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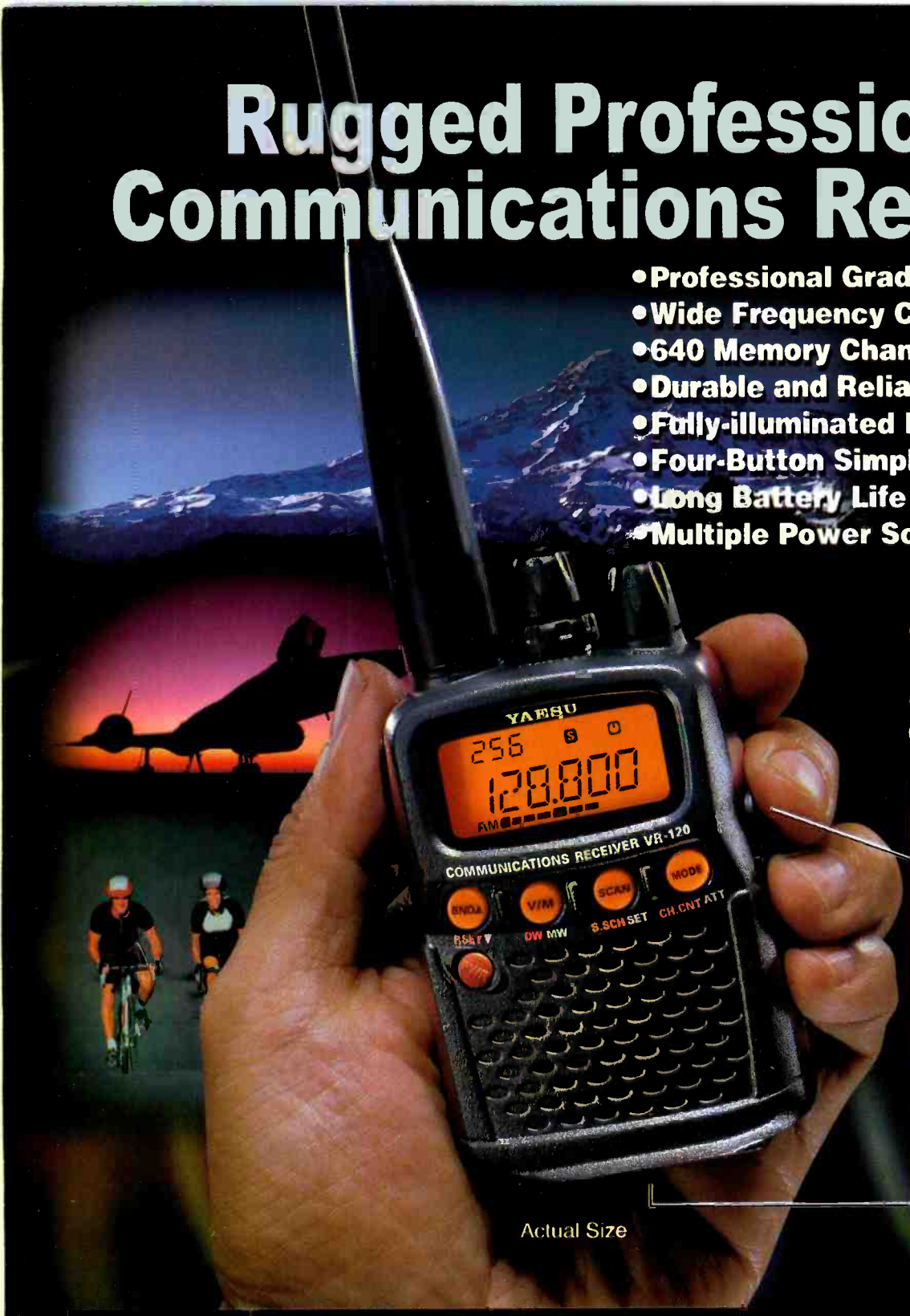

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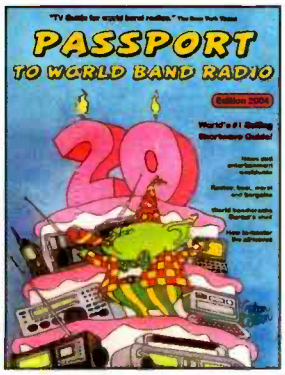

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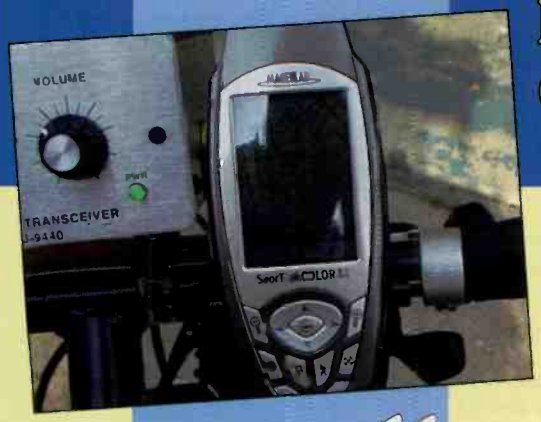
Volume 22, Number 5 January 2004



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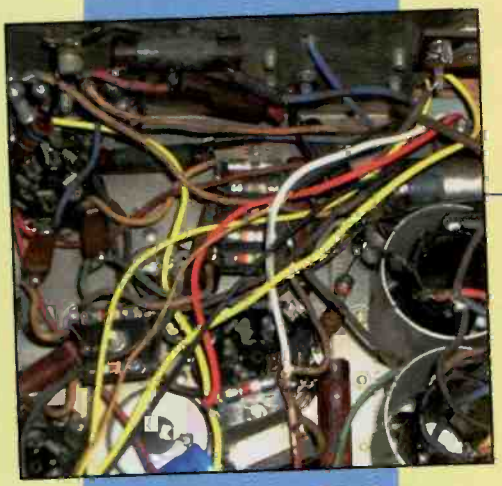

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Departments

On The Cover

It's a bird, it's a plane—well it's a B-2 Spirit and it's definitely fast and super-secret—and you can hear it! Just turn to this month's "*Utility Communications Digest*" by Steve Douglass, titled, "Let's Talk Tech, And Close Encounter At Roswell" beginning on page 55. (Photo Courtesy Master Sergeant Michael Nixon, USAF)

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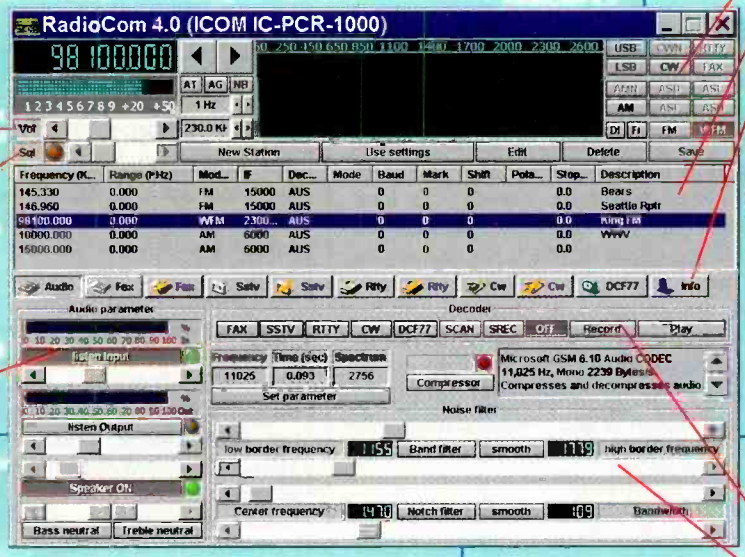

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tuning in

by Harold Ort, N2RLL, SSB-596

an editorial

Monkeys See Money, Monkeys Do Stupid Tricks

It's an unfortunate fact that when the political bigs (that *includes* the wheeler-dealers at the FCC) in Washington want to move their collective tails into high gear, they can.

Oh, come on, get serious. You know I don't mean it happens when it comes to money and programs that would help *everyday folks* like you and your family get adequate no-BS healthcare and medications, or improve our education system, or take care of our *own* before the rest of the world (today's case in point is Iraq; in a few years, it'll be somewhere else, of course). But it *does* happen for the Big Monkeys and companies that nod their heads in a trance-like approval as they hallucinate as visions of those big dollar signs light up their tiny brains. These are the guys in the Big Bureaucracy wearing the blinders that write the rules, selectively leak what they want the public to know (while carefully massaging the rest with slick PR-speak) so by the time we're hit with the final blow on the evening news we feel like we were hit with a baseball bat by an oversize gorilla. Let's take away some of their slick.

The general public and mainstream media isn't yet in on the latest Big Monkey Business from Washington, but many of you are already aware of BPL, short for Broadband Over Power Line. It sounds harmless enough and like something we could all use. Unlike the FCC that immediately hugged and kissed BPL, I decided to think about it first, asking questions, listening to the American Radio Relay League (ARRL) and others, and yes—in keeping with former American tradition—I even listened to our foreign allies who have seen BPL up close and personal. Folks, this is one Big Monkey you don't want to cuddle up with.

BPL would use power lines to deliver high-speed broadband Internet services into America's homes and businesses using frequencies betwen 2 and 80 MHz. Current Part 15 rules would allow BPL, but the potential for interference to licensed services is, as they say today, over the top.

What's amazing is how the FCC fell in love with BPL without much forethought, and how the Commission even wants to relax Part 15 rules for the industry. It really makes one wonder if the FCC is working for the industry or the taxpayer.

Let's look at BPL from a common sense perspective for a moment. For years hams and other radio enthusiasts have been zapped by powerline noise. (See there, we didn't need to convene a meeting or look through tomes of League or Commission files to recognize that fact; it's like saying it'll get cold in the winter. Everybody knows it—except the illustrious bureaucrat who apparently thrives on stupid pills). Seems to me if the industry pumps *ANY* amount of RF into what radio enthusiasts *already* recognize as a noise and hash radiator that the end result would be chaos for hundreds of thousands of amateurs.

Let's face it, even *without* BPL, the power industry's record of solving powerline interference problems resulting from faulty equipment, ancient insulators, lightning arrestors, connectors, and a myriad of other 1940s technology lurking above our streets, is less than stellar. Think about it: This is the very carrier they'll be using for high-speed broadband transmission. Once again my BS meter is pegged and something smells funny. The ARRL says, "BPL is a pandora's box of unprecedented proportions." This is such a serious threat to amateur radio that the League has begun a Spectrum Defense Fund campaign to aid their efforts in educating bureaucrats (good luck!) on the threat. For more information, go to www.arrl.org/forms/ development/ donations/bpl/.

What has the FCC done? Can you say, "end run"? In a news release from the Marketing Communications Manager, Mr. Mark Gedris of the United PowerLine Council, or UPLC (phone: 202-833-6809 or e-mail: mark.gedris@ utc.org), titled "FCC Supports Promotion of Broadband Over Power Line Systems, UPLC Applauds The Commission's Leadership" the UPLC says,

> The UPLC is pleased by the support of the FCC to promote broadband over powerline through its Notice of Inquiry [Docket No. 03-104]...agrees with the commissioners' sense that the Notice of Inquiry will mark an historic moment, unveiling broadband over powerline as the elusive third wire to the home or business that Congress, the FCC and the states have sought since the Telecommunications Act of 1996.

Their news release goes on to say,

> Broadband over powerlines is huge for both communications electric customers ...consumers

(Continued on page 76)

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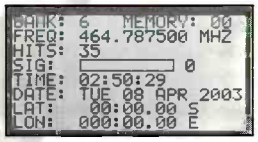

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An Overview Of Digital Audio Broadcasting Systems

Eureka! Unraveling The Mysteries Of This 21st Century Medium

By D. Prabakaran, prabakar10@yahoo.com

Radio's tradition of providing entertainment and information to people around the world has been given a new lease on life with the move to digital broadcast radio, which is now becoming a revolution in technology. This article provides an outline of emerging digital radio technology. In it, we'll cover digital audio broadcasting (DAB), which replaces the traditional "analog" AM and FM systems with higher fidelity, greater noise immunity, and new services.

Digital Radio, or DAB, as it's sometimes called, is a method of broadcasting and receiving radio signals in the digital domain, as opposed to the traditional method of analog transmission by AM and FM systems. While digital television signals are now routinely received over cable and satellite systems, reception of digital *radio* broadcasts is still fairly uncommon. Although not yet a reality in the United States, digital radio broadcasts are available in many other parts of the world, such as Europe, Asia, and Canada. Digital radio is most prevalent in Europe, most notably the UK, where the BBC simulcasts much of its programming in digital.

Supporters of the format say that digital is the future of radio and that it is inevitable. While a large portion of the industrialized world has access to digital radio signals, very few people are taking advantage of it yet since new hardware, in the form of a digital radio tuner (DRT), is required.

How It Works

Digital radio works similarly to satellite TV, except that instead of being transmitted from a satellite, it is normally broadcast from transmission towers just like standard radio. Two companies, Sirius Satellite Radio, Inc., and XM Satellite Radio Holdings, Inc., offer satellite-based subscription radio services (something like DTV), but for the purposes of this article, we'll concentrate on the more widely available conventional broadcast version of digital radio.

In contrast to analog radio, digital radio signals are immune to distortion from multipath, adjacent stations, overly weak or overly strong signals, etc. Additionally, digital radio signals can carry extra information, such as text, that can provide station callsigns, artist and song titles, weather, or even traffic information.

A number of technologies are being developed to deliver DAB services via terrestrial and satellite means. At this stage, two types of DAB technology are potentially available for delivery of terrestrial services: Eureka 147 and in-band. Eureka 147 is the only system presently in operation and can deliver satellite services to receivers used for terrestrial services. In-band systems are under development in the United States.

The Eureka 147 System

When DAB was first presented as a concept called the "Eureka System," it was envisioned as a digital signal that would be transmitted on available frequencies within the "L Band" (300 to 1500 MHz). Eureka 147 was developed in Europe by a consortium of broadcasters. The system uses advanced digital techniques to convert the audio signal from an analog waveform to a digital signal, sampling the amplitude of the wave and creating a stream of ones and zeros, which accurately represent the original sound. The sampled information is digitally compressed, and several audio channels are brought together and encoded into a single data stream by means of a multiplex. Data and other services are added. The whole digital stream is referred to as an ensemble. Receivers separate and decode the signals in the digital stream.

The method of transmission could be either satellite-based (extra-terrestrial), whereby the signal would be uplinked to a satellite and distributed to satellite receiver, or an earth-based (terrestrial), antenna system, whereby a given number of stations could transmit from a central site to receivers in the immediate area. But, in order to accommodate the large number of urban AM and FM stations already in place, the data transmissions would have to be compressed in order for them to fit into the limited spectrum available to them. However, the efficiency and reliability of the data compression facility employed would be the determining factor as to how many stations would, realistically, be able to transmit from any one site.

This system broadcasts at much higher frequencies than standard radio transmissions, which operate in the FM band, from 88 to 108 MHz, and in the AM band, from 0.525 to 1.705 MHz. While the actual frequencies used for digital radio depend on the availability for that particular country, Britain utilizes Band III, which covers 174 to 240 MHz while Canada uses part (1452 to 1492 MHz) of the L-Band, which is 300 to 1500 MHz. In comparison, satellite television utilizes frequencies starting around

4 GHz and going up to almost 20 GHz.

The Eureka system broadcasts multiple stations and services over a single frequency in something called a "multiplex." Bandwidth within the multiplex can be allotted to the various stations as needed. For instance, a high-quality stereo station can be given more bandwidth than a news or talk radio station that may be broadcast in mono. Stereo programming is typically broadcast at 192 kilobits (kbit). Digital radio uses a method of digital compression (similar to that of MP3) so that many services can be combined onto one signal for broadcast over a single frequency.

The sound quality of digital radio has been described as close to or as good as CD. With a bandwidth of 192 kbit for a stereo broadcast, the sound quality of digital radio, which utilizes MUSICAM digital compression, should be quite good but probably not true CD quality. The main advantage of digital radio is that it will not have the usual distortion associated with analog radio, such as hissing, popping, and phasing.

Eureka 147 will operate in a new band, automatically avoiding any impairment caused to, or suffered from, existing analog services. The In-Band systems showed particularly badly with respect to the key attribute their proponents have always touted: their ability to co-exist in the AM/FM bands without causing interference to analog services.

Eureka 147 generally allows for more effective spectrum use than analog technology in terms of the number of services that can be carried in a given amount of spectrum and in providing adjacent local coverage areas.

Canada, Australia, and a number of European countries, including the UK, have commenced services using Eureka 147. Major radio manufacturers have obtained access to the proprietary Eureka 147 technology.

Depending upon the technical arrangements, the Eureka 147 system may offer:

- More reliable reception to fixed, portable and mobile receivers than current AM or FM radio
- Higher quality sound than AM or FM radio, provided that an appropriate bit rate is used
- Program associated information and ancillary services
- Use of one receiver for both terrestrial and satellite reception
- The capability to reconfigure services for different programming requirements
- More effective use of spectrum than analog services
- Reduced radiated power requirements over analog services for coverage of a given area
- Greater flexibility in coverage than analog services
- The ability to operate over a range of frequency bands
- Generally lower or comparable capital and operating costs compared to AM or FM radio.

In-Band, On-Channel (IBOC) System

The two main in-band systems under development are In-Band, On-Channel (IBOC) and In-Band, Adjacent Channel (IBAC). The IBOC system transmits a digital signal simultaneously within an existing analog AM or FM signal (see **Table 1**). The IBAC system transmits a digital signal within unused spectrum adjacent to that used by existing FM signals. In-Band, Reserve Channel (IBRC), which is based on using "spare" spectrum that can't be used for other services, is also a possibility.

Unfortunately, the United States has decided not to adopt the Eureka system for digital radio and is developing its own system, IBOC, which is compatible with the current analog radio formats. This method will utilize the existing AM and FM bands by attaching a digital side-band signal to the standard analog signal so that the system is compatible with any existing tuner. Thus, if a station is currently located at 99.9 on the FM band, it will remain at 99.9 FM whether in analog or IBOC digital radio. Because of the limitations of the bandwidth of AM frequencies, digital AM broadcasts are said to have FM-like sound quality, while digital FM broadcasts will have near-CD sound quality. IBOC uses a form of digital compression called Perceptual Audio Coder (PAC), originally developed by Lucent Technology. Another limitation of IBOC is that AM and FM frequencies are not suitable for satellite transmission if extraterrestrial transmission is desired in the future.

The characteristics of in-band systems are a subset of the characteristics of Eureka: CD and high-quality stereo sound, plus ancillary data, text, and other new services.

Using the existing AM and FM bands has both advantages and disadvantages, but the biggest disadvantage of the IBOC system is its incompatibility with the Eureka digital radio systems in use throughout the world.

The IBOC system is unique in that it would coexist on the same channel as the existing FM or AM station. Unfortunately, in order to do this on the FM band, it would consume more bandwidth, thereby causing a possible compromise of the 100-KHz guard band that now exists between each station on the dial. This is not likely to be acceptable, given that many listeners, unconvinced of the effectiveness of digital radio, would still be listening to their FM receivers. As for AM, if an IBOC system were to be introduced for it, a similar situation would exist.

The IBOC approach to digital radio uses the current AM and FM frequencies to simultaneously transmit digital signals along with the current analog transmissions. This makes the technology compatible with existing radios. New digital-capable receivers will produce CD quality audio on FM stations and better than FM quality on AM stations. If a station elects to turn off the analog signal in the future, IBOC DAB-compatible receivers will operate with the remaining all-digital signal. IBOC signals are designed so that for each station, the IBOC signals fit within the frequencies and spectral occupancy allowed for that station's conventional AM or FM transmissions.

DAB Type	Technical Features	Typical System
New Band Approach	System used new spectrum different from what is currently allocated for terrestrial radio service	Eureka/147
In-band on-channel (IBOC) approach	Spectrum of the digital signals are placed in occupied channels within the existing FM spectrum	AT&T/Amati IBOC USADR FM-1 IBOC
In-band adjacent channel (IBAC) approach	Spectrum of digital signals co-exist with analog FM signals in the existing analog FM spectrum	AT&T IBAC

Table 1. Current DAB systems.

It is expected that IBOC digital radio, in addition to CD quality sound without multipath interference, will be capable of transmitting a large volume of ancillary data. Potential applications for ancillary data include station data, such as callsign, format, artists and song titles, as well as news, financial, and stock market data, paging, dispatching, computer communications, and networking.

In addition to ancillary data, it is expected that digital radio will be capable of monitoring signal strengths and use this information to switch automatically from a fading signal to a new, more powerful one.

Lucent Digital Radio, a wholly owned venture of Lucent Technologies Lucent Digital Radio is developing its IBOC DAB system for consideration as a potential digital radio standard in the United States. The IBOC approach will allow broadcasters to rapidly introduce digital audio programming to listeners on their current dial positions using existing transmitters and antennas. In addition, the system will support datacasting using the existing radio broadcasting infrastructure to deliver information, such as song titles, weather and traffic reports, financial reports, and news, to consumers with new digital receivers.

Lucent Digital Radio draws on a number of patented Lucent digital audio and channel coding techniques that provide robust digital signal delivery in an impaired broadcast channel, including:

- Lucent's PAC technology
- Unequal Error Protection, which prioritizes information based on its impact on audio quality
- Multi-Streaming—a combination of techniques that extends the coverage of digital signals by allowing for graceful degradation of audio quality

Frequency Spectrum For Digital Radio

There are a number of broadcasting spectrum allocations being considered by individual overseas countries for the introduction of Eureka DAB. The main spectrum options being considered include:

- The frequency band from 1452 to 1492 MHz, allocated at the World Administrative Radio Conference (WARC-92) for terrestrial and satellite uses (commonly referred to as the L-band);
- Existing terrestrial AM and FM terrestrial radio frequency bands
- Existing terrestrial TV broadcast band frequencies (VHF Band III)

The L-band is allocated internationally (except for a small number of countries, most notably the United States and the Russian Federation) for terrestrial and satellite DAB. It is also allocated to other services, including fixed and mobile services.

The AM and FM radio bands are being used for in-band digital radio in the United States. Some consideration is being given to using Eureka 147 in the FM bands, but this requires prior clearance of existing FM broadcasters. VHF band III, around 220 to 230 MHz, is being used by some European countries and India for terrestrial digital radio services.

EIA Performance Test Results On DAB Systems

On August 22, 1995, the Digital Audio Radio Subcommittee of the Electronic Industries Association (EIA) released the results of independent laboratory tests conducted on seven proponent DAB systems. Measurements and related audio recordings for each system were made at NASA's Lewis Research Center (LeRC) in Cleveland, Ohio. Subjective assessments of the audio recordings were carried out at the Communications Research Center (CRC) in Ottawa, Ontario, under contract to the EIA. These tests are the first time all proposed DAB systems were assessed by an independent body using the same evaluation criteria.

The main purpose of the laboratory tests was to determine the basic digital audio quality produced by each system, its reception reliability, and its ability to co-exist with other radio stations, including the "host" analog station. In cooperation with the National Radio Standards Committee (NRSC), the EIA developed a complex series of tests to determine these factors. Each proponent had the opportunity to propose system-specific tests that would best illustrate its operating features. All system proponents took an active part in the subcommittee that developed the testing procedures. Each system was operated in accordance with the developer's specifications, and tests were conducted using DAB encoders and receivers that were supplied by the proponents themselves.

The DAB systems (and modes) listed were evaluated in the EIA tests (see **Table 2**). All comments and observations in this report relate only to the first seven system proponents listed, that is Eureka 147 and the six IBOC proponents. The AT&T IBAC system is not a serious contender for a North American standard, as it utilizes adjacent FM channels and evidently would require significant frequency reshuffling in most radio markets to make it practical.

The VOA/JPL system is not discussed here, since it is designed for satellite-delivered DAB in the 2.3-GHz band, allocated only in the United States and India. This system was used by India in their DAB satellite GSAT-1, which was launched by their first Geo-orbit carrier GSLV in 2000. However, this mission failed due to some problems in final cryogenic stage.

When the basic digital audio quality of each proponent is assessed in a lab setting, using strong signals and no induced impairments, the ratings for all system proponents, with the exception of the USA Digital AM IBOC system, are quite similar. The Eureka 147 system (224 kbits/sec) rated the highest of all, even though the two USA Digital FM systems employ a higher data rate (256 kbits/sec) and use the same MUSICAM audio coding system. Even with strong signals and no interference, the USA Digital AM IBOC system suffers audio quality impairments that experts judge to be "annoying"; consequently, this system is not capable of providing "CD-Quality" DAB service.

Although all DAB receivers require time to recover when signals fail or listeners change frequencies, the recovery time of IBOC receivers is far too long to be practical in a real-world environment. The Eureka 147 system generally recovers from signal loss in one second or less. The IBOC systems can take from five to nine seconds to recover.

When tested with five common household, portable, and auto receivers with known operating characteristics, IBOC FM DAB produces significant impairments to existing analog services on first and second-adjacent channels. In a majority of the tests, expert listeners judged the stereo FM analog service to be "worse" or "much worse" when an adjacent-channel station, carrying an IBOC DAB service, is present. This interference tends to worsen when multipath occurs.

FM stations operating one channel apart on the dial are said to be "first-adjacent," while those separated by two channels are "second-adjacent." Multipath

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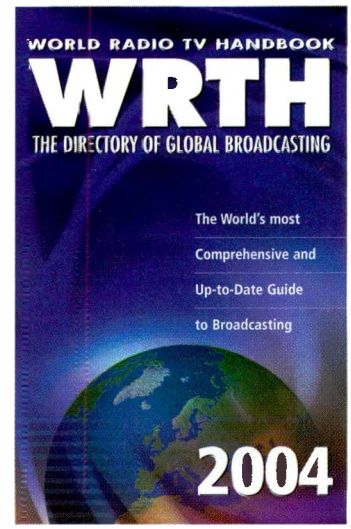
A really fine publication on which all involved should be heartily congratulated! *D.T., UK*

The 2003 edition of the World Radio TV Handbook is a shiny new volume, and this is not only because of what you see when you first look at it, but also because of what you find in its informative and up-to-date contents. *Adrian Peterson, AWR Wavescan*

As a good general overview of worldwide broadcasting, WRTH is still the best guide on the market. Anyone waiting for a verdict on whether or not the 2003 edition is worth buying should not hesitate to place an order.
Radio Netherlands Media Network

An excellent, well-presented publication again and always within finger-tip range of my receiver.
R.S., UK



System Name	Source Coding	Data Rate	System Type	Proposed Band Used
Eureka 147	MUSICAM	224	New-Band	1452-1492 MHz
Eureka 147	MUSICAM	192	New-Band	1452-1492 MHz
USA Digital FM-1	MUSICAM	256	In-Band, On-Channel (IBOC)	88-108 MHz
USA Digital FM-2	MUSICAM	256	In-Band, On-Channel (IBOC)	88-108 MHz
USA Digital AM	MUSICAM	92	In-Band, On-Channel (IBOC)	525-1705 kHz
AT&T/Amati LSB	PAC	128	In-Band, On-Channel (IBOC)	888-108 MHz
AT&T/Amati DSB	PAC	160	In-Band, On-Channel (IBOC)	88-108 MHz
AT&T	PAC	160	In-Band, Adjacent Channel (IBAC)	88-108 MHz
VOA/JPL	PAC	160	Direct Broadcast Satellite	2310-2360 MHz

Table 2. Evaluated DAB Systems.

interference occurs when FM signals reflect from large objects, such as buildings and mountains, causing several time-delayed versions of the same signal to arrive at the receiver.

When tested with five common household, portable, and auto receivers with known operating characteristics, IBOC FM DAB produces a significant impairment to the quality of the FM stereo audio on its "host" analog station. IBOC signals produce objectionable background noise in FM analog receivers. Many of the test reports from expert listeners said that the quality of the FM stereo analog service was "worse" or "much worse" when the station was carrying an IBOC DAB signal. IBOC impairments to the FM stereo service are more substantial on home tuners than on auto receivers, probably due to the reduced bandwidth of the latter.

If two FM stations having a first or second-adjacent channel relationship (and standard geographical spacing) were both to implement IBOC, their useful DAB service areas would be significantly less than their analog coverages in the zone between the two stations.

FM IBOC system performance and interference impairment worsens significantly in the presence of multipath. Of the IBOC systems, the AT&T system performed best in a multipath environment, although failures still occurred under certain conditions. The USA Digital FM-1 and FM-2 systems generally produced degraded performance (or failed completely) whenever multipath was added to the signal.

If two neighboring first-adjacent channel AM stations were both to implement IBOC DAB, the digital signals would fail wherever the desired station's signal is not at least 34 times stronger than that of the undesired station. Many AM stations in urban markets would experience DAB coverage that is substantially smaller than their AM service areas. Nighttime AM DAB service would likely be impractical for most stations, due to the presence of strong adjacent-channel skywave signals.

Digital Radio For The Emerging World

Digital radio is now being provided to the underdeveloped world. A satellite communications company named WorldSpace is setting up a network of three satellites, including "AfriStar," "AsiaStar," and "AmeriStar," to provide digital audio information services to Africa, Asia, and Latin America.

Each satellite provides three transmission beams that can support 50 channels each, carrying news, music, entertainment, and education, and including a computer multimedia service. Local, regional, and international broadcasters are working with WorldStar to provide services.

Low-cost DAB radio receivers are now available from various Japanese manufacturers, and WorldSpace has worked with Thomson Broadcast to introduce a village communications center known as a Telekiosk to bring communications services to rural areas. The Telekiosks are self-contained and are available as fixed or mobile units.

Even the Eureka 147 DAB system that has been adopted outside the United States has been slow to catch on. Broadcasters in several countries have begun to offer service, but the audience remains infinitesimally small. This is certainly due in part to the non-availability of affordable receivers, although this may change with the recent development of a new Eu147 receiver chipset from Philips.

While it is clear that the digital radio services will be competitive with audio alternatives to radio listening, it is unclear how the market will respond. As it stands, the information services market is near saturation. The very same services digital radio expects to provide are currently being provided via pagers, via voice mail, via superwatch. Consequently, digital radio's impact on the market may be far less that what is expected.

For more information, contact The World DAB Forum at www.worlddab.org, the Eureka 147 Consortium at www.eurekadab.org, and iBiquity Digital's IBOC technology at www.ibiquity.com. ■

homeland security

power, and products

by Rich Arland, K7SZ

GPS: What The Global Positioning System Can Do For You, And Hack-Proofing Your Home Or Office Wi-Fi System

One of the most often heard complaints from women concerning men is that when "lost," men refuse to stop and ask for directions. Okay, it's true! It's a "guy-thing." The idea of asking directions from a perfect stranger interferes with our macho mojo. Face it, men, we don't like to ask directions because we hate to admit that we don't know where we are!

However, knowing where you are or the specific location of a way point, or even another individual, takes on a whole new meaning during times of disaster. Thankfully, over the last 10 years or so, the Global Positioning System (GPS) has alleviated much of the anxiety associated with being lost or asking for directions. Thanks to the U.S. military, modern mass production manufacturing techniques, and surface mount components, you can have more information in the palm of your hand than could have been imagined only 10 to 15 years ago.

GPS has been around for a while, and we've become almost blasé about the technology. Today's crop of high-end cell phones has GPS capability. There are several models of GMRS radios that also offer built in GPS receivers (these are great for SAR work). For under $200 you can purchase an adequate GPS stand-alone receiver which will interface with a computer or PDA running a mapping program to provide you with your specific location anywhere in the world. All in all, GPS has gone from a "gee whiz" gizmo for Buck Rogers wannabees to a must-have piece of gear for the average citizen.

What Is GPS?

For those new to GPS, it is a worldwide radio-navigation system formed by using a constellation of satellites (24 in all) in low Earth orbit (LEO). Spatial positions are calculated using up to four GPS satellites simultaneously.

It works like this: Each GPS "bird" continually transmits a data stream down to Earth. A GPS receiver "hears" these satellites, looks at the data stream, which includes an extremely accurate clocking pulse, and can determine, by comparing at least three satellites' data transmissions, the precise point on the face of the Earth where the GPS receiver sits. Add a fourth satellite and you can get a very accurate determination of the GPS receiver's altitude above sea level (ASL).

Initially the military maintained close control of the accuracy of the civilian GPS units by purposely degrading the downlink data sent by the GPS satellites. Several years ago things changed, and now the civilian market can get almost the same degree of accuracy that's available to the military. Of course, the military can, at any time, degrade this service in the interests of national security.

Older GPS units (like my Garmin 38) took several minutes to access the required three satellites, compare the time delay of the clock pulses, and compute the actual position of the GPS receiver. The newer units do this data manipulation in a matter of seconds.

Midland's new G-225 GMRS/FRS handheld is a great walkie-talkie that packs a punch—2 watts on GMRS.

It is possible, with a GPS receiver, to not only track your progress as you trek, walk, hike, bike, drive, fly, or boat your way around the surface of the Earth, but also to obtain a reading of your average speed. Allegedly this feature has been employed by some car rental companies to snare speeders who fracture the posted speed limits when driving their rental vehicles. GPS can be a double-edged sword!

If you don't already have a GPS unit in your "Jump Kit," now would be a very good time to obtain one. The prices have dropped dramatically. High-end GPS receivers offer a map library in non-volatile memory, with the option to download map updates from the Internet. Nearly all GPS receivers have a data output jack which will interface to a computer, TNC (terminal node controller), or radio modem. The computer interface offers real-time tracking of your trip while the TNC, when connected to a 2-meter (144-MHz) transceiver, broadcasts the GPS information on selected VHF radio links, allowing many similarly equipped radio amateurs to watch your progress on a real-time basis.

Automated Packet Reporting System: Ideal For Emergency Comms

This latter feature is at the heart of the Automated Packet Reporting System (APRS), which has taken the ham radio fraternity by storm. APRS repeaters (144.39 MHz) are springing

GPS is no longer just for techies or the military. Everyday folks, even our main man, Editor Harold's bike sports a new Magellan (Thales) SporTrak Color GPS. (He'll be reviewing it in an upcoming issue of Pop'Comm).

up all over the United States, allowing APRS-equipped mobile and portable units to have their progress charted and displayed over a wide area. APRS has even been used on the space shuttle and the International Space Station to display real-time orbital tracking data.

APRS works like this: A GPS receiver is hooked to a TNC that interfaces to a 2-meter (144 MHz) transceiver set up to periodically broadcast on the APRS frequency of 144.39 MHz. As this information is transmitted, it is simultaneously retransmitted by the APRS repeaters in the area, and anyone running APRS software on their computer (which must be interfaced to a 2-meter radio in their shack or car) can track the progress of the transmitting station. Additionally, the individual stations that are monitoring the APRS repeater can be used to "digi-peat" the ARPS data outside the immediate coverage area for far wider coverage than is allowed by a single VHF repeater. As you might well imagine, this is a tremendous tool in facilitating disaster communications and SAR operations.

Knowing the exact location of various communications personnel gives the on-scene command staff an improved way to manage their communications assets. On-scene commanders can now watch real-time progress of SAR operations and/or direct APRS equipped units to take specific routes and cover areas outlined on computer map overlays.

In short, APRS is a great tool for the disaster communicator. If you are a licensed amateur radio operator and haven't become "APRS active" as yet, take the time to research this mode and get on the APRS bandwagon. It can, quite literally, be a life saver.

And Now, A Trip To The Dark Side

Obviously such accuracy that GPS provides can be used in an unlawful manner. What follows is an actual situation that took place recently in a gathering of some local radio enthusiasts. We were talking about Wireless Fidelity (you know, Wi-Fi), and how easy it is to hack into "open" (unprotected or non-secured) Wi-Fi systems.

One of the members involved in the discussion then produced a PDA with a small outboard GPS receiver attached. He proceeded to explain how easy it would be, using the GPS enhanced PDA and a Wi-Fi-equipped PDA or computer, to drive around various sections of the city and map out those unsecured Wi-Fi systems and return later to hack them.

Of course, my ears perked up! My first thought was about the more exclusive housing developments and the threat to the doctors, lawyers, and high-level business professionals who lived there and might be using unsecured Wi-Fi systems in their homes to work out of the office. Obviously, this is only one major area of concern, there are certainly many others. For instance,

Scenario #1: You're a successful high-profile doctor who brings work home from the hospital/office. Some of your patients are very influential people within the local community. To have someone hack into your unsecured Wi-Fi system and find out some of the problems or possibly some embarrassing information about these people could ruin some lives! Change that doctor to a psychiatrist and you have just added a whole new dimension to messing with someone else's life!

Scenario #2: You're a District Attorney who works at home using an unsecured Wi-Fi system. One of the many cases you're working on concerns a high-profile criminal action involving some very influential people. Your system gets hacked and your entire prosecution strategy gets hand-delivered to the defense attorney. Oops! Reverse this scenario and you are now a defense attorney trying to keep your client out of jail. The DA's office gets information on your defense strategy by

The Garmin Rino 110 is a GPS unit/GMRS/FRS radio that's easy to use and perfect for everyday use and emergencies.

This APRS (Automated Positioning and Reporting System)-equipped ham transceiver from Kenwood requires a license and a little effort to use, but the end result is a superb communications and a tracking tool for fun and—you guessed it—emergencies! The TM-D700A dual-band mobile transceiver includes a built-in 1200/9600 bps TNC, NMEA 0183 GPS input terminal, 200 memory channels, 118 MHz to 1.3 GHz receive (less cellular), and a nine-pin PC connection so you can program frequencies and other APRS mapping programs. For more information, visit www.kenwood.net and click on "amateur radio."

having someone surreptitiously hack into your Wi-Fi system. Justice may be blind, but she's certainly up to speed when it comes to electronic surveillance.

Scenario #3: You're an investment banker, stock analyst, and research & development director (take your pick) and you get your unsecured Wi-Fi system hacked. Industrial espionage is certainly not a new thing. However, the damage potential of having someone release sensitive business information gathered from your unsecured Wi-Fi system could become a major problem and cost your company millions of dollars in lost revenue.

Okay, the handwriting is on the wall. One more time, folks: if you use a Wi-Fi system at home, ensure that you **change the administrative password from "admin" to something new, change the SSID and disable SSID broadcast, and enable the WEP encryption at the highest level of security that is offered.** When the new WDA encryption becomes available (sometime after the first of the year) install the software and ***use*** it! Also take measures to limit the RF radiation of your system. Antenna orientation, physical placement of the Wi-Fi router, and the power levels used need to be coordinated to ensure that your Wi-Fi RF emissions stay within the confines of your home and don't broadcast several hundred feet around your neighborhood. If you are on a Wi-Fi system at work, talk with your IT guru and be sure the company is on board with all the security precautions that need to be taken. If not, take it up the food chain to someone who has the power to invoke these security measures. You cannot be too careful, especially in this day and age.

What Else Can You Do?

One more cheery thought regarding computers and the Internet. You should install a good firewall and virus checking program. Hackers can gain access to your machine and use it to distribute malicious software (like spyware, viruses, and Trojan horse programs) or they can use your machine as a "zombie" to remotely attack other systems.

Additionally, turn off all file sharing (this is done in the Windows toolbar) and run the latest Windows Update (if you are using ***any*** version of Microsoft Windows as an operating system). Running Update ensures that you have the latest security patches and critical updates for your operating system. Spy killing software, like Adaware 6.0, is free for the download (do a Google search for the ftp site nearest you). Finally, if you want the ultimate in control over your PC, install a USB thumb drive, which won't let anyone without an electronic thumb print on file log onto or have use of your computer. Software is also available for encrypting your files and e-mail, *if* you get that paranoid.

While cyberterrorism is a relatively new term, the implications are ominous. Using several thousand private computers to simultaneously attack military and governmental computer systems and websites is not outside the realm of possibility. Be safe and secure your computer. Become cyberterrorism savvy and take the necessary precautions to ensure that your machine is immune to intrusion and manipulation by unauthorized personnel.

One final thought on computers and security: Watch *Cyber Crime* and *Security Alert* on Tech TV. These two programs are loaded with the latest information on scams, hacks, counter hacker info, etc. A couple of hours per week watching these two programs might just save you a lot of embarrassment and potential loss of revenue.

And From The "Old Business" File...

You remember the Great Northeastern Blackout of 2003, right? Well, if not, read (or re-read) the November "Homeland Security" column in your favorite communications magazine. The final chapter is far from being written on this event. While initial indicators pointed to a small power company going off-line and causing several other power companies to follow suit, plunging the northeast and portions of the Midwest into a power vacuum, this may only be the tip of the iceberg, so to speak. Various sources within the government went public to quickly reassure the American people that this blackout was not—repeat ***NOT***—terrorism oriented or orchestrated. We're not so sure.

Several of my sources within the security industry have hinted to me that there are some governmental agencies very quietly investigating the possibilities that a computer virus could have caused this catastrophic blackout. This is scary for numerous reasons, not the least of which is the idea that someone or a group of people could invade and neutralize the security measures of a major computer network and blackout about 20 percent of the country! The FBI and other three-lettered agencies are keeping this on a very low-profile, close-hold status.

However, rest assured, if this outage was caused by some form of hacking or cyberassault, whether by terrorists or some kid with an overactive imagination, they will find the answers. My question is, "Will we, the American people, ever find out? Inquiring minds want to know.

Essential Gear: A Couple Of Winners From Midland

In this installment of "Essential Gear," we are going to showcase some of the latest releases from Midland Communications. Recently, I had the good fortune to acquire a set of the new Midland G-225 GMRS handheld transceivers (HTs). These small, palm-sized units (costing $59.95/pair) are ideal for keeping in touch at family outings, camping trips, vacations, etc. The G-225 HTs run a cool 2 watts of RF power output on GMRS. The unit also includes FRS frequencies (22 channels total). Although Midland boasts a five-mile range (on the GMRS frequencies only), this is a highly subjective figure. Maybe—and it's very "iffy"—you might be able to achieve this range line-of-sight over water or between two mountain tops or ridges. But it is highly doubtful that this five-mile range is attainable in urban areas or in wooded locations. All the options, like CTCSS tone encode/decode, volume, squelch, channel selection, and power output selection, are controlled via menus accessed from the pushbuttons on the front of the HT. Power is automatically dropped to 1/2 watt (500 mW) when moving from GMRS to FRS channels. This is to comply with the FCC mandate on the maximum power output allowed on the FRS.

