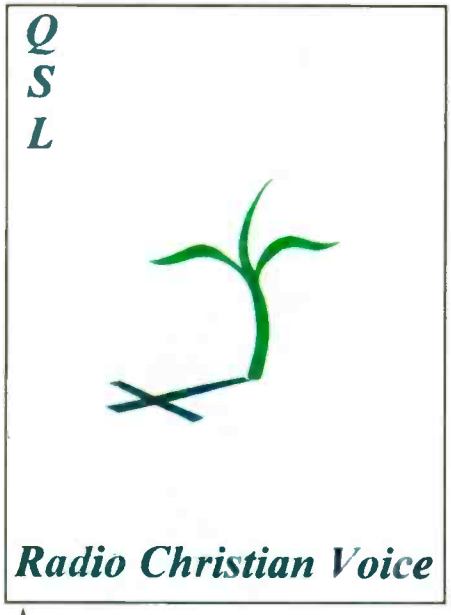
SOUTH KOREA—KBS World Radio, 6045 via Canada to Europe in SS at 0610. (Parker, PA) 9650 at 1230 on "Easy Korean Cooking" f/by learning Korean pgm. (Linonis, PA)

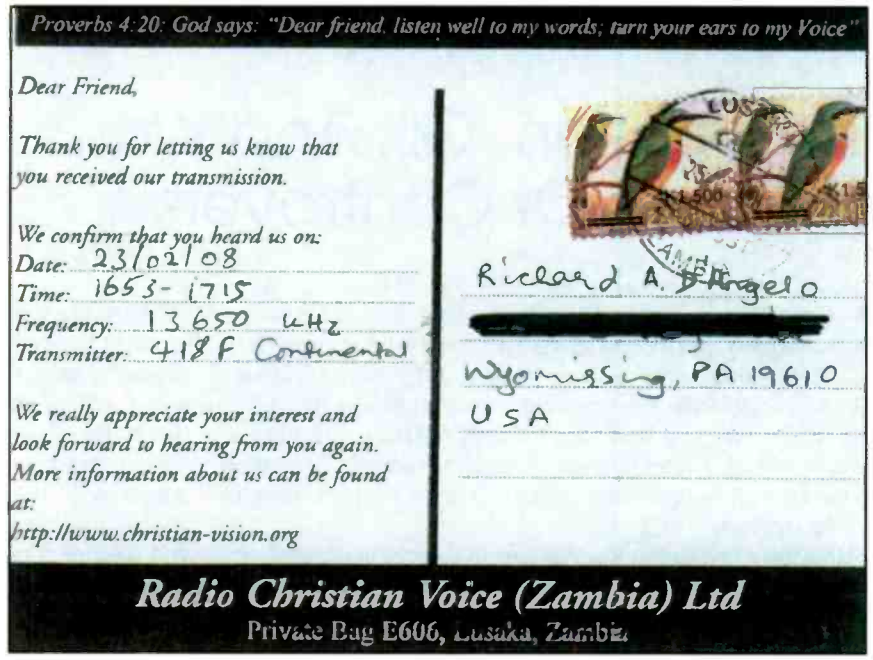
SPAIN—Radio Exterior de Espana (Nobeljas site, except as indi-

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 winner is **Robert Brossell** of **Pewaukee, Wisconsin**. Bob's available time is extremely limited but he manages to come up with 50 or so very nice logs every month. A 2009 edition of *Passport to World Band Radio* will be on its way to Bob as soon as they're off the press, courtesy of our friends at Universal Radio, Reynoldsburg, Ohio. You can write or call for a copy of their great catalog (6230 Americana Parkway, Reynoldsburg, OH 43068, 614-866-2339 or Universal-readio.com).





↑ *Christian Voice, Zambia's stylish QSL. (Thanks Rich D'Angelo)* →

cated), 3350 Costa Rica Relay in SS at 0548, 6055 in SS at 0527, 9535 in SS at 0010, 9630 in SS at 0342, 15110 in SS at 2236. (MacKenzie, CA) 6055 in SS at 0525 and 11620 at 1850. (Maxant, WV) 9535 in SS at 0245, 11680 in SS at 0133, 15110 at 2233, 17595 in PP at 2110, 17715 in SS at 1736 and 17850 Costa Rica in SS to 2002 close. (Parker, PA) 17595 in SS at 1451. (Charlton, ON)

SUDAN—Miraya FM Radio, 15650 via Slovakia at *1500 sign on with local music, anmts and EE news at 1501. (Alexander, PA)

SWAZILAND—Trans World Radio, 4775 with hymns at 0348. (Brossell, WI)

SWEDEN—Radio Sweden Intl, 6065 with news at 2130. (Paradis, ME) 2150. (Fraser, ME) 9490 via Canada at 0014. (MacKenzie, CA) 7395 at 1855 with sudden signal loss. (Maxant, WV) 15240 via Canada at 1443. (Charlton, ON)

TAIWAN—Radio Taiwan Intl, 9680 via Florida in CC at 0503. (MacKenzie, CA) 15270 in Mandarin at 0557. (MacKenzie, CA)

THAILAND—Radio Thailand, 7260 in VV at 1112, chimes IS at 1114, EE ID and into Cambodian. (Ronda, OK) 9680 in EE at 0022. (Charlton, ON)

TANZANIA—Radio Tanzania, 11735-Dole, Zanzibar, in Swahili at 1946 through 2059. (D'Angelo, PA)

TURKEY—Voice of Turkey, 5975-Emirler to Europe and NA at 0352, closing at 0355. Also 11980-Emirler to Western Europe in TT at 0418. (Parker, PA) 7325 via Canada at 0348. (McKenzie, CA) 9785 with "Letterbox" in progress at 1856. (Fraser, ME) 1904. (Charlton, ON)

TUNISIA—RT Tunisienne, 7190-Sfax in AA at 0513. (Parker, PA) 9720 with AA vocals monitored at 0315. (Paszkiewicz, WI)

UGANDA—Radio Uganda, 4976 heard at 0325 with tribal vocal groups, ID at 0359, brief segment of marching band and EE. (D'Angelo, PA)

UKRAINE—Radio Ukraine Intl, 7440 heard at 0000 with "Ukrainian Diary." (Paradis, ME) 0039. (Charlton, ON) 0240 in UU. (Brossell, WI)

UNITED STATES—Voice of America, 5890 Tinian relay in KK at 1400, 9390 Deewa Radio Service in Pashto at 1350 and 15205 Sri Lanka Relay in Special English at 0030. (Ng, Malaysia) 6160 Philippines Relay in CC at 1208 and 11785 with US pops at 1429. (Brossell, WI) 13755 at 2358 and 13775 in CC at 2228, both via Thailand Relay. (MacKenzie, CA)

WWCR, 3215 monitored at 0550. (MacKenzie, CA)

Family Radio/WYFR, 9485-Irkutsk in listed Indonesian at 1234. (Brossell, WI)

AFN/AFRTS, 5446u-Key West at 0326. (Wood, TN) 0515. (Parker, PA) 7811u-Key West at 0655. (Parker, PA) 1217. (Brossell, WI) 12133.5u at 0310. (Paszkiewicz, WI) 1923. (Charlton, ON)

Adventist World Radio, 11955 via South Africa at 1905. (Maxant, WV) 15205 via Wertachtal to Nigeria in vernacular to 1957 close. (Parker, PA) 15315 via Austria in BB at 1809. (Charlton, ON)

WEWN, 17510 in SS at 1639 colliding with SS 5 digit numbers station. (Parker, PA)

WHRI, 17800 monitored at 0410. (MacKenzie, CA)

Trans World Radio, 12085 via Novosibirsk at 0110. (Strawman, IA)

VATICAN—Vatican Radio, 6040 via Canada at 0252 and 7305 at in SS at 0343. (MacKenzie, CA) 7305 in FF at 0235. (Brossell, WI) 13765 at 1540 and 15595 in AA at 1530. (Charlton, ON)

VENEZUELA—Radio Nacional (*all via Cuba—gld*), 11670 in SS at 2240, 11750 in SS at 2236 and 13680 in SS at 2348. (MacKenzie, CA) 11680 in SS at 1552. (Charlton, ON) 1555. (Maxant, WV) 13680 in EE at 2301. (Parker, PA)

Radio Amazonas, Puerto Ayacucho, 4940v at 0115 in SS. Strong but badly distorted. (Alexander, PA)

VIETNAM—Voice of Vietnam, 6175 via Canada at 0100. (Fraser, ME) 9839.9 in JJ at 1120. (Ronda, OK) 1141. (Strawman, IA) 12020-Son Toy in EE at 2337. (Charlton, ON)

Son La Radio, 4740 in VV at 1340. (Ng, Malaysia)

YEMEN—Republic of Yemen Radio, 9780.5 at 0343 with ME music, M in AA. (D'Angelo, PA)

ZAMBIA—The Voice-Africa, 4965 with group hymns at 0213. (Parker, PA)

ZIMBABWE—Zimbabwe Broadcasting Corp., 4828 with Afropops heard at 0322. (Brossell, WI)

And, once again, order is restored! All the thanks possible it's possible to give go to the following gentlemen (and lady!) who made it work this time: Peter Ng, Jahore, Malaysia; Brian Alexander, Mechanicsburg, PA; Charles Maxant, Hinton, WV; Stewart McKenzie, Huntington Beach, CA; George Zeller, Cleveland, OH; Jerry Strawman, Des Moines, IA; Bob Winkler, Pompano Beach, FL; Jim Ronda, Tulsa, OK; Bob Fraser, Belfast, ME; Jack Linonis, Hermitage, PA; Joe Wood, Greenback, TN; Robert Charlton, Windsor, ON; Robert Brossell, Pewaukee, WI; Rich D'Angelo, Wyomissing, PA; Rich Parker, Pennsburg, PA; Ray Paradis, Pittsfield, ME; and Sheryl Paszkiewicz, Manitowoc, WI. A huge thanks to each one of you. ■

by Bruce A. Conti, BAConti@aol.com

The Election, Oil, And War: Airwaves Of Controversy

Long distance radio broadcast listeners—DXers—are uniquely positioned to receive news and commentary from alternative sources. They're fully aware that network newscasts from Western-centric media empires like ABC, CBS, CNN, Fox, and NBC don't always tell the entire story or provide adequate international coverage. DXers have learned to actively seek out information from external sources via radio and the Internet.

Here are a few examples, some from sources in direct opposition to the United States and, therefore, controversial, as the world awaits the 2008 U.S. Presidential election and gages its impact on oil prices and the war on terror.

Saudi Arabia

Saudi Arabia would seem like a logical place to start our journey thanks to its leading role in Middle East oil production. The Broadcast Service of the Kingdom of Saudi Arabia (BSKSA), also known as Radio Riyadh, operates megawatt-powered AM radio stations that have been received worldwide, yet it's not known for the provocative propaganda that is often the primary purpose behind government broadcast institutions. Saudi Arabia is the home of Mecca, the birthplace of the Prophet Muhammad and the holiest city of the Islamic religion. Religious practices, such as praying facing Mecca at least five times a day, are strictly adhered. Censorship and prohibition laws as determined by the teachings of the Koran (or Quran), the holy book of Islam, are vigorously enforced by the government. This is, of course, reflected in the BSKSA radio program schedule with daily Koranic recitations and religious broadcasts. News reports of late have focused on oil production, crude oil prices, and economic relations with China. There seems to be only a passing interest in the U.S. presidential election as public political discourse is considered inappropriate.

Two announcers prepare for a newscast from the BSKSA studios. (BSKSA photo)

Further censorship and government regulation of the media in Saudi Arabia could be eminent with the 2008 official opening of the National Media Archiving Center (www.nmac.info). "The center will provide organized and well-archived bibliographies and data of journalistic significance to the media industry in the Kingdom," said Iyad Madani, Minister of Culture and Information, in response to concerns that the center would act as a new government regulatory agency rather than a media resource. The center monitors, collects, and catalogs broadcasts worldwide for the use of media subscribers in Saudi Arabia.

BSKSA logo.

The BSKSA AM radio signal most often heard around the world by DXers operates at 1521 kHz with 2000 kW (that's 2 MW!) of power from Duba on the Red Sea near Egypt. Other high-power BSKSA signals that are received regularly by North American DXers include 594 Duba (2000 kW), 1440 Dammam (1600 kW), and 1512 Jeddah (2000 kW), as well as shortwave broadcasts at 9555 and 9870 kHz. Although English is widely understood in Saudi Arabia, broadcasts are primarily in Arabic with an extremely limited foreign language program schedule.

Russia

A recent arms deal between Russia and Saudi Arabia leads us to Radio Moscow, the former shortwave strong-arm of Communism and the Soviet Union. The old Radio Moscow is now the Voice of Russia (www.ruvr.ru), but as the saying goes, the more things change the more they remain the same. While the transformation from Radio Moscow to the Voice of Russia has been remarkable, with programs like "The Christian Message from Moscow" among the new listener favorites, news and views typically counter to Western media accounts continue to be a mainstay of daily broadcasts and Internet reports. "A View from Moscow" commentaries have been highly critical of the Bush administration economic and foreign policies, addressing issues such as a failing U.S. economy, the war on terror, and the U.S. global missile defense plan.

"Professor Marshall Goldman, an Associate Director of Harvard University's Russia and Eurasian Research Center, argues that there is really no need for such a global missile defense system and is certain that any new U.S. administration will surely reverse this hurried and ill-advised decision," according to a recent Voice of Russia broadcast. "In Moscow a leading foreign policy expert, Alexander Pikayev, fully agrees with Dr. Goldman."

"The Americans must clarify their missile defense plans to Russia, there is no doubt about that, because this is undermin-

ing mutual trust and global security," said Dr. Pikayev. "Russia will have to respond in kind and the Americans will be fully responsible for destroying the unique security situation we've had in Europe since the end of the Cold War," Alexander Pikayev added.

The Voice of Russia has been closely monitoring the U.S. presidential election process. Topics broached on the air have included whether America is ready for a black president, the prospect of prolonged occupation of Iraq under a McCain administration, and unresolved problems with voting machines and ballots. This month the Voice of Russia is also celebrating 30 years of broadcasting in English, with Radio Moscow having commenced 24/7 broadcasts in English on October 3, 1978. East coast North American DXers as well as our troops stationed in the Middle East may catch the Voice of Russia broadcasting in English on 1548 kHz from Moldova with 500 kW of power. Consult the "World Band Tuning Tips" and "Global Information Guide" right here in *Pop'Comm* for current shortwave frequencies, or listen anytime via Internet radio.

