Head for the Hills!
Take a Field Trip with your Scanner

Also in this issue:
Jasper’s Antique Radios
Tune In Major League Baseball
Giant List of Government HF Frequencies
Tuning your receiver will never be easier. Introducing the all new Mini Scout Reaction Tuner. With a .001 second measurement time, the Mini Scout will not miss even the briefest of transmissions. While locking onto a frequency from up to 200 feet away (5w UHF), the Mini Scout automatically tunes the receiver to the action using its patented Reaction Tune capability. No manual tuning necessary.

**Compatible Receivers:**
- ICOM 7000, 7100, 8500, 9000, R10
- AOR 8000, 8000B, 8200
- Optoelectronics Optocom, R11
- Radio Shack Pro2005/6 with OS456/Lite
- Pro 2035/42 with OS535

No modifications necessary. Interface cables required.

**Specifications**

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Field Trip for the Scanner Listener
By Gary Webbenhurst

Looking for a bit of stress relief that would also help you brush up on your hobby? Head for the hills! There’s nothing like taking a field trip to a nearby mountain peak for the ultimate exercise in scanning. You must do a little advance preparation, but the end result will be an enjoyable and very productive outing. Story on page 19.

Jasper’s Antique Radios and Fresh Fruit
By Bob Tarte

It’s not your ordinary museum — open Sundays by appointment or by chance. You may or may not get inside the front door, depending on whether Jasper Giardina judges your interest is genuine. Once inside the cramped building in St. Louis’ Antique Row, however, you’ll be treated to a collection of radios and memorabilia to rival any museum.

A quick tour can only hit the highlights ... a French-made Jesse Miniature Console, one of only two in the world ... the world’s first clock radios (grandfather clocks)! ... the claustrophobia of 10,000 radios mixed with NASCAR collectibles... To explain his dedication, Jasper simply says, “When they’re gone, there won’t be any others.”

HF Communications in the New Millennium
By Larry Van Horn

One of the problems that has plagued shortwave communications is the constant change in HF propagation. However, there has been a dramatic development: HF radio operators can now let their PC determine the best frequency to work a particular station in their network. The system is known as ALE or automatic link establishment, and it has revived government interest in HF communications. For hobbyists, it means is a world of new identifiers to tag, and this is the most comprehensive list of government ALE addresses published to date.

Somalia on Shortwave
By Hans Johnson

In your search for DX challenges, the opportunities to log one remote country are getting better: Somalia has seven stations broadcasting on shortwave and more on the way. Now is the time to give Somalia a try.

Summer AM DX Challenge
By Ken Reitz

There’s something very special about Listening to Major League Baseball on the radio. Here’s how to tune in the flagship stations for all 30 major league ball teams – see how many you can catch!
NEW IC-R75
HF RECEIVER

Cutting edge technology for today’s serious DX’er, yet easy & affordable for a casual listener.

Hear MORE of what’s out there. Pick up more amateur, marine and shortwave broadcasts. The new ICOM R75 covers from 0.03 - 60.0 MHz – wider than most other HF receivers.

Pull out the weak signals. The IC-R75 sports a remarkable arsenal of signal detection weapons, ready for your command: A triple conversion receive system rejects image and spurious signals. An automatic notch filter reduces interference by minimizing "beat" and "howl" signals. Use Twin Passband Tuning (PBT) to zero in on signals by shaping the IF passband. ICOM's all new Synchronous AM detection (S-AM) technology reduces signal fading in AM broadcasts. Optional Digital Signal Processing (DSP) noise reduction in the AF stage converts analog SSB, AM and FM signals to crisp, clear audio output (you'll hear the difference on the R75's large front mounted speaker). Further tailor the R75 to meet your listening needs by installing up to two optional filters.

There's much more. Plan to test drive a surprisingly affordable new IC-R75 at your LENTINI showroom today.

IC-R10
Advanced performance and features.
0.5 - 1300 MHz; all mode, alphanumeric backlit display, attenuator; 7 different scan modes; beginner mode; 1000 memory channels; band scope; includes AA Ni-Cds and charger.

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Excellent audio, tiny package.
0.5 - 1300 MHz; AM, FM, WFM; easy band switching; CTCSS decode; 400 memory channels; priority watch; MIL SPEC 810 C/D/E; weather resistant; includes 2 AA Ni-Cds and charger.

IC-R8500
The expert's choice.
0.5 - 2000 MHz; commercial grade; all mode; IF shift; noise blanker; audio peak filter (APF); 1000 memory channels; built-in Cl-V command control and RS-232C port for PC remote control with ICOM software for Windows®.

"If you want a receiver that is both a superior world band radio and a solid scanner, the new ICOM IC-R8500 is the best choice."
– Passport to World Band Radio, 1998

IC-PCR1000
The original “World in a Little Black Box”.
100% PC hardware external. Impressive 0.01 -1300 MHz wide band reception, all modes. Listen to your favorite broadcasts while working in foreground applications. Designed for Windows® 3.1 or 95.

"The PCR1000 has something to intrigue and satisfy everyone. This is a fun product.” – QST, 7/98

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Computer not included.
**Review:**

Our reviewers, Wayne Mishler and Ben Hester, were very well impressed with the **Palstar R30**—the new, no-nonsense shortwave receiver from Palstar. It received high points for sensitivity, overall performance, ease of operation, and quality feel (see p.96). The **PRO-2052 trunk tracker scanner**, made by Uniden for Radio Shack, received mixed marks from Bob Parnass, who found it an excellent radio trapped inside annoying ergonomics (p.100).

What's new on the CB scene? asks Jock Elliott. He reviews three new models from Cherokee and Cobra—one of which receives his highest personal recommendation (p.96). Let your computer do the notching... Catalano looks at more digital signal processing programs available to the consumer to clean up audio signals and even get rid of annoying whistles and beeps (p.94).

Bob Grove tests both the base and mobile **Nil-Jon** scanner antennas, confirms their quality, and gets an unexpected surprise (p.104).
On March 29th U.S. Senators Ron Wyden (D-Oregon) and Conrad Burns (R-Montana) introduced the Wireless Eavesdropping Protection Act of 2000 into the U.S. Senate.