The G-225 HTs replace the Midland P-222 handhelds, which are being discontinued. These are rugged and very useable little UHF radios that deserve serious consideration for inclusion into your emergency communications "Jump Kit." At only $59.99 per pair, the price is definitely right.

Speaking Of GPS And GMRS...

Garmin's answer to the GPS-integrated GMRS/FRS radio for two-way comms is the waterproof Rino 110. This is one unique little unit and has a 2-watt output on GMRS (1/2-watt on FRS) and has a built-in city point database and MapSource "Points of Interest" CD ROM, along with 1 MB of on-board data storage. The price of the Rino 110 is $195, which gets you on board with both a handy two-way radio system and GPS, so you're basically killing two birds with one stone. At that price, the Rino 110 deserves some serious consideration as a "Jump Kit" must-have.

The Audiovox GMRGPS120 is another GPS-integrated GMRS/FRS two-way communications device that features 22 channels and 2 watts RF output. It costs $130. Their CL500W GMRS/GPS Portable "Locator" is another offering that features a handheld GMRS transceiver/GPS receiver master unit with a wristwatch style "slave unit" that can be worn or attached to almost anything, animal or human. Costing $195.95, this little unit is also worth a serious look.

Arland Takes The Plunge!

It was bound to happen. A couple of months ago, I hocked the family farm and purchased my first computer-controlled trunktracking scanner, a BC-895XLT by Uniden (Bearcat). What a great piece of gear! Next month, we are going to explore some of the positives and negatives of computer-assisted scanning. Since I am a complete novice when it comes to high-end scanners and computer interfacing, I'll make the mistakes, you learn from them, and we'll all have a good laugh at my naïveté.

Until then, remember: preparedness is ***NOT*** an option. ■

by Shannon Huniwell

Shannon's Broadcast Classics

a look back at radio & TV's golden years

Yuma's Radio Switcheroo

Here's a question I get in most every *Pop'Comm* reader's e-mail: *How do you decide which topics to cover each month?* Well, this time, while waiting for inspiration at the Dell laptop, I had my computer playing *Television's Greatest Hits, Volume II*, a CD containing 65 vintage TV show themes. For some reason, a tune sung by Johnny Cash stuck in my mind, and soon I caught myself singing, "Johnny Yuma was a rebel. He roamed through the west. Away, away, away rode the rebel. John-nee Yu-ma."

This moved me to look up *The Rebel* in Brooks's and Marsh's *The Complete Directory of Prime Time Network TV Shows 3rd Edition*. The show was long before my time, but sounded interesting because it was aired on two networks, ABC from October 1959 to September 1961, and then as reruns during NBC's prime time in the summer of 1962. Nick Adams starred as an angry former Confederate soldier, Johnny Yuma, who happened into a myriad of western adventures. The cowboy program was especially unique because Adams played its sole continuing character. All other actors on the show were contracted for a particular episode. It's likely that the series' creators came up with their only regular character's name because the word "Yuma" resonated so nicely with easterners (the bulk of the television audience back then) as sounding classically southwestern, rough, rugged, "pioneery," and legendary.

Anyway, captured by the frontier spirit, I rode straight for my *Rand McNally* atlas to scout out Yuma, Arizona, near the California and Mexican borders. Next, I fired a shot out Jan Lowry's way to get the historical low-down about Yuma's early radio scene. Quick on the draw, his *Broadcast Pro-File* organization (request a catalog from Jan at 28243 Royal Road, Castaic, CA 91384-3028) sent western tales of two pioneer Yuma radio operations. The first one made a big move, but suffered from a mistake in judgment. The other was activated to fill a local market gap, and coolly swapped off its wonderful call letters.

Away, Away, Away Rode KFXY To Yuma

KFXY was actually Flagstaff, Arizona's first radio station, signing on with 50 watts in early January 1926. Miss Mary Costigan owned the station throughout several power changes (down to 25 watts in the fall of its debut year, then up to 100 watts by late 1927) and a move from 1460 to 1420 on the AM dial. A planned 1929 sale and relocation to Winslow, Arizona, didn't happen. It went dark in mid-January 1931, but resumed operation that summer after being sold to local physician, Albert Schermann. The doctor soon asked the Federal Radio Commission for the okay to move KFXY to Yuma. Official approval resulted in the "Voice of the Grand Canyon" leaving the Flagstaff airwaves June 1932 and reappearing as KUMA 1420 that September.

The KYUM studio/transmitter site shortly after the 560 kHz Yuma station changed to KBLU and vacated its interesting architecture so that the newly named pioneer Yuma AM could be co-located with KBLU-TV. Jan Lowry snapped this photo in late April of 1972 and says he noticed a family living there. The realtor listing the building for Combined Communications Corporation eventually snagged a buyer who pulled down the neon-on-sheet metal K-Y-U-M sign and turned the place into a private residence. The signage over the carport "National Broadcast Company—KYUM—Arizona Broadcasting System" got painted out. Jan reports that 560 AM's two towers are still in the backyard, as is a little steel shack (between the "sticks") that houses the transmitter. Imagine moving into Yuma around 1972, looking for a home, and asking your real estate agent, "Can you show us anything that's a little unique?" You could hang a lot of laundry from a clothesline between those towers!

Let's Not Worry About Details

By winter 1934, Dr. Schermann was too ill to run the Yuma facility, so he quickly "relinquished control" of KUMA to an E.B. Sturdivant, via a lease deal never advanced to government regulators for approval. There was an application sent to the then-brand new Federal Communications Commission for permission to erect a 173-foot transmitting tower. The summer of 1937 saw KUMA going dark "due to financial and technical difficulties. Sturdivant, while still renting the station from the doctor, let personnel of Yuma's Silver Crest Theatre program it when the transmitter was re-activated and fed into the new tower in 1938.

In the FCC's eyes, this made it twice removed from the actual owner who was legally responsible for KUMA's day-to-day

In 1938, car radios were uncommon enough to warrant explanation about where the radio's speaker, tuning, and volume controls could be found. Note, too, the illustration showing a happy family joyfully cruising down the road relishing the perky tunes on their new Truetone radio. Even grandpa is snapping his fingers to the beat! Hey, how come that kid isn't in a safety restraint car seat?

control. Consequently, just a year after allowing for the tower upgrade, the Commission got upset about the Yuma property's dubious ownership/operation status (especially after discovering that some related statements made by the real licensee were false) and "numerous technical violations." This resulted in a license revocation effective on February 1, 1940. KUMA left the YUMA air that day and the FCC immediately deleted it from the list of operational radio stations.

What About Yuma Listeners?

Six quiet weeks after KUMA bit the dust, southwestern Arizona residents were again able to rope another hometown signal when KYUM was inaugurated on March 15, 1940. The 250-watt day/100-watt night facility at 1210 on the dial had been built by two Yuma lawyers, a local jeweler, and KTAR interests from Phoenix. Each saw opportunity in the now defunct KUMA's FCC troubles.

Later that year, an okay arrived from Washington for 250 watts night power, and the North American frequency realignment called for KYUM to move up the band to 1240 kilocycles. Another change came in 1944 when KTAR principals bought out the other Yuma partners. This more sophisticated ownership sought ways to boost KYUM's reach and found that a 560 spot would work with a kilowatt and two-tower directional pattern after sunset. The FCC agreed, so KYUM made the change in late 1951.

A High-Flying Stunt

A couple of years prior to the upgrade, colorful KYUM personality, Ray C. Smucker, helped organize a promotional venture aimed at highlighting Yuma's U.S. Army-built 6,000-foot aircraft runway and near perfect year-round flying weather. The military had thousands of personnel in the area during the war, but left town when peace returned. Smucker and friends had heard about some California pilots breaking the world's record for keeping a small plane aloft. They figured that if they could find a couple of willing flyboys to beat the 800-hour feat, Yuma could really be put on the map—and KYUM wouldn't look too low key either.

The 1949 operation was arranged with a borrowed plane and a Buick convertible that'd race down the runway just a few feet below the aircraft where a copilot could reel in fuel and supplies. Two-way radios kept the action live for KYUM listeners. After some seven weeks in the air (and on KYUM, NBC, in

Every receiver on this page—even the tall, seven-tube "tombstone" model—has one interesting feature in common: each is built primarily for battery power. Truetone's "Wind Charger," at lower right, was offered packaged with the radios for a $5 discount. With the windmill, one could "use a Truetone radio as often as one liked. Charger operates in lightest wind; Smooth-running—no vibration." There were thousands of rural residents who counted on battery-powered radios for their connection with the outside world.

Life magazine, and papers throughout the world) the tired pilots logged 1,124 hours up there. This demolished the old record and far exceeded expectations. KYUM came to enjoy lots of notoriety, as did the pilots, other organizers, sponsors, and Yuma itself. With all of that positive momentum, things stayed rather pleasantly routine at the big-signaled Yuma AM for a good part of two decades thereafter. Then a merger took place.

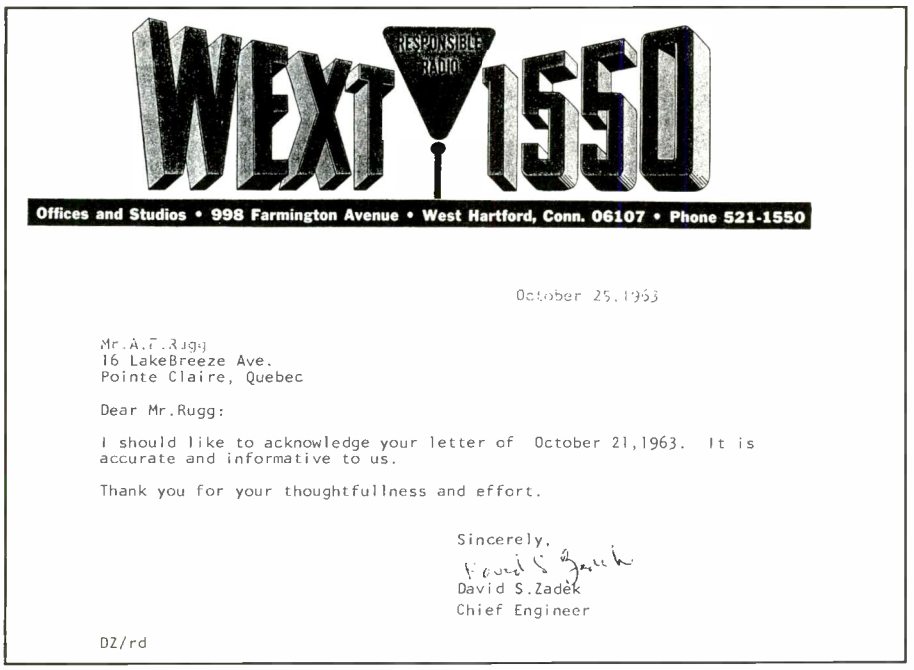
FCC To KYUM's New Ownership: Choose One Yuma AM And Get Rid Of The Other

The 1969 consolidation mated KTAR stations, such as KYUM, with a billboard and broadcasting company, Eller Telecasting, which already owned KBLU in Yuma. This new Combined Communications Corporation opted to donate KBLU's 500-watt daytime license to Arizona Western College because of the FCC's then-strict anti-duopoly rules. Combined decided on the giveaway (rather than sell to a commercial entity) because it figured that an "educational" competitor wouldn't be as significant as one actively trying to sell advertising in the Yuma market.

For reasons likely relating to co-owned KBLU-TV's moniker, Combined dumped the mnemonic KYUM calls and grabbed the KBLU letters for the 560 facility. As a result, on January 9, 1970, Yuma listeners heard the 30-year-old KYUM identified with an erstwhile rival's name, KBLU. Simultaneously, studios and offices in the distinctively styled KYUM studio/transmitter building were vacated for some spare square footage in the KBLU-TV headquarters. The two-tower antenna array (in back of the KYUM site) was then remotely controlled from the Channel 13 Television station locale. Meanwhile, the original KBLU (1320 kHz, and now 1000 watts day/147 watts night) was dubbed KAWC by the college that received it as a gift.

More Sales Until "Ole Blu" Lands In The Hands Of The Big One

By 1973, the KTAR/Combined Communications people decided to divest themselves of KBLU AM/TV. The pair was sold together, but got split up in a 1978 transaction. The year 1985 marked



WEXT 1550 RESPONSIBLE RADIO

Offices and Studios • 998 Farmington Avenue • West Hartford, Conn. 06107 • Phone 521-1550

October 25, 1963

Mr. A. F. Rugg
16 LakeBreeze Ave.
Pointe Claire, Quebec

Dear Mr. Rugg:

I should like to acknowledge your letter of October 21, 1963. It is accurate and informative to us.

Thank you for your thoughtfullness and effort.

Sincerely,

David S. Zadek
Chief Engineer

DZ/rd

When WEXT debuted around the Hartford airwaves during the last days of the Kennedy administration, the 1000-watt sunrise/sunset station billed itself as "Responsible Radio." Actually, there's a bit of confusion as to when this 1550 AM facility first signed on, because this QSL letter from Chief Engineer, David Zadek, to a Point Claire, Quebec DXer is for an October 21, 1963, broadcast. Most broadcast station yearbooks list WEXT's inauguration in 1964. Can anyone provide us with some clarification? By the way, the tiny Connecticut station represented a fine catch in eastern Canada; the 10,000-watt CBE Windsor, Ontario, typically dominated the 1550 spot.

another KBLU radio sale, as did 1989, 1994, 1995, 1997, 1999, and 2000. The last few transfers were due to mergers of radio notables Capstar and AMFM, Inc. The latter morphed into the 2000 deal with giant Clear Channel Communications, Inc., which, as of this writing, operates KBLU 560 AM in Yuma as a news/talk/sports outlet.

While We're Out West, How About Visiting Western Auto?

Always looking for tie-ins, I imagined there were some folks driving through Yuma around 1938 listening to KUMA—and a few years later, KYUM—on their new Truetone car radios. Truetone was the Western Auto catalog stores' radio brand. While it seems odd today to have a car without a radio, this convenience didn't really start making consumer headway until the late 1930s.

The introduction of push-button tuning caused many motorists to buy a radio for their vehicle, and Western Auto was an early adopter of the technology. Of course, then it was done mechanically with pulleys, strings, and levers (as opposed to electronic tuning). Plus, one truly had to push hard to activate a button. But Western Auto's ad explained why such a car radio was worthwhile:

> It's a thrill—a big thrill—to be able to tune in a favorite program as you drive along or when you park—to get the latest news, sporting events and market reports—to enjoy music and comedy—to learn from speech and lecture. Just press a button and PRESTO!—there's your program—smack on the nose and you've never had to take your eye off the road. [It's] a safety feature and a convenience that's close to priceless.

Imagine what the Western Auto advertising copywriter might think about safety and convenience if he saw 21st Century motorists driving while chatting on a cell phone!

The Truetone radio line for '38 also included several models designed for storage battery operation. Then, a significant number of rural homes had no connection to the power grid and so needed batteries to light up the average four- to seven-tube radio of the era. Western Auto claimed that its "long-lived *Wizard* brand 45-plate radio battery could be recharged at any garage or service station for about 50-cents." It was also advertised that playing a Truetone radio at reduced volume would extend battery life. Maybe some impecunious folk contacted their local radio station announcers and asked them to talk louder on the air so that the batteries could last longer.

Another nice Truetone radio accessory of the late '30s was Western Auto's "Wind Charger" windmill that came with a 10-foot mounting tower. If the gusts were blowing, the propeller turned a generator that would charge the radio battery. This must have made for an interesting set-up. If you recall any stories about wind/storage battery-powered radio reception from yesteryear, please feel free to share them with us at *Pop'Comm* via my melodyfm@dreamscape.com address.

Anybody Remember A Little Connecticut Country Music Station?

That's the e-mail question I got from a New Hampshire reader who spent a wintry Saturday in 1966 visiting WEXT 1550 AM in West Hartford. This radio buff has ever since carried the warm memories of seeing how things were done in a small, budget-minded daytimer. He recalls the 1000-watter then being the Constitution State's only C&W operation, running Mutual news and airing a jingle package with the lyrics "Country-wide music and world-wide news...one-five-five-oh, W-E-X-T."

Also vivid is the visitor's recollection of the tiny basement studio being a bit smoky and home to several partially filled coffee mugs. His host DJ declared, "Kid, here's radio lesson number one...If it weren't for the tobacco and coffee industries, the broadcasting business would come to a screeching halt!" When 4:45 rolled around, the announcer gleefully told him, "quitin' time!" hit the sign-off tape cartridge and *transmitter off* command on the dial-up remote control. A few seconds later, the monitor speaker crackled with shreds of a Windsor, Ontario 1550. The DJ invited his visitor to return, but according to our reader's note, "both moved on to other things shortly thereafter." That 1550 changed calls, city of license, power level, hours of operation, and formats.

The query focused, though, on the first incarnation of the little C&W outlet and wondered if I might include some WEXT pictures in an upcoming column. Unfortunately, the only piece of WEXT West Hartford literature in my files is a rough photocopy of a brief QSL letter dated October 25, 1963. That's curious, as *Broadcasting Yearbook* indicates WEXT debuted in October (and some listings say February) of 1964. If written dates can be trusted, obviously WEXT was active in '63—perhaps the verification represented a test broadcast? In any event, can anyone provide us with any WEXT information or a photocopy of West Hartford 1550 memorabilia? I'm sure the aforementioned *Pop'Comm* subscriber would be thrilled to see it in print.

We Get Letters

Perry Crabill of Winchester, Virginia, says our look at early TV (*Pop'Comm*, July 2003) reminded him of his "first viewing of electronic television." According to Crabill,

> This was at the New York World's Fair in 1940, carried over from 1939, and was a demonstration by General Electric using the original FCC standard of 441 lines. The scanning lines were definitely visible and marred the appearance of the picture. Later, of course, the FCC upgraded the standard to the present 525-line figure, resulting in a more satisfactory picture.
>
> TV programming was quite limited in the late 1940s. We lived in the Washington, D.C., area, and my brother Norman brought a girlfriend to dinner one Saturday evening. We had one of the few TV sets on the block, and settled down to watch TV after supper. We were tuned in to WNBW-TV on Channel 4, the local NBC outlet. At 10:00 p.m. the announcer said, "Well, folks, that's all the TV programming we have for tonight, so we're signing off. We suggest that you tune in WRC 980 on the radio dial and listen to NBC's Judy Canova Show."

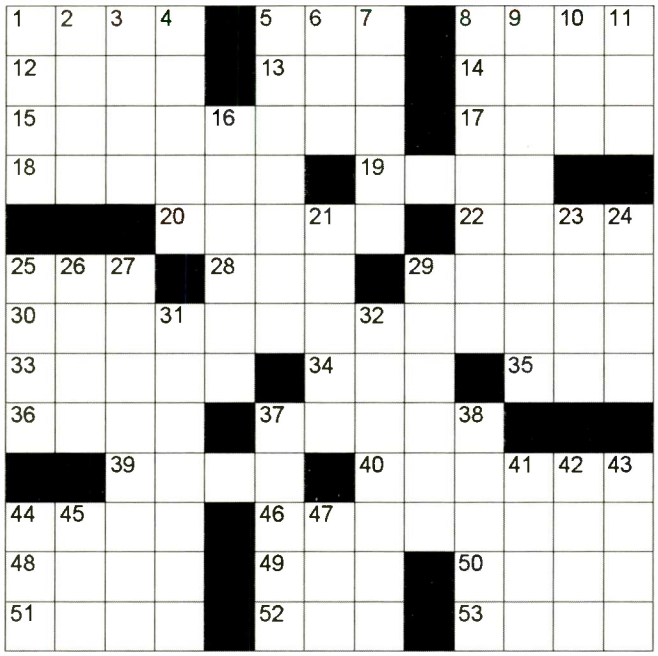
That gives me a good exit transition for saying...*And so ends another day of Pop'Comm broadcast history.* See you next time. ■

the Pop'Comm puzzle corner

test your radio knowledge

by Eric Force, eric@dobe.com

(RevSp = Reverse Spelling – e.g. "SPELLING" = "GNILLEPS" in puzzle)



ACROSS

1 12, 17 and 30 Meter Bands allocated in 1979 (Jargon)
5 Airport, Colorado Springs, CO
8 Moon of Saturn discovered in 1672
12 6th month of the Jewish calendar
13 Single unit
14 Spock charasteristic
15 Novice
17 Guitar fingerboard ridge
18 Communications security (MIL) (RevSp)
19 CW abvr., Vertical
20 IL Airport ORD (RevSp)
22 From a distance
25 Nostalgic Radio (abvr)
28 CW abvr, Television interference
29 FCC's Electronic Document Mgt Sys (RevSp)
30 Crystal under pressure voltage effect
33 Capital of Jordan
34 Lao National Radio & Television
35 Deutsche Telekom
36 About once per year second
37 Bridegroom's attendant
39 Callsign, National Aeronautics And Space Administration
40 Greek god of the winds
44 ____ Nam, ITC Prefix 3WA-3WZ (Country)
46 Slang term for telephone
48 Speaker part
49 Broadcasting company, abvr.
50 Leave out
51 Aware of
52 CW abvr, Please
53 Felines

DOWN

1 AM 770, New York, NY
2 CW abvr, Addressee
3 From this to riches
4 Serious wrongdoing
5 Hollowed inward
6 "Breaker, ____ Nine"
7 Type of "feedback" control device
8 To bend electromagnetic energy
9 Connecticut Airport BDL
10 Before (in time)
11 Timezone, UTC -9 hours, abvr.
16 Popular PC utilities program
21 Valleys' counterparts
23 Entrance
24 To matter
25 Phonetic "O" (U.S. Army 1916)
26 The "T" in OTR
27 Leftover (alt. sp.)
29 Boring speech
31 Cuban dance
32 Improve
37 ITC Prefix T8A-T8Z (Country) (RevSp)
38 This code can show component values (RevSp)
41 Phonetic dit dah dit dit
42 Phonetic "U" (U.S. Army 1916)
43 Hardens
44 EMF controlled oscillator
45 Electrically charged atom
47 Absiemens, abvr.

(Solution on page 80)

THIS MONTH IN RADIO HISTORY
On January 30, 1933...
(Remove letters C, F, J, K, P, Q & V)

KTCHFEJKLPOQNVE
VCRFAJNKGPEQRVC
CMFAJDKEPCIQTVS
QDCEFBJUKTPQOVN
VQVFCWKXJYQZPKJ
PFDJEVTQRCOFIJT

Solution: The Lone Ranger made its debut on WXYZ Detroit.

Pop'Comm Trivia...

(Thanks to Bob Sturtevant, KD7KTS, for this month's Trivia question)

When the Japanese were planning the Pearl Harbor attack, communications was a prime concern. The operational range of their naval aircraft radios was only about 100 miles. Communications co-ordination needed at least twice that range for a successful attack. Since changing all of the radios on the planes scheduled for the attack would have been a serious breach of security not to mention the expense, how did the Japanese planners overcome this problem?

Answer: They installed Morse Keys in the attack aircraft. Since Morse Code has a readable signal far greater than voice, the operational range of the radios was increased to 300 or 400 miles with no other changes.

by Gordon West, WB6NOA

An Unbelievable Earphone

I've uncovered a law enforcement hearing device that will muffle gunshots, amplify voices around you, and pipe audio from your HT right to your ear. As an avid communicator and scanner listener, no doubt you have an earphone plugged into your ear canal with your radio equipment hanging off your belt. And, more than likely, that earphone sometimes gets plugged up with wax, or it seems to fall out at just the wrong moment.

An earphone stuck in the ear canal also cuts down on your ability to hear anything going on outside your ear with the phone jammed in it. And then if you get a little tiny break in the fragile wire, you'll miss several important calls, perhaps not realizing the silence in your ear was more than your radio's squelch circuit!

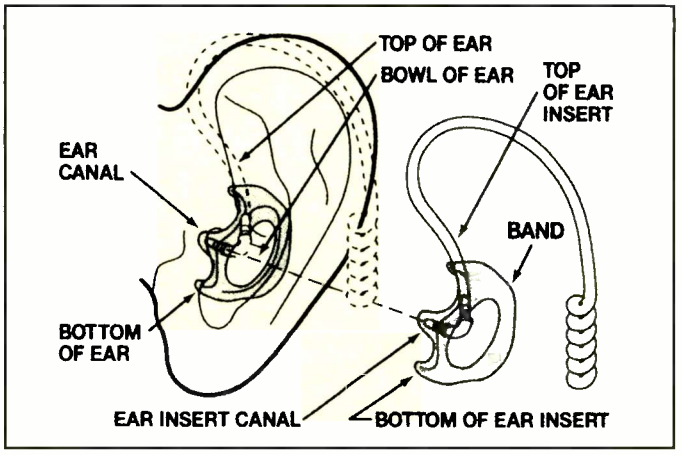
Law enforcement agencies throughout the country have analyzed the earphone problem and made the need for a better way to hear radio calls from a handheld a top priority. Not only could an officer's life be in jeopardy by missing a radio call, but there are also issues of ear hygiene with something plugged in the canal for 10 hours at a time. Then there's the problem of keeping something in your ear when wearing a protective helmet in a tactical situation.

At a recent law-enforcement gathering, I saw some innovative solutions, and one local Southern California company is also interested in marketing its sophisticated law-enforcement communications accessories to radio amateurs and scannists. Company president, Diann Smith, highlighted the similarities between professional and serious radio communicators, stating,

> We have combined the medical knowledge of clinical audiology together with the wireless radio communication services for clearer sounding communications, a more comfortable earpiece for all-day wearability, and more practical usable tactical kits for both law enforcement and serious two-way radio users.

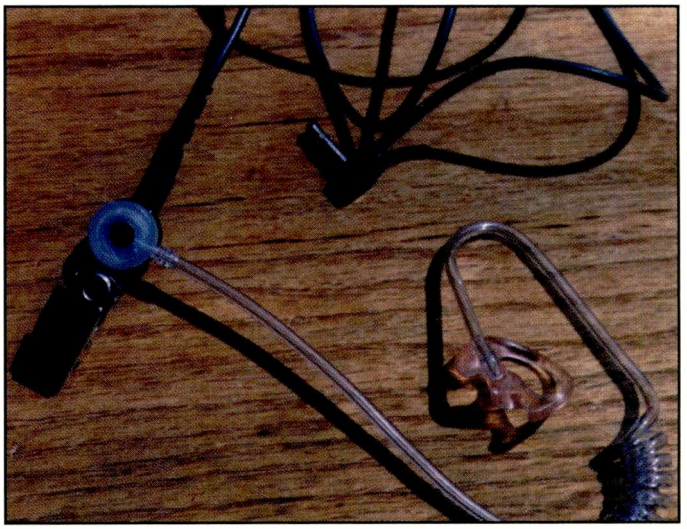
You can spot some of this listening equipment by the clear flexible acoustic tube and a snap ring that transforms earphone wiring to the acoustic piece that comes out of the tube and into their proprietary in-ear open earpiece. And just what is an "open" earpiece? It is a non-custom, flexible device, available in three sizes, that fits snugly in the bowl of the ear with a soft protrusion that gently directs audio from the tube into the ear canal. The little flexible protrusion does not block the ear canal from normal hearing, allowing sounds to simply pass through the open earpiece band. The thin clear tubing can ride up and over the top of the ear, much like you see on commercial television so announcers can hear their cues yet also are able to hear their own voice as they read the news.

The short section of clear flexible tubing usually terminates with a small clip on your collar that itself terminates with their proprietary radio plug and proper impedance lightweight transducer to bridge audio-output-electrical over to acoustic. Naturally, each manufacturer has its own idea on output impedance and what type of miniature plug will fit their specific jack. This is where Michael Houts, KF6YVS, at EarPro goes into their big book of handheld and mobile radios to come up with the right match. "We offer literally hundreds of plugs and side-mount adaptors to fit everything from commercial law-enforcement Motorola radios down to simple ham radios and scanner radios," said Michael, an avid ham radio operator and scanner listener.



Here's an illustration of the EarPro assembly.

EarPro also offers throat and bone conductive speaker/microphone setups, as well as exotic "talk and listen" systems for NASCAR, high-performance power boats, NFL, and motorcycle headsets. When I started asking about all of the different pieces of equipment for SWAT officers, I was impressed with some of the studies they had conducted. They consulted with licensed audiologists and hearing health care specialists about



The lapel clip holds the sound transducer that converts the wire audio to the clear tube.

Here's the SWAT Ears amplifier with auto-attenuator that protects your ear from gun shot noise.

A look at the many EarPro earphones and mics, including a wireless inductive earphone!

the needs of anyone requiring a custom hearing protection device, such as musicians, heavy equipment operators, and public safety personnel firing weapons.

One of their offering is called "SWAT Ears" and enhances hearing by up to 20 dB, yet muffles gunshots down to a noise reduction rating (NRR) of 27 dB with its automatic sound muffling capability. The device, which can be worn with gas masks and helmets, is specifically designed to enhance all the sounds around the wearer. It features a custom dual-port, in-the-ear earpiece with twin incoming tube receptacles (one for the amplified ambient noise receiver that fits behind your ear; the other for the tube leading to the collar and ultimately to the handheld worn on a belt).

The SWAT Ears device was truly amazing: with just the little rubber cushy earpiece, I could hear all sorts of sounds around me much better than my normal hearing allowed, yet any loud snap,

The earphone also lets outside sounds come in.

crack, or gun pop instantly pulled the hearing device into shutdown to protect my ears. And just as soon as the sharp sound was finished, the sound would then come back in from the little module behind my ear, which could be set to a number of levels. I didn't realize how shot my left ear hearing was until I tried SWAT Ears!

Michael and Kristen of EarPro prepare an audio cable for a new scanner from RadioShack.

In my communications van, I have a ham radio with an earphone output that sits between the passenger and driver. During noisy driving conditions, I would usually resort to an earphone that would then block what my companion was saying. With the new EarPro device, I can hear the radio audio and also, without any impediment, the conversation next to me. And if I need amplification of something local, I then go for SWAT Ears!

I found that it was almost like choosing "over the counter" to find a little miniature plug to fit my assortment of scanners and most ham radio ear phone jacks. I would then decide on exactly what type of earpiece I would stick in the bowl of the ear to also allow outside sounds to come in. That spongy little canal tip simply gets twisted and stuck in your ear canal. Within seconds it re-expands to fit snugly in the ear. It's connected by the clear tubing that leads to the little transducer assembly resting under your collar which leads to wiring that goes to your headphone jack.

EarPro, based in Costa Mesa, California, believes that big quantity orders that ultimately arrive from municipalities originate with a policeman or a comms officer trying out one of their ear systems personally. Since many scanner enthusiasts and ham radio operators are also on staff with large municipalities, the company is happy to consider single orders to get started. But this is no cheap earphone to be found for five bucks at a swap meet. Rather, it's a complete hearing system with the clear flexible tubing and the semi-custom earpiece that might run up to $100, depending on how custom you want to get. The amplified SWAT Ears could easily cost you over $600, but I'll tell you, after all my years in the ambulance running Code 3 without ear protection, a 20-dB boost from SWAT Ears has really made a difference around the house and out working public service events.

So, if you regularly have the traditional earphone stuffed in your ear because you take your scanning and communications seriously, you may wish to consider a *serious* line of acoustic accessories that lightly fit in the bowl of the ear and will give you a perfect match to your existing radio and scanner. Contact EarPro at www.earprocom.com or phone toll free 888-327-5992. Be sure to tell them you read about their products in *Popular Communications*. ■

Big Savings on Radio Scanners

Uniden® SCANNERS

Bearcat® 785DGV APCO P-25 Digital Ready with free deluxe scanner headset

CEI on-line or phone special price $339.95

1,000 Channels • 27 bands • CTCSS/DCS • S Meter

Size: $6^{15/16}$" Wide x $6^{9/16}$" Deep x $2^{3/8}$" High

New Product. **Scheduled for initial release January 10, 2003. Order now.**
Frequency Coverage: 25.0000-512.0000 MHz., 806.000-823.9875MHz., 849.0125-868.9875 MHz., 894 0125-956.000, 1240.000-1300.000 MHz.

When you buy your Bearcat 785D state-of-the art Digital Capable Trunktracker III package deal from Communications Electronics, you get more. The GV means "Great Value." With your BC785D scanner purchase, you also get a **free deluxe scanner headphone** designed for home or race track use. The Bearcat 785D has 1,000 channels and the widest frequency coverage of any Bearcat scanner ever. When you order the optional **BCi25D, APCO Project 25 Digital Card** for $299.95, when installed, you can monitor Public Safety Organizations who currently use conventional, trunked 3,600 baud and mixed mode APCO Project 25 systems. APCO project 25 is a modulation process where voice communications are converted into digital communications similar to digital mobile phones. You can also monitor Motorola, EDACS, EDACS SCAT, and EF Johnson systems. Many more features such as S.A.M.E. weather alert, full-frequency display and backlit controls, built-in CTCSS/DCS to assign analog and digital subaudible tone codes to a specific frequency in memory, PC Control with RS232 port, Beep Alert, Record function, VFO control, menu-driven design, total channel control and much more. Our CEI package deal includes telescopic antenna, AC adapter, cigarette lighter cord, DC cord, mobile mounting bracket with screws, owner's manual, trunking frequency guide and one-year limited Uniden factory warranty. For maximum scanning enjoyment, operate your scanner from your computer running Windows. Order Scancat Gold for Windows, part number **SGFW** for $99.95 and magnetic mount antenna part number **ANTMMBNC** for $29.95. Not compatible with 9,600 baud APCO digital control channel with digital voice, AGEIS, ASTRO or ESAS systems. For fastest delivery, order on-line at www.usascan.com.

Bearcat® 895XLT Trunk Tracker

Manufacturer suggested list price $499.95

Less -$320 Instant Rebate / Special $179.95

300 Channels • 10 banks • Built-in CTCSS • S Meter

Size: $10^{1/2}$" Wide x $7^{1/2}$" Deep x $3^{3/8}$" High

Frequency Coverage: 29.000-54.000 MHz., 108.000-174 MHz., 216.000-512.000 MHz., 806.000-823.995 MHz., 849.0125-868.995 MHz., 894.0125-956.000 MHz.

The Bearcat 895XLT is superb for intercepting trunked analog communications transmissions with features like TurboScan™ to search VHF channels at 100 steps per second. This base and mobile scanner is also ideal for intelligence professionals because it has a Signal Strength Meter, RS232C Port to allow computer-control of your scanner via optional hardware and 30 trunking channel indicator annunciators to show you real-time trunking activity for an entire trunking system. Other features include Auto Store - Automatically stores all active frequencies within the specified bank(s). Auto Recording - Lets you record channel activity from the scanner onto a tape recorder. CTCSS Tone Board (Continuous Tone Control Squelch System) allows the squelch to be broken during scanning only when a correct CTCSS tone is received. For maximum scanning pleasure, order the following optional accessories: **PS001** Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter $14.95; **PS002** DC power cord - enables permanent operation from your vehicle fuse box $14.95; **MB001** Mobile mounting bracket $14.95; **EX711** External speaker with mounting bracket & 10 feet of cable with plug attached $19.95. **CAT895** Computer serial cable $29.95. The BC895XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO, EDACS, ESAS or LTR systems.

Bearcat® 245XLT Trunk Tracker II

Mfg. suggested list price $429.95/**CEI price $189.95**

300 Channels • 10 banks • Trunk Scan and Scan Lists
Trunk Lockout • Trunk Delay • Cloning Capability
10 Priority Channels • Programmed Service Search
Size: $2^{1/2}$" Wide x $1^{3/4}$" Deep x 6" High

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ham discoveries

connecting as a radio amateur

by Kirk Kleinschmidt, NTØZ

Are You In The Loop?

Every so often, the forces of history overcome the last bit of conventional wisdom on one critical theme or another, and science, culture, and mankind take another step toward a more refined reality. If you'll remember, for centuries the world was flat—until enough evidence was accumulated to propel us into a "round world" consciousness. Da Vinci's experiments aside, prevailing wisdom was certain that man couldn't fly—until the Wright Brothers' success at Kitty Hawk.

I could go on, but I think you get the idea! This torturous history lesson, with its theme of change and acceptance, is slowly leading to this month's topic: loop antennas, an idea whose time has come!

Although we have visited this topic a time or two in the past few years, our industrious editor recently e-mailed me a note indicating his need for "a loop antenna article, A to Z." Because I'm a known loop antenna evangelist, I'm only too happy to oblige! And, unlike many evangelists who are merely out for gain (no pun intended) and fame, I constantly promote loop antennas because they work *really well*—just ask anyone who has put one up. Heck, I know hams who have scrapped their tribanders after experimenting with a decent-sized loop (but that's another story).

The bottom line is that antenna performance is what ham radio is all about. Say what you will about one facet of the hobby or another. Or talk up one radio, gadget, or doo-hickey. But the whole works—QRP or QRO—pretty much hangs on getting out a signal. And you can't do that unless you have a decent antenna. Contrary to popular belief, there's no extra merit in suffering with a crappy antenna!

Now, if you can afford to put up several tall towers and populate them with a bunch of high-gain antennas, you might not be interested in a "lowly" loop. But if you're like most of us and have a limited budget that allows for only one decent HF antenna, read on! (Although you can achieve killer 6-meter performance with a horizontal loop, we're not discussing VHF/UHF antennas here because most of us simply buy these relatively inexpensive, compact, and readily available antennas.)

So, assuming you have to make do with one "do-everything" antenna, which one deserves your undivided attention? A dipole? An end-fed wire? A quad loop? A vertical? An inverted vee? Each of these venerable designs is worthy of mention and can be made to perform well (especially on one or two bands), but when it comes to making a single antenna perform well over a wide frequency range, the horizontal loop is The One.

Performance That Throws You For A Loop!

That's right! A horizontal loop—a quad loop lying on its side—is one of ham radio's best-kept secrets. If some Old Timer tries to convince you that a horizontal loop is a simple "cloud burner" that radiates straight up, give him a wink and run (don't walk) in the other direction.

Perhaps in response to the ever-increasing interest in balanced antenna tuners, MFJ has come out with two new balanced tuners designed to handle open-wire feeders and ladder line the way they're meant to be handled: with the balun on the input side of the tuner and an electrically balanced output. The MFJ-974, shown here, covers 80 through 6 meters and is rated for up to 300 watts of RF. MFJ's new tuners are a welcome addition to the company's extensive line of manual and automatic tuners. We have been waiting for an affordable balanced tuner for quite some time! I look forward to testing one and I will share my observations in a future column. In the meantime, check things out at www.mfjenterprises.com. If you want to "roll your own," see "A Balanced, Everyday Approach to All-Band Bliss," which I wrote for the April 2002 issue of QST. Included are complete details on horizontal loops and how to feed them.

Here are a few benefits you'll enjoy with a horizontal loop:

• Horizontal loops are fabulous stateside antennas and beautiful DX performers. They can do it all, and that's also really their only potential weakness. Because these loops receive well in *every* direction, copying perfectly readable DX stations through a pile of super-strong domestic stations can be frustrating at times.

• Horizontal loops tune up easily on all bands *at or above the fundamental frequency*, and can be made to work well on frequencies below the design band in most cases. Dipoles, and even vertical loops, can't do that—and even if they could, the impedance matching required is much more complex.

• Loops are quiet (they suffer less from static and man-made noise), and they "hear" well compared to dipole- and vertical-type antennas. If fed with balanced lines they can also exhibit impressive immunity from locally generated computer noise.

• Horizontal loops kick the heck out of dipole-type antennas when mounted close to the ground (a real no-no for most antennas, but an unfortunate reality for most of us).

Let's Build One

If you're following along, a horizontal loop is simply a full-wavelength loop that's "lying on its side," supported at various points some 15 to 60 feet above the ground. Mathematically, loops are circular, but erecting a horizontal loop that's perfectly circular is needlessly tedious. Four strategically placed supports give us a "square loop" (an ideal shape), while three supports provide a "triangular loop" (pretty much the limit in what you can get away with). A slightly rectangular shape is okay, but an elongated rectangular shape starts to lose its loop-like qualities.

The formula for designing a loop has been published in antenna books for years. It's 1005 divided by the frequency (in megahertz). That's 1005/f. Here's a quick look at a few common loop sizes: 80 meters, 287 feet; 40 meters, 144 feet; 30 meters, 100 feet; 20 meters, 72 feet.

I've included these sample lengths to give you a size reference. In practical terms, when it comes to building horizontal loops, all you have to do is put up as much wire as possible (keeping it as circular or as square as possible) and let your antenna tuner handle the impedance tweaking. When I put up my present loop antenna I had more than enough Minnesota real estate for 40 meters, but not enough for 80. So I split the difference. My loop is resonant at 5 MHz. Consequently, it works outrageously well on 40 meters and up, and very nicely on 80 and 160. Not bad for a single wire. It's definitely not a compromise!

So, to make a killer multiband antenna with a single wire, put up a horizontal loop, sized to match your available space (shoot for a 40-meter loop size or larger, if possible, for best all-around performance). Then feed it with 50-ohm coax through a standard antenna tuner and operate with glee on all bands at or above the loop's resonant frequency. Feel free to feed the loop anywhere along its circumference, corner or side.

You can operate the loop on frequencies below the design frequency, but because of coax losses (SWR-related), performance usually decreases the lower you go in frequency (in relation to the resonant frequency of the loop). If you're looking to enhance the operating flexibility of your horizontal loop and improve its performance on all frequencies—especially those below the design frequency—replace your conventional shack-mounted antenna tuner with an SGC autocoupler mounted at the loop's feed point. This will give you lightning-fast band changes and low SWR on the coax that runs from the autocoupler to your radio. These handy devices used to be somewhat pricey, but they're now coming into the "affordability zone." If you have the chance to pick one up, do it. You won't regret it!

If you can't get your mitts on an autocoupler, try replacing your coax with 450-ohm open-wire line fed through a conventional tuner with a tuner-output balun (okay), a balanced tuner such as an old Johnson Matchbox (great, but hard to find), one of MFJ's new balanced tuners (see **Photo**), or a balanced L-network tuner (great, but you have to build it).