Iran

The next stop on the world radio dial is Islamic Republic of Iran Broadcasting (IRIB) where the propaganda is much more intense than anything heard on the Voice of Russia. "The Supreme Leader's Remarks" by Ayatollah Khamenei and "Crisis of the American Occupation of Iraq" reports on the Voice of the Islamic Republic of Iran (VOIRI) are aimed directly against the U.S. and its allies (see "World Watch: Iran" elsewhere in this issue for more).

In remarks by Ayatollah Khamenei during last year's General Assembly of the Asia-Pacific Broadcasting Union hosted by IRIB, it was reported, "The Leader emphasized that those who possess the world's deadliest nuclear arsenals and the largest and most sophisticated weapons manufacturing capabilities are also the ones who control the world's major media outlets. He deplored that these circles do not want to see a world where religion, spirituality and morality play the primary role, and where nations live in peace."

"Ayatollah Khamenei regretted the mischief of these media horns in equating Islam with terrorism and portraying the U.S. as a champion of human rights and democracy," the IRIB report further summarized. "He said that these big lies are being force-fed to the world's population using the most complex and sophisticated media techniques."

The IRIB AM signal most often logged by east coast North American DXers is at 1503 kHz with 500 kW of power, broadcasting the "Sarasary" domestic service in the Farsi language. VOIR1 foreign language programs are broadcast on 702 kHz also with 500 kW, as well as on shortwave. The IRIB Internet site at www.irib.com was redesigned this year and features a virtual FM tuner for listening to the various broadcast channels via streaming audio.

Venezuela

Petroleum exports represent a significant portion of the Venezuela economy. Venezuela is a key OPEC-member nation, and it is currently collaborating with Iran on the latest oil production technologies. So let's now travel the airwaves across the Atlantic from Iran to this major oil-producing nation where the "Elección Presidencial 2008 en los Estados Unidos" tops the news on YVKE Mundial at 550 on the radio dial (www.radiomundial.com.ve/yvke).

"Obama said that the withdrawal of the United States forces in Iraq was not a false measure, though the call made by the Iraq Prime Minister Nuri al-Maliki to elaborate on an exit timetable is more in line with his position than with the prolonged presence planned by aspiring Republican John McCain and President George W. Bush," reported the Mundial radio network about a speech by the Democratic Party nominee.

Though the U.S. presidential election is followed closely, commentaries and speeches by Venezuela's outspoken President Hugo Chávez often dominate the news. On the radio and television program "Aló Presidente," Chávez can be heard highlighting many of his humanitarian efforts, discussing the Partido Socialista Unido de Venezuela (PSUV), and talking about his relationship with Cuba's Fidel Castro. "¡Viva Fidel!" shouted Chávez in one broadcast.

Remember that Venezuela time is now offset by one half hour, four and a half hours behind UTC. So although most Venezuela radio stations identify frequently with nicknames, promos, and slogans throughout the hour, listen for full station identifications at the bottom

Mundial logo.

of the hour local U.S. time. Consult the *World Radio TV Handbook* for a complete listing of Venezuela AM radio stations, most of which do not offer Internet streaming audio.

Cuba

The last stop on our world tour by radio is Cuba. While Raúl Castro has taken charge of the government, Fidel Castro is still active via the airwaves with his personal "Reflexiones del Comandante en Jefe" ("Reflections from the Commander in Chief") aired on all three of the major domestic radio networks: Radio Progreso, Radio Rebelde, and Radio Reloj. In a style similar to "The Supreme Leader's Remarks" from Iran, Fidel Castro can be found commenting about human rights, U.S. foreign policies, and the U.S. Presidential election.

"It is not up to me to talk about the history of a candidate for the Presidency of the United States. I have never done so, and perhaps I would never have. Why should I be doing it at this time?" wrote Fidel Castro in one reflection.

Castro goes on to offer his detailed analysis of Republican candidate John McCain and his claims of torture suffered at the hands of Cuban agents while a prisoner of war in Vietnam. "I hope that the U.S. people will understand that I consider it my obligation to enter into a detailed analysis of this Republican candidate and to respond to him," stated Fidel Castro. "I shall do so on the basis of ethical considerations."

All "reflexiones" are archived on the Radio Progreso website (www.radioprogreso.cu). Progreso is best received on 640 and 730 kHz, among several network affiliates. Radio Rebelde (www.radiorebelde.com.cu) is celebrating 50 years of broadcasting. As announced on Rebelde, "¡Felicidades por el 50 aniversario de Radio Rebelde! Así comenzamos hace 50 años. Aquí, Radio Rebelde, la voz de la Sierra Maestra, transmitiendo para toda Cuba." The strongest Rebelde signals are on 670, 710, and 1180 kHz, plus 5025

Venezuela President Chávez speaking on the "Aló Presidente" broadcast.

shortwave. Radio Reloj (www.radioreloj.cu) is the 24/7 news and time station easily recognized by its minute markers and "RR" Morse code identifications along with a WWV-like clock continuously ticking in the background, strongest on 570 kHz.

Feedback

Regarding the review of the RFSpace SDR IQ in the July 2008 edition of "Broadcast Technology," Brian VK6ZD writes, "I enjoyed the article about the SDR IQ receiver. I have had this great unit here for awhile now and enjoy using it. My latest addition to the combination as you described in the magazine is the Griffin PowerMate USB Mulitmedia Controller, set-up to control the SDR IQ frequency using the information given in the SpectraVue 2.32 manual. It's working great and puts the icing on the cake so to speak, a pleasure to use."

Several readers confirmed the June 2008 report about AM HD digital interference. "Originally from New Hampshire but transferred to Ohio by my company, I relied upon 1030 WBZ Boston at night to 'keep in touch' with home," writes Ralph Craig AJ8R. He continues:

> About a year or so ago I found that I could no longer receive WBZ at night due to noise-like interference. I thought it was low signal strength so I erected a new antenna. No improvement. I finally gave up listening. Your excellent article explains why. 1040 WHO Des Moines comes in here real strong after sunset. I'll have to try a directional antenna now that I know the WHO digital signal may be the cause. It was very fortunate that you used WBZ as the example in the article.

Broadcast Loggings

This month's selected logs feature reception of Cuba, Iran, and Venezuela. Note the prevalence of radio stations from Venezuela received in the northeastern United States. Mark Connelly's exceptional logging of Radio Tehran was made from an Atlantic Ocean shore site where salt water conductivity gives DX signals a boost. All times are UTC.

550 CW1 Colonia, Uruguay, at 0800 making it through Cuba, Venezuela, and possible Colombia; John Philip Sousa marching band music and intro to news with "Radio Colonia" ID. According to Henrik Klemetz via RealDX, "Radio Colonia uses this march when cueing into their news." (Conti-ME)

550 YVKE Caracas, Venezuela, at 0111 heard carrying a Venezuelan political speech; poor, in mix with WDEV. (Connelly-MA)

570 CMDC Radio Reloj, Santa Clara, Cuba, monitored at 0110 with beeps, Spanish news, clock ticks; weaving in and out with CFCB and WMCA. (Connelly-MA)

670 CMQ Radio Rebelde, Arroyo Arenas, Cuba, at 0101 parallel 710 kHz with Spanish news by a woman, items separated by an electronic sound; under presumed YVLL. (Connelly-MA) At 0800 a good signal; light instrumental music, then Rebelde sounder and ID into news. (Conti-ME)

693 BBC Radio 5, United Kingdom, at 0013 with discussion of U.S. presidential campaign; fair. (Connelly-MA)

720 YVQE Porlamar, Venezuela, at 0025 an "En Venezuela, Oriente" ID, then a romantic vocal; good. By 0109 booming with a nice Oriente ID and timecheck of "ocho y treinte nueve minutos" (8:39), which is UTC-4.5 hours. (Connelly-MA)

750 YVKS Caracas, Venezuela, at 0030 good with "Radio Caracas Radio 750 AM" ID in sports commentary. (Conti-ME) At 0053 Spanish talk about baseball teams from Valencia and Maracaibo, then at 0100 "deportiva de Venezuela" slogan. (Connelly-MA)

880 YVYM Puerto Ordaz, Venezuela, at 0044 Radio Venezuela jingles, ID, and festive music; under WCBS. (Connelly-MA) At 0455 a good signal while WCBS was off the air. Ordaz, Venezuela, was mentioned along with festive music. New log. (Barstow-MA)

909 BBC Radio 5, United Kingdom, at 0114 heard with talk about soaring crude prices and inflation; to good peak over WABI slop. (Connelly-MA)

910 YVRQ Caracas, Venezuela, at 0024 heard Caracas adverts mixing with WABI. (Connelly-MA) At 0230 a fair signal over an unidentified Latin American station and 909 BBC5 het; folk music, "RQ 910, tu AM center..." promo with many more AM Center mentions. (Conti-ME)

1134 Glas Hrvatske, Zadar, Croatia, at 0207 monitored with a good to very good signal; woman with news, Washington mentioned. (Barstow-MA)

1170 YVQV Acarigua, Venezuela, at 0111 probably this with a time check ending in "cuarante uno" (:41), so Venezuela which has a half-hour skew relative to normal time zones. Over apparent Brazil. (Connelly-MA)

1190 LR9 Radio América, Buenos Aires, Argentina, at 0034 a man in Spanish with two Radio América IDs; through WLIB. Best on lower sideband to dodge slightly off-frequency HJCT Colombia growl. (Connelly-MA)

1200 WJES Saluda, South Carolina, at 2345 heard with oldies music and "AM 1450, AM 1200" IDs. Good signal with occasional fades. (New-GA)

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

1512 BSKSA Jeddah, Saudi Arabia, monitored at 0037 with preaching by a man in Arabic; through WWZN slop. (Connelly-MA)

1521 BSKSA Duba, Saudi Arabia, at 2305 with newstalk by a man in Arabic; pre-sunset fade-up. Then at 0031 noted with a huge signal and Arabic interview. (Connelly-MA)

1590 WCSL Cherryville, North Carolina, at 2250 with southern gospel music, "Your home for southern gospel, 1590 WCSL," and a weather forecast from the "WCSL Weather Center in Cherryville." (New-GA)

Your DX logs and letters are always welcome. Thanks to Roy Barstow, Mark Connelly, and Bert New for their DX reports. Don't forget that the annual DXpedition edition of "Broadcast Technology" is next month, featuring reports from remote locations by intrepid DXers.

Until then, 73 and Good DX! ■

by R.B. Sturtevant, AD7IL

Radio Fun And Going Back In Time

Q. I've monitored a lot of boats, merchant ships, and naval vessels in my time but I don't think I've ever heard a submarine at sea. Why is that?

A. Well, for one thing everything about subs, in any navy, is top secret. They don't want you listening in so they don't make it easy. Sure, as a radio monitor you have the legal right to listen to any signal you are able to catch, but they know some stuff we don't. Most messages from submarines are coded and then sent out in microsecond microburst signals that would probably sound like static, *if* you were tuned to the right frequency at the right millisecond.

The U.S. Navy, of course, has no trouble picking them up. They've been doing it on the old Soviet Union's subs since the 1960s and before. At first they couldn't decode the messages, but used the signals for direction finding and to keep track of the Soviet's subs whereabouts. But that was more that 40 years ago. What can the Navy get from the same traffic today? Call the Pentagon, they won't tell me.

Q. What kind of legacy has the use of Morse code left us?

A. CW, or Morse code, has been with us since 1844 and has changed history during that time. To give you some indication of just how important it's been, some of its abbreviations have become part of our regular spoken language. Over time telegraph and radio operators used abbreviations to shorten the length of time it took to send or receive a message. For instance, "HQ" was never used for "Headquarters" before the key. "DX" for "distance" and "RE" for "concerning" as well as "ASAP" for "as soon as possible" have the same source. "SOS" could be considered a word. It never meant anything like "Save Our Ship," but was something that would stand out, particularly if repeated three times, from regular traffic and be recognized as a distress signal.

The salutations "88" for "love and kisses" and "73" for "best wishes" or "good luck" both come from the Phillips code book, which was produced to standardize often-used phrases into numbers for speed. Some Football crowds have even stamped —... (7) ...— (3) with their feet on the bleachers to encourage their teams. But don't ask them why. Most don't know.

Q. I've heard a lot about the Venona Project, but I'm still confused. Was it a radio intercept program used to spy on the Russians during the early part of the Cold War?

A. No, the Signal Corp's Signal Intelligence Service found some way of getting a hold of copies of telegrams sent by the Russian staff from their New York Embassy to Moscow and other Soviet diplomatic missions. The messages came in by the wheelbarrow load in unorganized heaps. The project started on February 1, 1943, and went on into the 1960s. At first it wasn't very useful until the codes being used were broken. By the summer of 1946 the telegrams began to yield solid information. Their content showed a strong interest in the 1944 Presidential Elections and discussed methods for the Communists to influence their outcome.

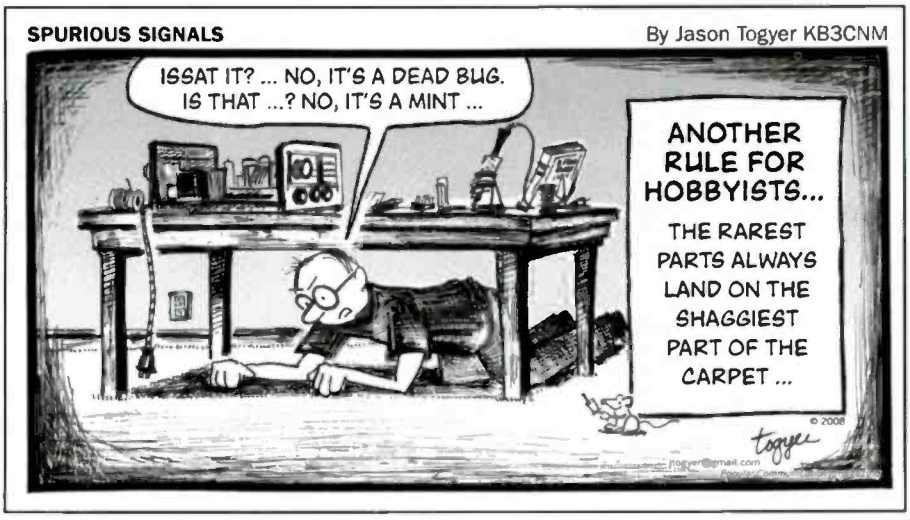
One major development to come out of Venona was in the area of nuclear espionage. American citizen and Communist Party member Julius Rosenberg (code name ANTENNA or LIBERAL) was identified as supplying information about the Manhattan Project (code name ENORMOZ). All this traffic was handled by Leonid Kvasnikov (code name ANTON), KGB chief of atomic espionage in the New York City office. Another nugget was the identity of Soviet spy Rudolf Able.