Senate bill S.2326 is identical in every respect to H.R.514 Wireless Privacy Enhancement Act, which passed the House in Feb 1999, and has been sitting in the Senate Commerce Committee ever since. Its intent is to assure the nation's 86 million wireless phone subscribers that their wireless communications remain private, and provides for new penalties for those who attempt to "listen in" on private communications.

Ron Wyden said "This bill will enhance the privacy rights of wireless subscribers by strengthening the laws that prohibit eavesdropping wireless communications. Since the early days of wireless communications, Congress has paid particular attention to the privacy rights of wireless subscribers. Unfortunately, despite our best efforts, electronic eavesdroppers have been able to find loopholes in the law."

"Using the loopholes, electronic eavesdroppers have been able to develop a 'gray market' for modified and modifiable wireless scanners. Some of these individuals even advertise in magazines and on Internet websites that their products can be altered easily to pick up cellular communications. The information and equipment necessary to make these modifications are also widely advertised, sometimes with blatant offers to unblock the cellular frequencies after the equipment is purchased."

The Wireless Eavesdropping Protection Act attacks these problems on several fronts. First, it would expand the definition of the frequencies that may not be scanned to include digital Personal Communications Service (PCS) frequencies as well as cellular ones. The legislation recognizes that some frequencies are shared between commercial mobile services and public safety users, and that the use of scanners to monitor public safety communications may assist in saving lives.

"Second, the bill would clarify that it is just as illegal to modify scanners for the purpose of eavesdropping as it is to manufacture or import them for this purpose, and it would direct the FCC to modify its rules to reflect this change," Wyden said.

"The bill also would amend current law to prohibit either the intentional interception or the intentional divulgence of wireless communications, so that either action on its own would be prohibited. Finally, the bill would require the FCC to investigate and take action on wireless privacy violations, regardless of any other investigative or enforcement action by any other federal agency. This provision would help ensure that these newly strengthened privacy protections are fully enforced in the future."

Specifically, the bill:

- Bans scanners capable of eavesdropping on wireless calls, regardless of what type of technology is used to transmit the calls;
- Bans the modification of off-the-shelf scanners, which can then be used to eavesdrop on wireless conversations;
- Directs the Federal Communications Commission to address the issue of modifying scanners, and also to consider placing labels on scanners that warn it is a violation of Federal law to intercept or divulge wireless communications;
- Enables the FCC to adopt regulations to enhance privacy when commercial wireless services and public safety users share portions of the radio frequency spectrum;
- Explicitly prohibits the unauthorized interception of wireless communications, as well as divulging its content; and
- Grants the FCC authority to investigate the unauthorized interception or publication of wireless communications, and to impose fines where warranted.

Goal of "Anytime, Anywhere" Communications Within Reach

The Federal Communications Commission has released a Notice of Inquiry (NOI) seeking information on "Software Defined Radio" technology or SDR for short. The FCC believes that software defined radios could significantly affect a number of Commission functions, including spectrum allocation, spectrum assignment, and equipment approval. In particular, they want to know how SDR could help them make more efficient use of the crowded radio spectrum.

The FCC said in the NOI "Software defined radios could offer tremendous advantages to consumers over currently available wireless equipment. These benefits include lower cost, a greater variety of features, and the ability to adapt to multiple communication standards. They could also offer advantages to manufacturers, such as increased economies of scale in production, increased world-wide market opportunities, and a decrease in the number of devices that must be maintained in inventory. Software defined radios could expand access to broadband communications for all persons and increase competition among telecommunication service providers."

Today, the radio communications world is defined by hardware. Radio equipment is manufactured to receive and transmit certain types of radio waves on certain frequencies. The FCC licenses specific frequencies to specific users. If the spectrum is not being used by the licensee, it goes unused.

With software defined radio the FCC might be able to allow many different radio services to use the same spectrum. Frequency license holders might be able to lease out their unused capacity to others. The technology enables devices to seek out pockets of unused spectrum and to shift operation to those frequencies.

In SDR technology, a laptop computer is interfaced between the different systems. Each radio system becomes an address on the computer which can be linked together. SDR can be used to talk across different radio systems...every radio becomes compatible with every other type. The commercial possibilities are endless since SDR could link any dissimilar radio-wave-based communications together.

In a software defined radio, functions that were formerly carried out solely in hardware, such as the generation of the transmitted radio signal and the tuning and detection of the received radio signal, are performed by software residing in high-speed digital signal processors. The fact that these functions are carried out in software means that the radio can be programmed to transmit and receive over a wide range of frequencies and to emulate virtually any different desired transmission format.

By using a computer to define what your radio equipment does, it can be an AM radio one minute...or a VHF/UHF FM or shortwave SSB radio the next. Changing from one mode to another is similar to loading a different application on your PC. SDR has the potential to completely revolutionize 2-way radio equipment and communication.

Wireless technology under development holds the promise of letting phones and radios of the future be updated as new cutting-edge services become available. The technology could reduce the need for consumers to get additional equipment or hardware to access advanced services as they evolve.

The U.S. military is already using the technology and has a multimillion dollar contract with Motorola to develop SDR. The system relies on the firm's Wireless Information Transfer System or WITS. Basically the system receives one mode, converts it to digital and ships it out to a universal device. Software-defined radio helps to make incompatible systems work with each other.

SDR has the potential to eliminate the need for different types of receiving and transmitting hardware and to change the way users can communicate across traditional services. As it is now, public safety personnel operating on different frequencies cannot communicate with one another. With SDR, it is merely a matter of linking the two addresses.

It could be several years before consumers see software-defined radio devices in the marketplace. Comments close on June 14, 2000; and reply comments July 14, 2000.

June 2000 MONITORING TIMES 5
Letters to the Editor

Let's Share Good Scanner News

"I slip out and buy a copy of Monitoring Times on my lunch hour. I do not subscribe because then I would have no excuse for my monthly trip to the book store!"

"My favorite part of MT is the Communications column. Can we please have more stories about good deeds done by scanner listeners? Let's encourage readers to send in tales of rescues and bad guys being caught due to folks listening to their scanner, then doing the right thing. Humorous scanner stories are great too! Thanks!"