Switching to an open-wire feeder will essentially negate the effects of high SWR values on the feedline and help you to put out a greatly improved signal on bands below the antenna's design frequency. However you slice it, however you feed it, a horizontal loop antenna is your best bet for an all-wire multiband HF antenna. In that light, then, go forth and square that circle!

SWLs Can Get Looped, Too!

The benefits of horizontal loops are available to SWLs who have the room to put them up. (Whether it's true or not, I think of SWLs as having less real estate for their antenna farms. Perhaps I'm remembering my own SWL days?)

A few caveats do apply, however. If you're using an entry-level receiver, be sure to build or buy an *attenuator*, or at least have something on hand to *decrease* the received signal. Loops and other full-size antennas can easily pull in so much signal that receiver front ends are easily overloaded, resulting in images, birdies, distortion, and a host of other unwanted side effects.

As with any antenna, a good preselector or even a wide-range transmitting-type antenna tuner can help to keep out unwanted signals while perking up the signals you want to hear. Although it's often overlooked, receivers and receive antennas require impedance matching for best performance!

Don't Be Shy

Thanks for your letters. Be sure to keep in touch. Send your photos, letters, and column suggestions to me at *Popular Communications*, "Ham Discoveries," 25 Newbridge Rd., Hicksville, NY 11801. Why not send along your photo while you're at it? See you next month! ■

on-the-go radio

around the block, around the world-personal radio keeps YOU in touch

by Alan Dixon, N3HOE / WPUC720 / KST8678

Revving Up For This Year's CB-Radio-Group On-Air Competition, And What's Changing With The 80 CB Channels In Great Britain?

This is it—the final call for the CB Radio World Championship! While the snow and icy winds are blowing outdoors, many of us are finding useful ways to spend time indoors. Winter is one of the best times to settle into your home-base shack and get comfy around some warm radio equipment. And you can keep at least one long, dark winter night alive by stirring up some excitement for yourself—by contesting!

The 2004 CB Radio World Championship will be held on Saturday, January 17, and Sunday, January 18. The event is conducted by the CB Radio YahooGroup and will run from 2 p.m. Eastern Time (19:00 GMT/Zulu) on the first day, until to 2 p.m. Eastern Time (19:00 GMT/Zulu) the following day. CB operators from all over will be competing. The rules for this contest are very simple: Contact as many other operators as you can during the 24 hours of the contest. The operator with the most contacts wins! There will be two operating categories in this year's contest:

AM within the 40 channels
Sideband (SSB) within the 40 channels

It's that simple. And remember, this contest is conducted *within the operating rules of the FCC*. Yes, that's right! So, be sure to respect the 155.3-mile (250-km) distance-of-communications FCC rule (CB Rule 13).

Last year's winners in the 2003 CB Radio World championships were: "Minuteman" from Indiana in the AM category and Doug S. from Colorado in the SSB category. Congratulations on last year's accomplishments, gentlemen!

This is a great opportunity to hone your operating skills. For 11-meter operators, there are just not a whole lot of contesting opportunities available, so don't miss this one! Contesting is one type of activity that demonstrates that your station is at full operational readiness. Your good operating skills will be (not *might* be) valuable for emergency operation, so be sure to take advantage of this great annual event.

For full information on this contest, and to sign up to participate, please go to the CB Radio YahooGroups website at http://nicyac.tripod.com/cbyahoogroup.html. For general club information, and to join this Internet club, go to: http://groups.yahoo.com/group/cbradio/. This is one winter sport that doesn't require you to go outdoors and freeze your tail off! Sign up right now.

Are Big Changes Ahead For CB Radio In Great Britain?

Just as CB radio in the United States is regulated by the Federal Communications Commission, CB radio in the United Kingdom is governed by the Radiocommunications Agency (RA). Several months ago, that agency proposed some pretty hefty changes for the 27-MHz band in the United Kingdom. These proposals appear in a *Consultation Document* issued by the RA, calling for the "deregulation" of CB by July of 2004.

Radio communications in the United Kingdom. (Photo courtesy of DCMS UK)

First, the *Consultation Document* reminds British CB operators that, "CB is a short-range radio service for both hobby and business use, designed to be used without the need for any technical qualifications" (RA 369). This language is strikingly similar to that used by the FCC to characterize CB radio in the United States, which describes CB as, "...a private, two-way, short-distance voice communications service for personal or business activities of the general public..." (FCC Part 95). At least the United Kingdom recognizes CB radio as, among other things, a *hobby*. This is something to which the FCC will likely never concede, despite the reality of how the service is so often used!

CB radio in the United Kingdom is still a licensed radio service, with licenses costing £15 for most users, with minors and the very elderly getting theirs free of charge. But that may soon change. The RA wants to remove the licensing requirement for CB radio. Still, that is perhaps not the most radical change the RA is proposing.

Some U.S. radio hobbyists may not be aware that Britain has two 27-MHz CB radio bands, each with 40 channels (See **Figure 1**). The British have both an 11-meter Citizen's Band and a 10-meter Citizen's Band. Each band has channel numbers ranging from 1 to 40. The first column of frequencies represents the 40 10-meter CB channels authorized only in the United Kingdom under regulatory specifications MPT1382/1320. Channel frequencies run in 10-kHz steps from 27.60125 MHz to 27.99125 MHz, immediately adjacent to the bottom end of the amateur radio 10-meter band.

The second (right-hand) column represents the 40 11-meter CB channels already in widespread use in Europe and elsewhere in the world. These are presently authorized by the European Union (EU) Conference of European Post-

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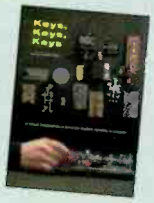

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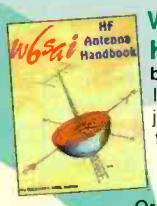

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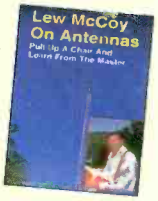

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Telecommunications Administrations (CEPT) under European Standards EN 135-1 and EN 300 135-2. The RA now proposes to remove one band of 40 channels, specifically the UK-only 10-meter MPT CB channels.

The obvious question about removing one entire band is, *why*? First, however, we should ask, *how*? How, that is, did the British ever come to have *two* Citizens Bands, anyway? The UK Consultation Document announcing the proposed changes did not address the history and evolution of CB radio in that country. However, various U.S. press reports from the late-1970s reported that when the United Kingdom first authorized CB radio, it was limited to what is now the UK-only band. The U.S. FCC CB radio channels were said to have been previously occupied by other radio services in Britain at the time. Apparently, the United Kingdom later authorized the 40 U.S.-standard 11-meter CB channels for use in their country, in addition to their own 40 10-meter CB channels. For a number of years, both bands were available to British subjects. Britain's present action to remove their own original 40 channels is clearly labeled as an effort to "harmonize" UK CB frequency allocations to current pan-European standards.

There is another ominous reason that the RA gives for wanting to remove half of their 80 CB channels from use: According to licensing statistics, CB radio popularity in the British Isles has declined substantially in recent years. According to the RA, at the peak of CB radio popularity in "the early 1990's" (***not*** in the 1970s!), the 80 CB channels in the UK supported 300,000 licensed users. As of 2003, there were only 23,000 licensees in the service, representing a decline of roughly 10 percent per year.

And the RA is not just counting *popularity*, which is merely a head-count. The agency notes that *monitoring* has shown that, "many channels remain unused for most of the time." This is a bittersweet example of the "use-it-or-lose-it" principle. It is bitter in that CBers in the United Kingdom are losing an entire band. And it is perhaps somewhat sweet because soon all British CB radio channels will be *harmonized*, that is, identical to the CB radio frequencies in use not only throughout Europe, but also in most of the rest of the world!

The RA tells us, "Discussions are underway regarding possible use of the released frequencies." Also, it is expected that use of dual-band UK CB radio equipment will remain legal *on the 40 EU/CEPT 11-meter channels only*. It is important to remember that these changes have been only *proposals* through 2003. If the 40 UK-only channels are indeed to be removed, the change is set to take effect on July 1, *2010*. This seven-year delay (from the time the proposal was drafted, in 2003) is said by the RA to prevent "causing major inconvenience" and so that affected CB operators "can continue using their existing (UK-only) equipment for the remainder of its economic life."

That last line really gets me! Is our radio equipment really only supposed to last about seven years? Some of us actually take good care of our hard-earned and valuable radio equipment. I have working two-way radio equipment in pristine condition from as far back as 1975. Quite a few radio hobbyists have working antique radio equipment in mint condition from *much* further back in time! In fact, fully half of my radio equipment is older than seven years, and everything looks and works like new.

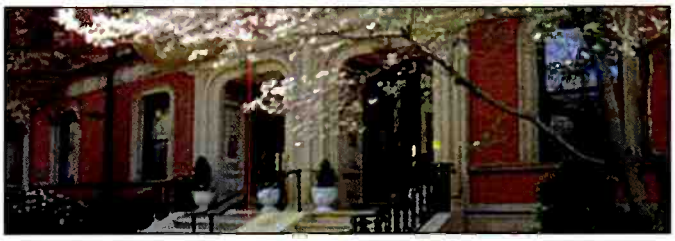
Government policy wonks and industry marketing-types take note: Consumers may indeed be *consumers*, but hobbyists are professionals (without the paycheck) who don't abuse and romp on their equipment. And we are fed up with being told that our equipment is *obsolete* every few years! It's all accounting and marketing bull. I own three working cell phones from the 1980s. In spite of the fact that they work great and still look like new, the CTIA and the FCC will undoubtedly force me to buy new equipment within the next few years. Who is the customer here, anyway?

Let's get back to the United Kingdom now, where the other proposed change to CB radio there is also being carefully considered: *deregulation*. And for purposes of this *Consultation Document*, "deregulation" means that, if passed, British CB operators and stations will no longer need "individual licenses." A CEPT decision (ERC/DEC/(98)16)) in recent years suggests that member states, such as the United Kingdom, exempt CB radio and a number of other radio services from licensing.

Table 1: UK-Only 10-Meter CB and CEPT/EU (FCC/US) 11-Meter CB Radio Channels

Channel	British 10-Meter CB Frequencies MPT1382/1320 ("UK Channels")	European 11-Meter CB Frequencies ETS 300 135 ("CEPT/EU Channels")
1	27.60125 MHz	26.965 MHz
2	27.61125	26.975
3	27.62125	26.985
4	27.63125	27.005
5	27.64125	27.015
6	27.65125	27.025
7	27.66125	27.035
8	27.67125	27.055
9	27.68125	27.065
10	27.69125	27.075
11	27.70125	27.085
12	27.71125	27.105
13	27.72125	27.115
14	27.73125	27.125
15	27.74125	27.135
16	27.75125	27.155
17	27.76125	27.165
18	27.77125	27.175
19	27.78125	27.185
20	27.79125	27.205
21	27.80125	27.215
22	27.81125	27.225
23	27.82125	27.255
24	27.83125	27.235
25	27.84125	27.245
26	27.85125	27.265
27	27.86125	27.275
28	27.87125	27.285
29	27.88125	27.295
30	27.89125	27.305
31	27.90125	27.315
32	27.91125	27.325
33	27.92125	27.335
34	27.93125	27.345
35	27.94125	27.355
36	27.95125	27.365
37	27.96125	27.375
38	27.97125	27.385
39	27.98125	27.395
40	27.99125	27.405

Figure 1. The British 10-meter and 11-meter CB radio bands. (Chart courtesy of UK Radiocommunications Authority)



On the street in Massachusetts. (Photo courtesy of Commonwealth of Massachusetts)

The RA notes that many other European countries have previously done away with CB radio licensing.

The RA goes on to make it clear that the existing technical limits and requirements specified in the UK Radio Interface Requirement IR2027 will continue in force, as will the CB operating rules presently stated in the *Citizens' Band Radio License Terms, Provisions and Limitations Booklet* (RA 369). It appears that the extent of the proposed CB radio "deregulation" is merely the cessation of the individual licensing requirement. If this portion of the proposal is put into effect, license-free operation would commence on July 1 of *this* year, 2004! The RA will issue an announcement on the outcome of these proposals sometime prior to June 30, 2004.

The *Consultation Document* goes on to mention a couple of broader changes likely to occur soon in the United Kingdom. Responsibility for spectrum management in that country had been authorized in recent years by the Wireless Telegraphy Act of 1949. A new Communications Bill before Parliament would transfer this responsibility from the RA to the Office of Communications (OFCOM). As it is, current EU directives were set to eliminate all license classes under the existing Telecommunications Act, with remaining license classes set to be administered under Office of Telecommunications (OFTEL) regulations as of this past July, 2003. If this bill indeed takes effect, OFTEL as well as the RA will be merged with several other communications agencies into the newer OFCOM.

No mention of any "optional" or voluntary CB radio licensing provisions is made in the *Consultation* document. Likewise, no mechanism for issuing callsigns or alternate means of station identification is specified. Much as in the rest of the world, CB club callsigns will have to suffice, it appears. For the latest information on CB or other radio services in Great Britain, go to www.radio.gov.uk/topics.

Personal Radio Perspectives From Massachusetts

Loyal *Pop'Comm* reader Ken Windyka in Springfield, Massachusetts, has been kind enough to give us an updated look at Personal Radio Services use in his local. Now here's a guy who really knows what's going on, like so many regular *Pop'Comm* readers! "On-The-Go Radio" (OTG) conducted an on-line interview with Ken, and here is what he tells us:

OTG: Greetings, Ken!

KW: Hello Alan. On GMRS: I thought your On The Go Radio Column 'Operational Considerations of Your GMRS Radio System' was an excellent presentation of some of the methods as well as problems that arise in GMRS.

OTG: Thanks!

KW: Locally I've been running a GMRS utilization survey—using a

Motorola T6400 portable in the scan mode—while traveling to and from work each day. It's about seven miles from my home on the Chicopee/South Hadley line to my office in Springfield, Massachusetts. Basically, there's one GMRS frequency that doesn't seem to have any activity on it, 462.650 MHz. Some of the others have grandfathered businesses and use the frequencies quite often during the business day, e.g. 462.550, 462.575, 462.600, 462.625 (very heavy), 462.675, and 462.725 MHz. One very large GMRS user is the Eastern States Exposition "The Big E" in W. Springfield on 462.700 MHz, 141.3 Hz CTCSS tone...

OTG: Could they have not picked a worse CTCSS tone? I guess they don't know that what they are using is the national "Travel Tone" for assistance or distress calling.

KW: ...especially during the 17-day September show run; but at other evening/night times the frequency is usable. I also noted that a small base station (auto repair/dealership) seems to be operating on 462.7125 MHz, 210.7 Hz tone, in Springfield. So, simplex-wise, we basically make use of the low-use GMRS repeater output frequencies—I've also noted that in many cases even (traveling) 10 miles north/northeast makes quite a difference in frequency utilization.

OTG: Here on Florida's Space Coast, there are easily a half-dozen GMRS repeaters, many of them operated by REACT teams.

KW: On FRS/GMRS Hybrids: Recently when I was in the local Wal-Mart, I noticed that the vast majority of the portable units being sold are now the 22-channels (six out of 10 models). I think that there was even a 3-watt Cobra model—seems to me that there's going to be a lot of unlicensed operation on the GMRS frequencies in the near future if not already.

OTG: As long as these manufacturers stick to producing only simplex handhelds, those legitimate GMRS licensees who have 50-watt mobiles, big base stations and/or repeaters, will continue to simply walk all over the garbage illegal traffic and the kids playing around. (I am *not* going to get into a debate here as to the legalities of this.) You are absolutely right, in any event: Unlicensed use will skyrocket.

KW: On FRS: I really haven't noticed anything different in my area; although in many cases one can differentiate the kids from the more serious folks on whether a CTCSS is being employed or not, on the frequency. I'm still using the base unit at home on FRS Channel 1, but many kids also use that frequency, so emergency monitoring is difficult. I still like the idea of a CTCSS being used also on the (FRS-1 calling) channel to cut down on any monitoring fatigue.

OTG: I am starting to agree. I used to say, monitor with open squelch on FRS Channel 1, but now I am thinking that for assistance, we should start to consider just monitoring the channel with the Travel Tone, 141.3 Hz.

KW: On MURS: The 151.XX MHz frequencies (Channels 1 through 3) continue to be open without any use that I can hear. I primarily use the scanner to monitor all MURS frequencies on the way to/from work, and also while on trips.

OTG: MURS Channel 1 (151.82 MHz) is the national calling channel for that service, which I monitor. But only Channels 4 and 5 (the 154.XX MHz "color-dot" channels) are active—with businesses, of course—wherever I travel.

KW: On CB radio: I haven't done anything with CB since June, 2003, but do carry a mobile unit and antenna in the trunk of the car, just in case.

OTG: CB Channel 19 remains the greatest source of highway traffic information, for me. The language is salty, but the information is solid. Around town, I only monitor Channel 9. Same for when my wife or guests are in the car, due to the language on 19. Hmmm... I'm still thinking of using an earphone for those situations.

KW: On REACT: Well at least now their ads seem to be including FRS, *but* not much emphasis to anyone about FRS Channel 1. I hope to attend the local REACT meeting (Pioneer Valley REACT) tomorrow, just to see what they are all about

OTG: Well, be sure to join up!

KW: Anyway, keep up the good work!!

OTG: Thank you once again, Ken.

"On-The-Go Radio" would love to hear reports from readers on Personal Radio Services usage from any number of different regions of the United States and Canada. Don't worry about style, just go ahead and send your reports in to me at wpuc720@juno.com, or by postal mail to our Hicksville, New York, office (the address is in the front of this magazine).

Home-base For The Holidays

Well, Christmas is passing and the New Year is at our doorsteps. After the warmth of the holidays comes the bulk of winter, the very coldest part. The best way to avoid the otherwise inevitable winter doldrums is to stay active on the air. Your home-base station is your connection to the world, whether on shortwave, CB radio, ham radio, or the Internet. Many of you have all of these together at your operating position. Any or all will do!

For those times when family or friends are not present, remember that you are never alone in your shack. Make certain that you are prepared now for an icy winter. Does that mobile station of yours still need any mechanical work? Better take care of it now, before more snow and ice come your way. Stay warm, and keep those batteries charged!

We'll meet again next month, right here at "On the Go Radio." ■

ScanTech

by Ken Reiss, radioker@earthlink.net

strategies and techniques to keep YOU informed

Frequency Information Redux

It's been quite some time since we caught up with the "Frequency of the Month" entries that you've been sending in, so let's take a look and see what's happening around the country. Don't forget to send in your entry every month, letting us know what you're hearing!

154.160 (Oct 02)

Mike Johnson from Burley, Idaho starts us off with his comments on 154.160. "I hear nothing on 154.160 here in Idaho. I didn't expect to hear much; the local fire and police are on 450 MHz channels. The frequency 154.190 is used at Twin Falls that is the closest [to 154.160]." Jack Hagood notes "This frequency is here in the Denver area, as the Fire Dept. in Englewood, Colorado. This city is south of Denver in the metro area." Jim Hatfield says, "Well, on the Pierce/King County line all I hear is the Pierce County Fire Dispatch. I do not hear many mobiles, or the mobiles are scratchy. I'm using an AOR 8200 on its supplied whip. There are so many frequencies in use in this area that intermod is very bad. My PRO-2006 is much better intermod wise, even on an outside antenna, but I don't want to hear the world, just around my home."

That's pretty much the idea of scanning, Jim! Keep listening and thanks for writing in!

Ed Campbell from Essex Jct., Vermont, reports, "This frequency is used by the Underhill/Jericho Fire Dept. This town is about 15 miles from where I live, but they boom in here when they get a call."

"I live in the Metropolitan area of New York/New Jersey, more specifically in Hoboken New Jersey in Hudson County. In this area, 154.16 seem to be the EMS of Fairview New Jersey," reports Luis Mendez. Luis also writes that he hopes to win! If you didn't win this one, Luis, keep trying!

Mark Schneider reports, "The frequency 154.160 MHz is very active in my area, as it is the repeater out for my local FD, Stillwater [Oklahoma] Fire Dept. SFD used to be on 154.130 MHz, but that frequency is/was used by many fire departments across Oklahoma, so a change to a less-congested frequency was in order. SFD has four stations in Stillwater, and is the largest agency in Payne County. Stillwater is the county seat for Payne Cty."

Thanks to Spence from Killeen, Texas, for these kind words, "154.160 is the freq for the Copperas Cove, Texas, Fire Department. I enjoy your column as well as the rest of *Pop'Comm*. Keep up the good work." That's always nice to hear. I included it so Harold could see that someone likes it as opposed to all the complaints he normally gets! (Just kidding!)

That frequency is widely in use, as was evidenced by the number of entries we received. If yours didn't get used, please keep sending them in! I do read them all, but for now we should move on.

453.235 (Nov 02)

To start us off with 453.235 is Art from New Jersey.

It's a beautiful day here in northern New Jersey—clear, crisp, with a beautiful blue sky. Cool or cold, depending on your attitude, 34 degrees. 453.225 MHz did not produce a lot of activity. At times the squelch would open and there was some noisy and unintelligible audio. I even tried one of my homebrew Yagis with little improvement.

Police Call lists only five towns in New Jersey that have licenses for that frequency. I aimed the Yagi at the closest one, Woodbridge, and occasionally was able to pick-up some usable signals. Nothing of interest, and no excitement. I am reasonably sure I was receiving Woodbridge since one transmission was "Be advised. We'll be coming into Metropark in a minute." Metropark is the rail station for the Metroliner train to New York City, Boston, and Washington, D.C. It is located in Woodbridge.

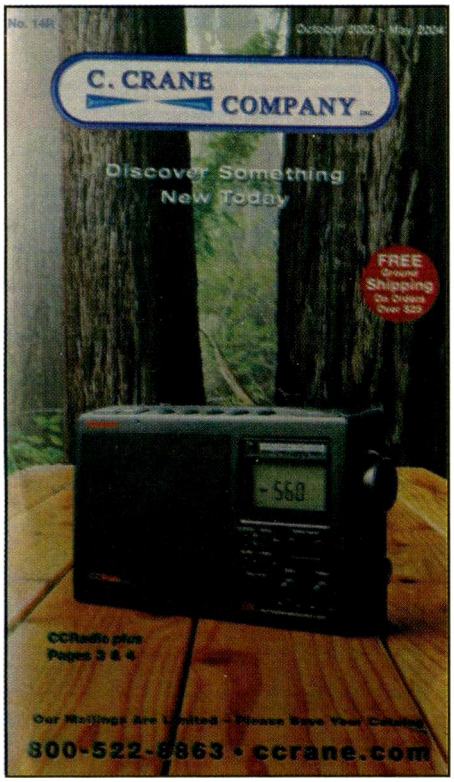
Jay Tarantino sent this picture of his club's repeater site. Quite a location!

Bob Davis sent in quite a bit of research information,

I am behind on my reading, I just finished November *Pop'Comm* magazine and I got the December issue in the mail two days ago. Here is what is on the frequency in Illinois:

Champaign Urbana Mass Transit
Chicago Transit Authority
Rockford Metro Centre Authority
State of Illinois, City of Metropolis
State of Illinois, Peoria and E. Peoria
State of Illinois, Town of O'Fallon
State of Illinois, Springfield
State of Illinois, Zion
Effingham County Memorial Airport

Dave Hill reports from Massachusetts, "453.225 pl 192.8 was in my PRO-92 for Quincy, MA PD. Probably a lot of police depts." Gil, also from Quincy, reports, "453.225 is Quincy, MA PD ch. 1. It is listed for New Hampshire DOT Highway, but



Just a little too late for last month's holiday wish list article, this new catalog from C. Crane arrived. There's lots of interesting things in here if you haven't done your shopping (or if you got money as a gift for the holidays!)

didn't hear them. Probably active only during snowstorms. I also hear what I think is school transportation that is closer than Quincy, but not real close. I haven't figured out where yet." And we heard from Ray Martin "I read your article in this month's *Pop'Comm* and I am sending you information on my favorite frequency, 453.225, City of Florissant Tac-1 Police Department. Callsign KCE423."

856.6875 (January 03)

Art writes, "Apparently Santa was not communicating with his Elves or his base at the North Pole on 856.6875 MHz during the month of December! Silent Night(s). It was a quiet frequency here in northern New Jersey. Nothing was heard all month long."

Apparently, Art wasn't alone. Not one single hit on this frequency, although it's used quite a bit here in St. Louis. It's a part of the city's trunked radio system. Some of them are bound to be better than others, and we'll just call this "one of the others."

153.890 (February 03)

We did much better with this frequency from February. Let's get right into your comments.

Louis Huron wrote,

I finally heard something on this freq. I am from Osgood, Indiana, and had not heard anything at all on it until last Sunday morning. They called out Penn township fire or EMS to check out a lady's carbon monoxide detector. By the time I got to the scanner to see what freq it was on—it was not a local call—they called them again, so I saw it was the 153.89 freq. I checked my Mr. Scanner CD but was unable to find anything in Indiana, Michigan, Ohio, or Illinois that listed Penn Township. I had previously heard some traffic from lower Michigan, so I figured there must have been a band opening. I live in SE Indiana. I enjoy your column in *Pop'Comm*, keep up the good work.

Our friend Art from New Jersey is back with, "There seemed to be two stations that used this frequency to dispatch emergency vehicles. I believe that there were two since there were two different formats used. I did not monitor this frequency continuously, only sporadically. I was unable to positively place the locations of the stations from the addresses I heard. Possibly, one was Mendham, New Jersey."

Ray from Florissant, Missouri, writes, "The February frequency 153.890 is South County Fire Alarm, KAK61. A lot of action on this frequency—dispatching Fire trucks and Ambulances."

That's right, Ray, it's the one that sends ambulances to my house when my wife does stupid things, but that's another story! Tim DeLong reports, "Ken, in my area of Indianapolis, Indiana, this frequency is used by Hendricks County Fire Departments just west of Indianapolis as a fireground frequency. Hope this will help you out and get me put into your drawing for the one year subscription for *Popular Communications*." Every entry gets entered Tim, even if you didn't hear anything!

Paul Ward says,

The 153.890 frequency you wanted us to monitor was real interesting. I live in the mountains of California about 20 miles from Yosemite Park. The elevation here is 3,000 feet, so we hear stations from all over California. 153.890, I believe, is a Fresno County Swat frequency. I know for sure that it is a Fresno County Sheriff Dept. frequency. It is not active all the time but, when it is, it's quite interesting! I am going to leave it programmed in my scanners!

Dave Foster from Holister, California, writes, "Ken, on the central coast of California this freq is Monterey F.D. BLUE, and other dept's in Monterey County also use it. There are several users in the central valley of California also." And, according to Tome Wade from McHenry, Illinois, "153.890 is used by the Lake County Illinois Fire Departments in my area of Northern Illinois."

Steven Zielke gave us a pretty complete report on the Seattle area,

I live in King County [Seattle], and 153.8900 MHz is not used inside King County; however, that is because it is used in Pierce County [Tacoma], which is the next county to the south of me. Within Pierce County, 153.8900 MHz, with 131.8 Hz, is called [PIERCE-1] and it is the main dispatch channel for most, but not all, of the fire departments in Pierce County, outside of the city limits of Tacoma.

And Henry Gruba pretty much knows the scoop on this frequency in his area, writing in,

I do not need to put the "Frequency of the Month" in my scanner, as it is already there. 153.890 is used in Lake County, Illinois, as the Main Fire Frequency for the Quad 3 Fire Departments, the Southwest quad of Lake County, Illinois, which includes Lake Zurich and Wauconda FDs. Before I moved to the Northern part of Illinois, 153.890 was the Main Fire Frequency for FDs on the South side of Chicago, which includes Calumet City (my hometown), Burnham, Lansing, and Harvey. I have fond memories from "DA South Side" and am making new ones from listening to it up here.

I am currently a Lieutenant/Paramedic on Waukegan, Illinois, FD (154.415) and the Communications Officer for the department. I got started in the Fire Service on "DA South Side" in 1984 as a POC Firefighter/Paramedic and never looked back.

Also, we have, "Hi Ken, my name is Jon, KB9ZTI, from Johnsburg, Illinois. I have been hearing Barrington, Illinois, fire/rescue on 153.890 with 127.3 Hz." Brian Reuger writes, "I have been monitoring 153.890 for three days now. There has not been a 'peep' out of my scanner! I did a look-up on this frequency and it is assigned to Chesapeake City PW and Williamsburg, Virginia, PW. I suspect that these freqs were abandoned when the two cities went to trunking."

Sounds like a very good theory, Brian. But keep an eye on that and any other frequencies that were abandoned. They usually don't sit idle for too long!

And Bob Davis is back with, "The frequency of 153.890 is used by Johnston County and the city of Vienna as a fire frequency here in Southern Illinois, and also used in central and northern Illinois."

Jay Tarantino really got into the spirit of the original idea behind this contest. He writes,

I enjoy the feature "Frequency of the Month." It is a good idea to encourage people

What's inside the box? As we mentioned last month, the PRO-96, a digital trunker from RadioShack is now shipping to outlets. This one just arrived at Pop'Comm headquarters and will be put through its paces shortly. Stay tuned!

to a little exploring. It was not long before I was hearing activity on 153.890 MHz. I was listening in on fire department communications. I imagine that this was a repeater system (I could hear both the fire station and the mobile units very clearly).

The on-line listing shows 153.890 being assigned to Medford Fire in Massachusetts. Medford is about five miles away from where I live in Waltham. Speaking of Waltham: I am a member of the Waltham Amateur Radio Association (http://www.wara64.org/). I have attached a neat photo that I took a few days ago of our repeater site. The club has four repeaters (53.25, 146.64, 224.94, and 449.075 MHz) at this location. We share this space with the city of Waltham.

I have to say that *Popular Communications* adds a lot of enjoyment to the hobby.

Thanks, Jay. It's nice to hear that you're having fun, and that we here at *Pop'Comm* can be a part, or even a cause, for some of it!

Rob wrote, "I listened to 153.890 for two weeks straight in Waldorf, Maryland, and on my commute back and forth to Columbia, Maryland, and heard absolutely nothing. I didn't have a chance to look up the freq yet and see what it is assigned to in this area, but it has sparked my interest. Looking forward to the next edition to read the replies of other readers." Well, Rob, it took a long time, but here you are. Keep reading! Ranger from West Virginia writes, "Ken, The New Martinsville VFD, in Wetzel County, West Virginia, uses 153.890."

467.5875 (April 03)

Stacey Whaley from Clarksville, Indiana, writes, "For the *Popular Communications* April 2003 issue "Frequency of the Month," 467.5875, I am not hearing anything on that frequency in my area—Clarksville, Indiana." Dave Hill from Boston writes, "Negative response on my ol' PRO-92 here in Boston area."

Now I'll have to admit I was starting to get worried when these two entries came in first. I thought maybe I had typed the frequency wrong or something. But then Juan from Las Vegas saved the day when he wrote, "I guess if you just look at the pictures in the magazine and not read the words and pay attention you wouldn't have picked up that the freq was FRS Channel 9. You probably did that on purpose."

Who me?

Juan continues, "As an amateur radio operator I monitor many types of comms and the FRS channels are included. I have a BC80XLT on an outside discone antenna and have those freqs always scanning. The most traffic is heard after the High and Middle Schools let out about 2 p.m. The students go home, get on their radios and the chatter is on all the freqs until the late hours of the night. Some interesting, some not." Thanks Juan

CopTalk

Thanks to Tiare publications for making a copy of their *CopTalk* book available. You can get information on this and many other great books at www.tiare.com.

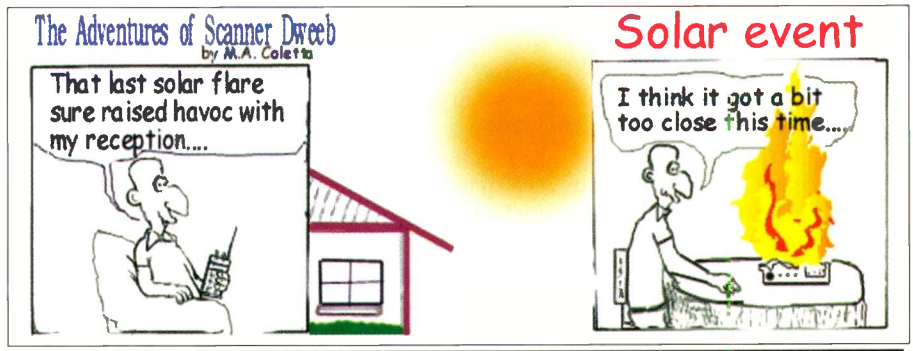
Our winner this month is Dave Hill, for his entry on 153.890. Congrats Dave!

Frequency of the Month

Well, with all this discussion of the various frequencies, we'll have to add one for this month! Let's give **146.940** a try. Yes, I know, it's a ham frequency and you'll either like what you hear or you won't. Or you won't hear anything, and you can tell me that too.

Send your questions and "Frequency of the Month" entries to the usual place: e-mail to radioken@earthlink.net or to 9051 Watson Rd. #309 St. Louis, MO 63126. Don't forget to mark the frequency in the subject or on the envelope so it gets entered correctly, and don't forget to send your address for the *CopTalk* book!

Until next month, good listening! ■



clandestine communiqué

tuning in to anti-government radio

by Gerry L. Dexter

North Korean Clandestine Off The Air?

The long running **Voice of National Salvation** has gone off the air, apparently for good. This North Korean-based broadcaster, beamed to South Korea went off the air on August 1, even admitting the station was in the North, although the broadcasts always claimed to come from the South. Voice of National Salvation was often heard in North America during their early morning transmissions on **3480, 4120, 4450, and 4557**. We can only speculate as to whether this move was part of the ongoing political dance over the North's nuclear capabilities and the concern this has raised in Washington, D.C., and various Asian capitals.

The latest new clandestine is **Radio Fthi** or **Radio Justice**, on the air Sundays from 1700 to 1800 on **12120** via Julich, Germany. It's the work of Tigrinyan International Solidarity for Justice and Democracy, based in Washington, D.C. The broadcasts are in Tigrayan and are beamed to Ethiopia.

Another new one is **Radio Abeokuta**, broadcasting to expatriate Nigerians in Europe via the Italian Radio Relay Service (IRRS). This one is on **5780** from 2000 to 2030 on Fridays and Wednesdays (repeating Friday's program).

Radio Togo Libre, mentioned last time, is operated by something called the National Dialogue of Civil Society, based within Togo. The broadcasts are scheduled from 1300 to 1400 Monday to Friday on **21670** (probably via Meyerton, South Africa), and Sundays from 22000 to 2100 on **12125** (site uncertain). The programming is produced in Togo and sent to the transmitter site via the Internet and satellite uplink. Togo authorities occasionally block Internet connections, which, along with power cuts in general, has created problems in providing fresh material.

Here are a few schedules, which should provide some target information for you:

Fang Guang Ming Radio is now scheduled daily from 2100 to 2200 on **6035** and **9625**, both via Samara, Russia in Chinese.

Anti-Laotian broadcaster **Hmong Lao Radio** is on the air on Fridays from 0100 to 0200 on **17540**, in Laotian.

The **Voice of Freedom/Voice of Free Lebanon** broadcasts in Arabic daily from 1600 to 1700 on **11645** via Samara, Russia.

The **Voice of Biafra International**, beams to Nigeria in English on Saturdays from 2100 to 2200 on **7380** (Meyerton, South Africa).

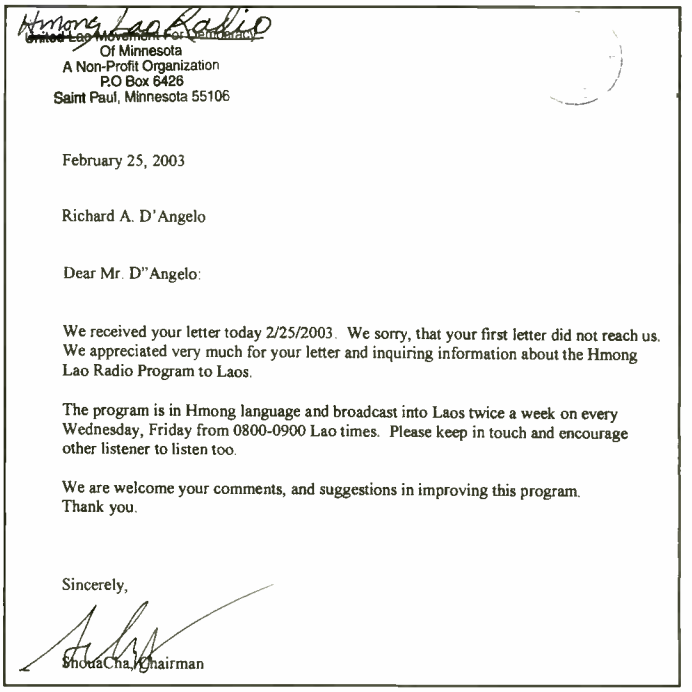
The **Voice of Reform**, aimed at Saudi Arabia, operates via Kvitsoy, Norway from 1800 to 2000 on **15705** with all Arabic language programming.

Anti-Syrian **The Arabic Radio** is scheduled with its Voice of the Homeland service in Arabic from 0330 to 0400 on **7510** (via Samara) and from 1500 to 1530 on **12085** and **12120** both via Samara.

Anti-Vietnam **Que Huong Radio** airs via KWHR, Hawaii, daily except Sundays at 1330 to 1400 on **9930**.

An hour earlier than the above you can hear **Radio Free Vietnam** (1230) via the same station and frequency.

And the **Voice of Khmer-Krom Radio**, airs on Tuesdays from 1400 to 1500 in Khmer on **15660**.



Hmong Lao Radio
~~United Lao Movement For Democracy~~
Of Minnesota
A Non-Profit Organization
P.O Box 6426
Saint Paul, Minnesota 55106

February 25, 2003

Richard A. D'Angelo

Dear Mr. D"Angelo:

We received your letter today 2/25/2003. We sorry, that your first letter did not reach us. We appreciated very much for your letter and inquiring information about the Hmong Lao Radio Program to Laos.

The program is in Hmong language and broadcast into Laos twice a week on every Wednesday, Friday from 0800-0900 Lao times. Please keep in touch and encourage other listener to listen too.

We are welcome your comments, and suggestions in improving this program. Thank you.

Sincerely,

ShouaCha, Chairman

Richard D'Angelo received this letter QSL from Hmong Lao Radio, beaming to Laos and based in St. Paul, Minnesota.

And now for a few loggings:

Tricia Ziegner in Massachusetts found the U.S.-sponsored **Radio Farda** broadcasting to Iran on **9560** at 2028 in Farsi. Tricia says she heard "cheesy," loud pop music interspersed with quotes from President Bush. Radio Farda, like most other U.S-run surrogate broadcasters (Radio Free Asia, Radio Free Iraq, etc.), uses a lot of these drop-in voice bits from government officials, making it rather easy to at least narrow down the choices as to what you're listening to. Most of the IBB transmissions have a similar flavor, no matter what the language or target area.

Marty Foss in the Philippines bagged the South Korean based **Voice of the People** on **3912** at 1809 with talks in Korean. Of course, where most of us live, there is no chance whatsoever of hearing this station on that frequency at that hour. Our best bet in North America would be to check for their sign on at 1100 and hope the amateur radio interference isn't too thick.

Jerry Strawman in Iowa heard the **Voice of Oromo Liberation**, aired via Julich, Germany, at 1710 on **15670** with talks in the Oromo language.

Remember, your informational input is what makes this column "go." So please continue to send along any material you have each month. That includes loggings of clandestine stations or programs, the schedules of same, copies of any QSLs you receive, and information on addresses, transmitter sites, and general info about the groups or organizations that sponsor such broadcasts. Thank you!

Until next month—good hunting! ■

7 GREAT New Books from CQ

Heathkit - A Guide to the Amateur Radio Products

by Chuck Penson, WA7ZZE

1

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

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pirate & alternative radio

free radio broadcasting

by Edward Teach

Sunshine And Grasscutter Tying The Coax Soon?

Our list isn't huge this month but some of the stations seem more active than usual, so they got a lot of notice. Let's dig into the mailbag!

Ironman Radio, 6950 USB at 0247 with heavy metal. Another time on 6925 at 0100 with Rage Against the Machine. (William T. Hassig, IL) 6925 at 0115 with Rage Against the Machine, spoof on Grasscutter Radio, Mr. Voodoo, Red October. (Dave Balint, OH) 0125 with rap-style thing featuring noted pirate operators, ID at 0129, and mentions of several other stations, J.B., Mr. Head, and Red October. Also song called "There Has Never Been a Pirate Operator Like JB" was announced as the winner of the song/poetry contest. (Wood, TN)

Sunshine Radio, 6950 USB at 0103 with female DJ, disco, music from *Saturday Night Fever*. (Hassig, IL) 0109 playing a couple of BeeGees tunes, then "I'm back. This is Sunshine Radio." (Duddy, NY) 0032 with "Henry the 8th" and many other older pop numbers—BeeGees, Kenny Rogers, Percy Sledge, and such.