Venona proved so successful that the Signal Intelligence Service was used to create the NSA.

Q. Speaking of the former Soviet Union, why did they have so much trouble with communications security in their fight with the Germans?

A. Russia, even before the Soviets came to power, was a poor country with vast resources but an inferior manufacturing infrastructure. Prior to the Nazi invasion, the Russian production of telephone equipment and wire was relatively low. Radio was the best answer for the requirements of military communications, but radio is open to interception. Just prior to the beginning of Operation BARBAROSA (the Nazi invasion of the Soviet Union) the German intercept stations in East Prussia were monitoring traffic from over 10,000 Russian military radio stations. Even if they hadn't been able to break the Soviet codes, direction finding and traffic analysis gave the location and approximate size of every Red Army unit in European Russia.

During and after the War radio was also the only means of communications between the far-flung prison system in Siberia and Headquarters in Moscow. Interception of this traffic gave the free world much information about the vast size and day-to-day workings inside the Soviet gulags. This was because dictatorships tend not to trust even their own government officials and *everything* had to be reported to Moscow. ■



by Mitch Gill, NA7US, NA7US@yahoo.com

The Fall And Rise Of HF Radio, And Its Place Within The National Guard

The early 1980s saw the start of a quiet revolution that would soon change the world: the proliferation of the personal computer. And with its extraordinary growth, associated technology developed right along side it, including cell phones, satellite communications, and, of course, the Internet. Naturally, the military kept up with—or spearheaded—this growth, funding research to explore other areas of communications.

But back in those early days, high frequency (HF) communications was still an important means for the military to pass information over long distances. For instance, if a soldier were stationed overseas or in another state, he or she could avoid the expense of phone lines and make free calls home through the Military Affiliate Radio System (MARS) at almost all military locations. Today, cell phones and the Internet, with its email, instant message, and VoIP (Voice over Internet Protocol) capabilities, have largely replaced MARS—even in a warzone soldiers have the Internet and cell phone access.

The technological change was so dramatic and promising that HF radio no longer seemed very relevant to many in the military. It was still used, but not to the extent as in the past. Most military MARS stations were shut down and the missions were taken over by affiliate stations (amateur radio operators who obtained a MARS license). Large military HF communication facilities, were downgraded or shut down entirely. After all, the first Gulf War had been broadcast live over satellite, and today the news can be shown live from anywhere in the world via a small satellite.

Who Needs It?

So why worry about HF? With all this wonderful technology it's no longer needed. At least, that's what the military thought and the government seemed to agreed. True, it's no longer appropriate for HF to provide the primary communications source, but it was a big mistake to neglect it as a good backup. Technology had developed so fast that decision makers failed to recognize the trap they'd placed themselves in.

Illustrations of this shortsightedness can be found close to home—to my home, for instance. My telephone, cable TV, and Internet all come into my home over one cable. When a truck hit and knocked out the power in my neighborhood I was left with nothing but my cell phone and radios

This is a photo of the Joint Operations Center (JOC) for the Washington Army National Guard. SSG Delgado-Rosario is seen at one of the many computer stations. (Author photos)

(which required a generator). I learned quickly; it took many years and some interesting problems that cropped up for the military and the government to realize that HF radio was still worth the investment.

Catastrophes That Could Have Been

Remember the Millennium Bug, when it was feared that all the computers and all the systems attached to them would crash worldwide? Well, the dire predictions came to naught, but—fortunately—the danger of the catastrophic effects of a massive computer failure made people start to realize how vulnerable we were. Besides all the other problems that would arise, our phones, cell phones, satellite systems, and almost all forms of long-haul communications could be lost.

Less than two months after the Millennium Bug scare, the State of Washington was hit with a large earthquake. All landlines, cell and satellite phones were either down or overloaded. Some systems were down for almost two hours. And how did the nation first hear of the earthquake? It was thanks to a local MARS operator who sent a message to the White House via HF radio.

Was that enough to spark a large investment in HF? The answer is no, but it did provide a start. Someone very smart—and thank you, whoever you are—in the National Guard Bureau (NGB) realized then that HF radio might be the "only" means of communications available in an emergency, and funding was made available to provide all the armories and air guard units with a 13.8 volt DC power supply and an HF radio programmed with several frequencies. Radio checks were initiated on a weekly basis to ensure that there would be at least some form of communication.

In my experience with the Washington State National Guard, the only problem was a lack of training about what to do if the power went out. Some armories did not have generators and most soldiers doing the radio checks had little or no experience with radios. A new training program that's been initiated in our state should help alleviate that problem.

More Radios And More Nets

While we passed into the new millennium without incident, a far more frightening event occurred not very long after, and much of our whiz-bang technology did break down, and HF radio, once again, took on importance as a backup system. After the tragic lessons of 9/11 regarding communications failures, the NGB sent each Joint Operations Center (JOC) a state-of-the-art radio (RT-1694) developed by the Harris Corporation. This was an important step toward preparedness as one of this radio's many capabilities is the Automatic Link Exchange (ALE), an extremely useful tool.

ALE is used to link radios to whoever is on a radio net. In the case of the Guard, we can link with NGB or any JOC throughout the United States or its territories. The radio searches for the best frequency and then links to the station desired. We can then send an HF email without an operator present at the other end, or if an operator is at the radio, we can talk to him or her as well.

In addition to making the most of HF with ALE capabilities, we'll be checking into the National Communications System (NCS) SHARES radio system (see sidebar) which will give us the ability to connect with numerous federal, state and commercial entities nationwide.

HF Is Here To Stay

I can only speak from experience about HF and the National Guard, but I don't want to leave you with the impression that HF isn't being used in the other services; the Navy and Coast Guard, for instance, use it for much of their ship-to-shore communications. But within the Guard today the officers in charge of our station are very aware of the viability of HF communications. We've tested our system on many occasions and it proved very valuable in a number of exercises and drills. In addition to these periodic trials, the NGB had us test the systems weekly in conjunction with secure and unsecure phone, satellite, fax and HF communications.

Our HF setups now consist of military and civilian equipment. The military HF gear has the advantage of allowing us to "go secure," whereas the filter system in the civilian HF equipment lets us hear communications better than we ever have before. As far as HF radio in the service

The National Communications System

The National Communications System (NCS) was formed in 1962 right after the Cuban missile crisis in response to the communications problems that arose during the crisis among the United States, the former Union of Soviet Socialist Republics (USSR), NATO, and foreign heads of state.

Right after the crisis had passed, President John F. Kennedy ordered an investigation of national security communications, which resulted in the establishment of the NCS by Presidential Memorandum on August 21, 1963. The NCS mandate included interconnectivity, survivability, linking, improving and extending the communications facilities of various federal agencies.

On April 3, 1984, President Ronald Reagan signed Executive Order (E.O.) 12472 which broadened the NCS' national security and emergency preparedness (NS/EP) capabilities and superseded President Kennedy's original 1963 memorandum. The NCS expanded from its original six members to an interagency group of 23 federal departments and agencies, and began coordinating and planning NS/EP telecommunications to support crises and disasters.

In March 1, 2003, with the Secretary of Defense serving as its Executive Agent, President George W. Bush transferred the jurisdiction of the NSC to the Department of Homeland Security (DHS) where it remains today.

There are a number of initiatives that the NCS has undertaken. One of these was developed through the combined efforts of 23 NCS member organizations and is known as the SHAred RESources (SHARES) High Frequency (HF) Radio Program.

The purpose of SHARES is to provide an interagency emergency handling system to bring together existing HF radio resources of federal, state, and industry organizations in the event of an emergency where normal communications are not available or destroyed. During such times SHARES will assist with transmissions of national security and emergency preparedness information.

In July of 2004 there were over 1,000 HF radio stations that included 93 federal, state, and industry entities located in every state and at 20 overseas locations. Over 150 frequencies have been authorized for SHARES. In addition SHARES provides a forum to address issues of interoperability in the communications area.

For more information, visit www.ncs.gov/SHARES/program_info.html.

SSG Delgado-Rosario monitoring the HF radio system while preparing to contact the armories throughout Washington State. The Harris radio is located on the far right with the ICOM radios in the center. The computer is used for MT-63 digital communications during our MARS net.

of Homeland Security is concerned, I again can only speak from my National Guard experience and see room for improvement.

For instance, the RT-1694 offers much. In addition to the ALE capability already mentioned, it has a tuner and amplifier, its cabinet has shock absorbers built in, and the radio is ruggedized for the worst type of environment. I've used them here at home and in Iraq and believe that it truly meets the requirements of the military. They are, however, designed for channelized operations and for use predominately in the field, limiting our ability to monitor and change frequencies easily.

The civilian equipment we use is not channelized, so we can go anywhere with it quickly. We recently purchased two ICOM IC-756PROIIIs and an IC-7000 after testing with similar equipment. This now gives us the ability to easily communicate with other organizations like the Department of Transportation, local Police, FEMA, and any other government entity with HF, VHF, or UHF capabilities.

A close up of one of the new ICOM radios that we're using today on SHARES, MARS, and our HF emergency net.

Of course radio isn't our only means of communication. HF/VHF/UHF radio is among several systems we have to ensure we can communicate within the state and beyond. It remains a backup system—but a crucial one—in the event that all other communications have failed.

HF Is There

Communications technology will continue to grow and change. HF radio is changing as well. It's now considered a viable backup once again for our state and for the federal government overall. It will always be a secondary method to phones, the Internet, and other communications, but when all else fails, I'm glad that I have HF radio to fall back on. I'm also glad to see that many federal, state, and commercial enterprises, and volunteer organizations are seeing the value as well. Groups like SHARES, MARS, REACT, and the Amateur Radio Relay League (ARRL) to name a few, are ready to assist in the event of an emergency or an attack on our homeland.

Until next time, consider your own state of preparedness. Would HF radio help keep you and your loved ones safer? Remember that our security, and that of our homeland, is not just the government's responsibility but ours as well. ■

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by Kirk Kleinschmidt, NTOZ, kirk@cloudnet.com

Log It Or Lose It!

If you're a businessperson or a computer geek, you've undoubtedly heard about the new age of the "paperless office" for what seems like (and may actually be) decades. Regardless of when you first heard the buzz, the coming Golden Age is reportedly just around the corner and promises to free us of the drudgery of keeping paper documents and forms. Desks will shrink and filing cabinets will be found only in museums. As the pitch goes, we'll save time, trees, and trouble.

Ham radio is at a similar juncture with QSL cards, logbooks, books in general, and magazines. The digital era definitely saves shelf space. You can carry around 500 radio and electronics books, a half-century of ham magazines, and digitally compressed recordings of every QSO you made over the past 10 years in a single iPod—with room for a few music videos and all of Billboard's Top Ten.

That convenience comes at a price, however, and I've ranted about this before. Even though I use digital documents on a daily basis, there's a certain tactile, visceral connection that humans have to things printed on paper, whether glossy and hi-res, or ancient and smelly. (Actually, this connection may only be relevant to people born between 5000 BC and 1990 AD, although I'd like to think that the special connection exists for everyone, even kids born with USB ports behind their ears.)

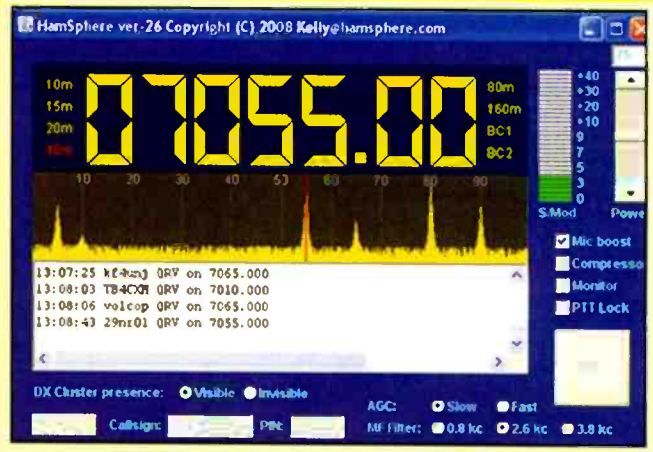
Storage issues aside, if I have the choice between reading an electronic copy of a ham book or magazine or the real thing, I'll take the real thing, hands down. And if it smells a bit musty—an unmistakable, but not unpleasant, odor that hints at the book's age and place in the universe—so much the better. Add in the tactile feeling of the pages and the binding and you're now experiencing printed material much like the pharaohs of Egypt, the rishis of India, the Greeks, the Romans, Marconi, Maxim, and the Japanese engineers who designed the Kenwood TS-520! There's a lineage there that's best not forgotten.

The challenge is, we want the speed, capacity, and search capabilities of computers, but we don't necessarily want to lose the superior presentation of the printed page (or printed logbook). That's the dilemma I find myself in now. I just ran out of printed, blank logbooks. I still remember stocking up on them in 1991, dreading the day when I would run out, yet hoping computerized logging would advance sufficiently to handle things to my satisfaction.

Well, that day hasn't yet arrived, unfortunately, and I'm once again torn between converting to sterile, yet speedy, computer logs, buying more logbooks, or kludging some interim solution. I chose the latter, for now, while I play around with software logs in search of the Holy Grail. I found a blank logbook page and scanned it. I then printed 25 copies and punched them for a three-ring binder.

The crazy scheme I invented as a teenager to track QSL card "send-sent-received-tallied-tracked" status still works today (somewhat), but it's not terribly efficient. Computerizing my log data would make short order of some QSL tracking chores, but it doesn't provide any warm fuzzies. And what if my data becomes toast? A lifetime of ham radio goodness down the drain? I still can't get past that...

As a veteran PC tech, I know the necessity of redundant data back-ups and all that jazz, but I also know that the archival storage qualities of disks, tapes, and hard drives are pretty abysmal when we're talking about preserving important information for 50 to 100 years or more. Until we get affordable, impervious, long-term storage media—such as crystal holography, which presently exists but is still too expensive—nothing beats paper, which can survive for 1,000 years or more in ideal conditions.