– John Henderson, Richardson, Texas

Thanks, John. We do try! Keep sending those clippings, folks. In addition to printing the stories in MT, we occasionally have opportunities to forward the best examples to reporters who are writing scanner-related stories.

Money, Religion, and Radio

"I work in the communications industry and I'm ham radio operator N4VVT. I enjoy Monitoring Times and truly believe it is the best publication and the only one to cover topics from A to Z in the monitoring/ham hobby. I think highly of not only you [Bob] personally but all the folks who work for you. They are both friendly and knowledgeable when you ask a question or an opinion.

"With all that said, I was surprised at your commentary in the February issue of MT concerning religious broadcasters and their tactics to dupe the masses out of money, etc. ... You seemed to have a problem with preachers who preach on the electronic medium and sometimes ask for money. We all know it takes bucks to be on TV or radio – AM/FM or shortwave.

"When I read your article, the thought that came to mind was that you are angry at men who are on the air begging for money. I hate that also. But with that statement comes the fuel for those who take any opportunity to further cut down any Christian or religious cause. Perhaps that was your intent. Perhaps not. I just found it strange that you diverted from your usual columns on radio and the hobby and came down on these folks. Personally, I don't care what size house anyone live in. Who are we to down on these folks. Personally, I don't care usual columns on radio and the hobby and came.

"I don't usually write to people with my comments. But I really respect you and thought that this one commentary was out of step with your usually great work. It didn't fit somehow and I wanted you to know that I am not on the religious right but I defend their right to exist and preach the gospel. If people want to send money into them so be it. I have no more right to try and stop that than someone does telling me not to buy the new HF gear in your catalog."

– Nick? via email

"Hi, Nick, and thank you for taking the time to share your thoughts regarding my commentary. Oddly enough, yours was the only dissenting letter I received about it. ... You are correct in assuming that I distrust anyone who takes advantage of another person's faith to profiteer. I have seen much crass commercialism in religion that I have become (perhaps overly) suspicious of religious broadcasting. At the turn of the millennium, I was astounded at the number of religious broadcasters cashing in on the trust of unsophisticated, believing listeners in order to make a last-minute, fast buck on Y2K fears.

"Upon re-reading my commentary, I feel that the point I made was that much of the pitch is being used to generate money for personal, not philosophical purposes. After all, if the preacher is living in a palatial mansion, perhaps we should take a closer look at his revenue generating scheme.

"The inspirational messages which may be heard on the airwaves serve to provide many downtrodden listeners with courage, motivation, and hope. In no way would I want to see this altruism curbed; we need more of it. But are there self-serving, profiteering religious broadcasters who prey on the trust of their listeners? Absolutely. And, are there also decent men and women who use the airwaves to propagate good and righteous ideals? Absolutely. My take on all of this is that we need more broadcasters who are religious, and fewer religious broadcasters."

– Bob Grove

Who's on Shortwave?

The following opinions were cut from Glenn Hauser's Global Forum column for lack of space, but they seem appropriate here:

"You wouldn't believe some of the nonsense spouted on 6890 USB, a channel mainly sold out to 'super patriot' groups. I was never quite sure what 'super patriot' actually meant, but it appears to be someone who is intolerant to pretty well every other race, religion and lifestyle, obsessed with 'outing' US governments past and present for alleged scandals and dishonesty, and trying to earn a few dollars by convincing as many as possible that either (a) there is an imminent nuclear strike or (b) there is a government conspiracy to strip Joe Public of his home and wealth, and using this to persuade them to invest in vitamin and food supplement tablets, tents, water purifiers and Grundig short wave radios (at least that's not such a bad thing).

"The 'severity' of these broadcasts varies; one of the more disturbing is Voice of Freedom, a neo-Nazi/anti-Semitic program of some organisation run by an Ernst Zündell. I had read of such programs, but only really got such an insight by chasing up an elusive WGTG QSL (WGTG stated that their current attitude to QSLing was that it would require an addressed envelope, $2 and 5 hours worth of programme details.) Anyone know actually how many Americans are caught up in these sentiments?"

– Tom Read, UK, in BDXC-UK

"It seems that there are only religious organizations out there willing to take advantage of the far reaching power of shortwave broadcasting. I have tried so hard to get more alternative stuff but it's the same old story – a lot of

Skip Arey reports: "I got to operate the original Tuna Tin II! Here is a pic of me with Ed Hare W1RFI at the station. You can see the TT II sitting on top of the Ten Tec Omni we were using as the receiver. This occurred at Atlanticon 2000 in Glen Mills, PA. We also used W1FB/3 as the callsign. Doug Demaw's call. I got goosebumps sending it. What a rush!"
the free thinkers don’t seem to have the time or the money to get on the air. Sometimes it is sad and discouraging. There are lots of angry voices on the radio today. Very few voices of love and peace willing to take to the airwaves. If I did not ‘give away’ a lot of my airtime as I do there would be very little alternative stuff on my airwaves. I shall keep trying.”

— Allan Warner, WBCQ, DX Listening Digest

**MT — a Labor of Love**

“I felt compelled to send this message to compliment you and your staff for the excellent, comprehensive monthly issues of Monitoring Times. I can’t imagine how you manage to publish monthly issues, each one full of different cutting edge information. It’s obvious that Monitoring Times is a labor of love of the highly technical world we live in today.

“We are going through the best and worst of times, and your knowledge woven into each issue keeps me afloat, always looking forward to receiving the next issue. My sincere thanks to you and your staff keeping everything so informative, and my thanks to the writers of articles, but especially your (Bob Grove’s) writings in every issue.”

— Don Paxton, via fax

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**LET’S HEAR MORE FROM SOUTH POLE**

“I am prompted to write following January’s Antarctic article by Chuck Kimball, full of detail plus photos. Although in New Zealand we are a few thousand miles closer to McMurdo, the nearest information center is down in Christchurch, in the South Island. Quite some way from here.

“May I now suggest you eventually compose a similar spread on the South Pole setup? There appears to be a dearth of info and pictures, particularly of the exterior. How about a decent aerial shot above the pole to give us some perspective?