WHYP, 6925 USB at 0130 with talk of Haarp, microwaves changing weather, "Sky Pilot." Again at 0130 with blues and gospel, bingo game, Canadian radio recordings. Also at 0210 with punk rock and pop. (Hassig, IL) 6925 at 0216 with IDs, various rock things, mention WBIG and a conspiracy, Red October, and Bethlehem, Pennsylvania, and "L.C.—one of the coolest DXers out there, as an 11 meter DXer." Also at 0257 with talk about "Jay and the '66 VEW bus" taking a road trip to California. Another log at 0143 playing "Hashpipe" song and comment "I've been away for awhile—it's good to be back." (Brian Duddy, NY)

WFMQ, 6925 at 0230 with butchered Beatles songs. (Hassig, IL) 0305 with Beach Boys and Culture Club. (Duddy, NY)

WMOE/Voice of Captain Ron Shortwave, 6925.1 LSB at 0040 with rock numbers. Drifting upwards. (Hassig, IL)

Indira Calling, 6925 at 0247 with music selections from India. (Duddy, NY)

Psycho Radio, 6950 USB at 0403 with repeated ID and tune "I Gotta Get Psycho" and more repeated IDs. (Duddy, NY) 0152 with ID "Psycho Radio, 69—50 USB—kicking electronic ass." Music portions were hard to read; VOX was fair. (Wood, TN)

Radio Bingo, 6925 at 0303 with a ton of bingo numbers and comment "going into a holding pattern." Spoof of Lucky Charms. (Duddy, NY)

Grasscutter Radio, 6950 USB at 2333 with "Gimme Some of Your Lovin'" and many older songs. (Duddy, NY) 0301 with Dylan tunes, man talking, and ID. Then Grasscutter Radio "broadcasting from the ionosphere." After a Hendrix selection and talk, women mentioned Sunshine Radio. (D'Angelo, PA) 0009 with things by Stevie Ray Vaughn and Jimi Hendrix. Mentioned that "Sunshine has declared her love for Grasscutter" and later some dialog between the two. (Balint, OH)

Crazy Wave Radio, 6275.8 at 0254; very poor with techno music and man talking. ID caught at 0256. (D'Angelo, PA)

Radio Borderhunter, based in Belgium, is still active occasionally as far as we know. It's a tough catch in North America, although Rich D'Angelo managed it from Pennsylvania a couple of years ago.

Big Thunder Radio, 6915 at 0211 with songs by Fats Domino, Dr. Hook. Sign off announcements and "Happy trails" at 0235. (Joe Wood, TN)

Undercover Radio, 6950 USB at 0305 with songs by Laurie Anderson (I think). (Balint, OH) 0207 "This is Undercover Radio broadcasting from the Middle of Nowhere." (Duddy, NY)

WMPR, 6955 with a rock song, then off at 2245 but back on at 2255 with more selections. (Duddy, NY)

Radio Pigmeat International, 6950 at 0143 airing a song with "yeah, yeah, everybody right now" in it. (Duddy, NY) Also at 0344 with "Yeah 1979 live—Neil Young" and "You are listening to Radio Pigmeat International."

Buckwheat Radio, 6955 USB at 0155 with Pink Floyd and others. Then Grasscutter Radio came on and asked, "Is this Captain Ron?" Buckwheat said no and they complimented each other. Off at 0205. (Duddy, NY)

Polka Radio—? 6925 at 0111 with polka version of "Uno Paloma Blanka" and other polkas. ID and e-mail address were given but too hard to understand. (Balint, OH)

Quite a listing after all! Keep those logs coming my way! Catch you next time with more pirate tips! ■

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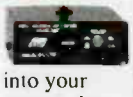

Plug this *compact* MFJ all band active antenna into your receiver and you'll hear strong, clear signals from all over the world, 300 KHz-200 MHz including low, medium, shortwave and VHF bands.

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MFJ-1026 **$179.95**

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MFJ-959B **$99.95**

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

Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload. Select 2 antennas and 2 receivers. 1.6-30 MHz. 9x2x6 in. Use 9-18 VDC or 110 VAC with MFJ-1312, $14.95.

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High-Gain Preselector

MFJ-1045C **$99.95**

High-gain, high-Q receiver preseletor covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Push buttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18 VDC or 110 VAC with MFJ-1312, $14.95.

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Use your computer and radio to receive and display brilliant full color FAX news photos and incredible WeFAX weather maps. Also RTTY, ASCII and Morse code. Frequency manager lists over 900 FAX stations. Auto picture saver.

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

High-Q Passive Preselector

MFJ-956 **$49.95**

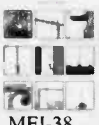
High-Q passive LC preselector boosts your favorite stations while rejecting images, intermod and phantom signals. 1.5-30 MHz. Preselector bypass and receiver grounded positions. Tiny 2x3x4 inches.

Super Passive Preselector

MFJ-1046 **$99.95**

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

Easy-Up Antennas



MFJ-38 **$16.95**

How to build and put up inexpensive, fully tested wire antennas using readily available parts that'll bring signals in like you've never heard before. Antennas from 100 KHz to 1000 MHz.

MFJ Antenna Switches

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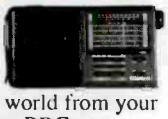
Build this regenerative shortwave receiver kit and listen to signals from all over the world with just a 10 foot wire antenna. Has RF stage, vernier reduction drive, smooth regeneration, five bands.

21 Band World Receiver

MFJ-8121 **$39.95**



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world band tuning tips

your monthly international radio map

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

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

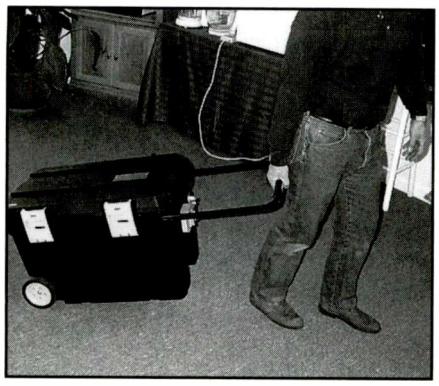
UTC	Freq.	Station/Country	Notes
0000	9580	Int. Radio of Serbia-Montenegro (Yugoslavia)	Serbian
0000	9875	Radio Vilnius, Lithuania	
0000	17675	Radio New Zealand Int.	
0000	4845	Radio Mauritanie, Mauritania	AA
0000	15535	Radio France Int., via Russia	FF
0000	64585	AFRTS/AFN, USA, via Puerto Rico	
0000	9563	Voice of the Iraqi People, clandestine	AA
0000	9440	Radio Prague, Czech Republic	
0000	5010	Radio Pueblo, Dominican Republic	SS
0030	12040	Radio Ukraine Int	
0030	15150	VOA Relay, Thailand	unid
0030	3320	Radio Sondergrense, South Africa	Afrikaans
0030	9845	Radio Netherlands	
0030	6145	Radio Japan/NHK, via Canada	
0030	11955	BBC Relay, Thailand	
0030	9770	Sri Lanka Broadcasting Corp.	
0030	11940	Radio Romania Int.	Romanian
0030	17835	Radio Imperial, El Salvador	SS
0030	4832	Radio Litoral, Honduras	SS
0030	5865	Voice of Greece	Greek
0030	6010	La Voz de su Conciencia, Colombia	SS
0030	11815	Radio Brazil Central, Brazil	PP
0100	4965	Christian Vision, Zambia	
0100	7305	Vatican Radio	SS
0100	9715	RDP Int., Portugal	PP
0100	11800	RAI, Italy	
0100	9965	Voice of Russia	SS
0100	7285	Sudwestrundfunk, Germany	GG
0100	9725	University Network, Costa Rica	
0100	4915	Radio Nacional Macapa, Brazil	PP
0100	9790	China Radio Int., via Canada	
0130	15275	Deutsche Welle Relay, Rwanda	
0130	6155	Radio Eireann, Ireland, via Canada	
0130	6185	Radio Educacion, Mexico	SS
0130	9590	VOIRI, Iran	
0130	6055	Radio Exterior de Espana, Spain	
0130	3340	Radio Misiones Int/HRMI	SS
0200	7175	Voice of Vietnam, via Canada	VV
0200	9605	Vatican Radio	SS
0200	6190	Radio Slovakia Int.	FF
0200	7185	RTV Marocaine, Morocco	AA
0200	5678	Radio Ilucan, Peru	SS
0200	4800	Radio Lesotho	vern
0200	11725	Radio Cairo, Egypt	AA
0200	12095	BBC Relay, Ascension Is.	
0200	11710	RAE, Argentina	
0230	9560	Radio Korea Int., via Canada	
0230	15495	Radio Kuwait	AA
0230	9570	Radio Budapest, Hungary	
0230	7160	Radio Tirana, Albania	
0300	11885	Voice of Turkey	TT
0300	9985	KHBN, Palau	unid
0300	6940	Radio Fana, Ethiopia	Amharic
0300	4800	Radio Buenos Nuevas, Guatemala	SS
0300	7345	Radio Prague, Czech Republic	
0300	5025	Radio Rebelde, Cuba	SS
0330	13675	UAE Radio, Dubai	
0330	11770	Radio Mexico Int.	SS
0330	15665	Radio Free Asia, via Northern Marianas	CC
0330	6985	Voice of the New Sudan (clandestine)	AA
0400	15275	BSKSA, Saudi Arabia	AA
0400	11665	Voice of Tartarstan, via Samara, Russia	RR
0430	11765	BBC Relay, South Africa	
0430	15565	Radio Vlaanderen Int., via Bonaire	Flemish
0500	7190	RTT Tunisienne, Tunisia	AA
0500	7255	Voice of Nigeria	
0500	4770	Radio Kaduna, Nigeria	
0500	7230	Radio Japan/NHK, via England	
0500	9925	Voice of Croatia, via Germany	Croatian
0500	6349.5	AFRTS/AFN, USA, via Hawaii	USB
0500	9970	RTBF Int., Belgium	FF
0600	4915	GBC/Radio Ghana	
0800	5020	SIBS, Solomon Islands	EE/Pidgin
0900	4387	Radio Imperio, Peru	SS
0900	3290	Voice of Guyana	
0930	6010	Radio Mil, Mexico	SS
0930	4960	Radio Federacion, Ecuador	SS
0930	9665	Radio Marumby, Brazil	PP
0930	4895	Radio Bare, Brazil	PP
1000	4930	Radio Amazonas, Venezuela	SS
1000	11715	Radio Korea Int., via Canada	SS
1000	12085	Voice of Mongolia	
1000	9575	Radio Medi-Un, Morocco	AA

UTC	Freq.	Station/Country	Notes
1000	4810	XERTA, Mexico	SS
1000	4600	Perla del Acre, Bolivia	SS
1000	3280	La Voz del Napo, Ecuador	QQ
1000	4996	Radio Andina, Peru	SS
1000	9605	Voice of the Mediterranean, via Italy	II
1000	2220	HCJB, Ecuador	QQ
1000	6035	La Voz de Guaviare, Colombia	SS
1000	4902	Radio San Miguel, Bolivia	SS
1030	4335	Radio Naylamp, Peru	SS
1030	4775	Radio Tarma, Peru	SS
1030	9335	Korean Central BS, North Korea	
1030	5040	La Voz de Upano, Ecuador	SS
1030	9900	Deutsche Welle, Germany, via Russia	GG
1030	5010	Radio Cristal Int., Dominican Republic	SS
1030	4814	Radio Buen Pastor, Ecuador	SS
1030	1030	Radio Rebelde, Cuba	SS
1100	4830	Radio Tachira, Venezuela	SS
1100	7260	Radio Thailand	Thai
1100	4790	Radio Atlantida, Peru	SS
1100	11710	Voice of Korea, North Korea	FF
1100	15705	Norwegian Radio	NN
1100	9885	Radio New Zealand Int.	
1100	4920	Radio Quito, Ecuador	SS
1100	4052.5	Radio Verdad, Guatemala	SS
1100	4835	Radio Tezulutlan, Guatemala	SS
1100	4800	Radio Coatan, Guatemala	SS
1100	9470	Xinjiang PBS, China	CC
1130	11985	Radio Taiwan Int	
1130	2310	ABC Northern Terr. Svc, Alice Springs, Australia	
1130	13645	All India Radio	unid
1200	9670	Radio Veritas Asia, Philippines	JJ
1200	9595	Radio Tampa, Japan	JJ
1200	6045	XEXQ Radio Universidad, Mexico	SS
1200	4890	NBC, Papua New Guinea	
1200	11580	KFBS, Northern Marianas	CC
1200	11740	Radio Japan/NHK, via Singapore	JJ
1200	11500	Voice of Russia via Tajikistan	unid
1200	5050	Guangxi PBS, China	CC
1230	12000	Voice of Russia	CC
1230	9545	VOA Relay, Northern Marianas	CC
1230	4870	RRI Wamena, Indonesia	II
1230	6150	SBC, Singapore	
1230	9405	FEBC, Philippines	CC
1230	11605	Radio Taiwan Int	CC
1230	11945	BBC Relay, Singapore	CC
1230	11620	All India Radio	Hindi
1230	15400	YLE/Radio Finland	Finnish
1230	9515	Radio Canada Int.	
1230	15615	Adventist World Radio, Guam	
1300	9780	Republic of Yemen Radio	AA
1300	15295	Voice of Malaysia	unid
1300	9910	KWHR, Hawaii	
1300	15375	La Voz Cristiana,	
1300	9580	Radio Australia	
1330	17840	Radio Sweden	
1330	5765	AFRTS/AFN, USA, via Guam	USB
1400	9830	Radio Thailand	
1400	17755	Radio Exterior de Espana, Spain	SS
1400	15065	Radio Pakistan	unid
1400	6070	CFRX relay CFRB, Canada	
1430	13770	RDP Int., Portugal	PP
1430	15220	Radio Netherlands, via Canada	
1430	13705	Radio Rossii, Russia	RR
1430	17705	Russian Radio Int., via Germany	RR
1500	15395	UAE Radio, Dubai	AA/EE
1500	15510	Voice of Russia	CC
1500	15315	BSKSA, Saudi Arabia	AA
1500	11570	Radio Pakistan	unid
1500	15205	KTWR, Guam	
1530	13730	Radio Austria Int.	GG
1600	11690	Radio Jordan	
1600	21630	Radio Japan/NHK, via Ascension Is.	JJ
1630	15630	Voice of Greece	Greek
1660	17630	Sudan Radio Service, USA, via England	
1700	17895	VOA Relay, Morocco	
1700	11820	Radio Romania Int.	
1730	11585	Kol Israel	HH
1830	15345	RTV Marocaine, Morocco	AA/EE
1830	15715	Radio Africa Int., USA, via Germany	
1900	15455	Voice of Russia	FF
1900	12060	Voice of the Mediterranean, via Russia	
1900	13670	China Music Jammer	
1900	15175	Adventist World Radio, USA, via Austria	AA
1930	15205	Radio Jamahiriya/V of Africa, Libya, via France	AA/EE
1930	11990	Radio Kuwait	
1930	17605	Radio Netherlands, via Bonaire	
1930	11675	Radio Kuwait	
1930	15640	Kol Israel	HH
1930	13885	AFRTS/AFN, USA, via Iceland	USB
1930	12050	Egyptian Radio	AA
2000	11860	VOIRI, Iran	
2000	11955	Radio France Int., via Gabon	FF
2030	13610	Radio Damascus, Syria	EE/AA
2130	11905	Radio Tashkent, Uzbekistan	unid
2130	15435	Radio Jamahiriya, Libya	AA
2130	15155	Radio Netherlands	DD
2130	9580	Africa Number One, Gabon	FF
2200	9460	Voice of Turkey	
2200	17825	Radio Japan/NHK	JJ
2200	11620	All India Radio	
2200	17510	KWHR, Hawaii	
2230	17800	Voice of Nigeria	
2230	11905	Swiss Radio Int., via French Guiana	GG
2230	21740	Radio Australia	
2230	7210	Radiodiffusion du Benin	FF
2300	11805	VOA Relay, Philippines	SS
2300	4835	RTV Malienne, Mali	FF
2300	12010	Radio Sawa, USA, via Morocco	AA
2300	9885	Swiss Radio International	
2300	13865	INBS, Iceland	Icelandic, USB
2300	4785	Radio Caiari, Brazil	PP
2300	9400	Radio Bulgaria	
2330	7125	RTV Guineenne, Guinea	FF
2330	6190	Deutschlandfunk, Germany	GG
2330	9945	Danish Radio, via Norway	DD
2330	5030	Radio Burkina, Burkina Faso	FF

power up:
radios & high-tech gear

by Harold Ort

review of new, interesting and useful products



The APS Power Plant is a must-have power supply that's always ready when you need it.

APS Power Plant

The recent blackout that crippled the northeast certainly won't be the last blackout we experience. The unprecedented technological advances, which demand more and more electricity, have made it inevitable for supply to fail the demands of a power-hungry America.

The solution is simple: an APS Power Plant. It's an easy-to-use emergency backup power system in a rolling case with either 1250- or 2500-watt-hours of stored power that's always ready when you need it. A 400-, 700-, or 1500-watt inverter and an automatic charger allow you to simply keep the Power Plant plugged into a regular outlet until it's needed. A simple on/off switch and a receptacle will allow you to use a computer, monitor, fax, lighting, credit card processor, printer, cash register, electronic phone system, TV, VCR, satellite dish receiver, radio, and more for up to eight hours without worry. When the grid electricity comes back on you simply roll your APS Power Plant to the nearest outlet and plug it in. It will be ready when you need it again.

The APS Power Plant is an extremely simple and "user friendly" appliance that's designed so that anyone who knows how to plug an appliance into a wall outlet can use it. With a simple on/off switch on the outside of the rolling case and a two-outlet receptacle, it's as simple as plug and play.

APS' news release shows one of their corporate work stations and the Power Plant operating a computer/monitor, printer, fax machine, credit card processor, desk lamp, and cash register. They report,

Using an average of 500 watts per hour, these appliances would operate for approximately five hours before the Power Plant would need to be recharged. For home use, the Power Plant would operate TVs, VCRs, lights, radios, and with the appropriate extension cord and/or connections available, the Power Plant could even operate gas furnace blowers to maintain heating for a period of time. (Power outages do not affect natural gas, but does disable the fan).

In the event a power outage exceeds the amount of time the Power Plant is needed, an emergency DC charging cable is available with the system.

The IOTA 15-amp charger is a special heavy-duty automatic charging system that plugs in to any outlet in a home or business. The IOTA snaps onto the Power Plant and charges the deep cycle batteries. When the batteries are fully charged, the IOTA charger automatically stops drawing current from the regular grid, thus maintaining a full charge until the Power Plant is needed.

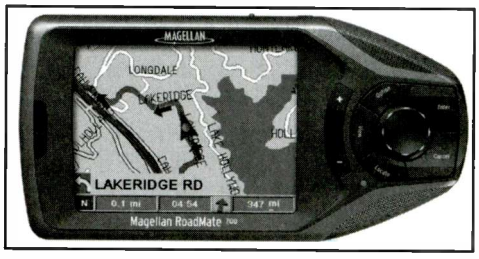
The APS Power Plant can also be used with the special jumper cables for emergency charging in the event of prolonged power outages. These cables snap on to the same connector on the Power Plant used for solar panel connection. When charging during an emergency (when there is no grid electricity), simply roll the Power Plant to any vehicle and attach the jumper cables to the vehicle's battery exactly as you would when jump-starting a vehicle. Letting the vehicle idle for a period of time will recharge the Power Plant's 100-amp hour gel-cell deep cycle batteries. These are maintenance free and the owner never has to worry about monitoring water or electrolyte levels as they would with a common automobile 12-volt battery. Because they are sealed, there are never any fumes, and the Power Plant can be operated with absolute safety indoors. Each battery stores approximately 1250-watt-hours of power when fully charged. The batteries are safely mounted to the base of the unit to prevent movement.

All APS products are designed like Lego Blocks. APS says,

In other words even our smallest portable backup power systems can be added to and expanded to include solar and/or wind generating components. While the Power Plant is primarily designed to maintain its charge from the regular grid system while not in use, many applications, such as remote areas not on the grid, camping, etc. may employ solar panels to create a totally independent power system that does not rely on the grid.

Solar panels can produce battery charging during long power outages when the grid is not available to provide AC charging. Solar panels come in many different sizes, from small "trickle" charge panels, which are less than one square foot, to 120-watt panels.

For more information, contact the company directly at 678-494-2035.



Magellan's new RoadMate vehicle navigation system is a high-tech GPS system that includes voice prompts so you can keep your eyes on the road.

Steer Clear Of Wrong Turns! Magellan RoadMate Now On Board

Car-to-car, turn-by-turn, and point-to-point—no matter where you are, where you're headed, or what vehicle you're driving, the new Magellan® portable GPS vehicle navigation solutions deliver innovative design and unrivaled ease of use. Thales Navigation, a leading global provider of Magellan GPS solutions, just announced two new vehicle navigation solutions in the Magellan RoadMate series to be introduced in time for the holiday buying season.

Magellan RoadMate fuses new advanced features with technologies developed by Thales Navigation for the most proven vehicle navigation system in the world, Hertz NeverLost, which has safely guided millions of people to their destinations.

Once vehicle navigation was consid-

ered an extravagance reserved for luxury car owners, but the portable Magellan RoadMate 500 and 700 are the first products to offer simple, affordable yet fully-featured street navigation so any driver—from the road warrior to the soccer mom to the vacation traveler—can gain time-saving efficiency and peace of mind.

The flagship model, Magellan RoadMate 700 is the only system in its category to provide a complete built-in map of the United States, so drivers can navigate seamlessly anywhere in the country. With an internal hard drive, Magellan RoadMate 700 is pre-loaded with the latest mapping data for the continental United States and Canada. It provides fast, reliable guidance to nearly every address in the country, including two million points of interest, such as restaurants, parks, gas stations, banks, schools, and police stations. The mid-level Magellan RoadMate 500 uses a compact flash memory card, which can store user-selected areas of the United States and Canada mapping data that can then be uploaded from the supplied software.

According to Lonnie Arima, vice president of worldwide consumer sales and marketing for Thales Navigation,

> The Magellan RoadMate built-in tutorial and intuitive configuration make the system easy to operate from the start. And, since most households have more than one automobile, portability is another key benefit that makes our new Magellan RoadMate systems outstanding, cost-efficient, vehicle navigation solutions. The introduction of these innovative products also proves yet again that Thales Navigation is committed to making products that respond directly to our customers' needs.

Compact and lightweight, Magellan RoadMate sets up for use in minutes without professional installation and the added cost and time associated with it. In addition to plug-and-play set up, a large high-resolution color touch screen, high-quality voice guidance prompts, and a wide array of mounting and faceplate options make the Magellan RoadMate series the new standard in portable car navigation.

The Magellan RoadMate 700 and 500 offer complete map coverage using the latest NavTech data for the United States and Canada. Both show a clearly visible, full-color route, viewable as text directions, as a graphic showing one turn at a time, or displayed on a moving map to show the driver's progress. Either way, convenient turn-by-turn voice-prompt guidance minimizes the driver's need to view the display.

To obtain a route, drivers can choose from their personal address book, which stores up to 100 frequent destinations, choose a destination from the points of interest database, or enter a street address using either the touch-screen or keypad. The Magellan RoadMate 700 and 500 offer navigators a choice of several routing methods, including "Shortest Time," "Shortest Distance," "Least Use of Freeways," and "Most Use of Freeways." In addition, the system automatically recalculates a route after a missed turn.

For additional information, visit www.magellangps.com. The RoadMate 700 retails for $1,299.00 and the 500 is $999.00.

Thales Navigation is one of the world's leading developers and manufacturers of positioning, navigation, and guidance equipment with global operations. Thales Navigation markets its Magellan brand GPS solutions in the consumer electronics, recreation, and automotive markets, and its GPS and GNSS professional products in the survey, GIS/Mapping, and OEM markets. Through its joint venture with Hertz, Thales Navigation has developed the Hertz NeverLost vehicle navigation system. Thales Navigation's key innovations include the first U.S. commercial handheld GPS receiver for positioning and navigation, and the first handheld GPS with industry standard Secure Digital Memory Card capabilities. ■

by Bruce Conti, baconti@aol.com

Online DX Resources You Can Use!

Mediumwave DXers maintain a huge presence on the Internet. This month "Broadcast Technology" reviews some of the top online DX resources to maximize your enjoyment of the hobby.

AM-DX.Com

AM-DX.com is an outstanding website dedicated to serving mediumwave DXers exclusively. It contains a list derived from the FCC database of all AM radio stations in the Western Hemisphere. A utility automatically updates the list weekly. A unique feature is the availability of antenna patterns for each directional radio station in the list.

Webmaster Craig Healy writes,

> I've updated the site to add the directional antenna patterns for every listed station. Patterns for day, night, and critical hours are shown. Almost every foreign station is also there, other than a few low-power Brazilians with no callsign. Some of the Caribbean patterns are interesting, and [which] explain why they are seldom heard. There are about 3,500 small .gif files of these patterns. They load quickly even by a dial-up connection.

AM-DX.com is interactive with forums for discussion of various related topics. Future plans include access to a remote receiver, possibly located at a prime DX site on the south coast of Massachusetts. Broadcast engineer Craig designed and maintains the site. He has been an engineer for AM radio stations on 920, 1110, and 1220 kHz, plus 95.5 FM, all in Providence, Rhode Island, and he's a member of North America's two leading mediumwave DX clubs, the International Radio Club of America, and the National Radio Club.

Where's That Station?

Popular Communications columnist Eric Force has created "Where's That Station?" to help DXers maintain their own logs on computer. Download this mediumwave/BCB DX utility to look up stations and create a customized personal log including distance calculations and links.

The website offers many other resources; one in particular was recently added. "Since about 1997, Werner Funkenhauser, who probably needs no introduction to avid MW DXers, maintained one of the net's foremost resources for mediumwave DXers, Funkenhauser's Whamlog and Medium Wave DX Links," writes Eric. "Last summer, Werner closed his site forever. Fortunately, before his files were deleted, Werner gave his permission for me to clone his site at dobe.com. The site is now located at www.dobe.com/wts/funk."

Eric Force is an avid mediumwave DXer and co-designer of the Van Eric Antenna, a custom high performance tuned air core loop antenna. Visit www.dobe.com/wts to find that station.

Pacific Asian Log

From Bruce Portzer, N7ECJ, editor of the *Pacific Asian Log* (*PAL*), we learn,

> I've recently updated the *Pacific Asian Log* (*PAL*). Now in its fifth edition, the *PAL* lists some 3,800 medium and longwave broadcast stations throughout Asia and the Pacific. As with previous editions, it is free of charge, and can be downloaded as a pdf file sorted by location or frequency. You can find it at www.qsl.net/n7ecj. My thanks to everyone who has sent updates for this latest edition. Comments, additions and corrections are always welcome, and can only add to the completeness and accuracy of the list.

Per stats on the website, it's over 100 pages long and lists over 3,500 stations in 59 countries, with frequency, location, call letters, slogan, network, power, schedule, languages, and other information. It also includes longwave broadcasting stations in the region, plus weather stations and beacons operating near the mediumwave band. The Pacific Asian Log is compiled from DX reports and information gleaned from the Internet. Bruce Portzer is a veteran of the Grayland Beach DXpeditions on the Pacific coast of Washington.

European Mediumwave Guide

Compiled by Herman Boel, the *European Medium Wave Guide* (*EMWG*) is a free publication that lists literally all long and mediumwave stations in Europe, North Africa, and the Middle East. It gives extensive information on each station (exact location, broadcast times, languages, parallel shortwave frequencies, format, address, telephone, fax, website, QSL info, and much more). On top of this it deals with DRM and also sums up the very best websites on long and mediumwave.

As Herman Boel recalls in a brief history of the *EMWG*,

> In the mid-1990s I was becoming more and more interested in mediumwave, in particular the European mediumwave. I noticed that the sources I used to consult, the *WRTH* and *Sender & Frequenzen*, mostly contained concise frequency lists with nothing more than the frequency, station name, and power output. This lead to a continuous browsing between pages to get as much information as possible and make DXing easier. Just like many other DXers I started to make my own list with the information I found. That information came especially from various club bulletins, but also from messages in the DX Antwerp Bulletin Board System. This was the Internet's predecessor and meant a true revolution for DXers who could now exchange information through their computer. Today, it is a truly indispensable tool for the mediumwave DXer.

The *EMWG* is available via a continuously updated online database and a pdf document updated periodically. Visit http://go.to/emwg to learn more about this essential resource.

Brazilian Medium Wave List

The *Brazilian Medium Wave List* is the most complete list of Brazilian mediumwave stations, compiled with the help of dozens of Brazilian DXers and periodically updated. Rocco Cotroneo informs us, "The 2nd edition of the *Brazilian Medium Wave List* compiled by the DX Clube do Brasil (DXCB) is ready. Lots of updates and info. Free download in PDF format at www.ondascurtas.com, link Brasil em ondas medias."

A daunting task to say the least with several stations on every AM broadcast channel, many like U.S. graveyard frequencies, the list represents an outstanding effort by the DXCB to provide the latest information.

NRC AM Radio Log

Not on the Internet? Even if you do have access to the Web, there's still nothing that matches the wealth of information contained in the National Radio Club's *AM Radio Log*. Updated annually, the *AM Log* has everything a DXer needs to know about AM broadcast stations in the United States and Canada. In addition to basic information that can be found on Internet databases, such as call letters, power, and location, the *AM Log* provides programming details including network affiliations, format, slogans, call letters of FM simulcasts, and broadcast schedules, plus working QSL addresses. New to the 2003-04 edition is a list of stations broadcasting in AM stereo. The *AM Log* is the definitive resource published by DXers for DXers. Visit www.nrcdxas.org to learn how to obtain your copy of the *AM Log*, also available from our friends at Universal Radio.

World Radio TV Handbook

The *World Radio TV Handbook* (*WRTH*) is the most comprehensive source of broadcasting information worldwide. Most international shortwave DXers are familiar with the *WRTH*; however, it's just as valuable, if not more so, in terms of national or local broadcast listings. Published annually, a good two-thirds of the book is dedicated to national/local radio. Regular features, such as the solar activity report and receiver reviews, are always interesting, too.

WRTH editors have made an effort to connect with DXers to ensure that listings are current in the latest printings. World renowned DXers Olle Alm, Bengt Ericson, Tore Larsson, Mauno Ritola, and Bernd Trutenau are among the contributing editors whose names you might recognize. The National Radio Club provides the *WRTH* with the latest station listings for the United States and Canada. Need to determine what station from Venezuela is on 750 kHz, where to find Radio Rebelde AM broadcasts from Cuba, or if a Saudi Arabia on 1521 kHz has any shortwave parallels? You'll find it all in the *WRTH*. Look for it at bookstores and radio communications retailers, on the shelf, or online.

QSL Information

870 KSKO McGrath, Alaska, received QSL form back in 370 days after two follow ups. Mentions power of 10 kW, Community Radio of Alaska, signed Dustin Parker-News Director. Address: PO Box 70, McGrath, AK 99627-0070. I am really pleased with this, Alaska QSL #54. (Martin, OR)

963 Southern Star, New Zealand, full detail Radio Rhema/Southern Star QSL card with program booklet and note from Stewart Jenke-Eng. in 23 days for a taped report. Address: Rhema Broadcasting Group, Inc., Private Bag 92-636, Auckland, New Zealand. New Zealand QSL #109. (Martin, OR)

1540 KXEL Waterloo, Iowa, is testing for distance. Evening shows include religious programs from 9 p.m. to 12 a.m. central time, and the "Midnight Trucking Radio Network" 12 to 5 a.m. "Please let me know when and where you are when you hear it," writes Mark Schumacher of KXEL. Address: 514 Jefferson St., Waterloo, IA 50701.

1540 KZMP Dallas, Texas, partial data letter in 9 days for tape air check of the top of the hour ID and $1 (returned), signed Scott Savage, GM. Address: 5307 E Mockingbird Ln., Suite 500, Dallas, TX 75206. (Griffith, CO)

1670 KNRO Redding, California, full-data QSL card plus a personal note written on my report, in 156 days (12 days after 2nd follow-up). Also returned my $1. Signed Jim Bremer, CE. Address: 3360 Alta Mesa Dr., Redding, CA 96002. (Griffith, CO)

1680 WDSS Ada, Michigan, a computer printed half-sheet QSL with color Radio Disney/AM 1680 logo in 58 days for report and $1. QSL verifies that they are 680 watts at night instead of the usual 1000 watts for expanded band stations. Address: 3777 44th Street SE, Grand Rapids, MI 49512. (Griffith, CO)

1690 KFSG Roseville, California, received full-data confirmation letter on KSXX stationary and Radio Poder sticker in 178 days (19 days after 3rd follow-up), signed Len Harris, CE. Address: 3463 Ramona Ave., Suite 15, Sacramento, CA 95826. (Griffith, CO)

UNION RADIO NOTICIAS

Broadcast Loggings

As promised last month, we've got plenty of your loggings this time. How do they do it? Al Ogrizovich of Jacksonville, Florida, uses the C. Crane CCRadio Plus with the Justice Loop antenna to null out interference.

Patrick Griffith listens in Colorado on the Drake R8 receiver with a Kiwa loop. The Kiwa loop is no longer in production, but if you can find one it's a worthy investment. Not only does the Kiwa regeneration provide peak performance, it's also a mechanical work of art.

Patrick Martin on the Oregon coast caught some good transpacific openings using the Drake R8 and directional Ewe wire antenna.

Marc DeLorenzo uses a phased array of noise-reduced sloping wires with a JRC NRD-525 receiver located on Cape Cod, Massachusetts.

Mark Connelly is DXing from choice coastal locations like the Parker River salt marsh in Rowley, Massachusetts, one of the few sites where 1566 India has been received, using the Drake R8A, phased

antennas, and Beverage wave guide antennas. The Drake R8A/B is a popular mediumwave DX receiver. At home, in a car, or overlooking the ocean, turn on your radio and let us know what you're hearing. Now the logs, all times in UTC.

531 1XPI Auckland, New Zealand, at 1250 very good with island music and "My Island" by Englebert Humperdink, "Radio 1XPI" ID, a regularly received signal. (Martin, OR)

540 WWCS Canonsburg, Pennsylvania, at 2130 poor with Radio Disney programming. Surprising appearance on a usually dead daytime channel. Confirmation was elusive because, like all Radio Disney affiliates, this station offers maddeningly few IDs other than "Radio Disney 540," etc.; however, according to several websites, this is Radio Disney's only representative on 540. (Smith, IN)

540 1XC R. Rhema, Tauranga, New Zealand, at 1323 very good and dominant with Christian pop music parallel 549 kHz. (Martin, OR)

550 WDUN Gainesville, Georgia, at 2010 fair with Trojan football, local station nulled. (Ogrizovich, FL)

558 DZXL Pasig, Philippines, at 1341 presumed with Filipino talk under JOCR Japan. DZXL is fairly common when conditions are good. (Martin, OR)

580 HICN R. Montecristi, Santo Domingo, Dominican Republic, at 0203 a good signal with news and music. (Medina, FL)

580 WKAQ San Juan, Puerto Rico, at 0234 a weak signal with news and program about old music. (Medina, FL)

594 Radio Rhema, New Zealand, at 1335 parallel 801 kHz with Christian music, under JOAK Japan and 3WV Australia. (Martin, OR)

620 WRJZ Knoxville, Tennessee, at 0554 the Radio Bible hour and Joy 620 WRJZ liner. (Ogrizovich, FL)

640 WFNC Fayetteville, North Carolina, at 0900 fair, suddenly peaking with an ID that included Lumberton, probably a reference to its FM namesake, located in that nearby North Carolina community. Alas, 'twas short-lived glory for 'FNC. (Smith, IN)

650 RCN Antena Dos, Bogota, Colombia, at 0100 good; "En Antena Dos, Colombia, mucha informacion, mucho deportes..." then promo, "...Radio Panamericana Bolivia, RCN Antena Dos Colombia, Radio Chilena Todo Noticias Chile, Radio Quito Ecuador, Radio Programas Peru, y Radio Caracas Radio Venezuela." (Conti, ME)

675 Arrow Classic Rock, Lopik, Netherlands, at 0400 fair with popular rock tunes by Lynrd Skynrd, Sheryl Crow, The Rolling Stones, and Marc Cohn. Very little DJ patter. (DeLorenzo, MA)

684 RNE1 Sevilla, Spain, at 0323 loud and clear with man in Spanish and bridges of light instrumental music. Slight amount of splatter from 680 WRKO. (DeLorenzo, MA)

711 Rennes, France, at 0017 a cabaret-style French vocal; over 50 Hz rumble from off-frequency Western Sahara station at 711.05 kHz. (Connelly, MA)

730 HJCU R. Melodia, Bogota, Colombia, at 0355 loud and clear in null of CKAC Montreal while copying WJTO Maine DX test. Played Spanish ballads and ran news headlines at 0430. IDed as "Melodia AM Siete Treinta" (AM 7-30). (DeLorenzo, MA) Visit www.ircaonline.org for an up to date list of scheduled DX tests.

738 RNE1 Barcelona, Spain, at 0004 Spanish news; good signal, over 740 CHCM/WJIB slop with 50-kW CHWO Toronto phased to nil. (Connelly, MA)

765 RSR Sottens, Switzerland, at 0013 "Stand By Me" by Ben E. King

PENDING

New Call	Location	Freq.	Old Call
WIJD	Prichard, AL	1270	WKSJ
KJPR	Shasta Lake City, CA	1330	KSNA
KZNY	Oregon City, OR	1520	KKSN
WSPO	Johnstown, PA	1490	WNTJ
KRDY	San Antonio, TX	1160	KENS
WJJD	Morris, IL	103.1	WYXX

CHANGES

New Call	Location	Freq.	Old Call
WZTQ	Centre, AL	1560	WAGC
KNJY	Boise, ID	950	KKIC
KKHQ	Oelwein, IA	950	KOEL
KJIN	Houma, LA	1490	KFXY
KCSP	Kansas City, MO	610	WDAF
WAIZ	Hickory, NC	630	WIRC
KMMZ	Enid, OK	1640	KMKZ
WWOF	Walhalla, SC	1000	WSMW
KELD-FM	Hampton, AR	106.5	KKOL-FM
KWYE	Fresno, CA	101.1	KVSR
KBAA	Gilroy, CA	94.5	KBAY
KHGQ	Quincy, CA	100.3	KHWG
KBAY	San Francisco, CA	93.3	KKWV
KZBR	San Francisco, CA	95.7	KKDV
WKDB	Laurel, DE	95.3	WQJH
WXLS	Danville, IL	99.1	WIAI
WWCT	Farmington, IL	96.5	WXMP
WXMP	Peoria, IL	105.7	WWCT
WSLE	Salem, IL	91.3	New
WQSG	Lafayette, IN	90.7	New
WRDZ-FM	Plainfield, IN	98.3	WXIR
WBOW-FM	Terre Haute, IN	102.7	WLEZ
KOEL	Cedar Falls, IA	98.5	KKCV
KANS	Emporia, KS	99.5	KANS-FM
WLYE-FM	Glasgow, KY	94.1	WGBV
WNXX	Jackson, LA	104.5	WZRB
WSMJ	Baltimore, MD	104.3	WXFB
WKMY	St. Johns, MI	92.1	WWDX
WYTF	Indianola, MS	88.7	New
WYAZ	Yazoo City, MS	89.5	New
KBBM	Jefferson City, MO	100.1	KJMO
KJMO	Jefferson City, MO	104.1	KBBM
WDAF-FM	Liberty, MO	106.5	KCIY
KCVX	Salem, MO	91.7	KYMR
WOJZ	Egg Harbor City, NJ	104.9	WEMG-FM
WBDB	Ogdensburg, NY	92.7	WPAC
KQBL	Enid, OK	96.9	KMMZ
KORM	Astoria, OR	90.5	New
KLON	Rockaway Beach, OR	90.3	New
KAIK	Tillamook, OR	88.5	New
WQSD	Briarcliff Acres, SC	107.1	WWSK
WXST	Hollywood, SC	99.7	WJZX
WURV	Scranton, SC	102.9	WSQN
WFFI	Kingston Springs, TN	93.7	WYYB
WMXF-FM	South Pittsburg, TN	97.3	WLOV-FM
WNCH	Norwich, VT	88.1	WVPC
KLOP	Ocean Park, WA	88.1	New
KVIX	Port Angeles, WA	89.3	New
KCSP-FM	Casper, WY	90.3	KCSP

from '61; excellent signal, louder than adjacent 760 WJR Detroit and within a couple dB of 770 WABC New York. (Connelly, MA)

770 KJCB Lafayette, Louisiana, at 0619 a poor signal, gospel music, and AM/FM ID. (Ogrizovich, FL)

770 WLWL Rockingham, North Carolina, at 0630 poor with beach music oldies show. (Ogrizovich, FL)

780 KNOM Nome, Alaska, at 0800 fair under/over KKOH Reno with network news followed by local weather, "Snow showers a high of 30 to 35," into an oldies rock program. Haven't heard KNOM for some time. Using the MFJ 1026 gets a good phase null on KKOH. (Martin, OR)

820 Trinity Broadcasting Network, Charlestown, St. Kitts & Nevis, at 0820 good with a contemporary Christian music program parallel 7505 KTBN Salt Lake City, over Cuban jammer. (Conti, ME)

900 KNUI Kahului, Hawaii, at 1311 good with Hawaiian pops, "Your Maui Music station is KNUI." (Martin, OR)

940 WIPR San Juan, Puerto Rico, at 0100 heard a very good signal with local and international news plus music. (Medina, FL)

950 WAKM Franklin, Tennessee, at 0543 good with country music, TRN news and sports. (Ogrizovich, FL)

1070 CHOK Sarnia, Ontario, at 0640 poor with signal rapidly fading (and practically oscillating) during the rare and curious absence of local Indianapolis powerhouse WIBC. Weather report and morning show promo, "Hope you'll join me on 1070 CHOK. Only a short burst of intelligibility before CHOK slid back into the swamp. (Smith, IN)

1089 TalkSport synchros, United Kingdom, at 2234 with phone number 7042020 given, "TalkSport, your radio" slogan, and then a telephone poll was introduced. Subject was "What beer type do you prefer, bitter or lager?" Presenter took a call from British citizen in Denmark. (Connelly, MA)

1110 WGNZ Fairborn, Ohio, at 2050 poor with gospel music and station ID: "Good news 1110." Was checking a frequency once occupied by a central Indiana station before it went dark. Despite relative proximity to my location, WGNZ barely cracks the daytime static. (Smith, IN)

1130 KWKH Shreveport, Louisiana, heard KWKH Radio overnight in the car (northwest of Chicago); haven't been able to find any info on the Internet so I can send a QSL. I was wondering if you had any info. (Spies, IL) Per the NRC *AM Radio Log*, the address is 6341 West Port Av, Shreveport LA 71129, or PO Box 31130, Shreveport, LA 71130.