As technology marches on, humans seem determined to "simulate" just about everything. We make robotic pets, animated computer interfaces and, some day soon, simulated people (androids, cyborgs, spouses, etc.). So, I guess it was inevitable that hams created a "simulated ionosphere," complete with simulated amateur radio to accompany it! Other amateur radio simulators use Internet telephone-like technology to create high-quality ham-to-ham comms (see www.qsonet.com), but the folks at www.hamsphere.com actually simulate the skip, fading, interference, and propagation characteristics of each simulated operating frequency in real-time! Users can choose power levels, frequency, voice, digital and image modes, and more—even choosing between fixed or directional antennas. Users (hams and non-hams alike) "operate" via a simple software transceiver that has a built-in spectrum analyzer and a DX spotting cluster (shown in the photo). Because no RF is emitted (it's simulated, remember?), non-hams can get on the air and see what ham radio is all about. It's nifty—and it's free!

Your logging preferences may be different than mine, however, so let's examine ham radio logging this month and see where it takes us.

To Each His Log

First, let's recognize that logging isn't even required for today's hams! In the old days, though, government radio overseers insisted that hams keep station logs that detailed date, time, mode, callsigns, frequency, power output—the works—for each and every QSO *and CQ call!* Yes, hams had to log each transmission, QSO or dead air.

Even though logging isn't required, it's still worthwhile today, and it will be priceless tomorrow.

For me, looking through my old logbooks (or looking through stacks of older QSL cards) is like jumping into a time machine. Without the benefit of a log I can remember a few of my most prominent early QSOs, but with the log, I can remem-

ber those QSOs in great detail, as if I'm watching a big-screen movie in my mind's eye. I can hear the sounds and see the sights. The logbook, filled with scrawls and notations, corners bent, exuding that faint musty smell, is a fantastic mnemonic device. In that way, it crushes a sterile, yet efficient, PC log.

Simply keeping a station log has kept those memories fresh for three decades. And as long as I have those logs, for as long as I'm around, those memories will stay fresh. If you don't keep a station log for any other reason—and there are many present-day incentives for keeping an accurate log—keep it for your own future nostalgia.

I almost always use computers to log contest QSOs, and I sometimes use logging software to track awards, I still keep a paper log (or print out a hard copy of the log I made with a contest logger). Lately, I don't make thousands of QSOs, so the dual logging process isn't as tedious as it sounds (except for entering old QSO data that isn't inputted in real time). Plus, my computer log has crashed a time or two, but my logbooks are still going strong. It's an endless debate, I know, but one worth having.

Your Very Own Archives

In addition to keeping tabs on QSOs, award data, etc., your station log is the perfect place to keep track of a whole range of station-related info.

You can track modifications and changes to your equipment. Not only will the information be easy to find for future reference, it will be easier to note the effects of such changes by referencing contacts before and after. How does your new dipole antenna compare to your old trap vertical? Check out the signal reports in your logbook and you'll have a good idea!

I use my logbook to keep track of schematics and equipment interconnect diagrams. When I need to connect a PC sound card to, let's say, the audio input pin of my rig's mic or accessory connector, I don't have to tear the place apart because I have the data sheet right in the logbook pocket. The same goes for the connector layouts of every piece of gear on my bench, as well as a schematic of my RF and ground connections, etc.

DXers often refer to their logs when trying to work into specific parts of the world. When is the best time to work Japan in the winter? A quick check of last year's log entries will probably turn up the required information.

Feel free to note any other changes in your log, too. When you upgrade your license, note it in your log. When you get a new rig or put up that long-awaited killer antenna, write it down. And don't forget to include a few details that might elicit a grin 20 years from now when you stumble across your station log. Logbooks aren't merely for recording QSO information! There can be much more to them.

Tech Helpers

If you want or need to take advantage of the luxuries afforded computer loggers, feel free to jump in with both feet—but remember to *PHYSICALLY PRINT* your logs every now and then as a hedge against digital disaster.

There are many excellent logging programs for hams running all flavors of Windows, Linux and Mac, and most packages have lots of handy bells and whistles. Some cost money, while some (and arguably some of the best available) are free to download. Check the ads in *CQ*, *QST*, and other amateur radio magazines. AC6V's exhaustive list of ham radio logging programs will set your head spinning. Point your Web browser to http://ac6v.com/logging.htm. To see what other hams think about the many ham software offerings, check out the reviews at eHam.net (www.eham.net/reviews/products/27).

I prefer DXLab (www.dxlabsuite.com), which is free for noncommercial use and is actively and *aggressively* updated by its author, Dave, AA6YQ, and Ham Radio Deluxe (www.ham-radio-deluxe.com), also free, both of which do a *lot more* than mere logging.

If computerized logging isn't your thing, The *ARRL Logbook* is just what you've been looking for. Used by uncounted thousands of hams over the years, the latest versions (standard, mini, and loose-leaf) are available from the ARRL (or from your favorite amateur radio dealer) for $4 to $8 (see www.arrl.org; the logbooks are in the supplies section of the catalog section).

Get Busy Making—And Keeping—Memories

Paperless or otherwise, be sure to keep some kind of station log. Think of this as "one of those things" you should have acted upon when you were younger, like saving early for retirement, buying instead of renting, or buying stock at eBay's IPO. Just do it! ■

by Tomas Hood, NW7US, nw7uw@arrl.net

Substorm Mysteries Are Studied As The Earth Takes A Couple Of Plasma Bullets

On February 26, 2008, the Arctic skies were dark and Earth's magnetic field was quiet with very little activity. High above the planet, the five THEMIS (an acronym for Time History of Events and Macroscale Interactions during Substorms) satellites had just arranged themselves in a line down the middle of Earth's magnetotail—a million-kilometer-long tail of magnetism pulled into space by the action of the solar wind.

All of the sudden, an explosion that released about 1015 joules of energy (about as much energy as a magnitude 5 earthquake) halfway up the THEMIS line (see **Figure 1**). The blast launched two "plasma bullets," huge clouds of protons and electrons. One bullet was shot straight toward Earth, and the other away. When the Earth-bound plasma bullet hit Earth, it triggered aurora.

We know that space is not a vacuum, at least not in our solar system. The sun's atmosphere actually extends very far out from the sun. Space in our system is filled with plasma, a low-density gas in which the individual atoms are charged. The temperature of the sun's atmosphere is so high that the its gravity cannot hold on to it. The plasma streams off of the sun in all directions at speeds of about 400 kilometers per second (about 1 million miles per hour). This is known as the solar wind.

The solar wind buffets the Earth's magnetic field and can produce storms, or more properly, substorms, in the Earth's magnetosphere. Until this explosion was witnessed first-hand, however, scientists did not understand the full mechanics of how substorms occurred.

The Earth has a magnetic field with a north and a south pole that is enclosed within a region surrounding the Earth called the magnetosphere. As the Earth rotates, its hot core generates strong electric currents that produce these magnetic fields, which reach 36,000 miles into space. The solar wind distorts the shape of the magnetosphere by compressing it at the front and causing a long tail to form on the side away from the sun; this is the magnetotail.

The Ap Index And Understanding Propagation Terminology

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

Classification of A indices is as follows:

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

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

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

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

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

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

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

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

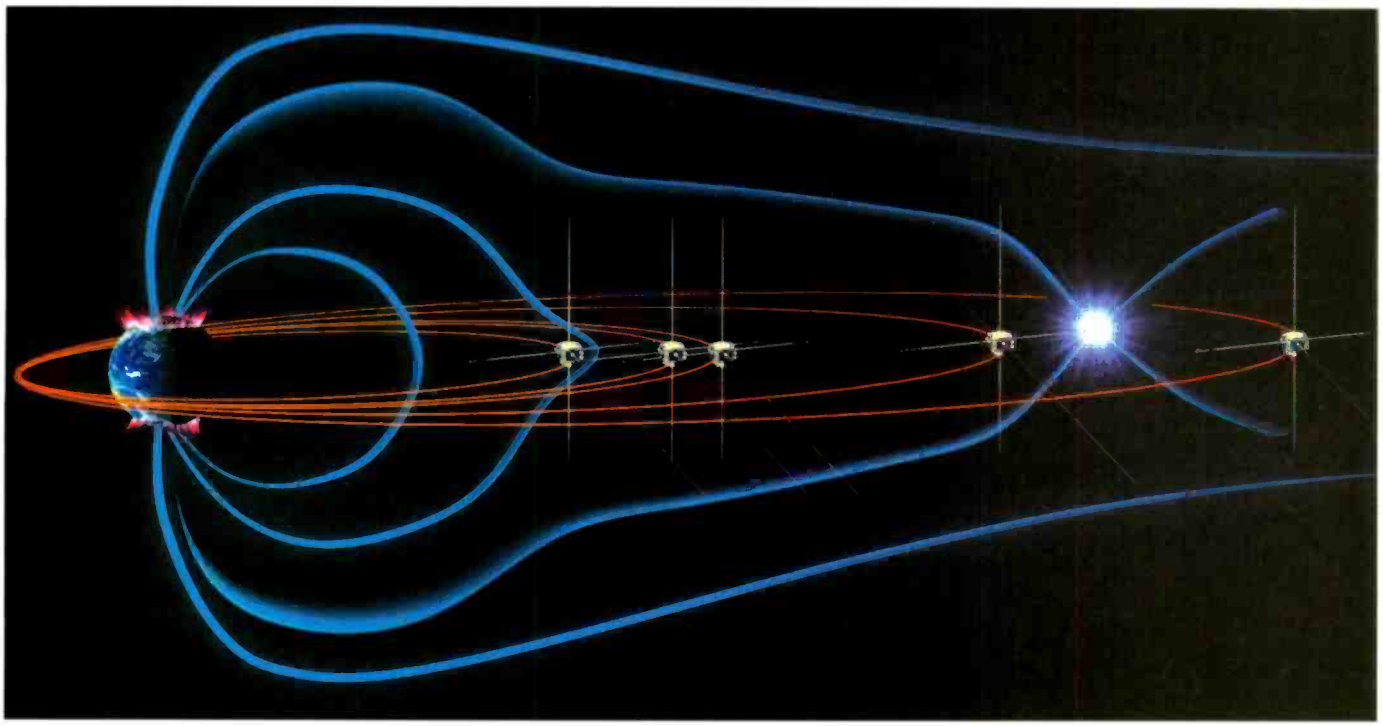


Figure 1. An artist's concept of the THEMIS satellites lined up inside Earth's magnetotail with an explosion between the fourth and fifth satellites. (Source: NASA)

The ionosphere is affected by these changes, either by an increase of ionization, or a decrease or even a depletion of ionization. Depressions in ionospheric density cause major communications problems because radio frequencies that previously had been refracting off the ionosphere now punch through. The Maximum Usable Frequency (MUF) on a given radio signal path can be decreased by a factor of two during an ionospheric substorm event. Storm effects are more pronounced at high latitudes.

These substorms are often accompanied by aurora. The aurora is caused by the interaction of plasma raining down through the atmosphere, riding along the magnetic field lines that run from Earth's magnetic poles. Substorms produce dynamic changes in these auroral displays seen near Earth's northern and southern magnetic poles, causing a burst of light and movement in the northern and southern lights. These changes transform auroral displays into auroral eruptions.

To understand why, take a look at a neon light. When a neon light is energized, you're looking at an interaction of electrons with the plasma inside the tube. Plasma conducts electricity, and is also steered by magnetic fields. On a much larger scale, the solar plasma riding the solar wind is shaped by the interaction of the magnetic field lines found in the magnetosphere.

The explosion observed in February happened inside Earth's magnetic field, but it was actually a release of energy from the sun. When the solar wind stretches Earth's magnetic field, it stores energy there, in much the same way energy is stored in a rubber band when you stretch it between your thumb and forefinger.

Bend your forefinger and—crack!—the rubber band snaps back on your thumb. Something similar happened inside the magnetotail. Over-stretched magnetic fields snapped back, producing a powerful explosion. This process is called magnetic reconnection, and it is thought to be common in stellar and planetary magnetic fields **(Figure 2)**.

Solving the mystery of where, when, and how substorms occur will allow scientists to construct more realistic substorm models and better predict a magnetic storm's intensity and effects. "We had bulls-eyes on our solar panels," says THEMIS project scientist David Sibeck of NASA's Goddard Space Flight Center. "Four of the satellites were hit by the Earth-directed cloud, while the opposite cloud hit the fifth satellite." Simple geometry pinpointed the site of the blast between the fourth and fifth satellite or "about 1/3rd of the way to the Moon." No damage was done to the satellites.