“I understand that most radio comms are now made directly between McMurdo and Auckland although ‘Deep Freeze’ HQ is still at Christchurch Airport. Supply flights from Hickam to Christchurch via Pago Pago pass directly overhead here. All we see, however, are the contrails.

“In your list of frequencies, you show the French station Dumont d’Urville on 7450 HF, but a better ‘catch’ would be their transmissions on 11,576 and 14,971 (ARQ-E3 96/404), a quite unmistakable signal tone. All in French, of course, and sometimes up to six pages! Paris transmitting to Kergulen on 14438 also comes in well.

“Another project of interest to MT readers, if I may suggest, could be the US military presence on Okinawa with its very active airbase at Kadena and adjacent listening post at Sobe with giant antennas.”

— Charles Chenery, Auckland, NZ

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**Thanks for the suggestions to our authors, Charles.**

Ironically, Chuck Kimball’s article actually came about because an article on the South Pole had been scheduled, but didn’t come through. We’re still waiting! Anyone interested in writing the suggested article on Okinawa?

Send your “Letter to the Editor” to Monitoring Times, PO Box 98, Brasstown, NC 28904 or via email to mteditor@grove-ent.com.
Crees in County Communications

Counties all across the U.S. are struggling to find flexible, reliable, but affordable communications systems, so the story of Fauquier County, Virginia, could take place anywhere. There are a few quirks to this story that make it especially interesting, however.

It all started last fall when two rodents crawled into a cabinet and short-circuited some electronics, putting the fire and rescue system's base transmitter (for dispatching response to 911 calls) out of commission for five days. From there it gets complicated. That transmitter stands in a "radio shack" at the Warrenton Training Center, a federal intelligence base. Permission to visit the shack for maintenance requires a background check from the Warrenton Training Center security staff. Technicians from the maintenance company had to wait three hours to gain access to the training center, according to the company president.

When the back-up system also failed and parts weren't available, one day grew into five. The new company responsible for maintenance could neither return the system to the air nor establish a working back-up. When the county finally turned to the old contractor for help, a stop-gap system was in place in less than two hours. (Guess who the sheriff wants back?)

The sheriff and other county officials have used the failures as confirmation that the county needs a new emergency radio system. Others point to multiple warnings of rodents at the site and the lax maintenance of the system.

"It's just part of the mentality," said Bill Weber, a Federal Aviation Administration air traffic systems specialist and retired volunteer firefighter. "We take it easy till something happens. I mean, what does it take to pick up the trash and put the wires in a conduit? ... They (county officials) say, 'Oh, your lives are valuable and we're gonna spend $8 million on a new radio system.' Well, is it not worth $10,000 to get the current system working (properly)?"

While the county officials wrangle, officials at the training center said they've called exterminators to take care of the rodent problem. Virginia State Police radio technicians also began improvements to the radio shack to make it secure for their own use. "We plan to improve it, harden it against lightning, seal it and improve the lax maintenance of the system." Supported by 800-MHz systems cite "interoperability" among that system's primary advantages. "Every other county that has gone through the (research) process has come up with 800 megahertz... for very practical reasons," said FCC Region 20 Chairman Steve Souder.

Nonetheless, the Virginia State Police has begun a six-year project to construct a statewide 150-MHz emergency radio network. All state

Radio Honor Roll

Saved by a Scanner Listener

Where do you land when the lights are out? That's what four pilots were wondering to each other as they circled above the Kingman, Arizona, airport. Fortunately for them, their conversation was overheard by Kim McLaughlin who was listening to her scanner. She alerted her husband Ken, a Department of Public Safety officer, and he contacted the Department's Air Rescue Ranger unit. By using a helicopter and a spotlight to light the runway, all four planes landed safely.

Saved by a Ham

A Dutch family which has been sailing around the world for the past four years, encountered more adventure than they bargained for on April 7. Anchored among uninhabited islands off the coast of Honduras and Nicaragua, Jacco van Tuyl and his 13-year-old son Willem were returning in an inflatable dinghy from visiting a nearby boat. When an unknown vessel pulled alongside the van Tuyl's home-built yacht, Janne van Tuyl assumed they were fishermen — until they pulled out assault rifles and boarded the boat. She screamed to warn her husband away. The pirates shot and sank the inflatable and wounded Willem. When the pirates fled, Jacco swam back to the boat, supporting the now-paralyzed Willem.

Amateur radio operators who picked up their distress call contacted the U.S. Coast Guard, who arranged for a rescue ship to be sent from Honduras. Hams gave the parents directions to the Honduran rescue ship and stayed on the air with them through the 20 hours it took to get Willem to a clinic in Honduras. In particular Dr. Jim Hirschman, a Miami physician and ham radio operator, guided them in treating the boy until they could get medical help. "If it weren't for them, Willem probably would have died," Janne van Tuyl said.

It took 20 hours for the boy to reach a clinic in Honduras, from where he was later transferred to the Children's Medical Center in Dallas after several US hospitals refused to accept him because of fears about payment. Willem is paralyzed from the waist down because of the damage to the spine.

Supporters of 800-MHz systems cite "interoperability" among that system's primary advantages. "Every other county that has gone through the (research) process has come up with 800 megahertz... for very practical reasons," said FCC Region 20 Chairman Steve Souder.

Nonetheless, the Virginia State Police has begun a six-year project to construct a statewide 150-MHz emergency radio network. All state
agencies and some local law enforcement agencies can become part of the system.

**No Perfect Solution**

800 MHz systems have their own problems. In Anne Arundel County, Maryland, eight “dead zones,” in which radio signals are weak or non-existent, force police to turn to cellular phones for communications. Engineers and officials have concluded that, ironically, the problems stem from the presence of a cellular tower in each of those areas.

Although the cellular companies and the police are assigned different frequencies, they are extremely close together, and the stronger cellular signals essentially overpower police transmissions.

Several solutions are available, according to FCC engineers. In some cases, frequency coordinates can be adjusted slightly. But with the tremendous growth of the telecommunications industry, the bands are usually crowded. A new radio system with better filters is under consideration and has tested successfully in the dead zones. Initially, the chief said he was going to spend about $23,000 on cellular phones for officers patrolling the dead zones. But if the $22 million expenditure for a new system is approved, all radios would eventually be replaced with new models, which have analog and digital capability.