1140 KYOK Conroe, Texas, at 0010 fair with urban gospel programming, including a host who delivered Bible-based quotations and, at one point, a deliberately elongated, high-pitched utterance: "The Re-DEEEEEEEE-mer!" Apparent signoff around 0015. Unusual gray-line breakthrough on a frequency typically dominated by WRVA, which quickly reasserted its command after KYOK's disappearance. (Smith, IN)

1170 KFAQ Tulsa, Oklahoma, at 0120 very good with station ID: "The new talk radio 1170, KFAQ." Never-before-heard station? Well, yes and no—it was merely the new call letters of 50,000-watt stalwart KVOO. (Smith, IN)

1377 France Info, Lille, France, at 0034 a woman in French and musical interlude; good signal, at least as strong as adjacent 1380 WMYF. (Connelly, MA)

1467 TWR Roumoules, France, at 2215 an excellent signal; "On 1467 mediumwave and in the UK on Sky Digital channel 888, this is TWR, God's word in today's world," into Bible program. (Conti, ME)

1503 IRIB Bushehr, Iran at 0053 a Koranic vocal; huge signal, equal or better than adjacent 1500 WTOP Washington, D.C. (Connelly, MA)

1521 BSKSA Duba, Saudi Arabia, at 2222 parallel 9555 and 9870 kHz with a woman in Arabic; good, stronger than 1520-kHz stations. (Connelly, MA)

1530 VOA Pinheira, Sao Tome e Principe, at 0358 heard "From Washington, the nation's capital, the Voice of America has presented Issues in the News," into theme music; fair with WSAI phased. (Connelly, MA)

1548 R. Sawa, Kabd-Kuwait City, Kuwait, at 0054 "I Want It That Way" by the Backstreet Boys, Radio Sawa ID, then a collage of music clips showing all the styles of music played; huge signal, S9+20! (Connelly, MA)

1560 WPAD Paducah, Kentucky, at 0525 good with nostalgia and WPAD liners between songs. (Ogrizovich, FL)

1575 Al Mustaqbal (Clandestine), Kuwait, heard at 0055 an Arabic vocal; good signal, way over Spain, and at 2355 possibly this with non-stop U.S./Euro pops like "Total Eclipse of the Heart" by Bonnie Tyler. Strong signal. (Connelly, MA)

1600 WIDU Fayetteville, North Carolina, at 2134 poor with Bulldogs football and many local spots, local station nulled. (Ogrizovich, FL)

1620 WTAW College Station, Texas, at 0609 good with "Bloomberg on the Money." (Ogrizovich, FL)

1660 KXOL Brigham City, Utah, at 0733 heard, "You've got the Real Oldies, KXOL." ID as "101.5 FM, KEGA Oakley." '60s and '70s oldies. Haven't heard these guys for a while, a sign of improving conditions. (Griffith, CO)

1660 WGIT Canovanas, Puerto Rico, at 0046 with a rapid fire Spanish male announcer under WWRU Radio Unica, which was in Spanish too! Tentatively new, to say the least, as I never heard a Spanish signal on 1660 other than WWRU New Jersey. (Chiochiu, QC)

1690 WRLL Berwyn, Illinois, at 0845 a good signal in the null of local KDDZ. Larry Lujack with a promo for the morning show with him and Tommy Edwards featuring Animal Stories. Top of the hour ID, "WRLL Berwyn-Chicago." (Griffith, CO) New x-band station on the air. Tommy Edwards and Larry Lujack are local radio legends from the '50s and '60s on 890 WLS Chicago.

1700 WTXX Brownsville, Texas, at 0240 very good with news and Oldies Radio. (Medina, FL)

Thanks to Bogdan Chiochiu, Mark Connelly, WA1ION, Marc DeLorenzo, Patrick Griffith, NØNNK, Patrick Martin, Alberto Medina, KG4WRO, Al Ogrizovich, Brian Smith, W9IND, and Klaus Spies, WB9YBM. Visit BAMLog! at http://members.aol.com/baconti/bamlog.htm for more online DX resources. 73 and Good DX! ■

computer-assisted radio monitoring

by Joe Cooper, joe@provcomm.net

Audio Digital Recording Column—Part IV

Over the last three months I've been introducing you to the theoretical and practical aspects of digital audio recording. This month I'll wrap up this series by showing you how to set up a typical modern radio monitoring station for such recordings.

We'll look at an inexpensive and easy to use digital audio recording software program called "Total Recorder" by High Criteria, Inc. This software will allow you to have complete control of your digital recording sessions, including editing and running a scheduler/timer. In the case of MP3 recordings you will also be able to embed a detailed record about the recording session you conducted into the digital audio file that you create.

I'll also give you the background information you'll need to understand what goes into a basic computer-assisted radio monitoring station. To do so, I'll use my own monitoring station and introduce you to a well-written computer software program used to run my computer-compatible radio. I'll also outline how to connect the computer's audio card to the radio to properly sample the sound for the digital recording.

I'll discuss the radio and computer setup I'm using for this particular monitoring session so that you can follow along. Please note that in this month's column I'm going to keep it simple and use shortwave broadcast listening as the starting point. Don't worry, though; in the upcoming months we'll also look at a variety of different modes of radio monitoring that will include special techniques for those of you who use VHF/UHF scanners, longwave, broadcast band, utility radio, and other modes.

The only topics that I will not be touching upon will be the amateur radio modes and techniques, as there is already a ham column in this magazine and this topic has already been covered.

So let's get started by looking at the actual monitoring station and how it is set up, starting with the hardware.

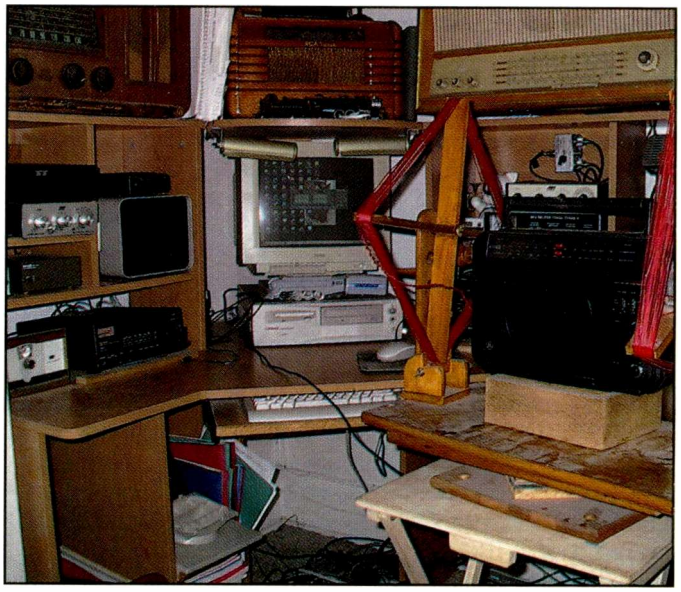
The Radio Setup

My computer-assisted monitoring station used as the example is not a leading edge, state-of-the-art affair and, frankly, I put it together on a budget. From the different e-mails and letters I've received, most of you are in the same situation, with only a few being able to afford high-end equipment. Still, even though it's humble, the station still works and works well because it's been properly planned out and refined through a lot of experimentation.

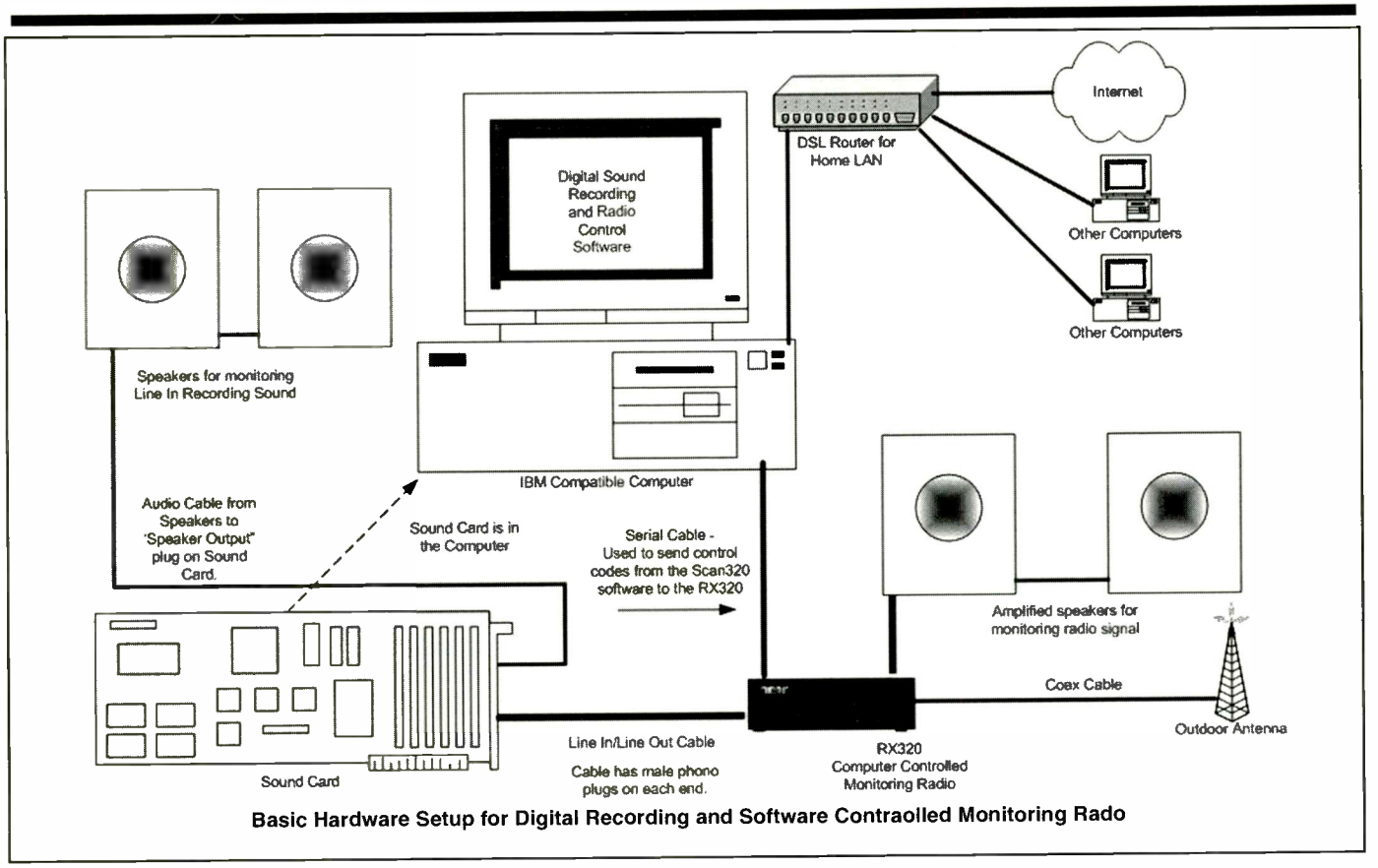
The main monitoring radios I use are a Yaesu FRG-100 that I picked up used and a Ten Tec RX-320. (I've also got a slew of antique and classic tube-based radios I still use for the simple enjoyment of it).

Both are excellent radios. The FRG-100 is a bit more sensitive in the frequencies below 1,000 kHz (I like it for Broadcast Band DX and longwave), while the RX-320 has some excellent digital signal processing (DSP) built in, providing a range of audio filters from 8000 Hz to 300 Hz. It also offers tuning as small as in 1-Hz steps, not to mention offset tuning and a number of other important features.

For this column I'm going to focus on the RX-320 just to keep things simple (though the basic techniques are also used with



Here is a picture of my monitoring station (you may recognize it from an earlier column). On the left are the TenTec RX-320 and the Yaesu FRG-100. You can also see the Compaq computer in use. Not shown are the speakers, which are off camera in this shot.



Basic Hardware Setup for Digital Recording and Software Contraolled Monitoring Rado

This is the interface for the Scan320 program used to operate Ten Tec's RX-320. It was written by Tom Lackamp, AB9B. You input the frequency using the Num Pad on your keyboard. Tuning is done with the up and down arrowed buttons in the upper right hand corner. The buttons numbered 8000 to 300 are the built-in DSP audio filter (measured in cycles per second). I've pre-programmed one of 10 banks of buttons with fixed frequencies (in this case, broadcast band stations). These are only a few of the features available—and it's free!

the FRG-100). It's connected to the computer via a 10-foot serial cable for the software control along with the audio line-out.

The line-out audio from the radio is plugged into the line-in input of the computer's sound card (remember what I was saying about the necessity of doing that for good digital recording in the last column). I've hooked up a pair of inexpensive amplified computer speakers to the regular audio output, and I use them to actually listen to the radio's audio.

If you have speakers hooked up to the computer's sound card you can listen to the radio through them as well. However, the audio quality will not be as good, as I explained in last month's column, because line-out audio is designed to be a constant voltage level for the benefit of the digital recording circuit in the sound card. Again, it needs to be this way to produce good digital recording. So it's better to have a separate set of amplified speakers hooked up to the speaker output of the radio for your actual listening.

The antennas I use are Antenna Supermarket's Eavesdropper Sloper and the Van Gordon G5RV. I use the Sloper primarily for broadcast band and low frequency monitoring, as I find it somewhat noisy in the higher frequencies. On the other hand, the G5RV, while primarily a ham radio antenna, works surprisingly well for shortwave monitoring and is very quiet as well. It also seems to demonstrate some gain over the Sloper when you switch between the two and look at the results on the S meter.

Again, your results may vary, and I've heard some people who find the same Sloper I use to be quiet and a high performer. I know that it is greatly dependent upon RF ground condition (the soil in my backyard is sandy and I can see performance gain when it has rained) and other factors. So don't be afraid to try out the Sloper.

I am a strong believer in using coax cable line isolators. These prevent RF on the outside of a coaxial cable from getting into your radio. Ham radio operators use them primarily, but I find they also keep noise from computers and house wirings (not to mention electrical equipment like florescent lights) out of coax for a quiet radio monitoring session. I bought mine through the Radio Works (www.radioworks.com).

You can also make your own line isolator by making six to eight coils (about 12 inches in diameter) of coax at each end of the length of coax (do not cut the coax, just make it out of the length of coax that you are using). These coils will act as chokes, but to work well they must be kept tight together. You can achieve this by tying them together tightly with either tape or twist ties.

The Computer System

The computer I use for radio monitoring is an old (1998) Compaq Presario using a Cyrix M II CPU, which is equivalent to an Intel Celeron 300 MHz. It has 256 MB of RAM and a 20-MB hard drive. You can pick up the same system on the used market today for a few hundred dollars. With this setup you'll have more than enough processing power to use the software I'll be describing, as well as to "multi-task" several programs at once (a technique I'll talk about in more detail in future columns).

The sound card is a true SoundBlaster brand. I've used so-called "compatible" sound cards in the past and have found them to be nothing but trouble. You may not have had this experience, but why take the chance. You don't need the most expensive sound card to make the best use of your monitoring radio or the software we'll be using.

The speaker system is very simple: a pair of amplified units that cost under $20. You really don't need to go overboard here, unless you also want to listen to Hi-Fi sound from your CDs or streamed music over the Internet.

I've got a few other odds and ends that make radio monitoring easier, but they are not absolutely necessary for the full enjoyment of your system. For example, I've got an MFJ antenna tuner and RF pre-amp that cover between 300 kHz to 30 MHz. I also have RF switches to change between the antennas I use.

The only thing I've done that's a little special is to have every electrical line covered in some way by a ferrite rod or choke. This is to prevent stray radio frequency (RF) and AC (alternating current) harmonics and hum from getting into the radio via the power supply. This keeps electrical hash and noise to a minimum. I'll talk about how to do this in more detail in a future column as well.

Also I don't use florescent lighting of any sort near my radios and instead have purchased some nice low wattage incandescent lights from the local hardware store. Specifically designed for illuminating paintings, they're great for low glare lighting of the monitoring station.

If you take a look at the photo, you'll see how I have everything hooked up. The computer is also hooked up full time to a high-speed Internet line rather than a regular modem, and it's also part of a small home computer network. At this point I can control one radio across that network and, eventually, will be able to from a remote location through the Internet.

In the near future I intend to convert this cable-based computer network to a wireless system, getting rid of all the wires I've strung through the house. I will then also be able to sit out in the backyard with my laptop and listen to my monitoring radio and control it as well. As I'll show you in a future column, it will be surprisingly simple to do.

So that's it for the hardware. Now on to the software.

The Software Packages

Before getting into the specifics of which software packages I'm using, let's look at how I chose them.

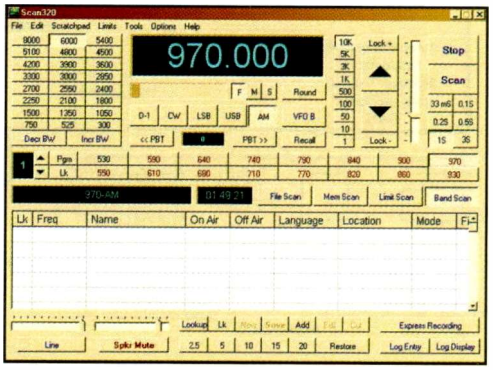
What I wanted was something that would allow me to control the RX-320 in such a way that would be useful for shortwave and broadcast band radio monitoring. This would generally mean that I would be working from either a schedule or a list of frequencies, where I would "plug" the number of the frequency into the computer so it would tune the radio to it. This is different from how utility radio monitors listen, because they generally scan a wide range of frequencies in the HF, VHF or UHF ranges.

I also wanted to digitally record what I was monitoring over the radio, whether I was listening to one long broadcast or several short ones. Part of my recording task was to make a collection of identifiers or theme songs for different stations.

So, what I required was a digital recording package that would allow me to do several things. I wanted to be able to edit what I had recorded, then save the resulting file with enough information to identify the station and frequency it was recorded from, the content of the recording, why it was made (special event or historic moment for example), and, finally, the time and date it was made on.

Regarding these requirements, I was very lucky. Not only was I able to find a free software package to operate the RX-320, it also came with many good features, plus I came across an excellent digital audio recorder for only US $12.

The control program is called Scan320 and was developed by Tom Lackamp, AB9B, specifically for the RX–320. It is available via Tom's webpage at http://www.qsl.net/ab9b/. Although it contains a wide range of sophisticated features (audio filters, programmable control buttons, logs, scanning functions, even an audio recorder, to name only a few), Tom decided to offer it up for free.



This is the interface for "Total Recorder" by High Criteria, Inc. You can see in the lower right hand corner that the recording controls are the same as the recording software I showed you last month (it's standard for all software audio recorders). Right now it's recording a station off the air. You can see the volume control and the volume level meter shown as a green bar (which moves according to the level of the audio signal). The controls are for editing the final digital audio recording.

Frankly Tom's program needs more space than is available this time around to properly describe it. But for now suffice to say it's the one I use to control my radio. Now, on to the main point of this column: the digital audio recording software.

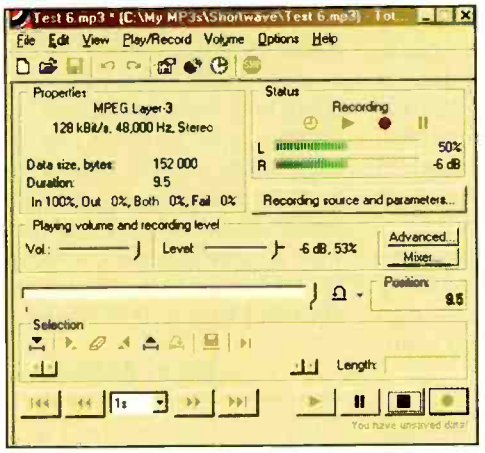
The digital audio recording software, while not free, is very affordable. The $12 charge for the "Standard" edition I use for radio monitoring (you can download a full featured evaluation version of the program for free and buy the license separately from http://www.highcriteria.com) is certainly reasonable.

The publisher, High Criteria, Inc., calls the program "Total Recorder," and frankly that's a very good description. Following is a list of some of the software's relevant features as described on their website:

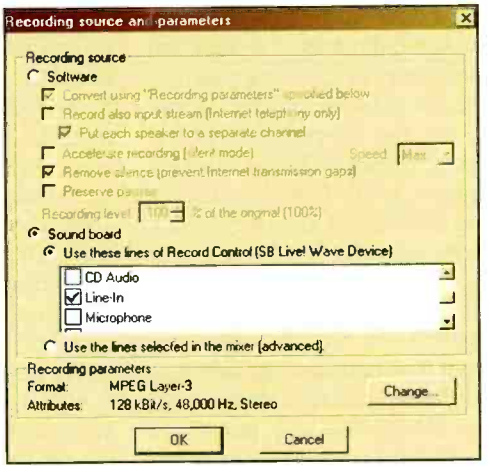
- The ability to record from any sound card input line, including microphone, line-in, CD, and DVD. This feature allows recordings to be made from cassettes, LPs, CDs, your home stereo, or an MD player.
- A Scheduler for automatic recordings where Total Recorder will activate, record, and save the recorded file.
- Convert almost any audio format to WAV format (plain or compressed), MP3, or Ogg Vorbis formats.

What this all means is that this software package fits the criteria for performing good digital audio recording as I have been outlining it in the last three columns.

You're able to record directly from the line-in audio input, giving you the best results. Likewise you can set the software



This is the computer screen that you see when you click on the "Recording Source and Parameters" button. It is now set up to record from the sound card (called sound board here) using the "Line-in" to get the sound. If you click on the "Change" button you can change the sample rate and the type of compression used.



When you save your digital audio file in MP3 compression mode you can also embed a fair amount of information into it. Yes, the labels for the data fields are designed for music listeners, but who cares; you can fill the data fields with any information you like (it won't hurt the file). I've given you an example here of how it can be done. Just click on the OK button to save it all with the file.

up to record when you're not directly in control of the station (say you're at school or work, or the recording time is late at night or some other inconvenient time).

More importantly, you also have a selection of the best audio formats to choose from for your particular monitoring needs. Remember, the more detail you record using a particular sampling rate, the larger the resulting computer file you'll create. Conversely, the more compression you use to make a file smaller, the more information is removed, so you may find that weak or noisy signals are more difficult to hear when played back in digital audio than in analog recordings.

The most important aspect of this software package is the amount of direct control that you have over all of the functions. Let me illustrate this by walking you through the proper set up of the software so you can use it to record your radio's audio.

Putting It All Together

You see how I've hooked up the radio to the computer, with an audio cable going between the line-out socket of the RX-320 to the line-in socket of the sound card. The amplified speakers that are plugged into the radio handle the speaker output.

Once you've hooked everything together, you need to check that the radio is working properly. Using the Scan320 software to turn on the radio does this. You then tune the radio to a local AM broadcast station, using the amplified speakers to hear the sound of the station. You need to do this so that when you're setting up the recording software you'll know for certain that there is something audible to record.

Once this has been done, you can start up the Total Recorder program, as shown in the photo. To connect the radio's line-out to the computer's sound card's line-in, you need to click on the "Recording Source and Parameters" button. You will see a new screen.

Turn off the software capture (used to record streaming audio off of the Internet)

and turn on the Sound Board feature by clicking on the radio button beside that name. Then select "In-Line" by putting a check in the check box beside the option.

You then need to select the sound format you want to record in. You have a wide range to choose from, from low sample rate mono to better than CD quality stereo. Likewise, you can save your file in one of many formats of WAV, MP3, and others.

Again, it's best to experiment using a variety of different sound conditions, ranging from a strong local broadcaster to highly difficult signals to hear, with lots of static and fading. Find an example and try as many different recordings as possible using different sample and compression settings. Then play them back to hear how each sounds, making note of which one sounds best for a given situation. Remember, we are now the pioneers of a whole new way of using our radios, so there are no fixed rules to go by. Instead we have to explore and discover on our own. And because this is a hobby, share the results of those experiments here in this column by sending them in for me to publish.

Once you have set everything up, click on the OK button to return to the main screen. The recording and playback controls are the same as those used in the Microsoft Sound Recorder that I introduced to you last month. Tune in a strong station and then click on the Record button. You should see the status of the software change to "Record" as the recording bars appear, showing the sound level of the recording. If you have speakers attached to the sound card you should now be able to hear the sound being recorded as well.

When you click on the "Stop" button you can save what you have recorded. Clicking on the "File" in the pull down menu area and then clicking on the "Save" as option does this. You can save the file by giving it a name, but there is a more important step as well. Clicking on the "More" button allows you to add additional information about your recording..

Looking at the photo, you'll see that if you are saving your file in the MP3 format you now have the option of adding a significant amount of information about the content of that file. This allows you to embed a permanent record of the circumstances behind the recording you've made into the recording itself. The software is fully documented, so all of the features I've described here are easy to access and understand.

Yet another feature allows you to set up a timer in Total Recorder to work in conjunction with a timer provided in Scan320. With this you can set up the tuning software to tune in multiple frequencies over a day, or even a week, at a given time of day or night. You can then set up Total Recorder to record at the same time, and each time it has completed a recording schedule it will save that recording with a unique file name. You can then go back later and listen to your radio monitoring recordings at your leisure.

And it doesn't end there. One of the major features of the program is the editing function. You can set the beginning and end point of an edited section out of an entire recording to a 10th of a second. Then you can save that selected section as a new file, including any new embedded comments.

What you can ultimately do with this is create libraries of your recordings, saving them either on the hard drive of your computer or on CDs. If you use the MP3 format, it's possible to store up to 12 hours of recordings on a standard CD (though you cannot play these on a standard CD player unless it's set up to use the MP3 format).

If do want to create CDs that can be played on a standard CD player, you do so using "CD Burner" software and recording CD player on your computer. You will be limited to a maximum of just over one hour of playtime, which is why the newer MP3 format is becoming more popular.

I'll cover the specifics of CD burning in a future column.

Wrapping Up

So that's the foundation you need to successfully record digital audio from your monitoring radio using your computer. The most important thing for you to do is read the instructions for the software and then learn how to operate each feature properly through practice.

As with everything, there's a bit of a learning curve with digital audio recording, so start off with easy monitoring targets and goals, then build up your skills. Keep a record of your settings and how you did something. You'll be surprised at how quickly such details accumulate over time.

Start building a structure for saving your files and keeping track of them right from the beginning. Again, you'll be surprised at how quickly things can get out of control if you let them.

As I said before, this is a hobby and as such it should be shared. It would be good to start hearing from you on how you're doing with recording digital audio. Send in some reports of your experiences and suggestions and I'll publish them here. For instance, there are many other digital audio recording programs out there—what are your experiences with them? Are they better for radio monitoring than the one that I have suggested here?

Next Month

It's hard to believe, but I'm coming up on two years writing this column. So next month, I'm going to do a review of all the past columns as an index for those of you who may have just recently started reading the column.

I've tried to focus on the foundation knowledge that you need in order to start from scratch and be successful. Too often I've found that other computer columns for the radio enthusiast start off assuming a level of knowledge that most people simply don't have. From here on, while I'll continue building on what I've introduced over the past two years, after I provide the index next month I'll refer back to specific articles rather than going back over old ground each time I cover a topic.

Don't worry, I'll make certain that people aren't left behind and I'll always try to keep the material that I present as relevant as I can. The key point is that I'll be focusing on specific monitoring situations in future columns rather than going over basic theory.

That said, your input is going to become even more important to me. Who are you and what are your interests in computer-assisted radio monitoring? I'll need that information to provide you with the best information on the subject.

Please e-mail or write to me with ideas, comments, and suggestions. The e-mail is carm_popcomm@hotmail.com and my mailing address is "Computer-Assisted Radio Monitoring," C/O Joe Cooper, PMB 121, 1623 Military Rd. Niagara Falls, NY 14304-1745.

Don't forget that I cannot answer general questions about computers, software, or operating systems, but I will do my best for any questions about the content of the columns or computer-assisted radio in general.

Thanks again and I hope that the information provided here will help you get more out of your computer and monitoring radio than you ever thought possible.

by Steve Douglass webbfeat@1s.net

utility communications digest

news, information, and events in the utility radio service from 30 MHz and beyond

Let's Talk Tech, And Close Encounter At Roswell

So what do you monitor HF with? What cool piece of hardware do you use to suck those signals out of the static? What works for you? I want to know. I also want to see. Send me your shack photos, whether they're of a full-blown money-is-no-object command center or a well-used portable SW radio you have by your bed table. UTE listening is more of an art than a science and I want to hear your solutions to interesting technical problems.

My own HF equipment list is, to put it mildly, unique. I do the bulk of my HF dial-twiddling on an ancient, yet very stable, 1970s vintage Panasonic RF-4900 communications receiver. It may not be state-of-the-art, but it is a real champ at pulling in those weak signals. It is coupled to an MFJ pre-selector and a random length dipole antenna about 60 feet long.

Many visitors to my humble abode are surprised to see me prowling the airwaves on such a venerable piece of equipment, but they are usually more impressed with its classic looks than any super-duper computer-controlled whiz-bang receiver they've encountered. It's big, black, and screams DX!

That's not to say I deplore high-tech. I have been experimenting lately with my first computer-controlled receiver, a WinRadio WR-1550e. I use it to scan my favorite HF channels, such as GHFS, Coast Guard, and HF aviation channels. Unless it's a very strong signal, it won't stop scanning (like a conventional scanner) but it will scan with the squelch open.

I set the preferences to have it scan one channel per second and with a delay time (stopping on any channel with the squelch open) to five seconds before resuming scan. This way I can listen to it scan through my favorite stations and then stop it manually on a busy channel. Works like a champ and makes it much easier to scan the bands for activity. On weak signals, I usually look to the Panasonic RF4900 to dig them out of the muck.

Old and new technology working side by side. The author's vintage Panasonic RF-4900, topped by a computer monitor showing the modern WinRadio WR-1550e virtual radio controls. (All photos and illustration by Steve Douglass)

The WinRadio's spectrum scope function is handy, but I use it mostly for VHF and UHF, since it isn't a real-time sweep and basically shows band usage over time. I let it scan the bands all day long looking for new active channels.

So to look at the entire HF spectrum I use my "dream receiver," which really isn't a receiver meant for UTE monitoring at all. It's a Motorola R2001D Communications Systems Analyzer that has a built-in real-time spectrum analyzer and can be tuned from 1 MHz to 1000 MHz in any mode, including CW and SSB. The spectrum analyzer lets me look at a large chunk of the spectrum from 1 MHz to 10 MHz wide. There is a selectable attenuation so I can pull out weak stations or keep the receiver from being overloaded by strong transmissions or noise. Since it's a real-time scope it's easy to "tune to a peak" without missing a short transmission. It's an amazing machine (but very expensive), and it's only by the grace of a good friend that I have this one.

Return To Space Project

Sometime next year the space shuttle is set to return to space. I am personally looking forward to this project for many reasons, chief among them being I was an eyewitness to the death of *Columbia* and the brave crew who flew her. I also graduated from junior high school with the shuttle commander, Rick Husband, who is from the city I've called home for the past 35 years. Although I didn't know Rick, I had met him and followed the career of "Amarillo's astronaut" from the time it was announced he would become one.

Published here for the first time in a national magazine are these photos I took the morning *Columbia* disintegrated right before my eyes. It's a sad irony that Husband probably took his last breaths in sight of his hometown and that a former classmate would photograph the tragedy that claimed him and his fine crew.

In light of this, I would like to ask all readers to begin sending me their frequency lists and loggings that might have anything to do with NASA communications, from HF to UHF. I'd like to publish them before the next shuttle launch, which is slated for about a year from now. I'd also like it to be the ultimate (and accurate) NASA monitoring resource, complete with frequencies, callsigns, and modes.

Why start so long before the launch? There have been many old lists published on the Internet, and only dedicated monitoring will weed out the bad (no longer used) frequencies.

There should be many shuttle component tests between now and the return to space, affording many opportunities to see what frequencies are still in use. Frequencies of support agen-

cies, such as the Coast Guard, Air Force, and Civil Air Patrol, should be included as well.

Then, on launch, during the mission, and reentry we should all be glued to the skies and our radios, monitoring the mission and (in near-real-time) communicating with each other via computer on what we are hearing. Maybe we can do some live conferences via ICQ or AOL IM?

In The Black, Part II: The Black Manta

Before we get on with our look at the history of black projects and their relationship with radio monitoring, it's interesting to note that since the last column, the wizards at Lockheed Martin have unveiled a new stealth aircraft that no one even speculated existed. Like I pointed out in Part I, *if they don't want you to know about a project, you won't.*

It's called MINION, and it's a stealth UAV (Unmanned Aerial Vehicle) and has the lowest radar cross-section yet, much lower than even the F-22 Raptor. Minion can be configured for recon or strike and launched from the ground or another carrier aircraft. The weapons bay can carry four 220-pound bombs, precision guidance, small diameter bombs, spy sensors, electronic jammers, or even a high-powered microwave weapon.

Close Encounter At Roswell

I'll never forget my first encounter with the "Black Manta." It happened a few years back in New Mexico while a few buddies and I were doing some "on scene" military monitoring at an annual military exercise known as Roving Sands.

Unfortunately, they stopped throwing this military war-game, which had become a great gathering for stealth chasers and military monitoring hobbyists. Since it didn't take place confined inside some off-limits piece of military airspace in Nevada but in the civilian skies over Roswell, New Mexico, Roving Sands became an annual exercise and opportunity to watch and monitor the U.S. military flex its muscles.

One night during the exercise, just outside of the Roswell Industrial Airfield, I had set up my video camera and spent the greater part of the evening photographing B-1B bombers taking off for a night strike on the White Sands Missile Range. I also monitored them passing traffic to "RED FORCE Ops" via SANDS CONTROL, on 11.243 MHz (USB) on my trusty portable DX–440.

Although the bulk of Roving Sands communications took place on UHF, I discovered the B-1s using 11.243 MHz to report "BLUE FORCE" resistance (over the White Sands Missile Range) back to the command post (CP) at Roswell. It was a great channel to be glued to because it gave us a good overall look at how the war games were going, whereas the pilot-to-pilot chatter on UHF was just plain confusing.

It was just after dark when my father-in-law, Elwood, spotted a triangular-shape flying low on the horizon, approaching Roswell from the west. I would speculate that it was a flying wing-type aircraft about half the size of the B-2, with a slightly different shape. The aircraft moved very slowly and silently as it loitered, obviously watching the B-1s depart on their assigned missions. Although it was after dusk I was able to shoot a few seconds of video of the craft.

It is a fuzzy image at best on video and doesn't reproduce well in print, but with the help of some computer enhancement we can make out the general Manta shape of the aircraft. Later, after returning home, I produced an artist's impression on my computer.

I was impressed by the aircraft's agility and speed (and lack thereof). At first it moved very slowly—slower than any conventional aircraft, more like an airship—but then it dipped a wing, made a knife edge turn and sped away at jet speed!

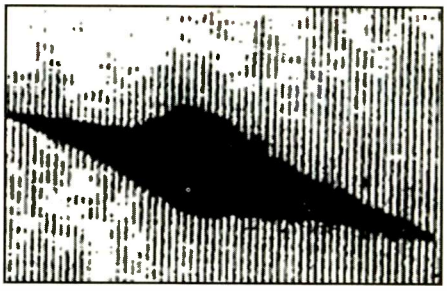
On departure, I overheard a B-1 pilot remarking, matter of factly on 11.243-MHz USB, "There goes one of Roswell's famous flying saucers"!

They way he said it, it sounded like the pilot didn't know he was transmitting and his microphone may have been set on VOX. Someone remarked on the same frequency, "Sands 44, take the UFO chatter to Uniform"!

I scanned my ferreted-out UHF frequencies but never monitored any further comments about the saucer-shaped visitor.

Manta History

The first civilian sighting of the TR-3A may have occurred in 1986. Several members of the radical environmental group Green Peace trespassed into the Nevada Test Range to protest nuclear testing. The protesters hiked in and camped in an area not far from the Air Force's super-secret



Enhanced video still showing the flying black triangle shot near Roswell, New Mexico, during Operation Roving Sands in 1995.

flight test center at Groom Lake. The Green Peace group's hair stood on end as they watched in awe as a strange black triangular-shaped aircraft flew slowly and silently over them.

Since then, Manta-shaped aircraft have been seen operating with multiple F-117s near Edwards Air Force Base, California, and a daylight spotting of the aircraft was seen near Tehachapi, California. Other sightings of this mysterious aircraft were reported by troops returning from Saudi Arabia during the first Gulf War.

In 1993, I received a video in the mail, taken by two Los Angeles police officers who were visiting the Groom Lake area. The video shows a mysterious triangle-shaped aircraft flying in and over the mountains ringing Area 51. Was it the TR-3A?

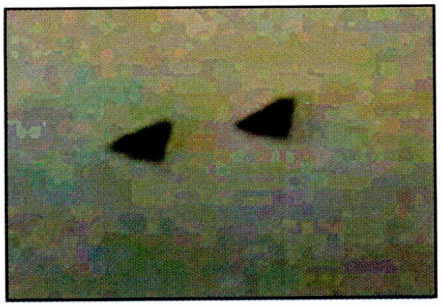
Only military insiders know for sure.

Again, while attending Roving Sands in 1997, I shot daylight video of two triangle-shaped aircraft flying in tight formation near the CHISUM VOR. Although similar to my first sighting, these triangles were faster and much louder.

First Published Reports

The first time the American public heard the designation TR-3A was in October 1990. There's still some doubt, however, if this is the true designation for the aircraft. The TR in "TR-3A" is thought to stand for "Tactical Reconnaissance," and the 3A is supposedly the number designation assigned by the Department of Defense. The Lockheed spy-plane U-2 evolved into a tactical reconnaissance aircraft, designated TR-1. The TR-3A is thought to be the next generation aircraft of this type.

However, if an insider overheard people talking about the TIER-3 UAV, he might have thought they were saying TR-3. Was the TR-3A in reality an early prototype of the Dark Star Tier 3 recon drone?



Still image pulled off the video the author shot of two flying triangles near the Chisum VOR, just outside of Roswell, New Mexico, in 1997. The "nose" of the aircraft is pointed (and moving) toward the photographer (up and to the right) and not away.

No one knows (or is admitting to) there ever being an aircraft designated TR-2 but some speculate that that designation was reserved for a joint American/European tactical reconnaissance aircraft, called the "EGRET."

Aviation Week & Space Technology magazine was the first to report the TR-3A designation. The source of the TR-3A information was J. Jones, author of the book *Stealth Technology, The Art of Black Magic*. Not much is known about J. Jones other than that he is an aviation insider and has access to information that the general public does not.

J. Jones's book was one of the first to publish inside information on the development of the F-117A and the B-2 bomber. The book is well researched, and it's clear that the author knows what he's talking about. He seems to be a credible source of information on the TR-3A; however, to this day, the Air Force continues to deny its existence.

It is interesting to note that in Phil Patton's book *Dreamland—Travels Inside the Secret World of Roswell and Area 51*, Patton notes that on a recent trip to Edwards Air Force Base looking for information to be included in his book, he found in the Edwards AFB history archives a folder titled "TR-3A Manta." To his dismay there was nothing contained in the file. My question is why create an official file for an aircraft that doesn't really exist?

Because of its tactical designation, it is thought that the TR-3A's mission is to find hard-to-locate targets, such as missile silos and command bunkers, and illuminate the targets with a laser, enabling the F-117A to destroy them with laser-guided smart bombs. Because of its excellent stealth qualities, the TR-3A can loiter undetected at high altitude over enemy territory, reconnoitering an area for F-117s to attack.

Working together, TR-3As and F-117s can have a devastating effect on an enemy's command and communications facilities, enabling conventional bombers and fighters to hit other targets with little opposition. Many stealth watchers have noticed F-117 pilots wearing patches bearing the term "Team Stealth," possibly hinting that F-117s and TR-3As work as a team to destroy high-value targets. The TR-3A could also be used in conjunction with other military aircraft, such as B-1s or B-52s.

The TR-3A mystery deepened when something secret crashed at the RAF's Boscombe Down Air Base on September 23, 1996. It was sharp-eared military radio monitoring enthusiasts who were the first to realize something strange was up, or should I say *down*, the object having crashed on landing at Boscombe Down.

Security forces scrambled to cover the aircraft with a tarpaulin, but even that couldn't disguise the unique shape of the mystery aircraft from the prying eyes of military aircraft enthusiasts who had monitored the incident on their airband radios and then flocked to the perimeter fence to have a look. Quickly the aircraft was tucked away in a remote hangar on the base. Later it was transported out on a USAF military transport.

Interestingly enough, days later I monitored the HF radio communications of a C-5A placing a phone patch through Kirtland Air Force Base to Edwards Air Force Base, arranging security for the aircraft debris they were ferrying. To quote, "The aircraft requires Constant Watch and Operations should be notified that the 'leading edges' of the recovered aircraft have also been found and are arriving via another transport just hours behind."

The Manta's Nest

If the Manta were operational, where would it be based? The most likely candidate would be Holloman Air Force Base near Alamogordo, New Mexico, which is also the home of the F-117 Stealth. Many trips to the area seem to confirm this suspicion.

Holloman is a sprawling base on the south side of the White Sands Missile range. If Groom Lake is the cradle of cutting-edge black project technology, then White Sands is the playground. Once a covert project is developed at Dreamland, it is often moved to White Sands (and Holloman) where it becomes an operational system. Weapons firing tests, tactics, and the training of the pilots and crews who will field the weapon are all worked out at White Sands.

Holloman has excellent RAM (Radar Absorbent Materials) applying facilities as well as permanent Lockheed Martin technical offices. Inside the White Sands Missile Range there are many remote airstrips and hangar facilities, chief among them "Northrop Strip" just five miles from Holloman, where one could secure the Manta away from prying eyes. Both the RAMS and RATSCAT facilities (used for determining the radar cross section of an aircraft) are located deep in the White Sands Range.

On one trip to Alamogordo in 1994, I monitored communications that seemed to confirm the existence of a new stealth aircraft being tested at White Sands. During the middle of one night, a lone aircraft using the callsign ZOLTAR took off from a remote strip called Stallion, located on the north side of the White Sands Missile Range.

After repeated attempts to reach Cherokee Control on 294.600, the aircraft was heard again on 13.201 MHz telling the Range Controller at WSMR that he would be doing some work on the Red Rio Range and on completion landing at Holloman. The pilot also wanted to arrange for security to be on hand when he landed to secure the aircraft as soon as possible.