Plasma bullets are vast, gossamer structures less dense than the gentlest

Optimum Working Frequencies (MHz) - For October 2008- Flux = 66, Created by NW7US

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

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

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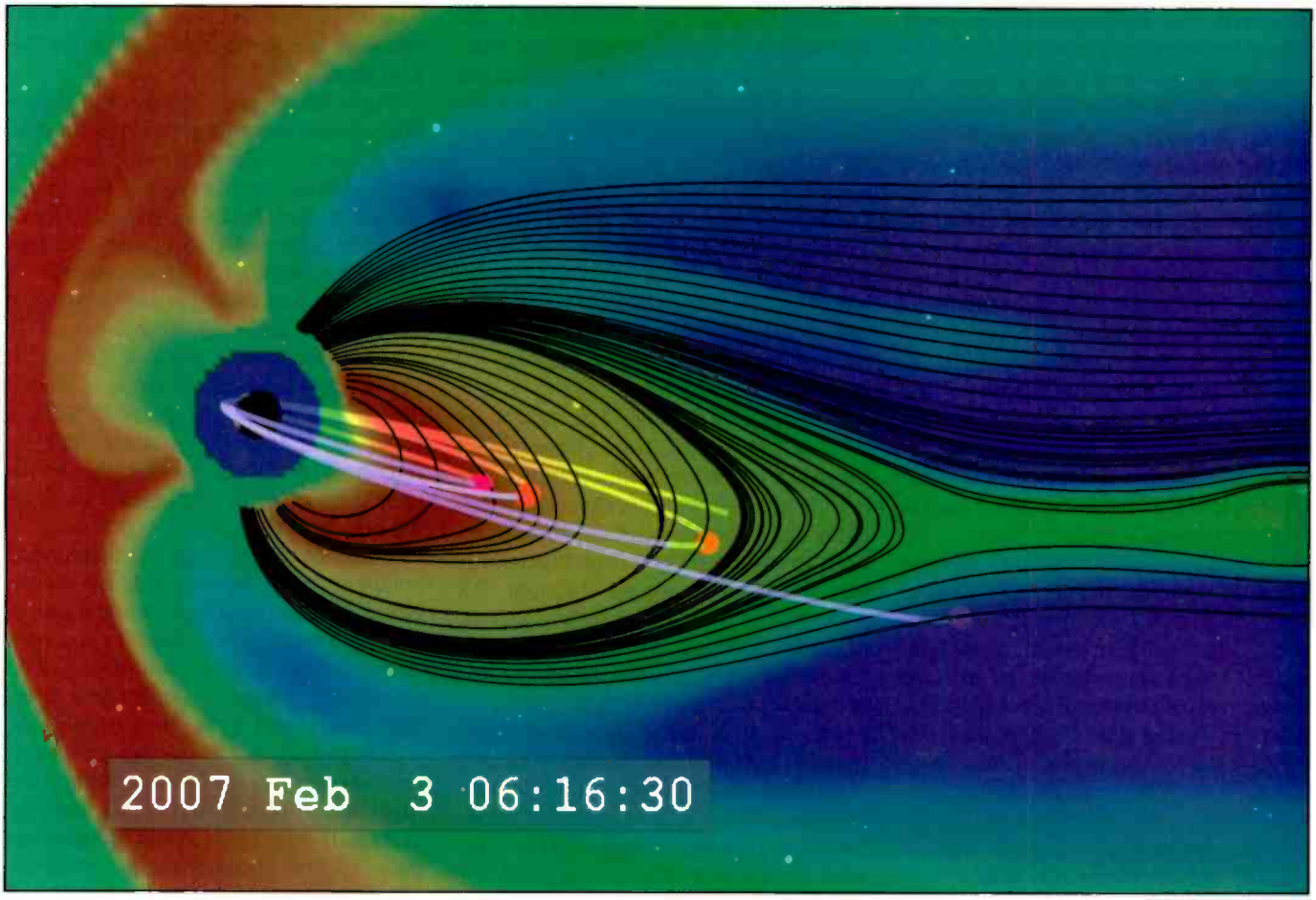

Figure 2. After the reconnection event, the magnetic field lines pull plasma earthward, where they may contribute to the structure of the aurora. THEMIS observed where in this volume of space the substorm trigger is located and how the substorm evolves in the few minutes after onset. (Source: NASA/Goddard Space Flight Center Scientific Visualization Studio)

wisp of Earth's upper atmosphere. As they pass by the satellites, THEMIS instruments sample the cloud's internal particles and fields without any damage to satellites.

This peaceful encounter on the small scale of a spacecraft, however, belies the energy deposited on the large scale of a planet. The bullet-shaped clouds are half as wide as Earth and 10 times as long, traveling hundreds of km/s.

"For the first time, THEMIS has shown us the whole process in action-from magnetic reconnection to aurora borealis," says Sibeck. "We are finally solving the puzzle of substorms."

Scientists directly observe the beginning of substorms using five THEMIS satellites and a network of 20 ground observatories located throughout Canada and Alaska. Launched in February 2007, the five identical satellites line up once every four days along the equator and take observations synchronized with the ground observatories.

Each ground station uses a magnetometer and a camera pointed upward to determine where and when an auroral substorm will begin. Instruments measure the auroral light from particles flowing along Earth's magnetic field and the electrical currents these particles generate.

During each alignment, the satellites capture data that allow scientists to study how substorms measured on the ground develop in space. The explosion observed on February 26, 2008, confirms for the first time that magnetic reconnection triggers the onset of substorms. The discovery supports the reconnection model of substorms, which asserts a substorm starting to occur follows a particular pattern.

The THEMIS mission is scheduled to continue for more than another year, and during that time Vassilis Angelopoulos, THEMIS principal investigator, expects to catch lots more substorms—"dozens of them," he says. "This will give us a chance to study plasma bullets in greater detail and learn how they can help us predict space weather."

HF Propagation For October

A change in propagation conditions in the Northern Hemisphere can be observed as we move away from the long sunlit days of summer into the longer hours of winter's darkness. With the shorter period of sunlight each day, the ionosphere has more time during the dark hours to lose the energy created during daylight hours. This affects the propagation of radio signals by lowering the MUF over many areas of the Earth. However, the change in the length of daily darkness is not the only influence on the propagation of radio waves through the atmosphere. The amount and strength of radiation arriving and passing through our atmosphere varies from season to season, as well as from the solar cycle minimum to the solar cycle maximum.

During the Northern Hemisphere's winter months, the Earth is closer to the sun than during any other time of its orbit.

This makes the daytime ionization more intense than that of summer daytimes. In turn, this higher-level energy during the day causes the average MUF to increase slightly as compared to the same time of day during the summer season, over the same radio signal path.

Then, with the longer winter hours of darkness, the ionosphere has more time to lose its electrical charge. This causes the MUF to dip lower at night than during the summer months.

These conditions cause a wide daily variation in the maximum frequency that can be propagated by refraction of the radio waves by the wintertime ionosphere. Many radio enthusiasts celebrate the arrival of the winter shortwave season for these reasons.

Signals below 120 meters are improving, with nighttime paths growing larger in the Northern Hemisphere. Seasonal static, which makes it difficult to hear weak DX signals, is starting to decrease as we move into winter. Expect a few DX openings during the hours of darkness and into the sunrise period. These openings will often be weak due to the relatively high signal absorption during the expected elevated geomagnetic storminess through the rest of this year.

Look for openings from Europe and the south if you are listening in the eastern half of the United States, and from the south, the Far East, Australasia, and the South Pacific if you are in the western half of the country. The best propagation aid is a set of sunrise and sunset curves, since DX signals tend to peak when it is local sunrise at the easterly end of the path in question. A good Internet website featuring a grey line map display is found at www.fourmilab.to/earthview/. Follow the link, "map of the Earth" showing the day and night regions.

Seventy-five through 120 meters are coming alive in late October. Expect long-range DX on the low bands, starting close in right after sunset, and extending farther as the night develops. Signals here should peak from Europe and from a generally easterly direction around midnight. DX paths will move farther west through the night. By morning, openings from Asia should be common. For openings in a generally western direction, expect a peak just after sunrise. The band should remain open from the south throughout most of the night. Propagation in this band is quite similar to that expected on 41 meters, except that signals will be somewhat weaker on average, noise levels will be a bit higher, and the period for band openings in a particular direction will be a bit shorter.

Forty-one meters should be the hottest DX band during the dark hours as the seasonal static levels are lower than they were during the summer. The band should be open first for European DX in the eastern United States during the late afternoon. Signals should increase in intensity as darkness approaches. During the hours of darkness, expect good DX openings from most areas of the world. Signals should peak from an easterly direction about midnight, and from a westerly direction just after sunrise. Excellent openings toward the south should be possible throughout most of the nighttime period.

Paths on 31 through 19 meters are becoming ever more reliable between North America and Europe in the morning and between North America and Asia during the late afternoon hours. The strongest openings occur for a few hours after sunrise and during the sunset hours.

Thirty-one and 25 meters will often remain open into many areas late into the night and will open early in the morning, especially when part of the propagation path moves through sunlit regions. However, these bands are crowded and signals are usually very strong and steady. Twenty-five meters is expected to be an excellent band for medium distance (500 to 1,500 miles) reception during the daylight hours. Longer distance reception (up to 2,000 to 3,000 miles) should be possible for an hour or two after local sunrise, and again during the late afternoon and early evening. Thirty-one meters will provide medium distance daytime reception ranging between 400 and 1,200 miles.

Twenty-two through 19 meters compete with 16 for the best daytime DX band during October. They will open for DX just before sunrise and should remain open from all directions throughout the day, with a peak in the afternoon. Nighttime conditions will favor openings from the south and tropical areas. Since the Southern Hemisphere has long daylight hours, DX paths on these bands from stations in the south will be common.

Sixteen through 13 meters will occasionally open through October when flux levels reach above 100. Paths from Europe and the South Pacific as well as from Asia, at least during days of higher solar flux levels, are common, especially on 16 meters. Look for best conditions from Europe and the northeast before

noon and from the rest of the world during the afternoon hours. Reception from the South Pacific, Australia, New Zealand, and the Far East should be possible well into the early evening.

VHF Conditions

Conditions during October should include moderate levels of trans-equatorial propagation (TE) in which stations in the southern states and parts of the Caribbean will be able to work into the northern areas of South America during the late afternoon. During peak years of a solar cycle, October is one of the best months for TE activity, especially later in the month. Since we are in the decline from the current Solar Cycle's peak, these openings will be rarer than previous years, but some exciting openings might occur.

While sporadic-*E* activity is sparse during October in the northern Temperate Zone (where much of the United States is located), there is some possibility of extended tropospheric propagation conditions during October because of the changing weather patterns. Higher VHF is the best frequency range to watch for this.

Current Solar Cycle 23 Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for June 2008 is 3.1. The lowest daily sunspot value recorded was zero (0) on June 1 to 4, 6 to 9, 12, 14, and 23 to 30. The highest daily sunspot count was 9 on June 5 and June 10. The 12-month running smoothed sunspot number centered on December 2007 is 5.0. A smoothed sunspot count of 9, give or take 2 points, is expected during October 2008.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 65.9 for June 2008. The 12-month smoothed 10.7-cm flux centered on December 2007 is 70.5. The predicted smoothed 10.7-cm solar flux for October 2008 is 66, give or take about 5 points.

The observed monthly mean planetary A-Index (A_p) for June 2008 is 7. The 12-month smoothed A_p index centered on December 2007 is 7.8. Expect the overall geomagnetic activity to vary greatly between quiet to disturbed during October. Consult http://hfradio.org/last_minute_propagation.html for the most up-to-date forecast of which days such storms may occur. The days indicated as "Low Normal," "Below Normal," and "Disturbed" are those days when the geomagnetic conditions range between disturbed and stormy.

I'd Like To Hear From You

Please take a look at what's new at my propagation website, http://propagation.hfradio.org/. 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've written. ■

by John Kasupski, KC2HMZ, kc2hmz@verizon.net

Time To Dust Off Your Old Radios

A lot has changed in the radio hobby over the slightly more than two and a half decades that have passed during the lifetime of *Popular Communications*, and radio equipment has certainly evolved. But just because something is more than a couple of decades old doesn't make it useless! Many of you (myself included) are much older than that...and you *are* reading this magazine, aren't you? Those old radios from the early 1980s still have their place in the shack, too.

I recall that in 1982 the Sony ICF-6500W **(Photo A)** had just hit the market. A dual-conversion portable covering .53–1.605, 3.9–10, 11.7–20 and 20–28 MHz plus the FM broadcast band, the ICF-6500W had an analog dial along with an LCD digital frequency display. When new, these radios sold for about $210 to $270. I recently saw one of these for sale on an online auction site for less than $40.

Now, when we compare the relatively limited capabilities of such a radio from 1982 to the DC-to-daylight multimode super receivers of today, there's a definite tendency to dismiss such old radios as "boat anchors"—this is, after all, a portable radio that weighs four pounds. Nonetheless, at 1.5x6.75x4.2 inches I find it difficult to call this one a boat anchor (for a real boat anchor portable, see **Photo B**, which shows a Zenith Transoceanic Y-600 next to a more modern portable for comparison). Besides, once properly aligned, the ICF-6500W is arguably still among the top 10 portable radios ever for mediumwave DXers (even though it doesn't cover the expanded AM band) because of its good selectivity and sensitivity.

Also typical of 1982 is the Radio Shack DX-302 shown in **Photo C**. Virtually identical in appearance to the DX-300 here in my shack (of which the DX-302 is a descendant), the DX-302 covered 10 kHz to 30 MHz in AM/SSB modes and was a $400 radio when new. These were manufactured for Radio Shack by GRE (yes, *that* GRE!) and feature the same Wadley loop design as the legendary Yaesu FRG-7 (and the Sears version thereof shown in last month's column). Therefore (again, when properly aligned), these are very stable receivers despite the 1960s design—in days gone by, many SWLs used to use an AEA interface and a Commodore computer to run CW and RTTY decoders with the DX-302.

These radios feature a preselector that you must tune along with the main tuning control and fine tuning knob, so they aren't great band-scanners, but they do supply plenty of excellent sounding audio from their front-firing speakers, and they offer surprising sensitivity. These features have made these radios a great addition to many listeners' shacks as a backup receiver and for listening to music broadcasts. Even today, there's no reason you can't pipe the audio from a DX-302 into a SignaLink USB interface (again featured in last month's issue as a "Tech Showcase") and use it to decode various digital modes. And, unlike the DX-300, the wide/narrow switch on the DX-302 selects an IF filter (the switch on the DX-300 controlled an audio filter), yielding a narrower receive bandwidth that also facilitates digital work.

Not that long ago, I hauled my DX-300 out of a closet. Grabbing a three-foot AC power cord that had been salvaged from a discarded device, I did a quick-and-dirty conversion to a very short dipole antenna. Connecting this to the back of my DX-300, I tuned 5696.0 kHz in USB and left it there for a few hours, listening to the USCG Communications Area Master Station Atlantic (CAMSLANT) in Virginia during the late

Photo A. Sony ICF-6500W, a popular portable back in the early years of Pop'Comm.

Photo B. Zenith Transoceanic Y-600. (Photo by Ryan A. Jairam)

Photo C. Radio Shack's DX-302, a 1982-era general coverage receiver.

evening here in my northeastern U.S. QTH. The DX-300 stayed dead on frequency the entire time.

Now, to be sure, these rigs take a bit more effort to tune (four controls that you must manipulate to tune a station due to the Wadley loop design, or five if you're not in AM mode and must include the BFO), but for a rig you can find on the used market for $125 or so, it's a solid performer. Furthermore, if you've done your part to learn to tune a Wadley loop receiver, there are some neat tricks you can pull off with that preselector. You can often use it as the main tuner for extremely strong signals; for example, it allows me to have both WWV on 10 MHz and the extremely strong 50-kW local broadcaster WWKB on 1520 kHz coming out of the speaker at the same time. Try doing that with one of today's digital receivers and let us know how it works out for you!