Anne Arundel is not the only Maryland county considering a radio upgrade. In Howard County, where police and firefighters also experience spotty radio service, officials are negotiating a $20 million to $30 million contract for a new system, said Alan Ferragamo, project manager. “It would remarkably improve our communication coverage throughout the county,” he said.

The new system would cover about 95 percent of the county, said Ferragamo, which “is about as good as you can get with the technology these days.”

In Baltimore County, police also report radio problems. “We have always had a few dead spots,” said Cpl. Ronald H. Brooks. “Some are attributed to cell towers. Some of it’s geographical.”

A police sergeant in Atlanta, Georgia, has filed a grievance with the Police Department because the radio system is unreliable, due to numerous dead zones. The city has agreed to add a bi-directional antenna to boost the signal in one problem area, but the commander of the communications unit says no communications system can completely eradicate dead zones caused by ditches, buildings, and other uneven terrain.

**Portishead Radio GKA Gone**

BT Maritime Radio Services announced that reknowned Portishead Radio and all of the VHF stations would close at 1200 UTC on Sunday, 30 April. The mediumwave stations will close at 1200 UTC on Friday, 30 June.

Portishead Radio first came on air 80 years ago in 1920 and became the largest communications center in the world. It employed over 340 people and was the CW and radioteletype center for the Commonwealth.

**Congress Moving to Block LPFM**

With massive persuasion from the National Association of Broadcasters, the House passed H.R.3439, a bill introduced by Sen Oxley which would require the FCC to revise its new low-power FM station licensing program. The new Radio Broadcasting Preservation Act of 2000 grants channel separation to avoid interference – a move which would reduce potential LPFM stations by 80%. It also prohibits any person who has operated an unlicensed station from being granted a low-power FM license. Commerce Committee Tom Bililey said, “I am extremely surprised that Congress must step in and legislate in order to prevent the issuance of low power FM broadcast licenses by the FCC.”

**Meanwhile, the Big Get Bigger**

Clear Channel, in its purchase of rival AMFM Inc, is now the number one US radio company, owning 867 radio stations. The merger forced San Antonio-based Clear Channel to sell or trade 72 of its stations to other consortiums, since the acquisition put the number of stations owned by Clear Channels over that allowed by the FCC in one market. Clear Channel also plans to purchase SFX Entertainment, Inc, a major promoter of live events.

Number two in the nation is Cumulus Med-ia Inc out of Milwaukee. Its purchase of 35 midwest stations puts the number of stations owned to 299. The majority of its stations, however, are in small towns; the company’s revenue is only the sixth largest in the nation.

**Art Bell Quits Radio**

“I have decided to retire from the broadcast business at the end of this month, my last show to be April 26, 2000,” long-time radio host Art Bell announced March 31. It was no April Fool joke: Bell has been broadcasting under great stress since the kidnap and rape of his son in 1997, and accusations made only a few months later that he himself was a child molester. The accusations were the issue of shortwave station WWCR in Nashville, Tennessee.

Bell blasted the station, saying, “This station has been described by newspapers and civic minded organizations as one of the country’s leading broadcasters of hate radio.”

“In addition to broadcasting these proponents of hate and violence, this radio station has consciously decided not to spend money on a delay switch, not to conduct a careful background check of the people it places on the air and to allow individuals to say almost anything they want in foreign languages without having staff on duty who can even understand what they are saying.

“In my opinion, WWCR is one of the most irresponsible stations permitted to broadcast over the airwaves of this country.”

Bell said he could no longer give his best as a radio personality and he looked forward to becoming a private citizen. “The reality that after suffering the fate of my son’s own molesta- tion, I now stand destined to be tainted for life as a child molester, has proven simply too much to bear.”

**Communications** is compiled by Rachel Baughn from newspaper and email clippings sent in by our readers. This month’s contributors are Anonymous, CT; Anonymous, New York; Louis Johnson, Doraville, GA; Gerald Kercher, Quaker Hill, CT; Kevin Klein, Neenah, WI; Jim MacDonald, Derry, NH; Doug Robertson, Poxnard, CA; Via email: Harley Bogart Jr, Patrick Downer, Warren Eggers, John Figliozzi, Nigel Holmes, Chuck Porter, Rhia Siegle, Doug Smith, Larry Van Horn, Jay Wilson, Robt Wyman.
Despite the vacuum tube atmosphere and falling ceiling plaster, a visit to Jasper’s Antique Radio Museum is a bit like playing a computer game. If you follow certain protocols, you ascend to the next level—or may even earn a trip to the basement. But if Jasper Giardina doesn’t take to you, don’t expect to get into all the hidden rooms, much less make it past his locked front door on St. Louis’ Antique Row.

It’s wise to call ahead and tell Jasper you’re coming, but unwise to trust the state’s Official Missouri Travel Guide, which listed Jasper’s address as 20-22 Cherokee Street. That hyphen’s a real killer. The desolate first block of Cherokee dead-ends at the Mississippi River, and as my friend Bill Holm turned the car around, a woman appeared from nowhere and insisted we drive her out of there because “that guy in the pick-up truck is going to shoot me.” Against our better judgment, we caved in, only to find ourselves ominously behind the pick-up a few blocks later. Fortunately, it veered off in another direction. Fortunately, it veered off in another direction. In lieu of any thanks, the woman whose bacon we purportedly saved told us how to find 2022 Cherokee just before hitting the sidewalk.

Not Your Ordinary Museum

Jasper’s isn’t your ordinary museum. For one thing, many of the 10,000 radios crammed into the corner storefront he shares with his thriving fruit basket business (“I invented the fruit basket over 50 years ago,” he claims) are for sale as long as you meet his asking price. “I won’t haggle,” he told us. “I haven’t gone to all this trouble for that.” And he has well-heeled customers like Bill Murray and Richard Simmons to prove it.

It’s also not a museum that permits great leisure to sort out the visual overload. Jasper’s floor-to-ceiling shelves are packed with a mind-numbing array of crystal sets, breadboards, tombstones, early superhets, Bakelite kitchen radios, wooden table radios, furniture-grade consoles, the first tube and transistor portables, novelty radios, coin-operated radios, a few shortwaves and military models, plus Catalin and Plaskon units priced into the ionosphere by collectors who covet the bright, pre-plastic colors and deco styling.