Just before the aircraft landed, the security frequencies at Holloman became very active. All units were advised that the "STF" would be landing soon and all stations should report in. On approach to Holloman, ZOLTAR could be heard on 255.900 MHz (HAFB tower) requesting "all security lighting to be turned off two minutes prior to the STF's landing."

After the base was dark, the STF landed and was secured in a hangar. Then the maintenance channels became active. It seemed that the STF needed to have its "heat shield" repaired and the entire aircraft needed to be cleaned before "tomorrows viewing."

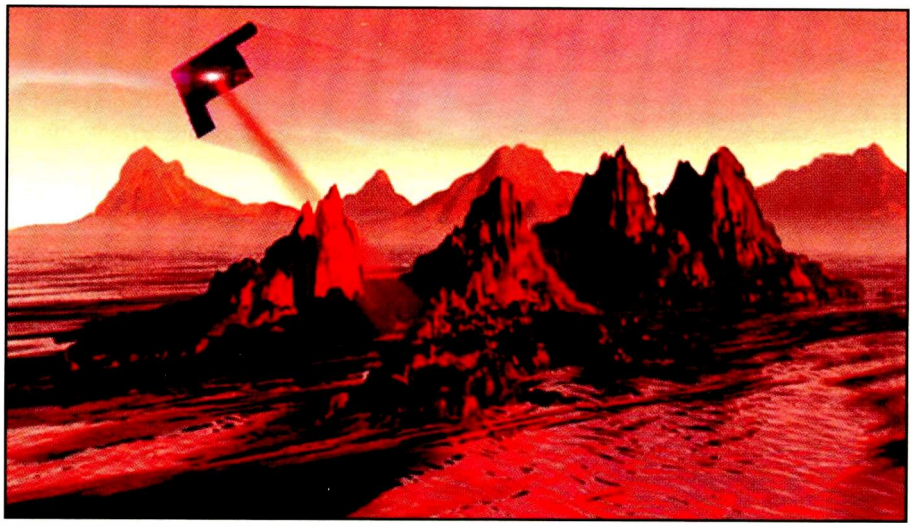
The next morning it became apparent from security and maintenance communications that the aircraft was being readied for some sort of presentation. "VIPs" were mentioned, as were calls for the base photographer and other officers who were to be on hand for the "viewing." Shortly before the VIPs arrived, the base was

closed to all traffic and the highway leading to the base was closed by roadblocks.

It was soon easy to tell from the communications surrounding the VIPs that it was none other than the (then) Chairman of the Joint Chiefs of Staff, Colin Powell. He had flown up from El Paso, Texas, where he had spent some time reviewing the troops at Fort Bliss. Before he went back to Washington, he made a quick side trip to Holloman (arriving in the back-seat of a T-38) to view the "STF" in a private ceremony. While he was there he was also treated to a flyby by three F-117s. The visit was over in a less than an hour, and after Powell's departure the base was reopened to normal traffic.

Late that night I monitored the security communications surrounding the departure of the STF. The base was again blacked out until the aircraft departed and returned to the remote "Stallion" base on the north edge of the White Sands Missile Range. We deduced that STF may have stood for "Stealth Tactical Fighter," but was it the TR-3A or another secret stealth aircraft prototype?

Next month we'll take a look at the Switchblade and other secret birds. Stay tuned and write in to let us know what you're hearing!



Artist's rendering of the TR-3A Black Manta made by the author and based on multiple sightings.

Reader's Logs

0000: STATION, Anytown, USA, summary of traffic heard in MODE at 0000 Z (Z), personal comments here. (SD)
2182.0: NLYL (USNS Loyal) working unheard station at 2208. (MC)
2370.0: ECHO FOXTROT coordinating Link tracks with FOXTROT and PAPA at 0229. (MC)
2670.0: Unidentified CG Station: 0110 USB w/Marine Information Bulletin (MIB) for South Carolina area. (RP)
3349.0: NNN0FAM, NNN0HNB, NNN0PXL US Navy MARS stations active in 4G1B South Carolina Traffic Net at 0021. (MC)
4426.0: CAMSLANT working Cutter OAK (WLB-211) at 0032. (MC)
4500.0: USAF MARS Region 2 Net with NNN0TWT, AFA2YR, AFA2SW, AFA2WP, AFA2BT, AFA2TN, AFA3XM active at 0040. (MC)
5211.0: HEADCAP 22 (CAP National Headquarters) checking in with WGY 912 (FEMA, Mt. Weather) at 0115. (MC)
5399.6: ECHO WHISKEY reporting they are receiving 7700 and 4X emergency IFF and request PAPA check their Pony at 0126. (MC)
5399.6: ECHO WHISKEY with Air Defense SITREP at 0026. AEW is TANGO and RAID 95 is airborne tanker. (MC)
5696: Appears that CAMSPAC Pt. Reyes controlling some of the CG radio sites along Gulf of Mexico and Florida. 8983 Also possibly because of hurricane Isabel affecting CAMSLANT? (DS2)
5696: CAMSPAC Pt. Reyes performing safety of flight comms with CG 1502 and CG 6001 at 1100 Z. Later with CG 1501 and CG 6031. All assets appear to be East Coast so not sure if comms with CAMSPAC were because propagation bad or CAMSLANT down due to Isabel. (DS2)
5696: CG 1502 acting as relay for CG 6001 to CAMSPAC. (DS2)
5708.0: REACH 9167 with ALE initiated p/p to Charleston AFB CP reporting they are diverting there due to oil leak in #1 engine at 0057. (MC)
5732.0: PANTHER tells 17C to RTB and get a full tank of gas at 2251. (MC)
5732.0: CG 1790 p/p via SERVICE CENTER to Maintenance Shop at 0026. (MC)
6501.0: O8X working NMN CAMSLANT for p/p to Greenville, NC. (MC)
7527.0: HAMMER tells 41S and 41SK he can hear them both then SERVICE CENTER calling 41SK with no answer at 1831. (MC)
7650.0: T1Z137 (1/137th Avn Bn, OH NG, Canton OH): 1543 USB/ALE sounding. (RP)
7753.0: 2222 (possibly Algerian SONELGAZ): 0235 USB/ALE sounding. (RP)
7903.5: AT1 (FBI, Atlanta GA): 1417 USB/ALE TO SJ1 (FBI, San Juan PR). (RP)
7992.0 HFB (UK Royal Signals, Hereford, UK): 2324 USB/ALE sounding. (RP)
7969.0: HR (Hassi Rhmel, SONELGAZ net): 0339 USB/ALE sounding. Also noted sounding on 09315.0. (RP)
13224.0: RS2 (unidentified, Brazilian Navy): 2257 USB/ALE sounding. (RP)
8050.0: FR5FEM (FEMA Regional Director, Region 5 Chicago IL): 1432 USB/ALE sounding. (RP)
8224.0: O/M (SS): 0103 LSB w/unheard station. Encryption system also noted on this freq. (RP)
8337.6: TOMCAT 21 and DOLPHIN 45 in comms with SHARK 10 (USCG Cutter) during law enforcement mission at 0114. (MC)
8337.6: STINGRAY 31 reporting to SHARK 20 that lights are coming on at Providenciales and they have comms with tower at 0050. (MC)
8912.0: JACKKNIFE working 310K to report 46 is on deck with radar problems heard at 2036. (MC)
8912.0: PING PONG tells D23 to hug the coast along Nicaragua to El Salvador to avoid WX then passes football scores at 2318. (MC)
8971.0: RED TALON 711 with SPARE GROUP 40 report to FIDDLE at 2235. (MC)
8971.0: TIGER 21 reporting SPARE GROUP 02 to GOLDENHAWK at 2046. (MC)
8983.0: CG 1706 in comms with CAMSLANT while conducting ELT search with M/V AFROSTAR at 2142. (MC)
8983.0: CAMSLANT diverting V8U to a plane crash off West Palm Beach heard at 1732. (MC)
8989.0: CANFORCE 4186 p/p via TRENTON MILITARY to Trenton Ops to check on flight plan and get WX for Gander and Shannon at 0026. (MC)
8992.0: REACH 437T p/p via Andrews HF-GCS to HILDA OPS and SAM COMMAND reporting ETA to Andrews from Guantanamo at 0122. (MC)
8996.5: O/M (SS): 0029 USB w/Y/L (SS). Familiar conversational tone. (RP)
9007.0: SENTRY 41 p/p via TRENTON MILITARY to RAYMOND 24 at Tinker AFB. Report they are RTB to Langley for broken WX radar at 2120. (MC)
9007.0: RESCUE 419 p/p via TRENTON MILITARY to RCC reporting ETA to Bagotville at 2154. (MC)
9010.0: O/M (Portuguese): 0005 USB w/aircraft 05 (O/M Portuguese). Brazilian Air Force. Some weak ALE also noted on this freq. (RP)
9065.0: KRBMNG (Arkansas NG, Robinson AAF Little Rock AK): 0114 USB/ALE sounding. (RP)

9016.0: BREAD requesting p/p from BEEFCORN at 0134. (MC)
9023.0: NAVY PG 332 p/p via Andrews HFGCS to Point Mugu at 1518. (MC)
9106.0: NAVEVERETT (US Naval Base, Everett Wash): 0957 USB/ALE sounding. (RP)
9315.0: ALR (Alrar, Algerian SONELGAZ): 0150 USB/ALE sounding. (RP)
9315.0: CENTR8 (MFA, Bucharest Romania): 0433 USB/ALE TO ORW ORB (unidentified Romanian embassies). (RP)
9315.0: ALG (Algiers, SONELGAZ net): 0353 USB/ALE sounding. (RP)
9315.0: INA (In Amenas, Algerian SONELGAZ): 0136 USB/ALE sounding. (RP)
9462.0: TDLFEM (FEMA, Technical Development Laboratory?): 1424 USB/ALE sounding. (RP)
10156.0: CLC22 (Communications Logistics Center, 22nd Infantry Brigade, Venezuelan Army): 0042 USB/ALE TO PCRC2 (Ear Command Post-Communications, 2nd Infantry Division). (RP)
10242.0: ALE id D41 reporting to JACKKNIFE they are RTB due to crewmember with medical problem at 2339. (MC)
10242.0: 45CS reporting to PANTHER about 2 suspects in custody and 10 kilos cocaine recovered from an aircraft at 1957. (MC)
10275.0: OHT30P (Oahnet, Algerian SONELGAZ): 00:37 LSB/ALE sounding. (RP)
10285.0: RNOUSLR1 (Rhourde Nouss, Algerian SONELGAZ): 0420 LSB/ALE sounding. (RP)
10608.0: CG 1720 calling Group Miami at 0021. (MC)
11108.0: FC8FEM (Communications Manager, FEMA Region 8, Denver CO): 2349 USB/ALE sounding. Also noted sounding on 14776.0. (RP)
11175.0: SAM 204 p/p via Puerto Rico HFGCS to SAM COMMAND at 0126. (MC)
11220.0: SAM 6517 checking in with Andrews for support during a mission to Canada at 2307. (MC)
11232.0: CANFORCE 4460 p/p via TRENTON MILITARY to WING OPS reporting inbound with Medevac patient at 2129. (MC)
11402.0: 062NHQCAP (CAP National Operations Center, CAP HQs Maxwell AFB, AL): 1415 USB/ALE sounding. Also sounding on 8012.0 at 2348. (RP)
11429.0: KJD (Chilean Navy): 0015 LSB/ALE TO HLA (Chilean Navy). (RP)
11430.0: 1505 (Columbian Telephone net): 2328 LSB/ALE TO 1901 (Colombian Telephone net). (RP)
11494.0: 13C with ops report to PANTHER at 0028. (MC)
12022.0: SKYWAT (Skywatch, US Army Flight Watch, Soto Cano AB Honduras): 1301 USB/ALE sounding. (RP)
12191.0: SCLC512 (Communications Logistics Service Center, 512th Jungle Infantry Battalion, Venezuelan Army): 2229 USB/ALE TO CLC51 (Communications Logistics Center, 51st Infantry Brigade). Also 513th Jungle Infantry Battalion w/CLC51 on this freq. (RP)
12600.5 HEC Bern Radio (Globe Wireless) with channel free idle and CW ID at 0240. (RW)
13927.0: JOSA 399 over St. Louis morale p/p via AFA1LJ to Maryland at 0003. (MC)
14686.0: ATLAS working FLINT 420 at 1937. (MC)
14780.0: ERMRIO (Brazilian Navy Radio Station, Rio de Janeiro): 2145 USB/ALE TO FDEFEN (Frigate Defensero, F-41)-[AMD]TZL. Same stations also noted on 11010.0. (RP)
13200: Lajes HFGCS in USB with EAM at 0253. (RW)
13224.0: RS2 (unidentified, Brazilian Navy): 2257 USB/ALE sounding. (RP)
13242.0: ADWNPR (Andrews AFB gateway, Non-Secure Information Protocol system): 0849 USB/ALE sounding. Also noted sounding on 3068.0 at 1536. (RP)
13242.0: JNRNPR (Roosevelt Roads PR gateway, Non-Secure Information Protocol system): 1450 USB/ALE sounding. Also noted sounding on this freq at 1620. (RP)
13357: Dakar Radio working aircraft in USB at 0200. Both French and English used. (RW)
17982.0: INDIAVICTOR (unidentified, probably Brazilian Air Force): 2235 USB/ALE. (RP)
18300.0: OLZ88 (MFA, Prague): 1221 USB/ALE TO OLZ63 (unidentified Czech embassy). RP sounding. (RP)
19131.0: SHARK 20 (USCG Cutter) heard working ATLAS to inquire about status of CG 6566. (RW)

This month's contributors were Mark Cleary (MC), South Carolina, R.C. Watts (RW), Louisville, Kentucky, Dwight Simpson (DS2), and Ron Perron (RP). Thanks to each of you.

Final Thoughts

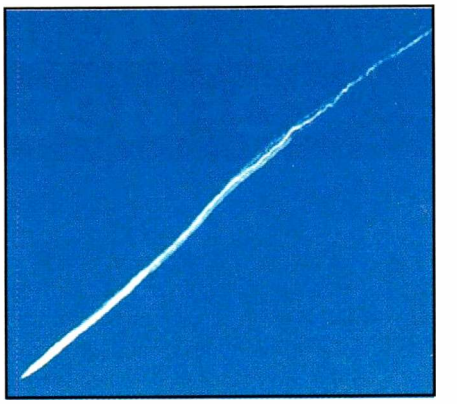
You may have noticed that the scope and frequency range of this column has widened a bit. Now you can send in your UTE logs that extend up into UHF! In particular, we want your military (MILCOM) loggings, frequencies, and callsigns.

Some die-hard HF UTE monitors may not like this change, but as I see it, since utility communications take place all over the radio spectrum, if you intercept them (on any frequency) we want to know about it!

Please don't send in your civil aircraft, police, and emergency loggings as MILCOM is our main focus (above 30 MHz). If submitting, please do so in the format listed above.

Yes, this column is ever changing and, as I've stated time and time again, my goal is to get more people interested in utility monitoring. Why limit this column to only HF?

So, as the cold weather sets in and we all are spending more time indoors, turn off the TV set, fire up those radios, and spend some quality time *with your kids*—searching the airwaves for real-world excitement! ■



The author shot this photo of the death of the Space Shuttle Columbia as it passed just south of Amarillo, in northwest Texas. Minutes later debris would start falling in far east Texas.

the wireless connection

a look behind the dials

by Peter J. Bertini, radioconnection@juno.com

Tips For Easy Restorations You Can Do!

As I prepare for a long planned and anticipated vacation, this month's column will be a tad shorter than normal. I'll present a few short restoration tips in no particular order, and I'll also pass along some additional information on the Atwater Kent model 447 tombstone radio featured in the December 2003 column.

RCA Radios And Dial Damage

My RCA 10T tombstone, shown in **Photo A**, and other similar RCA sets featuring the lower circular vernier logging scale dial, are prone to damage if the radio chassis isn't carefully removed from the cabinet. At least that was the conventional wisdom passed on to me by other collectors when I acquired the set. Several excursions in and out of the cabinet proved uneventful, and I eventually became complacent and careless.

A few weeks back the radio developed a bad hum at low volume settings. As I'd done many times before, I slid the radio chassis from the rear of the tombstone cabinet, while tilting the chassis a tad (a needed step to ensure the rubber bumpers attached to the chassis clear recessed holes in the base board; see **Photo B**) when it happened. The vernier dial snagged on the base board, and folded and cracked as the chassis was being removed. **Photo C** shows the gory details. I must have tilted the chassis more than normal, which was enough to ensure the edge of dial snagged on the wood.

Alas, on closer inspection, it appears there were older stress cracks from similar incidents early on in the set's history, as indicated by the darkened areas along those stress lines in the celluloid dial material.

Photo A. The RCA 10T has been my daily player for the past several months! I really love playing this old radio.

Celluloid was a very popular dial scale material during the 1930s, but unfortunately, as it ages it can darken and warp, and it certainly doesn't become less brittle with age. Warping is a *big* problem in the RCA design, as clearances between the dials, dial pointer, and cabinet are tight. **Photo D** illustrates the tight spacing between the rivet heads and dial scale pointer on the main dial hub.

If you look closely at the dial scale markings on the lower area of the vernier dial in **Photo C**, you'll see where the markings are worn (lower part of dial) from rubbing on inside por-

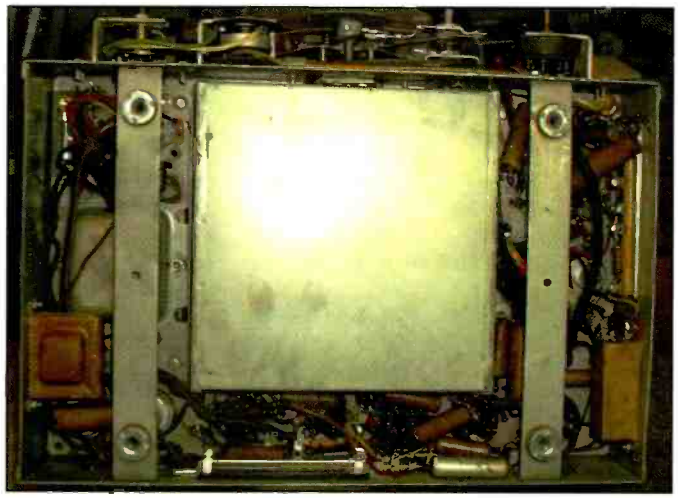


Photo B. Note the two mounting bars across the bottom of the radio. Fixed rubber grommets are attached to these bars and drop into recesses in the radio cabinet baseboard when the chassis is properly seated in the cabinet. Removing the chassis requires some tilting of the chassis to clear the recesses. This can cause the vernier dial scale to snag and crack if you're not careful. This is true for similar tombstone and console RCA models! Note the radio appears to sport the original wax capacitors. Not so—they were cleaned out and restuffed with new mylars. I'll show how to do this in a future column.

Photo C. Note how tilting the chassis causes the vernier dial to hit the protective carpet surface on my workbench, illustrating what happens inside of the cabinet.

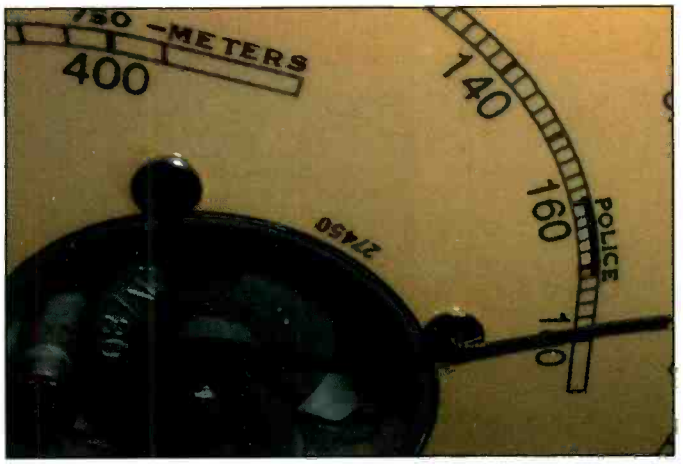


Photo D. This photo shows the tight clearances between the rivet heads holding the main dial scale to the aluminum hub and dial pointer. Screw heads will not provide the needed clearance.

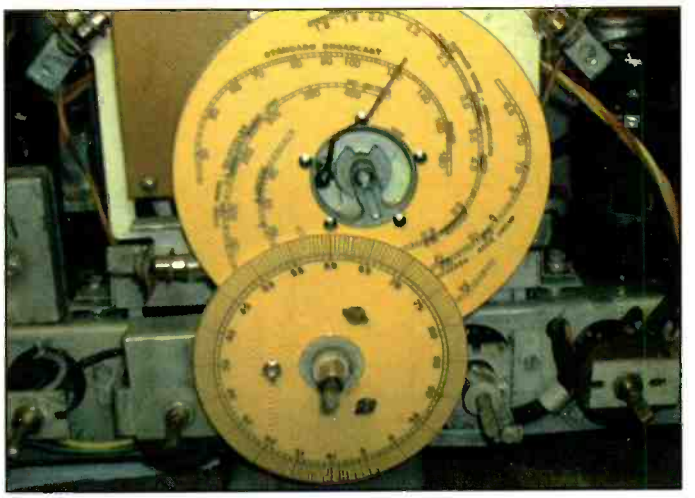


Photo E. Two new replacement dials from Rock Sea Enterprises are installed on the author's RCA 10T tombstone radio.

tions of the radio front panel. Ditto for the main tuning dial; markings on various band scales showed signs of wear where the vernier dial warped in the other direction. Note these caveats apply to the larger RCA tombstones using the circular vernier dial, such as the 9T and 10T radios, and also to the console versions of these radios (RCA 10K, 15K, etc.).

Replace Or Repair?

Most dial cracks can be fixed by flowing a small amount of super-glue type adhesive into the fissure. It's always best to retain the original dial scales in a vintage radio; new replicas generally look too "new" and seldom match the original dial patina. Such was the dilemma with the RCA replacement dial obtained from Rock-Sea Enterprises.[1] The new vernier dial scale was too new looking and didn't appear proper with the older, original main tuning dial scale. In this instance, I reluctantly replaced both scales, as seen in **Photo E**. I suspected that the original dials could be repaired and restored at some future point, so I carefully stored them, supporting them between two layers of cardboard material until a more suitable restoration could be attempted.

Of course, if both dials were missing or totally destroyed, having Mike Tobin's Rock-Sea Enterprise dials would be a blessing! Thank goodness people like Mike are supporting this hobby. They deserve our thanks and business.

More Clearance Problems

I had originally planned to replace the hollow rivets used to mount the original

Photo F. I found these split rivets at my local small-town ACE Hardware store. Someday I'll replace them with the proper and more authentic looking hollow brass rivets, when a source is found.

scales with nuts and bolts. I soon discovered that the close clearances between the two dials, and between the main dial and the dial pointer, precluded using such an obvious solution. I'm sure that the proper hollow rivets could be found, but an effective solution was as close as the neighborhood hardware store. Small split rivets (**Photo F**) worked quite well when press fitted into the main dial aluminum mounting hub, and they were also used to mount the new vernier dial as shown in **Photo G**. It's not the prettiest arrangement, but it works. I'll eventually replace the split rivets with proper hollow rivets once I locate a source for them.

Tonebeam Errata

Alas, a few small gremlins crept into the schematic for Ed Engelken's Tonebeam November construction article. Figures **1A** and **1B** are abridged from the original schematic, with **1B** corrected to show the proper connection point for the IF signal made directly to the IN914 detector diode.

Radio Spotlight: Atwater Kent's 447 Tombstone

The Atwater Kent 447 tombstone mentioned in the December 2003 column was a recent addition to my collection. For those of you who missed that month's presentation, the set is shown in

Photo G. This grand looking Atwater Kent was the top table set offered in the 1934 Atwater Kent line. I was pleased to finally locate one of these rare sets for my collection.

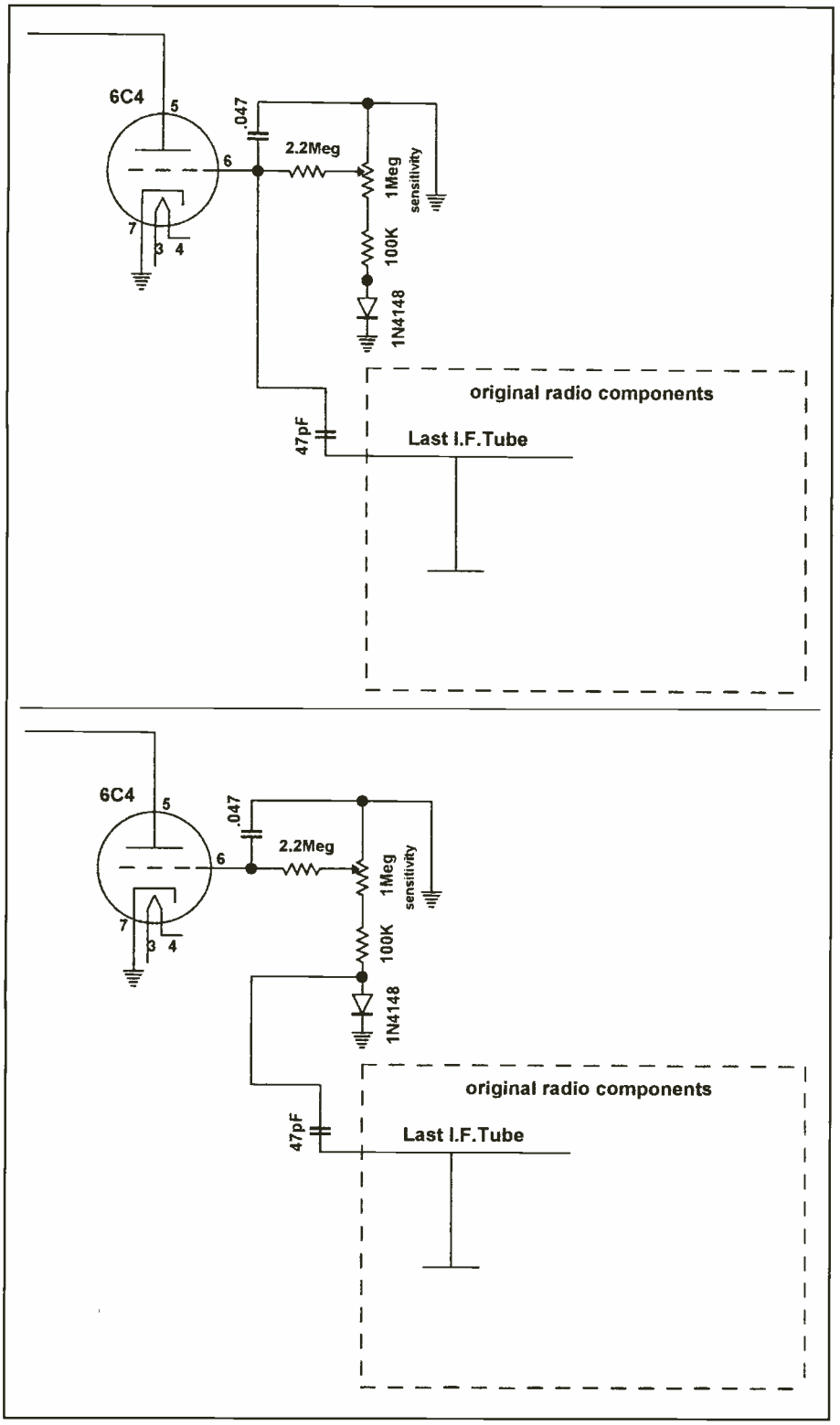


Figure 1. These abbreviated schematics show the original (A) and corrected (B) wiring for the 1N914 detector diode for November's 2003 Atwater Kent Tonebeam presentation.

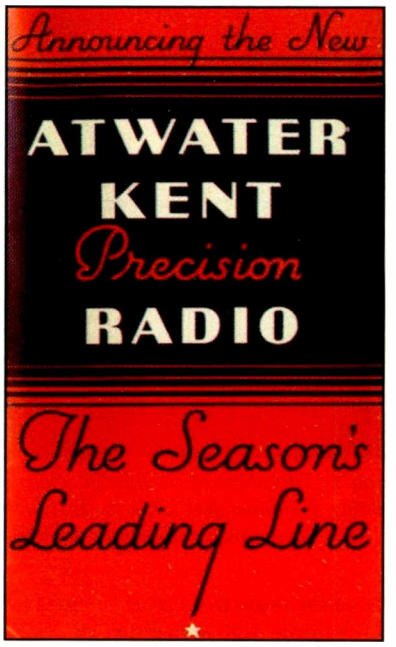


Figure 2. Cover for the Atwater Kent catalog introducing the company's new line of "Precision Radios." (Courtesy of http://www.atwaterkentradio.com/)

Photo G. As many of you have noticed, my tastes are slowly turning to favor the larger and rarer tombstone radio styles. This is truly a *radio of consequence;* indeed, it was the flagship of Atwater Kent's 1934 table-model line. It features a shadow-graph tuning indicator, a seven-tube lineup, and a price tag of $74.50—a princely sum in 1934.

The set covers the BCB and SW to 22 mc in four bands. There are four distinct dial scales; the appropriate scale is displayed by mechanical bandswitch selection. These sets have been offered for direct sale for $2,000 on Internet sites, but the typical street price averages around $1,300, still somewhat overpriced in my opinion, considering the low tube count (seven 2.5-volt filament tubes). Yet, it is one of the most stunning early tombstones produced in the 1930s, and it was introduced in the 1934 brochure for Atwater Kent's new line of "*Precision Radios.*" The brochure cover is shown in **Figure 2**. **Figure 3**, also taken from the 1934 Atwater Kent brochure, highlights the features of this impressive radio.

Several weeks after procuring the radio, I was fortunate to find its original owner's manual. The instructions were printed on four sides on a single sheet of folded paper. Although tattered and dog-eared (after all, it is 70 years old!), it was a lucky find and adds to the radio's presentation in my collection! See **Figure 4**.

In two years time (1936), Atwater Kent would close it factory doors forever. The popular story is that the factory closed down rather than sacrifice quality to remain competitive, but it was also rumored that the introduction of a labor union led to the decision to end the business. Some folks feel that Atwater Kent didn't keep up with technology and was slow to embrace the superheterodyne set. Regardless, by then Atwater Kent had amassed his ample fortune and retired to California where he lavishly entertained

Figure 3. The Atwater Kent 447 tombstone radio is featured on this page from the Atwater Kent brochure. (Courtesy of http://www.atwaterkentradio.com/)

the elite of Hollywood stardom until his death in 1949.

Replicating Vintage Wiring

The previous owner of the AK 447 restored the decayed rubber wiring in a unique fashion: he replaced the rubber insulation using appropriately colored heatshrink tubing over the bare wiring. It looks pretty good! You'll need a heat gun to properly shrink the tubing, however. **Photo H** is an under-chassis view of the AK 447 showing how it looks.

Another suggestion I've seen offered for duplicating the appearance of rubber insulated wire is to use more commonly available PVC insulated hookup wire. The PVC insulation is altered to appear more like the original rubber insulated wire by drawing the wire through steel wool to remove some of the gloss or sheen. PVC insulation looks like the old rubber insulated wire once the sheen is taken off. Try it next time you need to replace some failing rubber insulated wiring!

Cloth Wiring

I've mentioned sources for cloth-covered hookup wire in the past, but some restorers have commented that the factory-fresh wire looks too new to be proper in a vintage chassis. Here's a trick to "age" the wire's appearance: simply draw the wire through a rag soaked with wood stain

Figure 4. Having an original set of operating directions for your prized radio is a big plus! This four-sided set of directions covers the Atwater Kent 318 and 447 radios. How many radios still have the original instruction sheets after 70 years?

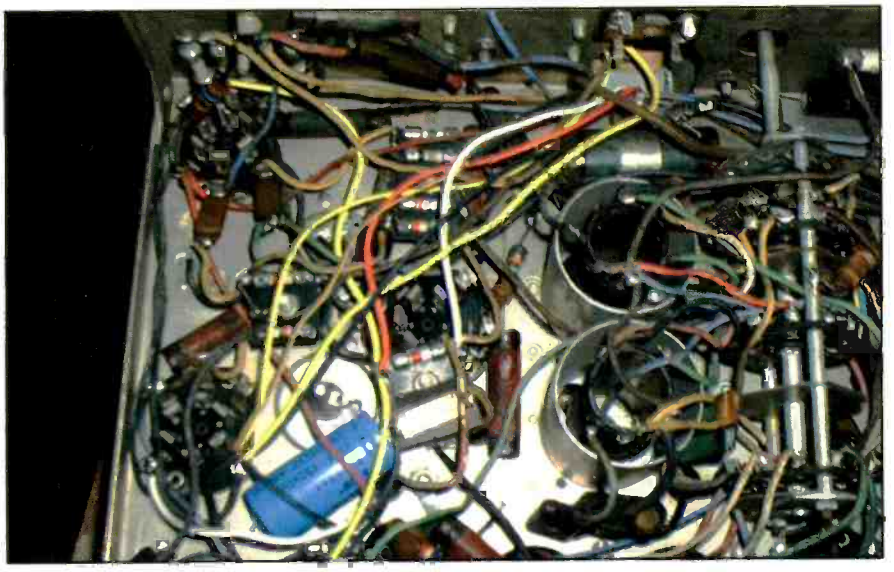


Photo H. The owner of the Atwater Kent model 447 had done minimal chassis restoration; the electrolytic filter capacitors were replaced, but the original wax-paper caps are still in place. It's a big plus since these should be rebuilt, not just replaced! Out of necessity, some of the original rubber insulated wiring was re-insulated using appropriately colored slip-on heat-shrink tubing. It looks pretty good. Sets of this rarity deserve extra special under-chassis attention to keep things looking as original as possible. The new electrolytic capacitors should be hidden in the old filter cans, not left dangling under chassis. Someday I will touch up the restoration to include these finer details and share them with you.

(such as the Minwax oil stains I've discussed in previous columns). This will darken and give the wire insulation an aged look to better match the original remaining wiring.

Till Next Time

Well, that's a wrap! Remember that our "Wireless Connection Beitman CD Offer" is still available. The CD includes the entire editions of the Beitman manuals in DejaVu format, and the reader software is included. The cost of the CD is $15, postpaid to U.S. and Canadian addresses. Write "Wireless Connection CD Offer," Peter Bertini, 20 Patsun Rd., Somers, CT 06071. E-mail us for further details or information.

Until next month, good luck with your restoration projects—and of course, let us know what you're working on!

References

1. Rock-Sea Enterprises, PMB 241, 323-110E. Matilija St., Ojai, CA 93023. Mike Tobin, owner. (805) 646-7362, e-mail dials@juno.com. http://members.aol.com/RockSeaEnt/ for further information. ■

Info Central

by Harold Ort, N2RLL, and D. Prabakaran

news, trends, short takes, and other things radio

U.S. Space Weather Service In Deep Trouble

Pop'Comm received the following information from the folks at the SEC. According to the letter and official report, for the coming fiscal year, "House committee-recommended funding creates a huge shortfall, and the Senate Committee's recommendation implies no support for space weather service at all this year. Possibly a new service would be established elsewhere in the government, but that is uncertain at this point."

For Fiscal Year 2004, which started October 1, 2003, the House Appropriations Bill for Commerce, Justice, and State continues the Space Environment Center's (SEC) funding at $5.2 million (a reduction of 40 percent from the FY02 level). Worse, the FY04 Senate Appropriations Bill zeroes the SEC and all space weather in NOAA, so services, data and observations, and archiving would all disappear if the final appropriation is at the Senate level. At the House funding level, starting October 1, the SEC will rapidly lose about half its staff, negatively affecting its ability to serve the nation with operational products, data collection, and R&D. Unless the appropriation level for the SEC is restored to the level of the President's FY04 Budget Request—$8.3 million—the nation's civilian space weather service is in trouble. At the President's requested funding level, the SEC can almost return to FY02 level of services, data, and R&D.

NOAA's SEC in Boulder, Colorado, provides a range of services to the nation related to space weather phenomena. Among other activities, the Center is the unique provider of real-time monitoring and forecasting of solar and geophysical events, it conducts research in solar-terrestrial physics, and it develops techniques for forecasting solar and geophysical disturbances. That is, the SEC is the nation's space weather service, monitoring and predicting conditions in space, much as the National Weather Service does for meteorological weather.

The SEC jointly operates the Space Weather Operations Center with the U.S. Air Force and serves as the national and world warning center for disturbances that can affect people and equipment working in the space environment. It is the government's official source for alerts and warnings of disturbances. Customers include DoD, NASA, FAA, airlines, operators of electric power grids, communicators, satellite operators, the National Space Weather Program, and commercial providers of value-added space weather services. Partnering with researchers funded by NSF, NASA, and the DoD, the SEC is the place where much of the nation's hundreds of millions of annual investment in the National Space Weather Program and in space physics research is applied for the benefit of commerce, defense, NASA spaceflight, and individual taxpayers.

The SEC's appropriation lines can be found in the Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), Office of Oceanic and Atmospheric Research portion of the budget. In the omnibus appropriations Bill for FY2003, the SEC received a severe cut to its budget of about 40 percent, with no explanation for the reduction. One-time funding additions have kept SEC afloat in FY2003. The President's budget request is $8.3 million for SEC in FY2004 (an amount consistent with its past budgetary levels), but the House Commerce-Justice-State Appropriations Committee provides only $5.2 million, or roughly 40 percent less than the amount necessary to maintain SEC at its current operational effectiveness. Again for FY04, no explanatory text was included in the Committee Report to explain this reduction, and it far exceeds the 18-percent reduction request meted out to NOAA Research overall and the 1-percent reduction to the National Weather Service's request. The bill has not yet been acted upon by the full House. The Senate Appropriations Committee explains its termination of space weather in NOAA in the Report accompanying its Commerce-Justice-State Bill; the full text of the Senate Report may be found at http://thomas.loc.gov/cgibin/cpquery/T?&report=sr144&dbname=cp108&amp.

Unless the SEC's appropriation level is increased in Conference, the best outlook is that the SEC will shrink to less than half its capability (House mark), and the worst is that space weather will disappear from NOAA (Senate mark). In this case, the nation's space weather service will have to be reconstituted in some other agency, at greater cost and lesser capability, to meet the nation's needs.

Disgruntled News Reader At AIR Climbs Tower, Threatens Suicide

A disgruntled news reader, Bhaskar Barua, of All India Radio (AIR) climbed a 120-foot-high transmission tower and threatened to kill himself unless he was given a salary hike and a regular job. Police officers frantically appealed to Bhaskar Barua to come down, but the man refused and kept hurling leaflets listing his demands, attracting thousands of people in the heart of New Delhi. The incident took place in the AIR complex barely a quarter kilometer from Indian Parliament House.

The drama began when Barua was spotted atop the tower at 9 a.m. Security guards immediately alerted senior AIR officials. As word spread, hundreds of employees trooped out of AIR and the neighboring India's national TV channel Doordarshan office to watch their colleague. Thousands more stepped out of other offices in the vicinity, throwing traffic completely out of control.

Barua is apparently a causal worker who works as a translator in the Assamese language section of AIR. AIR and POLIC officials spoke to Barua over his mobile telephone and tried to convince him to come down. But Barua insisted on speaking to Information and Broadcasting Minister Ravi Shankar Prasad. One of the leaflets said a casual worker was paid only Rs.125 ($3 U.S.). The man said this should be increased to Rs. 500 and also complained that payments were sometimes made as late as six months. According to Barua, causal workers played a key role in AIR but were not taken care of. He came down only after a five-hour drama.

Ham Radio University In New York

On Sunday, January 18, 2004, at 8 a.m., the doors of the East Woods School will open for the fifth annual Ham Radio University and the ARRL New York City/Long Island Section Convention. Ham Radio University 2004 is a day of education about amateur radio. The event is being held at the prestigious East Woods School, a private school on 46 acres in Oyster Bay. There will be special forums geared to the non-ham as well as the experienced amateur radio operator. The focus will be "hands on" with many demonstrations.

East Woods School is located at 31 Yellow Cote Road, Oyster Bay, Long Island. At Ham Radio University 2004 you'll learn about everything from satellite communications, low-power operating using radios

as small as a tuna tin, and the latest in emergency communications. There will also be a VE session for those who would like to take an FCC exam and a Special Event Station set up and operational on HF.

Ham Radio University 2004 is sponsored this year by the Long Island Mobile Amateur Radio Club and is a cooperative effort between over 20 clubs and organizations in the New York City/Long Island area. Besides the forums, there will be tables set up with information about different organizations and clubs, including the Red Cross, Salvation Army, National Weather Service, Friends of Long Island Wireless, as well as ham radio classes, local FCC exam schedules, public service and other activities. New this year is a special seminar presented by the ARRL explaining the different on-line educational courses that are now available. They include Emergency Communications, Antenna Modeling, HF Digital Communications, Beyond Repeaters, RFI, and more. These are part of the ARRL Certification and Continuing Education program (visit http://wwwarrl.org/cce for more information).

Admission is open to all, with a requested donation of $2 per person. Refreshments will be available. Talk-in on W2VL 146.850-136.5 PL.

Time And Frequency Station ATA Ceases Shortwave Operations

The Standard Time and Frequency transmissions by Station ATA, National Physical Laboratory (NPL), New Delhi, has ceased its SW operations. Standard Time and Frequency Signals (STFS) were broadcast under the call-sign ATA around the clock on HF bands (5, 10, and 15 MHz) with a power of 10 kW. There were voice announcements in English every 15 minutes with station identification. Ionospheric data was given every hour.

Since 1988, NPL has been transmitting STFS via the Indian Satellite (INSAT) system. It is also available via telephone. Now, the laboratory broadcasts coded STFS, via INSAT, on a Radio Networking-type channel through a downlink frequency of 2599.675 MHz. The STFS broadcast received by direct reception sets is decoded by a decoder developed at NPL which gives Indian Standard Time and a standard frequency of 1 MHz locked to the received signal.

AIR Longs For Shortwave—Stark Contrast To World Trend

Public broadcaster Prasar Bharati is on a shortwave splurge, contrary to international trends. Even as Prasar Bharati's radio division, All India Radio, claims to be phasing out shortwave transmission in keeping with government recommendations, its actions indicate otherwise. For instance, AIR installed five shortwave transmitters a few months ago. Officials, however, reasoned that the "new strategy" on phasing out shortwave came after orders were placed for these transmitters.