The reason for all this nostalgia concerning these radios from back in the early days of *Pop'Comm* is that as we now move into October, most of us will be transitioning from summer activities like backyard barbecues and vacationing in faraway places (hope you took a radio with you!) and turning our attention to indoor activities with the coming of autumn. If you're reading this magazine, I think we can safely assume that radio will likely receive more attention now that you're presumably going to be spending less time grilling steaks, playing softball, and gallivanting around the galaxy in your RV. So, if you have an older receiver that you picked up at a hamfest over the summer, or had one languishing in an attic or closet, now's the time to consider bringing it out, cleaning it up, doing an alignment procedure, and getting that radio back to work putting stations in your log.

After all, back when *Pop'Comm* started, everybody had to use equipment like this. The digital super-receivers of today hadn't been invented yet. Those old radios worked just fine back then and, with proper care, will do just as well now. But if you'll excuse me, I think the paint on my DX-300, where I touched up a couple of scratches, should be dry by now and I'm going to go see what she's still got.

Upcoming Space Missions

Space flight buffs have three events to monitor during October. I mentioned these in last month's column, but in case you missed it (shame on you!), in addition to the TacSat-3 launch tentatively scheduled for sometime this month from the Wallops Flight facility at the Goddard Space Flight Center, there is also the IBEX launch from the Reagan Test Site on Kwajalein Atoll scheduled for October 5, and the STS-125 mission, with the space shuttle *Atlantis* slated to blast off on October 8 from the Kennedy Space Center for a servicing mission to the Hubble Space telescope.

There are also three missions coming up for November – no excuse for missing these now, since I'm warning you about them well ahead of time. The STS-126 mission for space shuttle *Endeavour* is scheduled to depart *terra firma* from the Kennedy Space Center (its mission being to deliver a multi-purpose logistics module to the International Space Station. As of this writing, the tentative date is November 10, but as always, check the launch schedule page on the NASA website for late-breaking updates on this and all the space shots reported on in this space. You can find the schedule at www.nasa.gov/missions/highlights/schedule.html.

In addition to the STS-126 mission, there are two November launches scheduled for the Cape Canaveral Air Force Station. The first of these is slated for November 13, when a Delta II is scheduled to depart from Launch Complex 17, Pad A with a midcourse tracking technology demonstrator package on board. Part of an evolving ballistic missile defense system, this package is capable of tracking objects after boost phase and providing trajectory data to other sensor systems, as well as to interceptors, and will be launched by NASA for the Missile Defense Agency.

The other Cape Canaveral launch, planned for November 24, is that of the Lunar Crater Observation and Sensing Satellite from Launch Complex 41, a mission to confirm the presence or absence of water ice in a permanently shadowed crater on the Earth's moon. The launch vehicle will be an Atlas V.

There's also a December 1 launch from Cape Canaveral's Complex 41 of another Atlas V that pertains to the Space Weather Research Network, and a December 16 launch from Complex 35 aboard a Delta IV to insert the GOES-O satellite into orbit. The GOES (Geostationary Operational Environmental Satellite) series N through P birds are part of a cooperative program involving NASA and the National Oceanic and Atmospheric Administration (NOAA) and are expected to be a vital contributor to weather, solar and space operations, and science, according to NOAA and NASA sources.

Night Of Nights IX Is In The Logs

As this month's column was being written, the ninth annual Night Of Nights event had just been completed. Night Of Nights, held each year on July 12, is the night on which several famous maritime CW coast stations return to the air to commemorate the end of commercial Morse code in the United States and to honor radiotelegraph operators around the world.

KPH, the ex-RCA coast station located north of San Francisco, returned to the

air for this year's commemorative broadcasts, as did KSF (using a 1940s vintage Press Wireless PW-15 transmitter for operation on 12 MHz). KSM, WLO, and KLB. The U.S. Coast Guard's NMN, NMC, and NOJ stations also participated.

Initial reports from SWLs indicate that KPH was heard from coast to coast here in the United States, and was heard in New Zealand along with KSM. One listener in Ohio reported receiving six of the participating stations (KPH, KSM, WLO, KFS, KLB, and NMC) during one hour's time between 0200Z and 0300Z.

Those who logged one or more of these historic stations will find QSL information and other facts about the history of these stations at the Maritime Radio Historical Society (MRHS) website, located at www.radiomarine.org/.

The society operates KSM as the coast station of the MRHS. This station is licensed by the FCC as a full, commercial, common carrier public coast station—which came as something of a surprise to the MRHS when the FCC granted its application, according to the website—and the station accepts (at no charge) traffic from ships at sea via both CW and RTTY modes in the MF and HF marine bands for relaying to recipients ashore at no charge. Frequency information and hours of operation for KSM is also available on the MRHS website.

Help In Identifying Digital Modes

For many, one of the obstacles to expanding their horizons by becoming active in decoding digital UTE communications is properly identifying the digital mode being used. Unless you're fortunate enough to have the money to spend on a hardware/software package that automatically identifies and decodes digital modes—a category into which I do not fit, and I suspect many of you don't either—you generally have to set the software to the right mode before you can obtain decent copy. If you're experienced enough to recognize the mode by the sound, great...but what if you aren't?

If your computer has Internet access, help is available. Fortunately, there are others who have been kind enough to create websites with sound files of the "noises" made by various digital modes to aid in their identification.

One of these is maintained by Gary Hahn, KB9UKD, of southeastern Wisconsin. You'll find Gary's Digital Modes Samples page at www.kb9ukd.com/digital/.

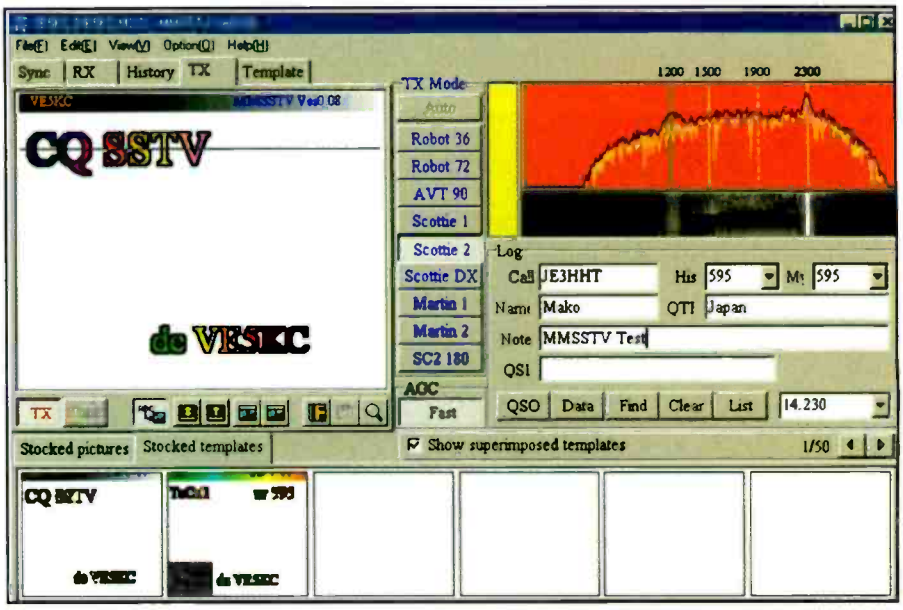

Photo D. Screen shot from the MMSSTV program. (Courtesy Makoto Mori, JE3HHT, program author)

Gary's site is intended to help you use recognition by ear, rather than signal analysis, to identify digital modes. Toward that end, his page lets you click on a digital mode to hear a brief sample of the sound that mode makes. The sound files are generally less than 100 kilobytes, so they're reasonable to download even over a dial-up line, and of course there's no problem at all for broadband Internet users.

Gary's site not only has sound clips of HF digital modes such as RTTY, SITOR, and the like, he also includes digital modes commonly used on VHF/UHF, such as packet and ACARS, paging modes such as POCSAG, and the sounds produced by a variety of trunked radio systems of potential interest to scanner enthusiasts.

He also has a collection of "mysteries," many of which were submitted by visitors to his site, so you can try your hand at helping out by seeing if you can identify one of the mystery modes. The sound files have been created with a reduced sampling rate and length to keep the file sizes down, but he has a link on the page to the original, uncompressed files as well. I was surprised to find that one of the mystery signals on his site comes from a UHF frequency right here in western New York, so I now have a new local mystery to work on. But, I digress.

Another website dealing with identification of digital modes can be found at www.milspec.ca/modems/modems.html.

Part of an extensive site dealing with military communications (Milcom), maintained by Canadian Milcom enthusiast Richard Lacroix, this page, titled "Sounds of the Modern Commercial and Military Digital Stations," offers descriptions of modern commercial and military radio modem modes with sample sound files. Included on the site are information and digital audio samples of various modem modulation types, including old familiars like RTTY as well as some of the newer standards like NATO STANAG waveforms and sounds from aeronautical stations such as SELCAL. Not only that, but to aid the tone deaf in identifying these signals, the site also furnishes associated spectrum displays for the various waveforms presented, so you can compare displays using a spectrum analyzer as another means of identifying the transmission mode of received signals.

Of course, sometimes software that identifies one or more digital modes we might be interested in doesn't cost a fortune, and although this is a bit out of the realm of utility communications, those of you who enjoy grabbing Slow Scan TV (SSTV) transmissions from the ham bands may, if you haven't already, wish to navigate to http://mmhamsoft.amateur-radio.ca/mmsstv/.

There, you'll find MMSSTV by Makoto Mori, JE3HHT, a free (for amateur radio use) program that runs under Windows 95, 98, ME, NT, 200, or XP and uses a soundcard to receive (and transmit, for those of you with the appropriate license) SSTV, automatically selecting

the correct SSTV mode by taking advantage of the mode identifier contained in the header information sent at the beginning of an SSTV transmission. **Photo D** is a screen shot taken from the program.

Although capturing ham SSTV transmissions admittedly has little to do with utility communications, for those who are new to the digital modes, it is certainly a good way of expanding one's horizons in this respect. All that's needed is a Windows PC and a sound card interfaced to your receiver. Many hams will happily send QSLs to SWLs...and I don't suppose a printout of the received image included with the request, thus enabling the ham who sent it to see exactly how well his signal was received, would hurt your chances of getting a QSL.

Besides, if your interface will handle SSTV, it will presumably also handle the other modes we utility listeners are generally more interested in, like RTTY, SITOR, and even ALE. All you need to make the transition is some additional software, and maybe some help identifying these modes—which has now been provided.

Last Words To The Wise

Well, hopefully, these *won't* really be my last words ever to you—just my last words for this month. You see, with the coming of fall, many radio enthusiasts find themselves on rooftops or towers making preparations to their antenna "farms" for the coming of winter, and obviously, hanging around in high places brings with it a certain element of potential danger. I've often remarked that it's not the fall that gets you; it's that darned sudden stop at the end. At any rate, I hope you already know all about things like using proper safety equipment when working on and around towers, staying well clear of power lines, and all the other excellent advice designed to keep you from becoming a statistic (and a highly negative one at that). If not, learn about it before it's too late...and do it!

I frequently write passages like this, and yet, often in the same issue in which my words are published comes a news story about someone who was killed because he failed to heed proven advice. In fact, this is exactly what happened this

Glossary Of Utility Terms And Acronyms

AFB—Air Force Base
ALE—Automatic Link Establishment, a link control system that includes automatic scanning, selective calling, sounding, and channel selection, without human intervention using processor control.
AM—Amplitude Modulation
ANDVT—Advanced Narrowband Digital Voice Terminal, a secure voice mode used by the military.
ATC—Air Traffic Control
CAMSLANT—Communications Area Master Station Atlantic, the U.S. Coast Guard's primary HF radio station for the Atlantic region, located at Portsmouth, Virginia.
CAMSPAC—Communications Area Master Station Pacific, the U.S. Coast Guard's primary HF radio station for the Pacific region, located at Pt. Reyes, California.
COMMSTA—Communications Station, for example: COMMSTA Kodiak, a communications station of the U.S. Coast Guard, located at Kodiak, Alaska.
CGAS—Coast Guard Air Station
Cut Numbers—The use of letters in place of numbers when sending a long string of numbers, for brevity's sake. This is often done by "numbers" stations, such as sending one long dash instead of five normal dashes to indicate a zero, or the letter N instead of the number nine, etc.
CW—Continuous Wave (Morse code)
DE—The Morse code operating prosign DE, meaning "from," as in DE NMN, meaning from station NMN
D-Layer Absorption—A phenomenon where the sun's rays ionize the *D* layer of the atmosphere causing it to absorb, rather than propagate (reflect/bounce), radio signals at certain frequencies.
Duplex—A means of radio communication where a station can both transmit and receive at the same time.
EAM—Emergency Action Message, coded instructions commonly sent by U.S. military stations. Despite the name, they usually aren't emergency traffic at all.
EHF—Extremely High Frequency (30-300 GHz)
FAX—Facsimile, a transmission mode used to send maps, charts, and other non-textual material.
FEMA—Federal Emergency Management Agency, a part of the Department of Homeland Security.
FM—Frequency Modulation
Ham Station—A licensed station operating in the Amateur Radio Service under the control of an operator who is licensed to operate the station.
HF—High Frequency (3–30 MHz)
LINK-11—Also called TADIL-A for TActical DIgital Link, a secure digital data mode used by the military. Utilizes a 16-tone data modem to allow assets to share digital information, such as radar data.
M/V—Merchant Vessel
NAS—Naval Air Station
Propagation—The means by which radio signals get from one place to another; some forms are quite simple (such as line of sight) while others are much more complex (such as EME, or earth-moon-earth).
QRM—Man-made interference to radio signals
QRN—Natural interference to radio signals, such as the static crashes often heard due to thunderstorms
QSO—A contact between two or more stations
QSY—Change frequency.
QTH—Location
RTTY—Radio TeleTYpe
SELCAL—SELective CALling, a method for activating a radio or data terminal at one station without disturbing other stations that are monitoring the same frequency.
Simplex—A means of radio communication where a station may transmit or receive at any given time, but not do both at the same time.
SITOR—SImplex Teletype Over Radio, a transmission mode used to transmit text messages over radio. There are two SITOR modes: SITOR-A (also called AMTOR) uses Automatic Repeat Request (ARQ); SITOR-B uses Forward Error Correction (FEC).
SWL—Shortwave Listener, a person who enjoys listening to shortwave radio stations.
UHF—Ultra-High Frequency (300–3000 MHz)
USAF—United States Air Force
USB—Upper Sideband
USCG—United State Coast Guard
USMC—United States Marine Corps
USN—United States Navy
UTC—Coordinated Universal Time, formerly known as Greenwich Mean Time, and also commonly referred to as ZULU time and abbreviated as in 1200Z.
UTE—Utility Station
Utility Station—Stations transmitting material that is not intended for reception by the general public and is not originating from an amateur (ham) station.
VHF—Very High Frequency (30–300 MHz)
VOLMET—Station that transmits aeronautical weather information. Comes from a French term that literally means, "flying weather."

past spring, and I was deeply saddened to see the news that a fellow ham had become a Silent Key as the result of a tower accident, ironically appearing in the very same issue in which I reminded (too late for one OM) folks to *please* pay attention and perform your antenna/tower/rooftop work as safely and carefully as possible. Yes, we all want to hurry up and finish so we can go back inside and have fun with the radios, but it's tough to put things in your log when your radios are home in your shack, while you are lying in a hospital bed—or worse.