The claustrophobia is formidable, and with gruff friendliness Jasper is right there at your side to usher you through the door into yet another daunting room as long as he gauges your interest is genuine. But if you’re a denizen of the deteriorating Antique Row neighborhood (a few blocks south of the Anheuser-Busch brewery) with no obvious...
A French-made Jesse miniature console from the 1930s — probably one of the only two left in the world.

French-made Jesse miniature console from the 1930s — probably one of the only two left in the world.passion for wireless sets or a hankering for a fruit basket, the bolted front of the shop is as far as you'll get.

And who can blame him for his vigilance? Unaccompanied guests have stolen the dial hoods from some of his oldest sets — though their value pales beside a lavender Egyptian Air King #52 molded plastic beauty from 1933 conservatively valued at $10,000.

Oddities and Rarities

The Air King shares its one-of-a-kind status with countless other rarities, including a gorgeous French-made Jesse Miniature Console from the 1930s with the look of an antique armoire. "As far as I know, there is only one more of those in the world," Jasper explained. "I tried to locate the guy who bought it out of an estate sale, so we could compare notes on it, but I didn't have any luck... Radios like this one that are really rare pieces were owned by people who really took care of them. You can walk up and down the aisles and probably pick out other radios owned by the same guy, because he kept them in such good condition."

One of Jasper's latest restorations was an oddball radio resembling a snare drum made by General Radio and Television Corporation in 1936 — a product of the days when the new medium of television was just beginning to breathe down AM-broadcasting's collective necks.

"Radio was so competitive in those days, they put attachments on console radios and said they were compatible with TV," Jasper told me. But despite the vaguely futuristic styling and tilt-adjustable stand, the General Radio set had nothing whatsoever to do with television. "It didn't mean a thing, there wasn't anything there. They all knew they had to look forward to TV, and everyone was using that as a sales pitch."

Generous with his information and his radios alike, Jasper is an antique radio evangelist who has been known to give a "starter" radio to newcomers to the hobby, especially kids. When I watched him fiddle with an old Atwater-Kent, tweaking the three front panel dials until he finally pulled in a local St. Louis station playing Simon and Garfunkel's "Bridge Over Troubled Water," I suggested that finding the desired frequency on the fussy regenerative sets took a while.

"Too bad they don't take that long any more. Kids would be better off if they spent more time with radios," he told me — a telling comment considering that the Littleton, Colorado, shootings had just occurred.

"Do you have time to see the upstairs?" he asked. We'd come all the way from Michigan, so why not? I was eager to discover what other oddities lay hidden, and after our near-death experience earlier that morning, it felt good to get as far from street level as possible. On the top floor, Jasper pointed out what first appeared to be a collection of full-size grandfather and grandmother clocks. A closer examination revealed that the manufacturers had carefully incorporated an AM receiver into each cabinet, thereby creating the first clock radios. But don't try putting them on...

Bartle or James presides over the country and gospel music archives of now-defunct KXLW-AM. Wire-service teletype is to the right of station clock.

Jasper and the author in one of the museum's many rooms.
Early “clock radios,” cathedrals and more in an upstairs room

Tour with a visit to the basement containing a studio mock-up of defunct St. Louis broadcaster KXLW-AM complete with the station inventory of country and gospel 45s, AP wire service teletype, and announcer’s microphone manned by a life-size cardboard cut-out of Bartle or James.

The basement held secrets even Jasper forgot were there. “I didn’t know I had one of these,” he muttered as he poked through a pile of radios awaiting restoration stacked against a wall in the corner. “It’s a nice surprise,” he smiled, as he bent over the pile.

Sharing space with Jasper’s radios in his crowded quarters are antique cash registers, an old whiskey still, an early telephone switchboard, NASCAR collectibles, first-generation televisions, radio memorabilia, fruit basket promos and paraphernalia, and photo after photo of the celebrities who have visited the museum since it opened in the mid-1980s. These include movie stars, St. Louis Cardinals team members, Rams football players and cheerleaders, sports figures such as Tommy Lasorda, Congressman Dick Gephardt and other national politicians, Regis Philbin and other TV luminaries, and stock car drivers.

Some celebrities, like Richard Simmons, stop by to try and purchase the same model radio that they grew up with in their home, though Jay Leno had his eye on an early model car radio to fit on the steering wheel of one of his vintage autos. Bill Murray, who coveted one of Jasper’s tombstone sets, even shot scenes for his white-elephant movie “Larger Than Life” in the museum. According to Jasper, two pachyderms were “Federal Express’d” to Antique Row for the film: starring-elephant Vera and a double to keep her company. Publicity from the movie along with frequent write-ups in local publications and antique trade magazines keep visitors coming Jasper’s way.

“I’ve had backers who wanted to put up money and put all this in a new building,” Jasper told us — and the crumbling flea market setting does constitute a humble home for what may indeed be largest collection of antique radios in the world. But he never even considered the offer of a more upscale museum.

“This is Jasper,” he said matter-of-factly, “cracked ceiling plaster and all.”

Jasper’s Antique Radio Museum

2022 Cherokee Street
St. Louis, MO 63118
(314) 421-8313
Open Monday-Saturday 9:00 am-4:00 pm, Sundays
“by appointment or chance”
Museum Admission: $2.00 per person
donation goes to Boy Scouts of America

About the Author:
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**UNIDEN**

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<tr>
<td>$900-$1500</td>
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*price includes shipping within the US

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June 2000
HF Communications in the New Millennium

By Larry Van Horn

The shortwave radio spectrum is a dynamic medium, one that puts a lot of demands on anyone choosing to operate in that portion of the radio spectrum. One of the main problems that operations in the shortwave spectrum have to deal with is the constant change in HF propagation. Selecting the right frequency on which to work another station in a net or radio system covering a 28 MHz expanse of radio frequencies can be a challenge.

However, the computer age has changed the equation dramatically. Using the computer and specialized software, HF radio operators now let their PC do the walking through the radio spectrum to determine the right frequency to work a particular station in their network.