AIR National Channel was also revived recently on shortwave. To top it all, AIR is now planning 24-hour news channels for Delhi, Mumbai, Chennai, and Guwahati on shortwave! Incidentally, the working group on the information and broadcasting sector for the Tenth Plan had recommended that shortwave in analog mode should be phased out, citing poor reception quality.

Although AIR failed to strike a deal with the BBC on content-sharing recently, now it is exploring other international arrangements. Preliminary talks are on with foreign broadcasters for giving them Indian transmitters on hire. Sources said AIR has 50 such transmitters, some of which have been around for 10 years or more. Recently, five powerful shortwave transmitters, 250 megawatts each, were purchased by AIR for its external service. ■

the propagation corner

by Tomas Hood, NW7US,
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up-to-the-minute forecasts helping you get the most from the radio spectrum

A Look At Mediumwave DXing—The Winter Season

The mediumwave broadcast band, also known in the United States as the AM broadcast band (or AM band) currently extends from 525 to 1700 kHz. In the United States and Canada, channels are spaced in even 10-kHz increments starting at 530 kHz. Elsewhere, channels are spaced in 9-kHz increments starting at 531 kHz. The hunt for signals from distant AM broadcasting stations is an exciting activity, especially during the late fall and winter seasons.

Which distant stations you can hear depends largely upon signal propagation. Propagation at these frequencies is very different than it is for frequencies in the high frequency range (3 MHz through 30 MHz). Propagation of mediumwave signals varies depending upon the time of day, the season, and other factors.

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

The groundwave, as its name implies, travels along a path close to the earth's surface. The distance a groundwave is able to travel depends upon the transmitter power, frequency, antenna pattern, and the earth's conductivity along the path of the signal. Lower frequencies travel greater distances, all other factors remaining the same. A signal on the lowest-end of the AM broadcast band, say 540 kHz, will travels twice as far as a signal broadcast on, say 1600 kHz, if all other parameters remain the same for both stations. If the land between the transmitting antenna and the receiving antenna is rocky, a groundwave signal might only travel 150 to 300 miles. On the other hand, if the

The Ap Index And Understanding Propagation Terminology

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

Classification of A-indices is as follows:

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

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

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

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

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

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

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

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

Optimum Working Frequencies (MHz) - For January 2004 - Flux = 98, SSN = 44 - 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	20	17	12	12	11	11	10	10	10	10	10	9	9	9	13	18	20	21	22	22	23	22	22	21
NORTHERN SOUTH AMERICA	28	25	21	16	15	15	14	14	13	13	13	13	12	12	13	23	26	28	30	30	31	31	30	29
CENTRAL SOUTH AMERICA	27	25	20	16	15	15	14	14	13	13	13	13	13	12	17	24	27	29	30	30	31	31	30	29
SOUTHERN SOUTH AMERICA	29	27	24	17	16	15	15	14	14	13	13	13	13	13	12	22	26	28	29	30	30	31	31	31
WESTERN EUROPE	9	9	9	9	9	9	9	8	8	8	9	9	9	9	8	11	14	13	13	12	10	9	9	9
EASTERN EUROPE	9	9	9	9	9	9	9	8	8	9	9	9	9	9	8	8	11	11	10	10	10	9	9	9
EASTERN NORTH AMERICA	21	19	14	13	12	12	12	11	11	11	11	11	11	10	14	20	22	23	24	24	25	24	24	23
CENTRAL NORTH AMERICA	12	12	10	7	7	7	7	6	6	6	6	6	6	6	6	9	11	12	13	13	13	14	13	13
WESTERN NORTH AMERICA	7	6	6	5	4	3	3	3	3	3	3	3	3	3	3	3	5	6	6	7	7	7	7	7
SOUTHERN NORTH AMERICA	21	20	17	13	12	11	11	11	10	10	10	10	10	10	10	16	19	21	22	23	23	23	23	22
NORTHERN AFRICA	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	13	15	16	17	14	11	11	10	10
CENTRAL AFRICA	11	11	10	10	10	9	9	9	9	9	9	9	9	9	9	12	14	15	16	14	13	13	12	12
SOUTH AFRICA	19	16	13	12	12	11	11	11	11	10	10	10	10	10	15	19	20	22	22	23	23	22	22	21
MIDDLE EAST	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	8	12	13	11	10	10	10	9	9
JAPAN	18	18	17	16	15	11	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	12	16	18
CENTRAL ASIA	18	18	17	16	14	11	10	10	10	9	9	9	9	9	9	9	9	9	11	11	11	11	11	18
INDIA	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
THAILAND	17	17	16	15	14	10	10	10	9	9	9	9	9	9	9	9	9	9	11	11	11	11	11	11
AUSTRALIA	26	27	28	27	24	17	16	15	15	14	14	13	13	13	13	13	12	17	16	15	17	20	22	24
CHINA	15	17	16	15	13	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	10
SOUTH PACIFIC	29	30	29	27	23	17	16	15	14	14	14	13	13	13	13	13	12	16	18	20	23	25	26	28

UTC TO/FROM US MIDWEST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	22	17	14	13	13	12	12	11	11	11	11	11	11	17	21	24	25	26	26	27	26	26	25	24
NORTHERN SOUTH AMERICA	24	21	16	15	14	14	13	13	12	12	12	12	11	15	22	25	27	28	29	29	29	29	28	26
CENTRAL SOUTH AMERICA	25	20	16	16	15	14	14	13	13	13	13	13	13	21	25	27	29	30	31	31	32	31	30	28
SOUTHERN SOUTH AMERICA	28	25	19	17	16	16	15	14	14	14	13	13	13	13	23	25	26	28	29	30	30	31	31	30
WESTERN EUROPE	9	9	9	9	9	9	8	8	8	8	9	8	8	11	14	16	16	16	15	14	12	10	10	9
EASTERN EUROPE	9	9	9	9	9	8	8	8	8	9	9	9	9	8	12	14	14	13	11	10	9	9	9	9
EASTERN NORTH AMERICA	15	12	10	9	9	9	8	8	8	8	8	8	8	8	14	16	17	18	18	18	18	18	17	16
CENTRAL NORTH AMERICA	7	6	4	4	4	4	4	4	3	3	3	3	3	3	4	6	7	8	8	8	8	8	8	8
WESTERN NORTH AMERICA	13	12	10	8	7	7	7	6	6	6	6	6	6	6	6	9	11	12	13	14	14	14	14	13
SOUTHERN NORTH AMERICA	15	13	10	9	8	8	8	7	7	7	7	7	7	7	10	13	15	16	16	17	17	17	16	16
NORTHERN AFRICA	12	11	10	10	10	9	9	9	9	9	9	9	9	13	16	17	18	19	19	19	14	13	13	12
CENTRAL AFRICA	12	11	10	10	9	9	9	9	9	9	9	9	9	13	16	17	18	19	19	14	14	13	12	12
SOUTH AFRICA	21	16	15	15	14	14	13	13	13	13	13	12	12	22	26	28	29	30	30	30	30	29	26	24
MIDDLE EAST	9	9	9	9	9	9	9	9	9	9	9	9	9	10	14	16	17	15	11	11	10	10	10	9
JAPAN	17	16	15	11	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	10	15	17
CENTRAL ASIA	17	16	14	11	10	10	10	9	9	9	9	9	9	9	9	9	11	11	11	11	11	11	11	17
INDIA	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
THAILAND	16	15	13	10	10	10	9	9	9	9	9	9	9	9	9	9	12	12	11	11	11	11	11	11
AUSTRALIA	26	28	26	22	16	16	15	14	14	13	13	13	13	13	13	12	18	17	16	16	18	20	23	25
CHINA	14	15	13	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
SOUTH PACIFIC	29	28	26	21	16	16	15	14	14	14	13	13	13	13	13	18	17	17	19	22	24	25	27	28

UTC TO/FROM US EAST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	16	12	11	11	10	10	10	9	9	9	9	9	11	17	19	20	21	22	22	22	22	21	20	19
NORTHERN SOUTH AMERICA	21	18	16	15	14	13	13	12	12	11	11	11	13	18	21	23	25	26	26	26	26	26	25	23
CENTRAL SOUTH AMERICA	23	20	19	17	16	15	15	14	14	13	13	13	21	24	26	27	29	30	31	31	32	31	29	27
SOUTHERN SOUTH AMERICA	26	22	20	19	18	17	16	15	14	14	14	13	17	22	24	25	27	28	29	30	31	31	31	29
WESTERN EUROPE	9	9	9	8	8	8	8	8	8	8	8	8	14	16	17	17	17	17	16	15	13	10	10	9
EASTERN EUROPE	9	9	9	8	8	8	8	8	8	9	8	8	13	13	13	13	13	12	12	9	9	9	9	9
EASTERN NORTH AMERICA	6	5	4	4	4	4	4	4	4	3	3	3	3	7	8	8	9	9	9	9	9	9	8	7
CENTRAL NORTH AMERICA	15	12	10	10	9	9	9	9	8	8	8	8	8	8	15	17	18	19	19	19	19	19	18	17
WESTERN NORTH AMERICA	22	19	14	13	13	12	12	11	11	11	11	11	11	11	15	20	22	23	24	25	25	25	24	23
SOUTHERN NORTH AMERICA	17	14	11	10	10	10	9	9	9	9	9	9	8	12	16	18	20	20	21	21	21	20	20	19
NORTHERN AFRICA	12	12	11	11	11	11	11	11	11	11	11	16	20	22	24	24	25	24	23	20	15	14	13	12
CENTRAL AFRICA	12	12	11	11	11	11	11	11	11	11	11	16	20	22	24	25	25	24	21	16	14	13	13	12
SOUTH AFRICA	17	16	15	14	14	14	13	13	13	13	13	20	25	28	30	31	31	31	31	31	30	28	26	21
MIDDLE EAST	11	10	10	10	9	9	9	9	9	9	9	10	15	17	19	19	20	20	15	13	13	12	12	11
JAPAN	15	11	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	14	16
CENTRAL ASIA	14	11	10	10	10	9	9	9	9	9	9	9	9	9	12	12	12	11	11	11	11	11	11	16
INDIA	9	9	9	9	9	9	9	8	8	8	8	9	9	13	14	12	11	11	10	10	10	9	9	9
THAILAND	11	10	10	10	9	9	9	9	9	9	9	9	9	12	13	13	12	12	12	11	11	11	11	11
AUSTRALIA	26	24	17	16	15	15	14	14	13	13	13	13	13	12	20	19	18	17	16	16	18	21	23	25
CHINA	11	10	10	10	9	9	9	9	9	9	9	9	9	10	10	9	9	9	9	9	9	9	9	9
SOUTH PACIFIC	28	25	18	17	16	15	15	14	14	13	13	13	13	13	19	18	17	18	21	23	25	27	28	29

signal is moving over salt water, the groundwave signal could make it some 1,000 miles. While most groundwave signals are stable and strong, some fading and changes in reception can occur for groundwave signals. Sometimes, this fading is caused by signal cancellation due to weak skywave reception at the same point where the groundwave component is received.

Groundwave propagation provides a broadcast station with reliable, stable coverage to its target audience, and radio station engineers optimize the antenna system to ensure the best delivery of that groundwave signal. During the day, because the *D* layer of the ionosphere so completely absorbs the mediumwave radio signals, groundwave is the only mode of propagation a mediumwave station can rely on. At night, however, because of the recombination that occurs in the *D* layer, and the sharp reduction in mediumwave signal absorption that results, many stations must reduce their power so that they do not interfere with other stations. Some stations must even cease transmitting during the night hours. Those stations that do not need to cease transmitting will have signals radiating up into the ionosphere and possibly refracting back to earth at far distant locations, making for AM DX.

The ionosphere is, therefore, directly responsible for mediumwave DX signals. After sunset, when the *D* layer is no longer under the direct radiation from the sun and nearly disappears, mediumwave signals make it up to the *E* and *F* layers, to be refracted back to the earth, much like a flashlight beam might be reflected off a mirror. The distance of the skywave skip is anywhere from ten to 500 miles or so. Mediumwave DX signals may travel farther, if the ground is highly conductive, providing a reflection of the signal back up into the ionosphere. Multiple hop skywave signals can enable a broadcast signal at night to span thousands of miles, and it's typical to hear European and Asian stations over the salt water of the oceans.

There is a region from about ten miles to about 500 miles out where both the groundwave and the skywave signals can be heard. This typically causes a cancellation of the radio waves when the two signals arrive out of phase. The listener will experience deep fades, slow at times, or fast. Sometimes it is strong enough to cause severe distortion of the signal. Out beyond 500 miles, past the influence of groundwave signals, skywave signals also experience some fading and variations due to changes in the ionosphere.

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

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

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

Current Solar Cycle 23 Progress

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-centimeter observed monthly mean solar flux of 112 for September 2003, compared to 176 a year ago, September 2002, and down from August's 122. The 12-month smoothed 10.7-centimeter flux centered on March 2003 is 140, down from 196 for March 2002, and down from February's 145. The predicted smoothed 10.7- centimeter solar flux for January 2004 is about 98, give or take about eight points.

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for September 2003 is 49, down quite a bit from September 2002 when it was 109.6. The 12-month running smoothed sunspot number centered on March 2003 is 74; again, down from the March 2002 figure of 113, about five points down from February. The lowest daily sunspot value during September 2003 was recorded on September 9 with a count of 17. The highest daily sunspot count for September was 79 on September 27. IPS Radio and Space Services, Australia, forecasts a smoothed sunspot count of 44 for January 2004, while SIDC (Belgium) suggests 56.

The observed monthly mean planetary A-Index (Ap) for September 2003 is 19. The 12-month smoothed Ap index centered on March 2003 remains 19.

HF Propagation

We are in the heart of the winter season, with very short daylight hours.

Average daily MUFs are at their seasonal lowest, but so are noise levels. While the solar cycle is clearly in a decline, the solar flux will continue to have occasional high peaks. Winter peaks will help keep some of the daytime bands hopping with DX signals. General conditions are expected to be excellent for HF propagation throughout the month.

Nineteen meters through 11 meters will close shortly after sunset, to open again just before sunrise. But morning and evening DX openings between some areas in the Northern Hemisphere on these bands are very short, because the band in question closes on one end of the path before it opens on the opposite end.

Paths on 31 through 15 meters remain in their seasonal peak, especially between North America and Europe in the morning, and between North America and Asia during the late afternoon hours. Twenty-two and 19 meters continue to be the best daytime DX bands, with 31 and 25 running a close second. Plenty of surprises are possible on 31 meters during the morning and evening hours, and well into the hours of darkness. North/south paths on 25 through 15 meters will be reliable and open for most of the daylight hours, especially where paths terminate in the Southern Hemisphere. Nighttime conditions on these higher frequencies remain short and weak, with mostly north/south path openings since the Southern Hemisphere has longer daylight hours.

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

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

Signals below 120 meters are also greatly improved, unless we experience those intense CME (Coronal Mass Ejection) events, where conditions will become degraded. Mediumwave DX is really hot during this season.

Don't forget to monitor the low VHF for DX TV signals (remember, European TV uses AM for their audio, instead of FM), as there might be an F_2-layer opening once or twice this month. I'd like to hear from you if you catch one.

Be sure to check out the latest conditions, as well as the educational resources about propagation, which I have put together for you at http://prop.hfradio.org/. I also provide a WAP/WML resource for wireless devices. If you want the latest propagation information like the solar flux, Ap reading, and so forth, check out http://wap.hfradio.org/, the wireless version of my propagation site.

Please don't hesitate to write and let me know about any interesting propagation that you have noticed. Do you have questions about propagation? I look forward to hearing from you. Turn on your favorite radio and enjoy the great DX season on medium and shortwave. Happy hunting! ■

global information guide

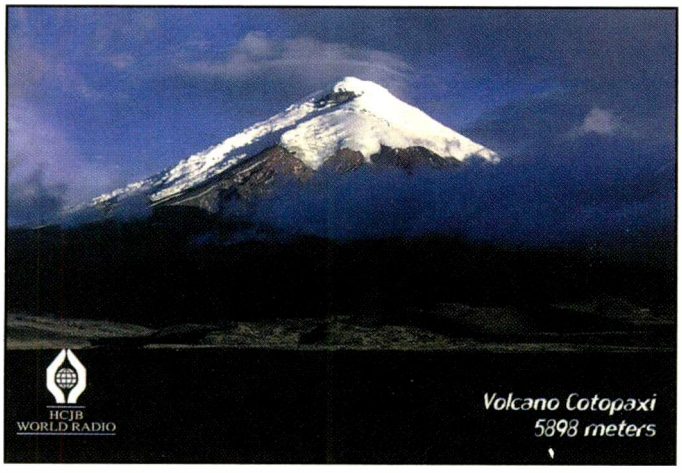
listening to what your world says every day

by Gerry L. Dexter

Is It A Pirate Or A New Shortwave Broadcaster?

Last September's meeting in Mexico of the World Trade Organization generated the usual assortment of protest groups—and one radio station! Unlicensed and thus technically a pirate, it nonetheless captured the interest of the larger SWBC DX community, even those who don't normally bother with pirates.

That station, **Radio Free Cascadia International**, operated on **15045** for a few days in mid-September and was heard, albeit poorly, throughout much of the eastern United States, as well as by a few lucky souls further into the continent. One DXer heard them talking about having plans to return at some point, but they didn't give out any details. It isn't known for sure whether these broadcasts actually came from Mexico or from a site in Central America, or even somewhere in the United States. Interestingly, the station, FRCI for short, used the same frequency as RFPI. Both groups are based in Oregon.



It's considerably harder to get a QSL from old reliable HCJB these days. (Thanks to Ray Paradis, ME)

Return Of An Ancient?

There are hints suggesting we may soon experience the return of an old time Mexican broadcaster. **Radio Tapachula** in Chiapas State is supposed to begin broadcasting again on its old spot of **6120**.

Another returning Mexican is **XERTA Radio Transcontinental**—La Voz Comercial de Mexico, which has resurfaced on **4810**. It was initially (and perhaps still) having problems with low modulation and so-so signal levels. There are some English language IDs interspersed with the Spanish language programs. Reception reports for this one should go to Plaza San Juan No. 5, Despacho No. 2, Col. Centro, Centro Historico, C.P. 6050, Mexico, D.F. They have a website at www.xetraradio.com. E-mails go to charlaxerta@yahoo.com.

Also on the Mexican front, we're seeing increased logs of the recently returned **Radio Universidad**, **XEXQ**, on **6045**, especially at, or just after, their 1200 opening.

You can continue your hunt for the **AFN/AFRTS** outlet on **Diego Garcia**, secure in the knowledge that there is, in fact, something there to be heard. Apparently, as some people suspected, this had been off the air for a while but it has been reactivated and is in use on **12579 USB**. You can also safely assume that, even when it's on the air, Diego Garcia is the most difficult to hear of the AFN shortwave sites, at least for most of us in North America.

The **Voice of Nigeria** has discontinued the use of 15120 and replaced it with **17800**, at least for the time being (the higher frequency is not as well heard.) VON also employs **9690** on an occasional basis. **7255** continues in use, running until 2300 sign off and then beginning its day again at 0500. One of the regional outlets, **Radio Nigeria**, Kaduna, is appearing on **6090**, in addition to its long time use of **4770** where it signs on around 0430.

Financial Problems In Papua New Guinea, And More

Financial troubles have hit several of the regional Papua New Guinea stations, forcing them off the air, namely **Radio Enga** (2410), **Radio Simbu** (3355), and **Radio Western Highlands** (3375). **Radio Southern Highlands** (3275) may have also taken a hit by now.

Laser Radio, based in the United Kingdom, has resumed broadcasts via the Ulbroka, Latvia, transmitter, although you may hear other broadcasters as well, such as the Dutch-based Radio Seagul or others who have rented time from Laser Radio. The overall schedule runs from 1800 to 2200 on **9290**.

Radio Misiones Internacional (HRMI) in **Honduras** has escaped the congestion of around 5010 and moved to **3340**.

Our book winner this month is **Sheryl Paszkiewicz**, of Wisconsin, who receives a copy of the 2004 edition of *Passport to World Band Radio*, courtesy of the good people at Universal Radio. If you aren't on the mailing list for their catalog you should be. You can get a copy—free—by calling 614-866-4267, e-mailing them at dx@universal-radio.com or by dropping a note to Universal Radio, 6830 Americana Parkway, Reynoldsburg, OH 43068.

Remember, your shortwave broadcast station logs are always welcomed with open arms. But please be sure to double or triple space them, list them by country, and add your last name and state abbreviation after each log. Also welcome are spare QSLs you don't need returned, station schedules, brochures, pennants, photos, and anything else you think would be of interest. And we continue to wonder if there are any brave enough to send in a shack photo—an activity that seems to have all but disappeared in recent years!

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

ALASKA—KNLS, **11765** with religious program in CC at 1230 and ID in EE. (Linonis, PA)

ALBANIA—Radio Tirana, **6115** at 0231 with frequencies, times, news. (Charlton, ON) 6115//**7160** with news at 0233. (Burrow, WA)

ANGUILLA—Caribbean Beacon, **6090** with Dr. Gene Scott at 0030. (Linonis, PA) 0203. (DeGennaro, NY)

ANTARCTICA—Radio Nacional Arcangel, **15476v** (p) at 0100 sign on with choral singing and man with SS talks. Special broadcast marking 83 years of Argentine broadcasting. (D'Angelo, PA) 0115 with woman in SS talks. Long, deep fades and gone by 0148. (Montgomery, PA)

ANTIGUA—BBC Relay, **5975** at 0042. (Charlton, ON)

ARGENTINA—Radio Nacional/RAE, **6060** at 0909 with SS news. (DeGennaro, NY) **9665** in SS at 0324. (Charlton, ON) (*New? No listing for them here.—gld*) RAE, **11710** in EE at 0200. (Burrow, WA) LA-101/Radio Continental, **5400 LSB** relay with U.S. oldies and SS anncr at 0119. (Montgomery, PA)

ASCENSION ISLAND—BBC Relay, **7160** at 0520. (Brossell, WI) **12095** at 0001. Also **17830** at 1758 going into news. (Charlton, ON) 12095 at 0224. (Jeffery, NY) **17745** at 2030. (Quinby, PA) Family Radio, via Ascension, **15195** at 2000. (Brossell, WI) (*They're everywhere—gld*)

AUSTRALIA—Radio Australia, **6020** at 1225, **9580** at 1130. (Northrup, MO) 6020 at 1105, 9580 at 1134, **11650** at 1149, **12080** at 1137, **13635** in unid language at 1143 and **13685** at 1149. (DeGennaro, NY) **9475** at 1124. (Jeffery, NY) 9580 co-channel with Gabon at 2129 but off suddenly at 2130. (Montgomery, PA) 9580//11650 at 1235. (Brossell, WI) 11650 at 1255 and **21740** at 2147. (Charlton, ON) **15240** at 0700. (Barton, AZ) **15525** at 0456 and **17715** at 2231. (Miller, WA) 21740 at 2155, //17715, **17795**. (MacKenzie, CA) 21740 at 2230. (Quinby, PA) ABC Northern Territories Service, Alice Springs, **2310** at 1955 with a discussion. (Foss, Philippines) Also Katherine, **2485** at 1007. (Miller, WA)

AUSTRIA—Radio Austria Int'l, **6155** in GG at 2044. (Foss, Philippines) **9820** heard at 0109, **9870** at 0149, **13730** in GG at 2316 and **15515** via Canada in GG at 1549. (Charlton, ON) 9870 at 2327 and **13730** in GG at 1554. (DeGennaro, NY) Adventist World Radio via Austria, **9820** at 0109. (Charlton, ON) **15175** in AA at 1920. (Brossell, WI) FEBA via Austria, **9465** with religious talk at 0047. (Charlton, ON)

BELGIUM—Radio Vlaanderen Int., **15565** via Bonaire at 2238 talking of legalized prostitution. (Miller, WA) 0445 in presumed Flemish. (Linonis, PA) 2236 with Algerian love songs. Also **17670** via Russia at 1536 in Flemish. (Charlton, ON) RTBF Int., **9970** in FF at 0515. (Brossell, WI)

BENIN—Radiodifusion du Benin, **7210** (*slightly variable—gld*) 2130 to 2302 close with FF talks and variety of Afro and FF pops, phone talk, ID. (Alexander, PA) 2235 tune to 2253 close. (D'Angelo, PA) 2240–2303, with carrier on for several minutes after that. (Montgomery, PA) 0611 with FF talk. (Paszkiewicz, WI)

BOLIVIA—Radio San Miguel, **4902.4** at 1000 with SS ID, time checks and repeated IDs. (Wilkner, FL) RadioTacana, Tumupasa, **4781.3** at 0955 with man in rapid SS talk. (Wilkner, FL) Radio Nacional, Huanuni, **5964.8** weak in SS at 1003. (Wilkner, FL) Perla del Acre, Cobija, **4600** in SS at 0940. (Wilkner, FL)

BOTSWANA—VOA relay, **11835** at 0502. (Brossell, WI)

BRAZIL—Radio Universo/Radio Tupi, Curitiba **11765** at 0128 with impassioned religious talk in PP. Overtaken by RAI by 0130. (DeGennaro, NY) Radio Difusora Acreana, Rio Branco, **4885** at 0925 with religious message in PP. (DeGennaro, NY) Radio Clube de Para, Belem, **4885** with religious talks in PP at 0925. (DeGennaro, NY) Radio Missoes da Amazonia, Obidos, **4865** with PP vocals at 0921. (DeGennaro, NY) Radio Brazil Central, Goiania, **4985** with choral songs in PP at 0014. (DeGennaro, NY) PP and music at 0416. (Miller, WA) **11815** in PP at 0021. (Charlton, ON) 0209. (DeGennaro, NY) Radio Bandeirantes, Sao Paulo, **9645** with local news in PP, commercials, ID at 0930. (DeGennaro, NY) Radio Educacao Rural, Tefe, **4925** at 0138 with Brazilian pops, PP talks, jingle IDs. Off at 0200. (D'Angelo, PA) Radio Educacao Rural, Campo Grande, **4755v**, 0116 with PP religious message. (DeGennaro, NY) 0216. (Miller, WA) 0904 with PP songs, ID at 0909. (Montgomery, PA) Radio Senado, Brasilia, **5990** at 0929 with PP vocals, address. (DeGennaro, NY) Radio Marumby, Florinapolis, **9665** at 0936 with talks, Brazilian music. (DeGennaro, NY) Radio Clube Paranaense, Curitiba, **9725** at 0943 with PP talks, commercials, music. (DeGennaro, NY) Radio Nacional Amazonia, **6180** in PP at 2358 and 11780 in PP at 0120. (Charlton, ON) **9665** at 0500 sign on with light instrumentals and IDs, local ballads. (Alexander, PA) **11780** at 1052. (DeGennaro, NY) 1950 with sports event. (Brossell, WI) Radio Nacional, Macapa, **4915** at 2342 with PP talks, PSAs. (DeGennaro, NY) Radio Caiari, Porto Velho, **4785** at 2313 with PP music. (DeGennaro, NY) Radio Anhanguera, Goiania, **4915** at 0132 with PP and U.S. pops. (DeGennaro, NY) Radio Bare, Manaus, **4895** at 0933 with ID, vocals. (DeGennaro, NY)

BULGARIA—Radio Bulgaria, **5800** at 2100 sign on with EE ID, sked, news, local folk music. Runs to 2200 and better on //**7500**. (Alexander, PA) **9400** at 2318. (Charlton, ON) **11900** at 2322 with history feature, ID. (Burrow, WA) **13800** in SS at 2114. (DeGennaro, NY)

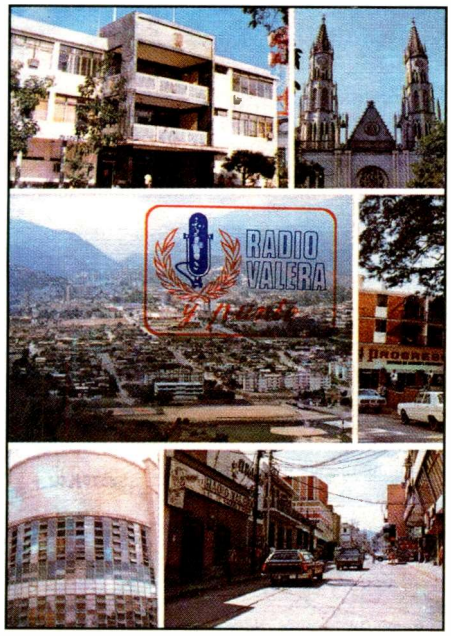
BURKINA FASO—Radio Burkina, **5030**, 2143 with FF discussion. (DeGennaro, NY) 2334 to 0001 close, FF pop and rap with man anncr, ID and sign off anmts heard at 2356 and orchestral anthem. (D'Angelo, PA)

CANADA—CFRX, **6070** relay CFRB , 6070 at 1415. (Northrup, MO) RCI, **9515** at 1230. Also **11935** via Germany in Ukrainian at 1540. (DeGennaro, NY) **12015** via UAE at 2057. Off at 2059. (Foss, Philippines) **11920** at 2150 in FF; **15170** at 2200; **15245** in FF at 1941 and **17820** at 2002. (Charlton, ON) **13670** with sports program at 2200. (Quinby, PA) 17800 at 1420. (Northrup, MO)

CHILE—La Voz Cristiana, **6070** in SS at 1009 and **11935** in SS at 1124. (DeGennaro, NY) **11745** in SS at 0640. (Barton, AZ) 11935 in

Abbreviations Used In This Month's Column

//	—	Parallel frequency
ABC	—	Australian Broadcasting Corporation
AFRTS	—	Armed Forces Radio Television Service
AFN	—	Armed Forces Network
AIR	—	All India Radio
anncr	—	announcer
anmt(s)	—	announcement(s)
BSKSA	—	Broadcasting Service of the Kingdom of Saudi Arabia
CNR	—	China National Radio
GOS	—	General Overseas Service
ID	—	identification
Int'l	—	international
IS	—	interval signal
Lang	—	language
LSB	—	lower sideband mode
NBC	—	National Broadcasting Corporation
OA	—	Peru, Peruvian
PBS	—	People's Broadcasting Station
Pgm	—	program
RRI	—	Radio Republick Indonesia
sked	—	schedule
SIBC	—	Solomon Islands Broadcasting Corporation
TOH	—	Top of the Hour
unid.	—	unidentified
USB	—	upper sideband mode
vern	—	vernacular (any local dialect or language)
VOA	—	Voice of America
VOIRI	—	Voice of the Islamic Republic of Iran



Sixty-meter Latins are a vanishing breed. Radio Valera, Venezuela, on 4840 is one of many who are missing in action. (Thanks to Sheryl Paszkiewicz, WI)

SS at 1230. (Brossell, WI) **15375** at 1310 in SS. (Montgomery, PA) **17680** in SS at 1457. (Charlton, ON)

CHINA—Xizang (Tibet) PBS, (p) **4905** in presumed Tibetan at 1143 with upbeat songs in unid language. (Foss, Philippines) 1214. (Strawman, IA), 1336, //**4920**. (Miller, WA) **4820** at 1125 and 4920 at 1120. (Wilkner, FL) Yunan Broadcasting Station, Kunming, **6035** with music at 1330. (Miller, WA) Xinjiang PBS, Urumqi, **9470** at 1057 with vocals, ID in CC at 1059, 1100 and into possible news. (DeGennaro, NY) China Radio Int., **9640** in SS at 2150. (DeGennaro, NY) **9790** via Canada in EE at 0105. (Charlton, ON) Guangxi PBS, Nanning, **5050** in CC at 1202. (Foss, Philippines) CPBS, **9590** in CC at 1128. (DeGennaro, NY) China Music Jammer, **11945** and **13670** at 1950. (Brossell, WI) **15680** at 1557. (Charlton, ON)

COLOMBIA—La Voz de su Concencia, **6010** at 0417 with kids singing, mention of Colombia, ID, and religious program. (Paszkiewicz, WI) 0800 with SS talk, ID, SS pops. (Alexander, PA) La Voz de Guaviare, **6035** in SS at 1005 with Colombian style music, SS talk, ID at 1010. (DeGennaro, NY)

COSTA RICA—University Network, **9675** with Gene Scott heard at 0045. (Charlton, ON)

CROATIA—Voice of Croatia, **9925** via Germany with news heard at 2337. (DeGennaro, NY) 0039 in Croatian and 0200 in EE. (Charlton, ON) 0513 in Croatian. (Brossell, WI)

CUBA—Radio Havana, **6000** in SS at 1220. (Northrup, MO) **9550** in SS at 2242 and **9820** in SS at 0107. (Charlton, ON) **11760** with Arnie Coro at 2106. (Ziegner, MA) **17705** in SS at 2223. (MacKenzie, CA) Radio Rebelde, **5025** in SS with news at 1004. Also **9600** at 1028. (DeGennaro, NY) **6120** in SS at 0300. (Miller, WA)

CYPRUS—BBC Relay, **12035** at 1348. (Miller, WA)

CZECH REPUBLIC—Radio Prague, **6200//7345** in Czech at 0127. Also **9440** at 0005, **11600//13580** in Czech at 2224 and **17485** in EE at 1715. (Charlton, ON) 7345//**9870** with EE news at 0303. (Burrow, WA) **11600** at 2200 in EE to NA. (Quinby, PA) **11615** in EE at 1053. (DeGennaro, NY)

DENMARK—Radio Denmark, **9985** via Norway in DD at 0052. (Charlton, ON) 9985 in DD at 0108. Also **9945** in DD at 2340 and **11615** in DD at 1041, all via Norway. (DeGennaro, NY)

DOMINICAN REPUBLIC—Radio Cristal, **5010** in SS with Latin music at 2349. (DeGennaro, NY) 1040 with IDs as "Esta es Radio Cristal." (Wilkner, FL) Radio Pueblo, **5009.8** at 2352 with SS ID and again at 2359 and phone-ins starting on the hour. (Montgomery, PA)

ECUADOR—HCJB, **3230** in Quechua at 1007. Also **11950** in SS at 1127. (DeGennaro, NY) **6050** in SS at 1145. (Northrup, MO) **15185** at 2000 and **15205** at 2037. (Charlton, ON) Radio Quito, **4919** in SS with local news at 1007. (DeGennaro, NY) 1104. (Miller, WA) Radio Federacion Sucua, **4960** in Quechua at 0945 with Andean music. (DeGennaro, NY) 1107 with indigenous music. (Miller, WA) La Voz del Napo, Tena, **3280** at 0932 with man/woman anncrs with station promos, music and religious talk. (Montgomery, PA) 1011 with SS religious talk. (DeGennaro, NY) 1028. (Miller, WA) Radio Buen Pastor, Saraguro, **4814** at 1031 in Quechua with music. (DeGennaro NY) La Voz del Upano, Macas, **5040** with SS religious talk at 1027. (DeGennaro, NY)

EGYPT—Radio Cairo, **9990** in EE at 2155 with talk on Shakespeare. (Ziegner, MA) 2231 and **11725** with EE/AA lessons at 0005. (DeGennaro, NY) 11725 in AA at 0200. (Linonis, PA) 2326 with ID, off at 2329 and back on at 2331 but much weaker. (Burrow, WA) **12050** in AA at 1955. (Brossell, WI) **17800** in AA at 1315. (Northrup, MO)

EL SALVADOR—Radio Imperial (p) **17835** at 0005 with SS ballads and talk. Poor in noise, with deep fades. (Alexander, PA) *(Nice to know this one isn't gone after all.—gld)*

ENGLAND—BBC, **5975** via Antigua at 0312, **6195** at 0148, **11920** at 0051, **12095** at 2036, **15190** at 1444, **15400** at 2308 and **17830** at 2149. (Charlton, ON) Sudan Radio Service (U.S. Agency for International Development) via England at 1615 on **17630**; moves to **17660** at 1700–1800. Various languages during daily 1600–1800 sked. (Brossell, WI)

ETHIOPIA—Radio Fana, **6210** monitored at 0257 with electronic instrument IS to woman with sign on at 0300. (Strawman, IA)

FINLAND—YLE/Radio Finland, **15400** at 1250 in Finnish. (Brossell, WI) 1254. (Charlton, ON)

FRANCE—Radio France Int., **9830** via Japan in SS at 1005 and **11600** via Beijing in FF at 1107. (DeGennaro, NY) 11660 in FF but with EE ID, URL. Also **11955** via Gabon in FF at 2003. (Charlton, ON) **11685** in FF at 0452, also **15300** in FF with live sports. (Brossell, WI) **15300** in FF at 1210. (Jeffery, NY) **15535** VIA Irkutsk, Russia, in FF at 0055. Off at 0100. (Jeffery, NY)

FRENCH GUIANA—RFI, **11665** in SS at 0116 with sports news. (DeGennaro, NY) **17860** in FF at 1330. (Northrup, MO)

GABON—Africa No. One, **9580** in FF with vocals at 2140. (DeGennaro, NY) 2130 with continuous 50s music. ID, time pips and news on the hour. (Montgomery, PA) 2208. (Charlton, ON)

GERMANY—Radio Africa Int. via Germany, **15715** opening at 1829. (Charlton, ON) Bible Voice, **15680** monitored at 1513 tones, ID, "Fire in the Hole" program. (Paszkiewicz, WI) Deutschlandfunk, **6190** at 2339 in GG with talk, easy jazz instrumentals. Buried by Radio Slovakia opening at 0000. (D'Angelo, PA) Evangelische Missions-Gemeinden, **9860** at 2203 with choir, religious talks in GG, IDs and addresses at 2227 and off at 2228. (D'Angelo, PA) Russian Radio Int., **17705** with RR pops and talk from 1428 tune. Off at 1459 after a series of bells. (D'Angelo, PA) Sudwestrundfunk, **7265** with news in GG at 0112. (DeGennaro, NY) Bayerischer Rundfunk, **6085** in GG at 2117. (DeGennaro, NY) Deutsche Welle, **6075** in GG at 0043, **9900** via Russia in GG at 1056 and **11655** in Slavic language at 0957. Into EE at 1000. (DeGennaro, NY) **11690** in GG at 2300. (Quinby, PA) 11690 in GG at 2356, **11865** at 2155, 11960 in GG at 0006, **15205** via Sri Lanka at 2034 and **17810** in EE at 2041. (DeGennaro, NY) **12045** to East Africa via Portugal at 0355. (Miller, WA) **13590** at 1832 in EE but into Hausa at 1845. (Montgomery, PA) **13780** with skeds in GG at 1555. (Barton, AZ) **15360** in Urdu at 1700, into Dari at 1730 and Pashto at 1745. (Ziegner, MA)

GHANA—GBC, **4915** with a discussion in unid language at 2137. (DeGennaro, NY)

GREECE—Voice of Greece, **5865** in Greek at 0035, **15630** in Greek at 1946 and **17705** via Delano in Greek at 2019. (Charlton, ON) 15630 in Greek at 1945. (Brossell, WI)

GUAM—Adventist World Radio/Voice of Hope, **11560** with religious talk at 1043. (Charlton, ON) **15615** heard at 1258 with IS and "From the beautiful island of Guam, this is Adventist World Radio—the Voice of Hope." Website given as www.awr.org. (Brossell, WI) Trans World Radio/KTWR, **15205** with news and talk at 1506. (Charlton, ON) Armed Forces Network, **5765 USB** at 1341. (Miller, WA)

GUATEMALA—Radio Coatan, **4780** at 1100 with frequent IDs over religious music—"estudios de Radio Coatan...las palabras de Dios." (Wilkner, FL) Radio Tezulutlan, Coban, **4835.4** (t) at 1100 but very weak. (Wilkner, FL) Radio Verdad, Chiquimula, **4052.4** with ID and religious programming at

Not only is Radio Cristal in the Dominican Republic active (5010), it replies with this nice QSL card. (Thanks to Sheryl Paszkiewicz, WI)

Radio Lesotho resumed operation on 4800 some time back. (Thanks to Sheryl Paszkiewicz, WI)

1100. (Wilkner, FL) Radio K'ekchi, Alta Verapaz, **4844** in SS at 1100. Very poor modulation. (Wilkner, FL) Radio Maya, Barillas, **3324.7** at 0907 "transmite onda corta...radio Maya de Barillas." (Wilkner, FL) Radio Cultural, **3300** in SS at 1039. (Miller, WA) Radio Buenas Nuevas, San Sebastian, **4779.6** in unid language at 1045 with vocals and ID. (DeGennaro, NY)

GUINEA—RTV Guineenne, **7125** at 2205 in vernacular and FF with talk, Afro-pops, sign off anmts with ID and NA at 0000. (Alexander, PA) 2254 with music typically played by this station. ID at 2304. (Montgomery, PA)

GUYANA—Radio Guyana, **2391.1** at 0120 with variety of light instrumental music and woman anncr. (Alexander, PA) 0919 short program anmts and brief music interludes. Man anncr with song titles. 0930 ID "This is the Voice of Guyana." (Montgomery, PA)

HAWAII—KWHR, **9930** with sermon at 1310. Also on **11565** at 1230. (Brossell, WI) 17510 with ID, and Brother Rose. (MacKenzie, CA) 0133 with religious program. (Foss, Philippines) Armed Forces Network, **6350** at 0519 with talk on disease evaluation. (Miller, WA) 0949 with sports interview. (Barton, AZ) WWVH, **10000** with time anmt by woman at 1100. (DeGennaro, NY)

HONDURAS—Radio Litoral, La Ceiba, **4832** with music and SS at 0030. (DeGennaro, NY) Radio Misiones Internacionales/HRMI, **3340** with ID at 0115 and religious music. (Wilkner, FL) 0118. (Strawman, IA) 0137 with slow SS ballads, possible ID at 0200. (Montgomery, PA) 0251 with frequent IDs and time checks during music program in SS. (D'Angelo, PA) 0305 with SS religious programming, ID at 0401. (Alexander, PA)

HUNGARY—Radio Budapest, **9570** at 0229 with IS, multi-lingual ID, program preview, and news. (Burrow, WA) 0230 beginning EE to North America with "Hungary Today.") Linonis, PA **9580** at 0231 and 9590 at 0103. (Charlton, ON)