Someone much wiser than me once remarked that you know you're getting old when the kid you hired to climb your tower gets to be too old to climb your tower. The trick is this: *do* let this happen to you! To paraphrase P.T. Barnum, there's a new climber born every minute...what's important is that you live long enough to be too old to climb the tower.

'Nuff said...I hope.

On To Our Readers' Logs

As usual, many thanks and a tip of the "Utility Communications Digest" hat to this month's contributors: Al Stern, Satellite Beach, FL (ALS); Doug Bell, Canada (DB/CAN); Steven Jones, Lexington, KY (SJ/KY); Glenn Valenta, Lakewood, CO (GV/CO); Chris Gay, Lexington, KY (CG/KY); and your faithful columnist (JK/NY).

4875.0: Unid. Spanish stations in and out of speech inversion with single-tone preamble, ALE burst heard as well, in USB at 0532Z. (GV/CO)

4900.0: Unid. Spanish stations in and out of various modes including ANDVT, in USB at 0558Z. (GV/CO)

5696.0: CAMSLANT Chesapeake calling CG 6031 with no joy in USB at 2009Z, again at 2020Z. (CG/KY)

6258.5: Unid. stations in simplex QSO w/voice scrambling, in DSB at 0115Z. (SJ/KY)

6265.5: WBF9522, *WILDERNESS EXPLORER*, U.S.-registered passenger/cruise ship w/MMSI in SITOR-A at 0601Z. (SJ/KY)

6676.5: Unid. fishermen in southern accented EE discussing weather, in USB at 0509Z. (GV/CO)

6679.0: ZKAK (Auckland, NZ VOLMET) weak but readable in USB at 0523Z. (GV/CO)

6754.0: Trenton Military VOLMET in USB at 0521Z. (GV/CO)

6855.0: V2a Cuban number station, extremely strong signal, in AM at 0320Z. (GV/CO)

8212.4: Unid. numbers station, actual freq. 8212.36, sending numbers then ending with DTUST, in CW at 0553Z. (GV/CO)

8290.0: Unid. fishermen in southern accented EE talking about something coming out of a riptide, in USB at 0600Z. (GV/CO)

8313.5: CKN, Canadian Forces, Esquimalt, British Columbia w/watch marker on new frequency: "NAWS DE CKN ZKR FI 2386 4155 6236 8318 12401 16552 22182 AR," in reverse mode ITA2 RTTY, 75 baud/850 Hz at 0258Z, stopped around 0310Z but carrier stayed up, then restarted the marker, in RTTY at 0335Z. (SJ/KY)

8381.0: JFRO, *KOJIMA*, 3,000-ton Japanese Coast Guard Academy patrol training vessel w/BBXX format WX OBS, vessel heard 7 days earlier on 8386.0 kHz w/same in the eastern Pacific, when heard this time it was in the Caribbean about 175 miles south of Kingston, Jamaica, apparently after Panama Canal transit, online info indicated vessel was en route to visit Baltimore, MD for special maritime event, to arrive there in 6 days from the time heard here, in SITOR-A at 1242Z; 9MEP3, *ALAM AMAN II*, 47,301-ton Malaysia-registered bulk carrier w/AMVER/SP, MMSI and abbreviated ID "AMII," departing from Southwest Pass, LA en route to Darica, Turkey, included 20 leg route list, to arrive in 20 days, in SITOR-A at 1945Z; Unid. vessel w/SELCAL VFKQ (0832) for OXZ, Lyngby R., Denmark, station not listed for this mode or frequency, in SITOR-A at 2120Z. (SJ/KY)

8383.5: LAZA2, TAGUS, 21,900-ton Norway-registered vehicles carrier w/AMVER/PR, 150 miles north of the Yucatan

WASHINGTON BEAT *(from page 8)*

BPL deployments." Imlay added that the League understands "there are at this point rules that could be adopted which would 'protect amateur radio communications from predictable harmful interference from BPL; and permit broadband over power line systems to operate in the 3 to 80 MHz range without significant constraint and without substantial redesign or retroactive build outs.'"

FCC Hosts Pandemic Preparedness Summit

The "Summit on Pandemic Preparedness: Enhancing Communications Response for Health Care and First Responders" was held by the FCC's Public Safety and Homeland Security Bureau in mid-September. The session's agenda focused on communications and coordination between first responders, the health care sector, government and industry in preparation for a pandemic.

Included in the discussions were "ways that communications may be expanded and enhanced in response to a pandemic and how the communications industry will serve an instrumental role in such a response," according to published reports in *Radio Magazine*. The summit was open to the public.

Agreement Reached In New England On 70 cm Coordination

In New England, new coordinations are being considered on the 70 cm FM band in an effort to quell ongoing interference by amateur radio repeaters to the U.S. Air Force's PAVE PAWS radar site at Cape Cod Air Force Station in Massachusetts. The move, brokered by the American Radio Relay League and involving the New England Spectrum Management Council (NESMC), is another step in an ongoing initiative to "develop a long-term procedure" to mitigate the problem.

According to the League's *ARRL Letter*, "Regulatory Information Manager Dan Henderson, N1ND, has been engaged in discussions with Lou Harris, N1UEC, of NESMC; USAF Col. Chris Gentry, commander of the Cape Cod PAVE PAWS Radar installation, and Dave Pooley of Air Force Space Command Headquarters, to craft additional procedures that would allow NESMC to consider new or modified 70 cm repeater applications."

"The plan being put into place will allow NESMC to resume 70 cm coordination while putting into place some checks and procedures which will allow the Air Force to be notified when a new repeater is going on the air within the area around the radar sites," Henderson said in the *Letter*. "NESMC continues as the frequency coordinator for amateur repeaters, which is their role."

The League will be working with NESMC "on Longley-Rice modeling to obtain an estimated signal strength at the radar of the new repeater. Once this occurs, Henderson said the ARRL will 'then make a recommendation—based on our knowledge of current repeater signals—if the proposed repeater should be at or near limits that that should allow it to operate without interference to the radar.'"

Part of the new agreement includes the ARRL serving as the point of contact for the Air Force if new interference is detected. ■

Peninsula and en route to Galveston, TX, in SITOR-A at 1715Z; S6EL8, *ESTEEM BRILLIANCE*, 118,802-ton Singapore-registered crude oil tanker w/open text request for help in filing an NBDP test report, included MMSI and abbreviated ID "ESBR," in SITOR-A at 2205Z; VRZZ2, *DARYA SHREE*, 74,823-ton Hong Kong-registered bulk carrier w/SELCAL XVSV (1090) for WLO, Shipcom R., Mobile, AL plus MMSI and abbreviated ID "DSHE" in SITOR-A at 0430Z. (SJ/KY)

8384.0: Unid. vessel w/SELCAL XYFV (1780) for SVO, Olympia R., Athens, Greece, fair signal in SITOR-A at 0344Z. (SJ/KY)

8386.0: JFRO, *KOJIMA*, 3,000-ton Japanese Coast Guard Academy patrol vessel, w/BBXX format WX OBS to NMC, USCG CAMSPAC, Pt. Reyes, CA, 1,200 miles south of Los Angeles, CA, vessel heard again in the Caribbean a week later on 8381.0 kHz, in SITOR-A at 0628Z. (SJ/KY)

8421.5: LZW, Varna R., Bulgaria w/weak idle marker: "DE LZW LZW," in CW at 0032Z. (SJ/KY)

8426.0: UIH, Kaliningrad R., Russia w/weak idle marker "DE UIW KLD," about equal w/NMC, USCG CAMSPAC, Pt. Reyes, CA, in SITOR-A with CW marker, at 0508Z. (SJ/KY)

8855.0: Bogata Radio working various A/C, weak/sometimes readable, in USB at 0538Z. (GV/CO)

8864.0: Gander Radio wkg AIR FORCE ONE (VC-25A #82-8000, Andrews AFB), SAM 91 (VC-32A #98-0001), SAM 50050 (C-20C #85-0050), and HANK 88 (E-4B #75-0125) for SELCAL checks (President Bush returning home after European tour) in USB at 1948Z. (DB/CAN)

8891.0: Gander Radio, Newfoundland, working Northwest 94 in USB at 0525Z; heard another night with severe multipath echo at my Colorado QTH, working various aircraft for SELCAL checks and announcement stating they are maintaining watch on 8864 and 3476 kHz, in USB at 0519Z. (GV/CO)

8971.0: PELICAN 71B in QSO with FIDDLE, in USB at 2335Z. (CG/KY)

8983.0: CG2120 in QSO with CAMSLANT concerning departure from Lake Charles, LA in USB at 1855Z; CG2004 in QSO with CAMSLANT concerning flight ops, in USB at 1859Z; CG2131 in QSO with CAMSLANT for "Flight ops normal" report in USB at 1909Z; CAMSLANT calling CG2105 with no joy in USB at 1900Z. (CG/KY)

8992.0: FOX 442 (C-12B/MCAS Beaufort, S.C.) via HF-GCS Station Andrews, p/p to GOMEZ BASE OPS, flight inquiring as to the briefing time, in USB at 2033Z. (DB/CAN)

8992.0: KING 70 with p/p via Andrews to metro station for WX at St. John's (CYYL) in USB at 2000Z. (CG/KY)

8992.0: Andrews HF-GCS with 28-char. EAM (V4S6ZY etc.), simulcast on all six HF-GCS primary freqs, in USB at 0352Z. (JK/NY)

9007.0: GOLIATH ALPHA (E-3 AWACS) via Trenton Military, p/p to DSN number for NOONTIME with a request for Zulu frequencies, in USB at 1221Z. (DB/CAN)

9040.0: Cuban ENIGMA V2a, female w/SS 5N groups in booming signal, MCW active at same time on 9063.0 kHz, in AM at 0925Z. (SJ/KY)

9063.0: Cuban ENIGMA M8a, cut number 5N groups, concurrent with V2a on 9040.0 kHz, in MCW at 0929Z. (SJ/KY)

11012.0: Unid. station w/transmission in FDM or similar mode, seems to be 13 channels of encrypted RTTY starting at 11010.84 kHz and moving up in steps of 170 Hz for the center frequencies for each channel to top channel of 11012.88 kHz, all w/170 Hz shift, all channels except one (11011.69 kHz possibly 100 baud) seem to be at 75 baud, in RTTY at 0330Z. (SJ/KY)

11175.0: NAVY AX 890 (C-130T/ "Capitol Express," Andrews AFB) calling MAINSAIL for a HF radio check with no response, in USB at 1806Z. (DB/CAN)

11175.0: NAVY PR35 calling MAINSAIL, then "any station" for radio check with no joy, in USB at 1157Z; ANDREWS with SKYKING foxtrot "R76 time 23 auth IE" in USB at 1423Z; ANDREWS with 28-char EAM in USB at 1435Z. (CG/KY)

11175.0: PELICAN 71B calling MAINSAIL with no joy, in USB at 1410Z; 5TS calling MAINSAIL for radio check with no joy, in USB at 1445Z; S4JG calling MAINSAIL, then

"any station" for radio check, no joy, in USB at 1511Z; BATON 74 "over Texas" calling MAINSAIL with no joy in USB at 1751Z. (CG/KY)

11175.0: HF-GCS Station ANDREWS wkg TIGER 21 for radio check in USB at 1156Z; ANDREWS wkg DAWG 32 (C-130, GA-ANG, 165AW, Savannah) at Savannah IAP for radio check in USB at 1148Z; ANDREWS wkg SKIER 73 (LC-130H, NY-ANG, Stratton ANGB, Schenectady, NY) for phone patch with Skier Ops, in USB heard at 1545Z. (ALS)

11175.0: RANGER 99 (USMC KC-130T, Ft Worth NAS VMGR-234) calling MAINSAIL with no joy (strong signal; guess everyone is at lunch) in USB at 1613Z; "4BC" calling HF-GCS stations PUERTO RICO and ANDREWS with no joy (strong signal; everyone still at lunch) in USB at 1627Z. (ALS)

11175.0: HF-GCS Station wkg RANGER 598 (KC-130T #164598, NAS Ft. Worth, VMGR-234) for radio check while on the ground, in USB at 1737Z; "BR 5TS," an NAS Norfolk MH-60F (HC-8 Sqdn), calling any station, no joy despite strong signal, in USB at 1426Z. (ALS)

11175.0: KING 4864 (Patrick AFB 920RQW C-130 #64-14864) calling ANDREWS for radio check w/no joy, might be on the ground here, strong signal, finally got a "loud and clear" from HF-GCS Station McClellan, in USB at 1505Z. (ALS)

11175.0: HF-GCS Station PUERTO RICO providing radio checks for PALM 35 (Charleston AFB 437AW C-17A) on two HF radios, in USB at 1217Z; HF-GCS Station ANDREWS wkg TERRA 97 (C-32B, McGuire AFB 227SOF) for radio check in USB at 1250Z. (ALS)

11207.0: Unid. station in unknown mode, dual pulses w/sweeping sound, 72 cycles/minute, in unid. mode at 2040Z. (SJ/KY)

11232.0: CANFORCE 2755 attempting QSO with Trenton Military, could not hear each other, QSY to 9007, in USB at 1935Z. (CG/KY)

11232.0: DRAGNET VICTOR (E-3 AWACS, Tinker AFB) via Trenton Military, p/p to DSN number for WEAPONS FLIGHT, flight reported zero effectiveness, in USB at 1925Z; CANFORCE 3693 (CC-177A #177703, CFB Trenton, Ontario) via Trenton Military, p/p to commercial number for weather at Pease AFB, N.H. in USB at 1819Z; PEACH 21 (E-8C, JSTARS/Robins AFB) via Trenton Military, p/p to DSN number for PEACHTREE OPS, flight reported it would land on time, in USB at 1918Z. (DB/CAN)