This new computer based system is known as ALE or automatic link establishment, and it has brought HF communications forward into the 21st century.

As the former Utility World column editor for Monitoring Times I have been fortunate to watch changes to the HF utility bands from a front row seat over the last decade. The turnaround has been nothing short of remarkable. The major force that has brought renewed U.S. government interest in the HF spectrum has been the introduction of ALE systems.

How the ALE system works is quite fascinating, but it is outside the scope of this article. If you want more information on ALE, look no further than the ALE World columns in this and the March issues of MT. You will also find an excellent write-up by Richard Lacroix on the internet at http://webhome.globalserve.net/ricroix/modems/ale.html. Additional information is available at UW columnist Hugh Stegman’s website: www.ominous-valve.com/uteword.html. Jim Dunning’s write-up on ALE and the utility monitor can be viewed at the WUN (Worldwide Ute News) website: www.wunclub.com/files/aleinfo.html.

Finally, if you want to get into the action of ALE monitoring, you can get the necessary software for the PC at Charles Brain’s website: http://www.chbrain.dircon.co.uk. It’s free!

Department of Defense and Scope Command

The largest ALE systems the monitor will encounter on HF belong to the Department of Defense (DoD). Of these DoD systems identified thus far, the U.S. Air Force Scope Command (see this month’s Utility World column) system is the largest in terms of frequencies and users. Here is a synopsis:

- Net frequencies: 2805 3059 3137 4721 5708 6715 6721 7632 8965 9025 9057 11226 11250 13215 15043 18003 20631 23337 27870 kHz.

- Major ground stations in this network:
  - ADW: Andrews AFB, Maryland
  - AED: Elmendorf AFB, Alaska
  - ASC: Ascension Island
  - CRO: Croughton AB, England
  - GTH: Thule AB, Greenland
  - GUIA: Andersen AB, Guam
  - HAW: Ascension Island
  - HHX: Hickam AFB, Hawaii
  - JGO: Diego Garcia
  - JNR: Salinas/Roosevelt Roads, Puerto Rico
  - JTY: Yokota AB, Japan
  - LOU: Louisville IAP, Kentucky
  - MCC: McClellan AFB, California (West Coast)
  - OFF: Offutt AFB, Nebraska
  - PLA: Lajes AB, Azores
  - RIC: Richmond, Virginia (CAP National Technology Center)
  - RSC: Dallas, Texas (Rockwell Scope Command Facility)
  - WRL: Robins AFB, Georgia (Warner Robins Air Logistics Center)

Aircraft and mobiles on the Scope Command nets may use up to a six character address, but you will also encounter some three digit aircraft identifications. Below are some of the more interesting Air Force aircraft that have been observed on this HF system recently:

- AF-2: Air Force Tail No 50049 (SAM 049 C-20C 85-0049 89AW Andrews AFB, MO)
- AF-5: Air Force Tail No 50049 (SAM 049 C-20C 85-0049 89AW Andrews AFB, MO)
- AF-6: Air Force Tail No 50050 (SAM 050 C-20C 85-0050 89AW Andrews AFB, MO)

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- AF-7: Air Force Tail No 60403 (SAM 403 C-20H 86-0403 Selcol AF-DP 89 AW Andrews AFB, MO)
- AF-8: Air Force Tail No 28000 (SAM 28000 VC-25A 82-80000 Selcol AE-FP 89 AW Andrews AFB, MO)
- AF-9: Air Force Tail No 29000 (SAM 29000 VC-25A 82-9000 Selcol AE-AP 89 AW Andrews AFB, MO)
- CO: Case 01 (KC-135A 57-2589 assigned to USSTRATCOM commander, belongs to 55 RW at Offutt AFB, NE)
- GSI: Sentry 30 (WACIS aircraft, probably not a permanent assignment)
- NW1: NW4 E-4B National Airborne Operations Center (NAOC) command aircraft
- S99/699: Speckled Trout (C-135C 412FTS)
- UK: Royal Air Force Aircraft (UK followed by a single digit)

There are some basic rules for ALE addresses that apply to other Air Force aircraft that use the Scope Command system. Most of the aircraft using the system can be recognized by their six digit only ALE addresses. The first element of the ALE address identifies aircraft type as follows:

- C-5: 1 C-5
- C-17: 2 C-17
- C-141: 3 C-141
- Kc-10: 4 KC-10
- KC-135: 5 KC-135
- C-9: 6 C-9
- C-8: 7/8/9 are reserved for later use
- Other types:
  - Second element is the last digit of the year of manufacture (i.e. aircraft manufactured in 1978 or 1988 would use the number 8).
- Third through sixth elements are the four digits of the aircraft tail number.

Here are some other military ALE addresses noted recently on Air Force HF Nets.

- AF-7: Air Force Tail No 60403 (SAM 403 C-20H 86-0403 Selcol AF-DP 89 AW Andrews AFB, MO)
- AF-8: Air Force Tail No 28000 (SAM 28000 VC-25A 82-80000 Selcol AE-FP 89 AW Andrews AFB, MO)
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- Other types:
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- Third through sixth elements are the four digits of the aircraft tail number.
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We have been told by several individuals close to the program that several addresses have been reserved. Some of these include:

- AND USAF Andrews AFB, Guam (Reserved)
- DGA USN Diego Garcia (Reserved)
- ELM USAF Elmendorf AFB, AK (Reserved)
- HAF USAF Washington, DC (HQ US Air Force/Reserved)
- HIC USAF Hickam AFB, HI (Reserved)
- HMS RN Her Majesties Ship (Reserved for anticipated testing)
- INC USAF Incirlik AB, Turkey (Reserved)
- NCS USAF Andrews AFB, MD (Reserved)
- PAN USAF (Reserved-Not Assigned)
- WXII USAF (Reserved-Not Assigned)

And as with any HF military system I have a large list of unknowns. Any help from our readers would be greatly appreciated. Scope Command unknowns include:

Lots of three digit number which are probably unknowns include:

- Lots of three digit number which are possibly
  - Unknowns include:
  - And as with any HF military system I have a

June 2000 MONITORING TIMES 15

 NOTICE: It is unlawful to buy cellular-capable scanners in the United States made after 1993, or modified for cellular use, unless you are an authorized government agency, cellular service provider, or engineering/service company engaged in cellular technology.