ICELAND—INBS, **13865 USB** in Icelandic at 2305. (Charlton, ON) Armed Forces Network, **13855** heard at 1935 on raising children and interview with an author. (Montgomery, PA)

INDIA—AIR-Chennai, **5010** with long talk in Hindi at 1243. (Strawman, IA) AIR—Ranchi, **4960** in unid language at 1123. (Miller, WA) All India Radio: **3365** (Delhi) in Hindi at 1349; **6165** (Delhi) in Hindi at 1339; **10330** in Hindi at 1548; **11620** (Bangalore) with EE news at 1812; 15050 (Delhi) in Hindi to 1500 close. (Miller, WA) **7410** with domestic music at 2023. (Foss, Philippines) 11620 in presumed Hindi at 1245. (Brossell, WI) 2201 with news. (Charlton, ON) 0100 in Hindi. (Quinby, PA) 1110 on **13645** (Bangalore) at 1146 in unid language. (DeGennaro, NY) **13605** (Bangalore) at 1849—weak, with skipping record at 1858, EE ID at 1900 and then news. Also **15050** in listed Sinhala at 1302. And **15110** at 1620 with Indian music, time pips on the hour and then possible news. More music at 1715 to close at 1800. (Montgomery, PA)

INDONESIA—RRI Palangkaraya, **3325** in II at 1543 with beautiful domestic vocals. (Foss, Philippines) RRI Pontianak, **3975** with mentions of Kofi Anan and Pakistan. (Miller, WA) RRI Fak Fak (p) **4790** at 1220 with vocals but low audio. (Strawman, IA) 1339 at 1329. (Miller, WA) RRI Wamena (p) **4870** at 1258 with pops to top of hour anmts. (Strawman, IA) RRI Makassar (t) **4753.3** with woman anncr in talk, then possible AA or maybe Koran reading. The music was at a better level. (Montgomery, PA) RRI Sorong, **4870** at 0951 with music, long talks by woman. (Montgomery, PA)

IRAN—VOIRI, **9590** at 0130 with ID, frequencies. Also **11860** in EE at 2013. (Charlton, ON) **15545** in AA at 1313. (Brossell, WI) **21470** at 1123. (Foss, Philippines)

IRELAND—RT Eireann, **6155** via Canada at 0150 and13640 via Canada at 1845. (Charlton, ON)

ISRAEL—Kol Israel, **11585** in Hebrew at 1740. (Miller, WA) **11605** in HH at 1945. Also **15785//17535** in HH at 2006 and **15615//15640//17545** at 1953 in HH. (Charlton, ON) 15615 in FF at 1942. (Brossell, WI)

ITALY—RAI, **6060** in II at 0041. **9840** in II at 2310 and **11800** in II at 0155 Also **11765** (*via Ascension—gld*) in II to Central & South America at 0130. (DeGennaro, NY) **9675//**11800 at 0111. (Charlton, ON) 11800 at 0332 to 0337 sign off. (Miller, WA)

JAPAN—Radio Japan/NHK, **5960** via Canada in JJ at 0310; **6145** via Canada in EE at 0005; **11895** in JJ at 2223 and **11710** in EE at 1506. (Charlton, ON) 6145 via Canada at 0051. **17585** in EE at 1055 to 1059 close. (DeGennaro, NY) **7230** via England at 0508. Also **21630** in JJ at 1612. (Paszkiewicz, WI) **9530** via French Guiana at 0900. (Barton, AZ) **11740** via Singapore at 1220 in JJ. (Brossell, WI) **11855** in EE at 2100. (Quinby, PA) **17825** in JJ at 2212. (MacKenzie, CA) 2205 in JJ. (Jeffery, NY) Radio Tampa, **9595** in JJ with domestic service at 1200. (Linonis, PA)

JORDAN—Radio Jordan, **11690** with news at 1605, IDs at 1620 and 1631. Heavy RTTY QRM. (Montgomery, PA)

KUWAIT—Radio Kuwait, **11675** at 1954, **11990** at 2044, **15495** in AA at 1944. (Charlton, ON) 11990 at 1932. (Burrow, WA) **13620** in AA at 1546. (DeGennaro, NY) **15110** in AA at 1435. (Miller, WA) **15495** in AA at 0236. (Jeffery, NY) **15505** in AA at 2010. (Brossell, WI)

LESOTHO—Radio Lesotho, **4800** at 0320 with music to 0330 then a discussion program with man and woman in Sesotho. More music at 0350, ID at 0400 and news. (D'Angelo, PA)

LIBYA—Radio Jamahiriyah, **15205** in PP at 1728 and **15435** in AA at 1740. (Charlton, ON) **15205** with news in heavily accented EE. (Miller, WA) 15205 with EE program about the concepts of the Revolutionary Committee's Movement at 1926, **//15315**. (Alexander, PA) (*15205 is via France—gld*) **15435** in AA at 2126. (DeGennaro, NY)

LITHUANIA—Radio Vilnius, **9875** at 2326 with EE news at 2330. (Miller, WA)

2329 with IS, ID, program preview, news. (Burrow, WA) EE sign on at 2330. (DeGennaro, NY) 0000 with news in EE and 1690 with opera selections at 0059. (Charlton, ON) **11690** with news at 0030. (Quinby, PA)

MALAYSIA—Voice of Malaysia, **15295** in unid language heard at 1638. (Miller, WA)

MALI—RTV Malienne, **4835** at 2320 with FF anmts, vocals. (DeGennaro, NY) 0001 with FF sign off anmts over flute and children's choir in background. Anthem at 0002, gone at 0004. (Strawman, IA)

MALTA—Voice of the Mediterranean, **9605** via Rome, heard at 1010 with II talks. (DeGennaro, NY) **12060** via Russia at 1907 history of Knights of St. John. (Foss, Philippines)

MAURITANIA—Radio Mauritanie, **4845** in AA at 0003. (DeGennaro, NY)

MEXICO—Radio Huayacocotla, **2300** at 1200 sign on but very weak. (Wilkner, FL) XERTA, **4810**, 1000 with over modulated signal. Very long periods of carrier but no audio. (Wilkner, FL) XEXQ, Radio Universidad, San Luis Potosi, **6045** at 1205 with sign on announcement in SS and into classical music. (Wilkner, FL) Radio Educacion, **6185** in SS at 0137. (Charlton, ON) 1014 with Mexican dance music. (DeGennaro, NY) Radio Mexico Int., **9705** in SS at 0132. (Charlton, ON) 2100 in SS. (Quinby, PA) 9705//11770 at 0310 in SS. (Burrow, WA) 0328 in SS. (Miller, WA) Radio Mil, **6010** with SS and Mexican music at 0945. (DeGennaro, NY)

MOLDOVA—Voice of Russia via Moldova a, **9665** at 0109. (Charlton, ON)

MONGOLIA—Voice of Mongolia, **12085** in Mongolia at 0904 with local music. Into EE at 1000 with feature on Central Asian relations and mailbag program. (Ziegner, MA)

MOROCCO—Radio Medi un, **9575** at 1007 with AA news, vocal music. (DeGennaro, NY) RTV Marocaine, **7135** at 2335 with non-stop AA music, man in AA at 2358, ID, news briefs and off at 2359. (D'Angelo, PA) **7185** in AA at 0217. (Charlton, ON) 7185 at 0108 and **15340** (*345?—gld*) in AA at 1046. (DeGennaro, NY) **15345** in AA at 1641. (Miller, WA) 1845 in AA/EE. (Ziegner, MA) VOA Relay, **15445** at 2009. (Brossell, WI0 **17895** heard at 1735. (Charlton, ON)

NEW ZEALAND—Radio New Zealand Int., **9580** via Australia at 1630 with pops, talk, IS & ID at top of the hour, news. (Barton, AZ) 9850 with religious talk at 1141. Also **9885** at 1200 with ID and sign on. (DeGennaro, NY) 9885 at 0951 with interview and news. (Jeffery, NY) **11820** with news at 0500. (Brossell, WI) **15160** at 2120 about TV news in New Zealand. (Foss, Philippines) **17675** at 0001. (Charlton, ON) 0316 with mailbag program. Closed at 0327. (Burrow, WA) 2225. (MacKenzie, CA) 2228. (Miller, WA)

NETHERLANDS—Radio Netherlands, **9560** via Canada at 0215 and **15220** (also Canada) at 1455. (Charlton, ON) **12065** via Russia at 1030. (Foss, Philippines)

NETHERLANDS ANTILLES—Radio Netherlands Bonaire relay, **9715** in SS at 1211. (DeGennaro, NY) **15155** in DD at 2145. (Barton, AZ) **17605** at 1958. (Charlton, ON) **21590** heard at 1940. (Charlton, ON)

NIGERIA—Radio Kuduna, **4770** at 2136 with man/woman annors in local language. Poor modulation. One time pip on the hour, ID and into piano music. Went past listed 2205 sign off. (Montgomery, PA) Voice of Nigeria, **7255** at 0526 in EE with African music. Also **15120** with news in EE at 2253. (Miller, WA) 7255 at 0515. (Burrow, WA) 0530 with ID, music, talk in FF. (Brossell, WI) 15120 in EE at 1845 and 2230. (Charlton, ON) **17800** at 2130 with ID, Nigerian pops. Top 5 countdown program at 2153. More news at 2200. (Montgomery, PA) 2250 to 2300 close with ID prior to anthem. (D'Angelo, PA)

NORWAY—Norwegian Radio, **15705** in NN at 1106. (DeGennaro, NY)

NORTH KOREA—Pyongyang Broadcasting Station, **3320** in KK at 1044. (Miller, WA) Korean Central Broadcasting Station, **2850** at 1438 with large mixed chorus and full orchestra. Also **9345** at 2327 with chorus and passionate speech. (Foss, Philippines) **9335** with news and vocal music. (DeGennaro, NY) Voice of Korea, **9335//11710** at 1100 in FF with long version of national anthem and praise for Kim Jong Il. (Linonis, PA) 11710 with IS and 1300 sign on "This is the Voice of Korea. From Pyongyang in the People's Republic of Korea, this is the Voice of Korea. Now the news." (Brossell, WI) 0845 with military chorus and EE talks. (Barton, AZ)

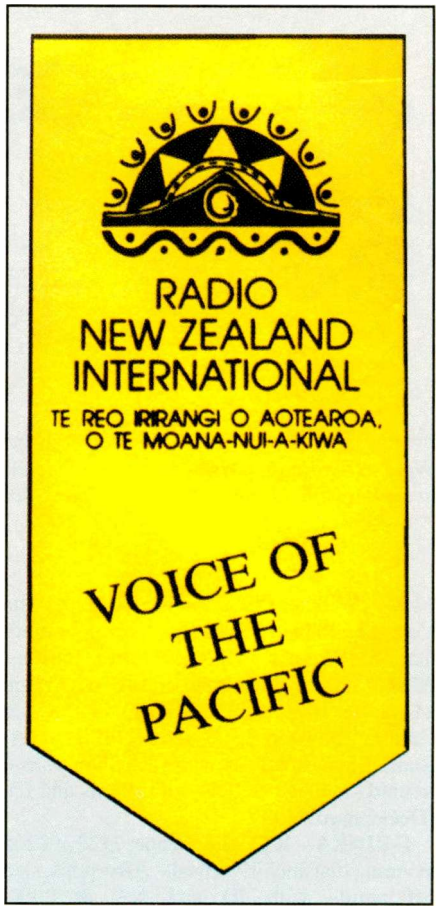
NORTHERN MARIANAS—VOA Relay, Tinian, **9545** at 1244 to 1300 close. (Paszkiewicz, WI) **13760** at 0835. (Barton, AZ) KFBS, Saipan, **11580** in CC at 1211. (Brossell, WI)

PAKISTAN—Radio Pakistan, **11570** at 1502 with man/woman reading news in unid language. (Foss, Philippines) **15065** in unid language to 1530 sign off. (Miller, WA)

PALAU—KHBN, **9985** with religious program in unid language at 0300. (Linonis, PA)

PAPUA NEW GUINEA—NBC, Port Morseby, **4890** with Karai National Service at 0909 with ID at 0916. (Burrow, WA) 1036 with news. (DeGennaro, NY) 1100 with news. (D'Angelo, PA) 1115 with BBC news relay. (Linonis, PA) 1333. (Miller, WA)

PERU—(*Note: Most Peruvian stations have similar programming, so to save space we won't repeat program things such as SS, PSAs, Andes music, flutes, etc. and stick mostly station name, location, frequency and time.—gld*) La Voz de la Selva, Iquitos, **4824.4** at 1023. (DeGennaro, NY) Radio Tarma, Tarma, **4775** at 1028. (DeGennaro, NY) Radio Huanta 2000, Huanta, **4748** in SS and QQ at 0949. (DeGennaro, NY) Reina de la Selva, Chachapoyas, **5486.7** at 1007. (Wilkner, FL) Radio La Oroya, La Oroya, **4905** at 0938. (DeGennaro, NY) Radio Libertad, Junin, **5039.3** at 1050 with quick ID. (Wilkner, FL) Radio Los Andes, Huamachuco



(t), 5030 with possible ID at 0005. (Montgomery, PA) Radio Ilucan, **5678** at 0150 to 0247 close. (D'Angelo, PA) Radio Horizonte, Chachapoyas, **5019.9** at 0020. (Strawman, IA) Radio San Antonio, San Antonio de Padua, **3375** with quick ID at 0950. (Wilkner, FL) Radio Atlantida, Iquitos, **4790** at 0200 with possible futebol. (Linonis, PA) 0944. (DeGennaro, NY) 1342. (Miller, WA) Radio Imperio, **4386.6** with apparent religious programming at 0851. (Wilkner, FL) Radio Naylamp, Lambayeque, **4335v**, with ID at 1030. (Wilkner, FL) Radio La Hora, Cusco, **4855.6** in SS/QQ at 1025. (DeGennaro, NY)

PHILIPPINES—Radio Veritas Asia, **9520** with religious messages in CC at 1116. (DeGennaro, NY) **9670** in JJ at 1200. (Linonis, PA) VOA relay, **9760** at 1250. (Brossell, WI) 1144. Also **15160** at 1215. (Jeffery, NY) **11805** in SS at 2320. (Barton, AZ) **17820** at 2216, **//17740**. (MacKenzie, CA) 0000. FEBC, **9405** in Mandarin at 1256. (Strawman, IA)

POLAND—Radio Maryja, **7380** via Russia, 2135 with religious program in Polish, IDs and sign off with EE anmts, but plug was pulled in the middle of giving their schedule. This frequency is covered by the Voice of Biafra on Saturdays. (Alexander, PA

PORTUGAL—RDP Int., **9715** in PP at 0130 and **17680** in PP at 1922. (Charlton, ON) **13770** in PP at 1443. (DeGennaro, NY)

PUERTO RICO—Armed Forces Network, **6458.5 USB** heard at 0003. (Charlton, ON)

ROMANIA—Radio Romania Int., **11840** at 1700 with IS, ID, schedule, news. (Burrow, WA) **11940** in RR at 0031. (Charlton, ON)

RUSSIA—Voice of Russia (Irkutsk) **5905** in JJ at 1358. (Miller, WA) **7390** (Irkutsk) in RR at 2032. (Foss, Philippines) 1430 to SE Asia. (Barton, AZ) **9485** via Samara with Russian folk music. (Strawman, IA) **9725** at 0220, **11675** at 1802, **12000** in unid. language at 2246 and **15465** at 2021. (Charlton, ON) **9830** from Armavir in SS to South America at 0047, **9965** via Armenia in SS at 0058 sign on. (DeGennaro, NY) 12000 in CC at 1250 and **15455** in FF at 1940. (Brossell, WI) **15510** in Urdu and Hindi at 1430. (Ziegner, MA) Radio Rossii, **13705** in RR at 1439. (DeGennaro, NY) Voice of Tartarstan, via Samara, **11665** at 0355 with open carrier, then IS and ID in Tartar, another IS and woman with ID in RR. (D'Angelo, PA) 0357 with open carrier to IS and ID at 0400. (Strawman, IA)

RWANDA—Deutsche Welle relay, **15275** with classical music at 0145. (Barton, AZ) **17860** in GG monitored at 2010. (Charlton, ON) 2020 in GG. (Brossell, WI)

SAUDI ARABIA—BSKSA, **9555** in AA at 2126. (DeGennaro, NY) **15230** in AA at 2233, **15315//15435** with Koran heard at 1507. (Charlton, ON) **15275** in AA at 0430. (Linonis, PA)

SERBIA MONTENEGRO—Radio Serbia Montenegro (ex R. Yugolslavia), **9580** in EE heard at 0002. (Charlton, ON) 0428 with IS to 0430 and into news. (Burrow, WA)

SINGAPORE—Mediacorp, **6150** with Newsradio **9380** at 1430. (Foss, Philippines) Festival preparations at 1349. (Miller, WA) BBC relay, **9740** at 1050. (DeGennaro, NY) **11945** in CC at 1245. (Brossell, WI) **15360** at 0815. (Barton, AZ)

SOLOMON ISLANDS—SIBC, **5020** in EE and Pidgin at 1017 alternating local news items. (DeGennaro, NY) BBC news at1133. (Miller, WA)

SLOVAKIA—Radio Slovakia, **5930// 9440** in EE at 0104 with ID. (Charlton, ON) **6190** monitored at 0212 with EE talks translated into FF. (DeGennaro, NY)

SOUTH AFRICA—BBC relay, **11765** with live sports coverage and news at 0500. (Brossell, WI) Radio SonderGrense, **3320** heard at 0034 with various songs. (Montgomery, PA) 0128 with music and talk in Afrikaans. (D'Angelo, PA)

SOUTH KOREA—Radio Korea Int., **9560** via Canada at 0236. (Burrow, WA) **9650** via Canada at 1215. 11715 via Canada in SS at 1012. (DeGennaro, NY)

SPAIN—Radio Exterior de Espana, **6055** in EE at 0156; into SS at 0200. **13720** in SS at 1154. (DeGennaro, NY) **9925** via Germany in CC at 0139, **15110** in SS at 1938, **15385** in EE at 0020, (Charlton, ON) **17755** in SS at 1402. (Foss, Philippines)

SRI LANKA—SLBC, **4870** in Sinhala heard at 1350. (Miller, WA) **9770** at 0030 with 4 plus 1 time pips, woman with opening ID and news, ID, continuous instrumental music to 0100. (D'Angelo, PA)

SWEDEN—Radio Sweden, **9495** at 0150, **9580** via Canada at 0024 and **17840** at 1341. (Charlton, ON) **17840** with interview at 1340. (Northrup, MO)

SWITZERLAND—Swiss Radio Int., **9885** at 2332. (DeGennaro, NY) **11905** via French Guiana in GG at 2257; **15515//17870** via Germany at 1732. (Charlton, ON)

SYRIA—Radio Damascus, **13610** at 2011. QRM WEWN. (Miller, WA) 2037 with news in EE, AA "rap," ID at 2100. (Burrow, WA)

TAIWAN—Radio Taiwan Int., **5950** (via Florida) in CC at 0039, **6145** via Canada at 0028, **15120** via Florida in CC at 2140 and **15600** via Florida at 2205. (Charlton, ON) **11605//15465** in CC at 1255. (Brossell, WI) **11985** at 1131. (DeGennaro, NY)

TAJIKISTAN—Voice of Russia relay, **11500** in presumed Hindi at 1229. (Brossell, WI) **11620** with news at 0210. (Charlton, ON)

THAILAND—Radio Thailand, **7260** at 1100 in presumed Thai with news, Asian music. (Linonis, PA) **9830** in EE heard at 1410, off abruptly at 1429. (Miller, WA) **15395** at 0029 with weather for Thailand. (Charlton, ON) 0300 with IS, ID, news. (Burrow, WA) BBC Relay, **11955** at 0020 on Asian issues, ID 0030. (D'Angelo, PA) VOA Relay, **7125** at 1400. (Barton, AZ) **9700** in Malay or Burmese at 1135. (DeGennaro, NY) **13775** with news at 2300. (Foss, Philippines) **15150** in unid language at 0041. (Jeffery, NY)

TURKEY—Voice of Turkey, **9460** with Turkish music at 2234. And **9830** with EE news at 2208. (DeGennaro, NY) **9785** at 1830. (Alexander, PA) 9830//**12000** with ID at 2206. (Charlton, ON) **11655** with news at 0305. (Burrow, WA) **11885** in TT at 2211. (Charlton, ON) 0200 in TT. (Linonis, PA) 0341 in TT. (Miller, WA) **17830** in EE at 1300. (Northrup, MO)

TUNISIA—RTT Tunisienne, **7190** in AA at 0520. (Brossell, WI)

UKRAINE—Radio Ukraine Int., **12040** in EE at 0039. (Charlton, ON) 0310 with "Ukraine Today." (Burrow, WA) 0349 with Ukrainian folk songs. (Miller, WA)

UNITED ARAB EMIRATES—UAE Radio, **11710** in AA at 2203. (Charlton, ON) **13675//15400** at 0331 to 0345 off. (Burrow, WA) 13675 in AA at 1550. (DeGennaro, NY) 1510 in AA and EE. (Ziegner, MA) **15395** in AA at 1935. Brossell, WI) 0318 with news in AA. (Miller, WA)

UZBEKISTAN—Radio Tashkent, **9715** in presumed Uzbek at 1522 with man and woman talks. (Foss, Philippines) 0016 in Uzbek. (Charlton, ON) **11905** at 2030 with EE news, comment, local pops and folk, address, IDs. EE also from 2130 to 2158. (Alexander, PA) 2130 in Uzbek. (Linonis, PA)

VATICAN—Vatican Radio, **7305** in SS at 0119. (DeGennaro, NY) **9605** in SS at 0325. (Charlton, ON) **11625** with IS, ID and sign off at 1658. (Miller, WA)

VENEZUELA—Radio Tachira, **4830** in SS at 1100, mentions of Venezuela. (Wilkner, FL) Radio Amazonas, Puerto Ayachucho, **4939.6** in SS at 1010. (DeGennaro, NY)

VIETNAM—Voice of Vietnam, **5925** in VV at 2241. (Foss, Philippines) 1400 in VV. (Miller, WA) **6175** via Canada at 0100. (Barton, AZ) 0149 in VV. (Charlton, ON) 0208 in EE. (DeGennaro, NY) **13740** at 1600 "This is the Voice of Vietnam coming to you from Hanoi, capital of the Socialist Republic of Vietnam" and into news. (Foss, Philippines)

YEMEN—Republic of Yemen Radio, **9780** in AA at 1305. (Brossell, WI)

ZAMBIA—Christian Vision, **4965** with pop type music and EE anmts, ID heard at 0053. (Strawman, IA) 0111 with woman presenting top 10 hits. (Montgomery, PA)

And that does it. If this were sports on television we'd "circle" the following for coming through this month: Michael Miller, Issaquah, WA; Robert Wilkner, Pompano Beach, FL; Bob Charlton, Windsor, ON; Jerry Strawman, Des Moines, IA; Robert Montgomery, Levittown, PA; Mark Northrup, Gladstone, MO; Marty Foss, Guinayangan, Philippines; Rick Barton, Phoenix, AZ; Dave Jeffery, Niagara Falls, NY; Brian Alexander, Mechanicsburg, PA; Richard D'Angelo, Wyomissing, PA; Robert Brossell, Pewauakee, WI; Jack Linonis, Hermitage, PA; Bruce R. Burrow, Snoqualmie, WA; Sheryl Paszkiewicz, Manitowoc, WI; Stewart MacKenzie, Huntington Beach, CA; Samuel Quinby, Sharon, PA and Tricia Ziegner, Westford, MA.

Thanks to each one of you and until next month—good listening! ■

get plug and play access that also networks the entire home or business...also...by positioning utilities as the third major competitor (in addition to telecommunications and cable TV) in the retail communications market.

But wait, there's more...

Encouraging utilities to deploy this nascent technology will stimulate investment in facilities-based competition, drive economic growth, and help to remedy the digital divide...the UPLC applauds the Commission's leadership towards these goals in initiating its Notice of Inquiry.

Pretty good PR wouldn't you say? After reading that who couldn't stand behind BPL? It's a lot like listening to the PR talk about securing $87 billion dollars (not for a five- or 10-year period, but for immediate desire) when *thinking* folks know there'll only be three-fold increases in three or four years' time).

So I called Mr. Gedris and asked him if he was aware of the interference potential to licensed amateur operators. Apparently he only *writes* the release, so I was transferred to Mr. Bret Kilbourne, a UPLC attorney who said,

...there's both a technical and legal component, so I'll defer to the engineers on the tech issues...on the legal component, we're legally prohibited from causing interference...I can't really in my mind [figure] the issue what folks are getting worked up about. [It's]...based on speculation; hams say one thing and it's picked up and repeated by others. There'll be a lot of flexibility [with BPL] and utilities can notch the signals.

Kilbourne, in addressing the actual BPL issue said, "The whole issue is sort of polarized—rational debate is difficult, trials from utility companies have been fairly limited for the most part [yet] widespread enough to discuss potential issues to interference."

Since the UPLC's Mr. Kilbourne seems to think folks are making a mountain out of a molehill when it comes to BPL, we dug a little further and obtained a copy of a letter from the U.S. Department of Commerce's Office of Engineering and Technology at the FCC that responded to the now infamous ET Docket 03-104. It says, in part,

The National Telecommunications and Information Administration, Office of Spectrum Management reviewed the subject request for a permanent waiver of the field strength limit specified for Class B emissions in Part 15 of the Commission's rules...NTIA believe that a permanent waiver should not be granted at this time because of the present lack of measurements and analyses showing that any resulting interference to allocated services would be at acceptable levels. One concern is that the proposed pole-mounted interface devices and outdoor power lines used for BPL could be located close to public safety and mobile band base station receivers operating in the 30-50 MHz frequency range and consequently many of the intervening signal paths would be unobstructed. The unobstructed and ubiquitous nature of this BPL application and perhaps other aspects of BPL, differs considerably from the situations presently found in typical unintentional radiators authorized under the Commission's Part 15 rules. We also have concerns regarding compliance measurement techniques for BPL systems and the characterization of emissions from a BPL system for use in compatibility studies.

Later in my conversation with Kilbourne, I laughed and asked him about the Commission kissing BPL on the first date and he said, "I'll admit it's unusual for an agency to make encouraging remarks... while conducting an inquiry."

That's an understatement, Mr. Kilbourne! (Of course, in these strange days, it's not the first time, either). He continued, "There's really not anyone to take on DSL and cable...[and] the utilities are assuming all the risks here—it might go somewhere, it might not, but it's not [about] the bottom line."

So the utilities are embracing BPL and plan on offering it as a free service to consumers and businesses? Right. And Don Rumsfeld's staff doesn't work weekends and holidays.

How Unethical Can The FCC Get?

I just can't shake off the thought that BPL isn't about money. FCC Commissioner, Kathleen Q. Abernathy, lauded BPL as "broadband nirvana" in a speech on September 22, 2003, given to the UPLC. I got a copy of that speech and here's part of what she said, "I am very excited about broadband over powerline technology... and believe it has a very bright future." She added, "...continuing development of BPL technology is a major step forward..."

She also said, "When the Commission completes this rulemaking I expect that we will eliminate many existing rules and substantially modify others; the central question is the degree of regulation that will remain during the transition to a more robustly competitive market."

Anyone who's been on planet Earth more than a week and listened to politicians' double-speak realizes that what Abernathy meant to say was, "We're going to rewrite Part 15 so BPL is a shoe-in. This is a big bucks opportunity and our mind is made up. The Notice of Inquiry is merely a requirement."

Talk about cuddling up with BPL and the power industry! Given her on-the-record comments, we'll also go on the record calling for Commissioner Abernathy to remove herself from future BPL proceedings. If she can't—or won't—Chairman Powell should request her resignation.

The League's President, Jim Haynie, said recently, "BPL is the most crucial issue facing Amateur Radio and the one that has the most devastating potential..." Regarding the interference potential he said, "nothing is on the same scale as BPL."

To illustrate the point, ARRL's Lab Manager, Ed Hare, W1RFI, visited several BPL trial areas in Maryland, Pennsylvania, Virginia, and New York, taking measurements and making observations. His vehicle was chock full of radios and measurement devices. The ARRL reported, "Hare didn't need to look long to find BPL interference...the signals were all over...and ranged from moderate to extremely strong."

What's most disturbing is that the ARRL's measurements of the FCC Part 15 BPL systems showed they "...all were within FCC Part 15 limits for power line carrier (PLC) devices." For licensed users, including public safety and government entities, this simply means that if BPL is implemented, the FCC will be walking a very thin line. The Big Monkeys will soon have to decide who has the priority—in reality. Will they tip the scales of responsibility in favor of Part 15 users, resulting in an unprecedented shift in favoring the bottom line over public safety?

Imagine this scenario: You're a licensed amateur and have determined that BPL signals on the overhead powerlines near your home are the cause of interference to your reception. The emissions are found to be within the limits of Part 15 and conform to the rules. It's certainly not beyond the realm of possibility that if the Big Monkeys don't move quickly enough to reinforce and put teeth into Part 15, *and* move *cautiously* on BPL itself, licensed services, including public safety and the several thousand federal government users of the spectrum, will be facing interference at levels only known in nightmares.

What can you do? Talk to your legislators about BPL, write letters, and contact your local media, directing them to the ARRL's website, www.arrl.org. If you think this is a battle that must be won for everyone's sake, you're one step ahead of Washington politicians who don't care because they see themselves as living in a different world, operating by different rules than the rest of America. Fact is, if BPL is implemented on the wide scale that's envisioned and a Part 15 harmonic from near 80 MHz prevents a public safety dispatcher or cop in the field from hearing a transmission, it could affect you or your family.

Time will tell if the FCC's circus monkeys are willing to play Russian roulette with the radio spectrum and public safety and to manipulate the rules for money. Regardless of the outcome, it's time for the FCC to reexamine its legitimate role as protectors of the radio spectrum, not Big Monkeys turning tricks for industry. ■

v.i.p. spotlight

how you got started in radio

Congratulations To Larry Shaunce, WD0AKX, Of Minnesota!

Popular Communications invites you to submit, in about 300 words, how you got started in the communications hobby. Entries should be typewritten, or otherwise easily readable. If possible, your photo should be included.

Each month, we'll select one entry and publish it here. All submissions become the property of *Popular Communications,* and none will be acknowledged or returned. Entries will be selected taking into consideration the story they relate, and if it is especially interesting, unusual or even humorous. We reserve the right to edit all submitted material for length, grammar, and style.

The person whose entry is selected will receive a one-year gift subscription (or one-year subscription extension) to *Popular Communications*. Address all entries to: "V.I.P. Spotlight," *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801 or e-mail your entry to popularcom@aol.com.

Here's our January "VIP Spotlight" winner, Larry Shaunce of Albert Lea, Minnesota.

Our January Winner: Larry Shaunce!

Larry tells us,

I enjoy the "VIP Spotlight" very much; it's always enjoyable reading about how others got involved in the radio hobby! My interest in radio began when I was about seven years old, when I received an AM transistor radio for a Christmas gift from my folks. I had immediately taken an interest in listening to the most distant stations that I could on that radio.

That went on until I was around 10 or 11 and then I discovered CB, first with walkie talkies and then on to the more powerful mobile and base radios. I used those to talk to local friends who also discovered CB. This was during the CB boom of the mid-70s.

Then I heard about a guy in my neighborhood who could talk around the world with his radio setup. I naturally had to set up a time with him to take a look at his equipment, it all sounded so interesting! He took me into his shack and told me it was called "ham radio" and proceeded to make a call to someone who was several states away from us and let me say "hi" into the mic. At that moment I knew my life was changed! I had to become a ham.

Four of my friends also decided to move into ham radio with me, so we all studied together and had a lot of fun working for our licenses. We were all in our early teens. At one point, there were at least five hams in our small town of 280 people! That was in 1977 and I have been active in all aspects of radio since then—I still have some of my CB equipment from that time on the air to this day. I am active on GMRS, SWLing, and many modes and bands on ham radio.

I guess radio is in my blood and always will be. I am still having just as much fun as when I started! ■

washington beat

Capitol Hill and FCC actions affecting communications

by Laura Quarantiello, lauraq@cts.com

Paying For 911?

New legislation requiring cellular telephone customers to help pay for 911 service could become a law in Lisbon, Ohio. The related funds would be released in direct proportion to the percentage of 911 calls originating from cell phones. Unlike a similar vote for landline phones, local voters would not have a say in the proposed cell phone fee, which could go into effect statewide if approved. The cell phone legislation is expected later this year and officials believe it will pass.

D.C. Emergency Radio Interference

Emergency personnel in Washington, D.C. are getting a little help, finally, with the interference they have been experiencing on emergency radio frequencies. A $40 million federal grant will allow D.C. to build seven transmitters and receivers to increase their radio system's signal and hopefully overcome the interference caused by cell phones that share the 800-MHz band with emergency radios. The FCC has pushed public safety communications to the top of the agenda and is considering reshuffling channels in the 800-MHz band to further separate wireless companies from public safety agencies.

Steve Largent To Head CTIA

The Cellular Telecommunications & Internet Association (CTIA) has announced that Steve Largent has accepted the seat of chief executive of CTIA. Largent, who served in the House of Representatives from 1995 to 2001 and also held a seat on the Telecommunications Subcommittee, is best known for his 14 years as a wide receiver in the National Football League. He was inducted into football's Hall of Fame in 1995. Largent takes over for CTIA's Tom Wheeler, who Largent says, "is the gold standard when it comes to leading a trade association."

FCC Frequency Database

If you haven't visited the FCC's frequency database website in a while, you're in for a surprise. It's been totally revamped and spiffed up to make searching for licenses a snap. It's now much easier to find the frequencies associated with a particular license; just click on the "frequencies" tab and you're there. Visit the website at http://wireless.fcc.gov/uls/ and pick "Licenses" in the Search section. Or use the long URL at http://wireless2.fcc.gov/UlsApp/UlsSearch/search/Advanced.jsp.

Southwest Airlines Changes Cell Phone Policy

Southwest Airlines has amended their cellular telephone and electronic devices policy, becoming one of several major airlines to make changes after conducting Federal Aviation Administration (FAA) mandated testing. Southwest now permits passengers to use their wireless devices once the aircraft has safely landed and is taxiing to the gate. Passengers will also continue to be able to use cell phones prior to departure, until the airplane's door is shut. Northwest, Continental, Southeast, and American Airlines have all enacted similar relaxed rules.

FCC To Amend Wireless Spectrum Regs For Rural America

The Federal Communications Commission has adopted a Notice of Proposed Rulemaking (NPRM) proposing changes to its spectrum regulations and policies to better promote the continued rapid and efficient deployment of quality spectrum-based services in rural America. Back in 2002, the FCC asked for public input on the question of whether it should modify its policies to promote spectrum access in rural areas. In the adopted NPRM, the Commission is considering several issues regarding rural wireless services, including input on questions relating to clarification of rules, minimization of regulatory costs, and incentives for service in rural markets, modification of construction requirements, and changes to rules that impede rural services. For complete information, visit the FCC at www.fcc.gov and search for FCC 03-222.

MRS/MURS Frequency Sharing Proposal Denied

It was a nice try, but the FCC didn't go for it. Two Petitions for Rule Making filed in February 2003 by Dale E. Reich were recently denied. In the first petition, Reich requested that the Commission amend its Rules to require the licensing of some radio programmers. In particular he asked that Part 13 rules be changed to require a commercial radio license for programmers in the hope that it would reduce the "epidemic of radios with unauthorized frequencies programmed into them." The Commission disagreed, saying,

> ...we are not persuaded by the record before us that having the licensing requirements for commercial operators in Part 13 of the Commission's Rules changed to apply to radio equipment intended for the personal or business communications covered by the FRS or MURS rules is appropriate. For example, it would not be in the public interest to impose an exam requirement on a consumer purchasing a radio, enabled in the FRS or MURS, at his or her local electronics retailer.

In the second petition, Reich asked the Commission to change its rules to permit General Mobile Radio Service (GMRS), Family Radio Service (FRS), and Multi-Use Radio Service (MURS) users to share the Industrial/Business Radio Pool (I/B)

frequencies. He wanted I/B frequencies 464.5375 MHz, 464.5125 MHz, 464.5725 MHz, 469.5375 MHz, 469.5125 MHz, 469.5725 MHz, 464.500 MHz, and 464.550 MHz opened up for FRS, MURS, and GMRS use on a secondary basis. The Commission shot down this idea, saying "the proposals set forth by Reich are inconsistent with the intended uses of these services because Reich's proposals, if implemented, would require interoperability between services designed for personal use with services designed for business use." Better luck next time.

FCC/Michigan Avian Collision Study

The FCC has announced the signing of a Memorandum of Agreement with the State of Michigan regarding Michigan's 800-MHz public safety system. According to the agreement, Michigan will comply with National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA) rules regarding construction of its statewide Michigan Public Safety Communications System. The statewide system will have 180 towers and will support communications for state and local public safety agencies. Michigan has committed to participate in a two-year Avian Collision Study at selected towers. This agreement is in line with FCC Chairman Michael Powell's action plan to improve the Commission's ability to protect valuable historic and environmental resources, while at the same time accelerating the process of developing necessary communications infrastructure. If you're interested in the details, copies of the study and agreement can be found at http://wireless.fcc.gov/siting/.

E-911 Bill Approval

The House Energy and Commerce Committee recently approved a bill granting $500 million in grants to public safety agencies to help them more accurately determine the location of wireless 911 callers. The bill would give matching grants to states over five years in order to improve E-911 services. Those states that have not appropriately allocated fees for E-911 would not be granted money. The U.S. Senate is looking at a similar bill. ■

ADVERTISERS' INDEX

readers' market

Advertising Rates for Readers' Mart: Non-commercial ads are 30 cents per word, including abbreviations and addresses; minimum charge $6.00 per issue. Ads from firms offering commercial products or services are $1.00 per word; minimum charge $20.00 per issue. Boldface words are $1.20 each (specify which words). Leading key words set in all caps at no additional charge. All ads *must be prepaid in full* at time of insertion; a 5% discount is offered for prepaid 6 time insertions. All ads must be typewritten double spaced.

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loose connection

radio communications humor

by Bill Price, N3AVY, chrodoc@earthlink.net

CQ Ratz

Hobbies are things that interest us for either a long time or a short time. Either way, I think (please write to correct me if you disagree) they are reasons to "get stuff."

"Getting stuff" can include buying one of each fishing lure in every store on the way home from work, or getting every book from the library on how to attract birds to your backyard, or gathering every piece of anything that looks as if it was once used in electronics. It usually involves buying, then subscribing to every magazine on the particular subject of interest in any particular week, month, or year, and as long as that includes *Pop'Comm*, then that's a good thing.

I have jumped from hobby to hobby ever since I got my first pogo stick back in the third grade. I'd still be using it now if it had more substantial springs. Okay, *much* more substantial springs. But I digress. In fact, this is all about digression.

I've never stopped enjoying listening to shortwave radio, but since I began, I've spent lots of time working CW, listening to scanners, pondering antenna design, carving wood, playing the guitar, the bass, the chromatic harmonica, doing some woodturning, reading, writing, working a bazillion crossword puzzles, collecting fountain pens, collecting typewriters, repairing harmonicas, writing programs in basic, taking pictures, developing and printing pictures, playing on the Internet, digging in the mud with a metal detector, and raising rats.

Of all the "hobbies," the rats are the least typical. There are no magazines to read. There are about two good books, and I've read them. The only things I can spend money on for them are overpriced rattie treats or overpriced rattie toys, and they like an ice cream stick as much as an specially designed chew-toy. They also love frozen peas as much as anything I could spend a fortune on at the pet store.

But recently, I read that rats can both *hear* and *make* sounds up to about 90 kHz!

Okay, Robin—time to fire up the Ratceiver!

So there was an article somewhere, which I have yet to find, saying that when rats pull a little prank on a human (they're too small to pull a chair out from under me, or they might try that) they giggle! Yes, that's what the man says, they *giggle*! He actually heard it, using an audio frequency converter, which I now covet and will have to seek out, or at least seek out plans for. Imagine me—communicating with my rats!

Actually, that's not such a stretch of the imagination if you know me. My family and close friends (those few remaining) know that I talk to my rats as freely as one talks to another person in the room. I have taken them to work with me (one of the occupational privileges in a HPJIE*), and have been known to drive through the countryside with a rat on my shoulder, face into the wind much like a Labrador retriever.

As I was telling a friend of my plans to investigate this device and build one, she asked if it wasn't the "Bat Phone" or something like that, and I said I didn't know. She told me that there was a device commercially available for about $200 that would enable me to listen to bats, and a little research told me that bats also communicate and use their sonar at frequencies up to about 90 kHz.

"Not by a long shot would I spend $200 when for about $190 and a hundred hours of labor I could build my own."

Now anyone knows that a hobbyist, a ham, and a cheapskate—particularly when they're all the same person—cannot imagine *buying* such a device, certainly not when parts, plans, a schematic diagram, and things of that nature might be available for a few pennies less. No siree! Not by a long shot would I spend $200 when for about $190 and a hundred hours of labor I could build my own!

My "Ratphone," of course, will be two-way, will likely NOT comply with Part 15 of the FCC rules, and will allow me to TALK to my rattie friends as well as listen to them. In a few short weeks, I'm sure I'll learn the language, at least as much as they're willing to teach me. I know that it'll help me design their next cage and their living quarters, but more than that, I can ask how many Reese's Pieces they would want to help me fish wires through the wall to rewire the upstairs (they will truly do anything for Reese's Pieces).

I think, too, that they can save me a lot of trial an error when I go shopping for their food; sometimes I come home with things they must sit there and laugh at (but, of course, I can't *hear* them laughing), and if I could ask them before I go to the store, I could save myself all this wasted effort. Most of all though, I've always wanted to know what they have to say about the cat when they think no one is listening. ■

**High Paying Job In Electronics*

Editor's Note: Write Bill at chrodoc@earthlink.net, or c/o the Cowfield County (VA) Home for the Silly

Solution to Puzzle Corner on page ??

W	A	R	C	■	C	O	S	■	R	H	E	A
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