11232.0: Trenton Military wkg Canforce 2648, no joy, QSY to "9 upper" (*probably 9007.0 kHz—jk*), in USB at 1712Z; Trenton Military wkg PEACH 33 (E-8C JSTARS, Robins AFB, GA-ANG 16ACW) for phone patch to PEACHTREE at Robins AFB, in USB at 1702Z. (ALS)

11330.0: DELTA 494 in QSO with NY radio concerning flight restrictions in USB at 2025Z. (CG/KY)

12180.0: Cuban ENIGMA V2a, female w/5N groups in Spanish, horrible audio w/noticeable powerline hum, in suppressed carrier DSB at 1913Z. (SJ/KY)

12226.7: Egyptian Ministry of Foreign Affairs or embassy w/weak traffic in ATU-80 Arabic, SITOR-A at 2250Z. (SJ/KY)

12359.0: Two males in casual simplex QSO in Scandinavian language, laughing, "OK OK," mentioned CRISTOBAL and PANAMA, good signal strength, in USB at 2258Z. (SJ/KY)

12422.0: Unid. station w/fast machine-sent alphanumeric traffic, either w/irregular timing or using "BEGHIMNOSTZ 256789" plus 3 dashes/1 dot and 4 dashes in unusual cut numbers, similar station heard this frequency in July last year but using full numbers except T for 0, good signal this time w/deep fades, in CW at 0217 to 0226Z. (SJ/KY)

12479.0: SXAU, *FIDELITY*, 106,548-ton Greece-registered crude oil tanker w/MMSI and abbreviated ID "FDLT" in SITOR-A at 1346Z; WSDK, *COAST RANGE*, 40,631-ton U.S.-registered oil products tanker w/ callsign and 5-digit SELCAL 11133 in SITOR-A at 1400Z; WWYY, *SEABULK AMERICA*, 46,312-ton U.S.-registered chemical tanker w/BBXX format WX OBS, in the Pacific 140 miles southeast of Acapulco, MX, in SITOR-A at 0040Z. (SJ/KY)

12490.0: Unid. vessel w/SELCAL XVSY (1097) for inactive NMN, USCG CAMSLANT, Chesapeake, VA some 80 days after station ceased SITOR-A operations, in SITOR-A at 1938Z; another vessel w/same 10 days later in SITOR-A at 2104Z. (SJ/KY)

12566.6: Unid. station w/traffic in Portuguese including world news brief on U.S.-Pakistan military incident, lots of sports news w/mentions of Brazilian teams AMARELOS, FLAMENGO and FLUMINENSE and the COPA DO BRASIL, ended w/"PREFERENCIAL P-121003Z/JUN/08" and weather forecast of "ENCOBERTO COM PANCADAS DE CHUVA LEVE" (overcast w/light rain showers), s/off w/out ID, somewhat similar traffic heard last month on this and nearby frequencies, possibly associated with the Brazilian Navy or PETROBRAS offshore oil storage/processing rigs, in SITOR-B at 2259-2312Z; another unid. station w/brief traffic 4 days later: "ASM ASM ASM AAAAAA" in SITOR-B at 0043Z. (SJ/KY)

12594.5: A9M, Hamala R., Bahrain w/fair idle frequency marker: "DE A9M TLX," not heard in some time, in CW+SITOR-A at 0250Z. (SJ/KY)

12702.0: CKN, Canadian Forces, Esquimalt, British Columbia w/modified idle marker: "NAWS DE CKN ZKR FJ 2386 4155 6236 8318 16552 22182 AR" (no 12 MHz watch frequency), in reverse mode ITA2 75 baud/850 Hz RTTY at 0405Z. (SJ/KY)

13270.0: New York VOLMET, also heard on 10051.0, in USB to 1850Z signoff. (JK/NY)

13927.0: USAF MARS wkg PEACH 33 (E-8C JSTARS, Robins AFB, GA-ANG 16ACW); PEACH 33 places p/p w/no joy, in USB at 1658Z; USAF MARS Operator AFN2AC (Miami, FL) wkg DRAGO 51 (Minot B-52, over Cincinnati and headed to Andrews AFB for fly-by at Arlington national Cemetery), for phone patch to commercial number in Virginia in USB at 1620Z. (ALS)

13927.0: USAF MARS Operator AFA6PF (Los Angeles) wkg PEACH 62 (E-8C JSTARS, Robins AFB) for phone patch to Peachtree Ops at Robins, in USB at 1706Z; VAMPIRE 01 (B-1B Bomber, Dyess AFB, 7BW) via USAF MARS for phone patch to DSN number for Dyess AFB Bat Ops in USB at 1735Z. (ALS)

13927.0: USAF MARS Operator wkg CODY 53 (AFRC C-130) in USB at 1600Z; 13927 kHz USB 2225z: USAF MARS Operator AFA6AY (Calif) wkg BONE 12 (B-1B, Ellsworth AFB 28BW, just outside of Nashville, TN) for M&W phone patches to commercial numbers in Omaha, then Florida, in USB at 2225Z. (ALS)

14488.5: NNN0GKV in U.S. Navy MARS net callup to NNN0ELA, NNN0IHN, AFA2AR and AAR4IY in handsent CW at 1520Z. (SJ/KY)

16545.5: Unid. vessel idling for long period w/out traffic, possibly planning to relay Philippines news as previously heard in this frequency range, in SITOR-B at 1904Z. (SJ/KY)

16685.5: C6FR7, *TROPICAL MORN*, 11,979-ton Bahamas-registered refrigerated cargo ship w/AMVER/PR, MMSI and abbreviated ID "MORN," 12 miles northwest of St. Croix en route to Turbo, Colombia, arrive in 2 days, in SITOR-A at 2028Z. (SJ/KY)

16687.5: Unid. vessel w/open text OPR and Direct Telex request to CBV, Chilean Navy, Valparaiso R., Playa Ancha, Chile: "WE WOULD LIKE TO SEND THE MSG TO OUR COMPANY," in SITOR-A at 1935Z. (SJ/KY)

16721.0: Unid. station w/handsent traffic repeating "XBRF" several times, off w/"K," in CW at 2115Z. (SJ/KY)

16747.0: Unid. vessel w/brief news relay in English on regular frequency regarding recent Philippines typhoon and ferry disaster, s/off w/"STARMAN," in SITOR-B at 2309Z. (SJ/KY)

16912.0: Unid. station w/machine-sent 5N groups, full numbers except T for 0, in FSK at 200 Hz shift, 1610-1624Z, same station back on at 1650Z w/encrypted RTTY, on/off w/short strings of YYYY and repeated character strings, 50 baud at 200 Hz from 1650 to 1720Z, same station 5 days later w/similar FSK traffic 1227 to 1231Z, off briefly, then back w/RTTY at 50 baud/200 Hz, strings of YYYY and encrypted traffic from 1239–1246Z, back again w/same 9 days later in FSK/RTTY at 50/200 at 1410Z. (SJ/KY)■

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by Bill Price, N3AVY

Revenge Of The Dummies

It was a dark and stormy night. What a great opening line. It *was* dark, but fortunately for thousands of celebrants around the world, it was not stormy; it was *Halloween*!

I've had the wits (what little remain) scared out of me countless times by motion-sensing spooky devices like vampires, Frankenstein monsters, ghosts, werewolves, and things I can't identify. The Halloween season brings them out into the stores, and each year they become more and more affordable until everyone has two or three near his or her doorstep or front porch.

I believe that we get only so many heartbeats in this life, and since mine seems to beat faster than others', I suspect my time here may be proportionally shorter. I believe, too, that we only get so many really *intense* scares that we can live through before, as Fred Sanford would say, "The Big One."

This was the year that I'd give someone *else* the big one—for a change.

To set the stage, my smarter brother Mycroft Price was out doing whatever 12-year-olds do on a long-ago Halloween night, which included stealing dummies from people's yards and porches and putting them on *other* people's porches. Always good for a laugh—and not something a person could generally be arrested for. He and some friends had relocated perhaps 20 dummies, and they were walking past a rural nursing home when he found yet another dummy lying by the side of the road. It was dark, and they had no flashlights.

He stopped, reached down and grabbed the dummy's arm and pulled, and said to his friends in a hoarse whisper, "Hey—this is the heaviest dummy I've ever found!"

It was at that moment that my younger brother had his first brush with a heart attack, because the dummy scolded him and said, "Let go of me! I'm no dummy!"

Their screams blended in with the sounds of other kids in the neighborhood, and were not taken too seriously. By this time, the woman, who was indeed *not* a dummy, had told them she lived in that nursing home and she was out for a walk and had fallen.

Two of the boys stayed with her while my now-composed brother went to the door of the nursing home and tried to explain to a nurse that one of their patients was lying on the ground by the side of the road.

They would not believe him.

I guess I wouldn't either. He begged them to go look; they wouldn't. He begged them to take a bed check; they wouldn't. Finally he called to his friends and asked them for the woman's name. She gave it to them, and when they called it out, the nurse at the door said something that could be construed as a short prayer in some religions, and called for two helpers with a wheelchair and some flashlights to rescue the poor woman. She was unhurt, and she had a good enough sense of humor to get a chuckle out of how she scared the boys.

I *know* that's a very long setup for a story about Norm and me, but without it, I'd have never had the idea for our *own* Halloween trick.

We knew that there'd be the standard bunch of tricks and pranks played in the neighborhood, so we thought we'd get in on it ourselves—forget that we were old enough to be arrested for any number of charges stemming from what we had in mind.

"A few hours before dark on Halloween, the motion-sensing devices were being sold for less than half-price, so we bought about 10 of them and put them all over my yard."

A few hours before dark on Halloween, the motion-sensing devices were being sold for less than half-price, so we bought about 10 of them and put them all over my yard. Then with rubber masks over our heads, pumpkins in our laps, and some straw sticking out of collars and cuffs, Norm and I took our positions—he was seated in the shadows on the front porch, and I was sitting in a chair, leaning against the lamp post near the end of the driveway.

To personalize our mischief, we had some little 49 MHz walkie-talkies with remote mics inside our masks and some press-to-talk switches wired to our hands. Each of our walkie-talkies was on a different frequency, and both of us had another walkie-talkie positioned along the walkway to the house. This enabled us to make comments to the trick-or-treaters as they approached the house, and we could notice things about their costumes so that they *thought* that whoever was speaking from the bushes could see them plainly.

We should assure all our readers that *no little children or feeble senior citizens had the wits scared out of them in the making of this prank.* It is important when playing pranks that you *don't* cause some poor five-year-old to sit up all night for the rest of his life fearing a walking dummy under his bed. Parents, however, were fair game.

The motion-sensing store-bought gadgets did a good enough job of startling people that we could have stopped right there and gotten our money's worth out of the price of the batteries.

Our comments to people walking up the path got a better response than we ever suspected. Perhaps that was because it was so very quiet in that country neighborhood, or maybe because we whispered into the mics, so no one knew it was their neighbors speaking to them—telling them to step a little closer to the bush so we could bite off their *foot!*

But the true *OHM* (that's a *pièce de résistance*, I believe) was when we did *not* use the walkie-talkies to speak to the older revelers, and allowed them to get close to us and attempt to steal *us*, the *dummies*!

The older kids—the ones who would tell tales of their dummy-stealing escapades in high school the following day—were the ones who screamed like little children and ran when they tried to pick us up and we grabbed their arms in what they thought was a death grip and held them as they looked for all the world as if they were about to die.

Of course, it ended with most of them coming inside to gather up the dregs of the goodies, as the younger trick-or-treaters had all gone home. We extracted promises from them *not* to give away our secret to anyone else they'd see along the road, and—for once—Norm and I had the last laugh on someone *else*. ■

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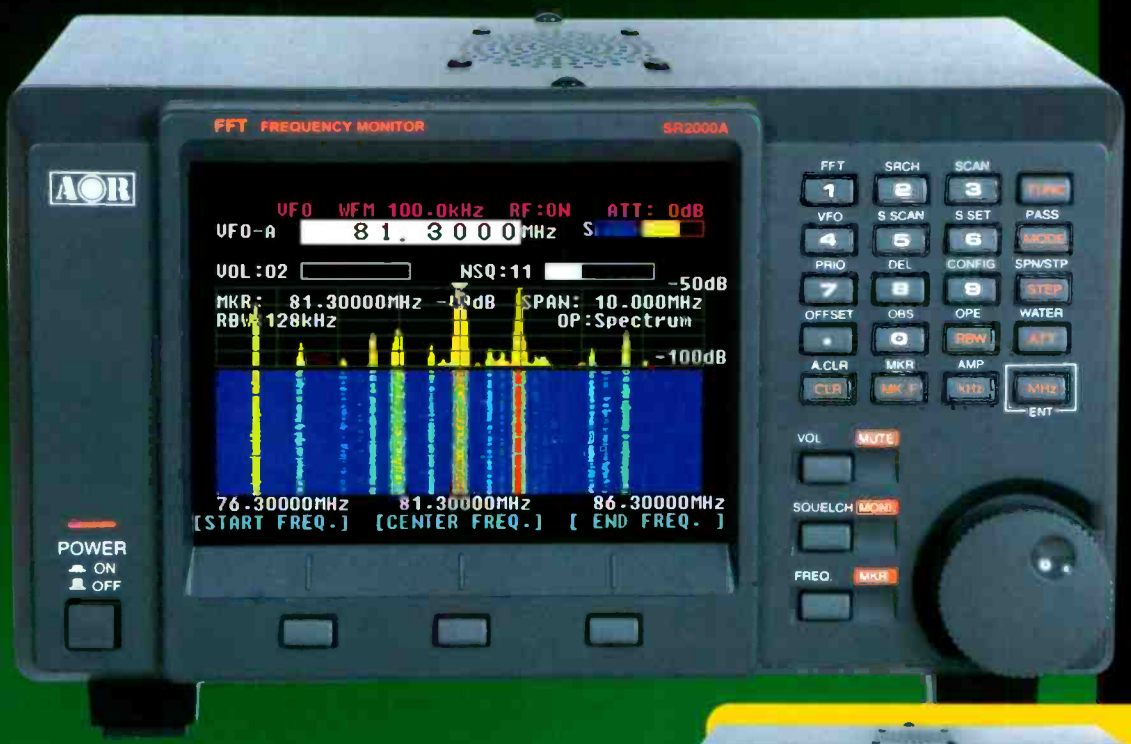

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