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Army Corps of Engineers

Another organization that has had a large presence on HF over the years is the U.S. Army Corps of Engineers. The Corps is the U.S. Army's property manager. They perform all activities associated with real property management and civil engineering, research, development, planning, construction, and maintenance related to waterways. They also assist other agencies in recovering from certain natural disasters.

The Corps has used a well documented HF system for many years now. Those frequencies include (channel numbers in parenthesis): 3345 (1), 5015 (2), 5327.5 (3), 5400 (4), 5437.5 (5), 6020 (6), 6785 (7), 9122.5 (8), 11693.5 (9), 12070 (10), 12122 (11), 16077 (12), 16326 (13), 16358 (14), and 20659 (15) kHz. Two other frequencies (12267 and 16382 kHz) have been identified carrying Army Corps ALE activity. It is not known how these two frequencies fit into the rest of the system or their channel numbers, if any.

While not all the HF ALE players have been identified in this net, the list that follows is the most significant ever published.

2613 Unknown Hendersonville, TN
CE0611 Unknown Albuquerque, NM
CEP0461 Pacific Ocean Division Anchorage, AK
CGO COE HO Unknown Washington, DC
CGDH1 Construction Engineering Research Lab Champaign, IL
CR1HF1 Unknown
L22 Unknown L22
L3D Unknown
LRRB Buffalo District Unknown
LRHHF1 Buffalo District Unknown
LRHHF2 Buffalo District Unknown
LRCHF1 Chicago District Chicago, IL
LRD Great Lakes and Ohio River Division Unknown
LRHDHF1 Great Lakes and Ohio River Division Unknown
LRHF1 Unknown Detroit District Unknown
LRRHF1 Unknown Huntington District Unknown
LRL Louisville District Unknown
LRLHF1 Louisville District Louisville, KY
LRHHF1 Nashville District Nashville, TN
LRO Unknown
LRP Pittsburgh District Unknown
LRPHF1 Pittsburgh District Unknown
MWD Mississippi Valley Division Unknown
MVDHF1 Mississippi Valley Division Vicksburg, MS
MVDHF13 Mississippi Valley Division Vicksburg, MS
MVS St. Louis District St. Louis, MO
MVSF1 St. Louis District St. Louis, MO
MVT Unknown
NADHF1 North Atlantic Division New York, NY
NAOHF1 Norfolk District Norfolk, VA
NAP Philadelphia District Unknown
NAPHF1 Philadelphia District Philadelphia, PA
NAPHF3 Philadelphia District Unknown
NAPHF4 Philadelphia District Unknown
NAPHF5 Philadelphia District Unknown
NAPHF6 Philadelphia District Unknown
NAPHH Philadelphia District Unknown
NAPHF1 St. Paul District St. Paul, MN

Special Operations Air Regiment (SOAR). There are only three frequencies currently associated with this net which includes ground stations at Fort Campbell, Hunter AAF, and possibly Fort Rucker in Alabama. Net frequencies discovered thus far: 5126, 9145 and 12068.5 kHz

Ground Station Call Signs
CH Hunter AAF, GA
CFT Fort Campbell, KY
D1X Unknown
GRB Ft. Rucker AAF, AL? (This is possibly the Ghost Rider Base voice call sign commonly heard on this net)
J8H290 Unknown
L26 Unknown

Aircraft Call Signs
D24118 Helicopter MH-47D
D24360 Helicopter MH-47D
E20471 Helicopter MH-47E
E20474 Helicopter MH-47E
E80267 Helicopter MH-47E
K26348 Helicopter MH-60K
L26184 Helicopter MH-60L Block Hawk
L26185 Helicopter MH-60L Block Hawk
L26189 Helicopter MH-60L Block Hawk
L26290 Helicopter MH-60L Block Hawk
L26363 Helicopter MH-60L Block Hawk
L26365 Helicopter MH-60L Block Hawk
L26366 Helicopter MH-60L Block Hawk
L26419 Helicopter MH-60L Block Hawk
L26457 Helicopter UH-60L Block Hawk

Other Army Nets

Another interesting US Army net apparently involves special operations forces from the 160th Special Operations Air Regiment (SOAR). There are only three frequencies currently associated with this net which includes ground stations at Fort Campbell, Hunter AAF, and possibly Fort Rucker in Alabama. Net frequencies discovered thus far: 5126, 9145 and 12068.5 kHz

Another interesting ALE net is also sharing the 5126/9145 kHz frequencies mentioned above. This appears to be some sort of medical communications net. Stations identified in this net include:

National Guard Bureau of Nets

There are also a large variety of National Guard frequencies with an even larger variety of ALE addresses, most of which have not been positively identified. Look for National Guard Bureau (NGB) ALE operations on the following frequencies:

2309 2360 2520 2627 3022 3170 3274 4442 4445 4517 4536 4607 4637 4776 4857 4924.5 4957 5062 5126 5202 5203.5 5217 5232 5299.5 5324.5 5429 5777 5817 5847 6047 6766 6910 7648.5 8037 8047 8054.5 8093 8157 9067 9121 9141 9141.5 9143 10233.5 10234 10234.5 10796 10816.5 12057 12081.5 14653 kHz

Known stations in network:

<table>
<thead>
<tr>
<th>Station Code</th>
<th>Location</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOR</td>
<td>Salem, OR</td>
<td>NG848</td>
</tr>
<tr>
<td>SPRINGFIELD</td>
<td>Springfield, OH</td>
<td>NG848</td>
</tr>
<tr>
<td>STA</td>
<td>St. Augustine, FL</td>
<td>NG819</td>
</tr>
<tr>
<td>SIP</td>
<td>St. Paul Holman Field, MN</td>
<td>NG834</td>
</tr>
<tr>
<td>TOP</td>
<td>Topeka, KS</td>
<td>NG827</td>
</tr>
<tr>
<td>TTN</td>
<td>Trentan Mercer Airport, NJ</td>
<td>NG841</td>
</tr>
<tr>
<td>WDC</td>
<td>Washington, DC</td>
<td>NG813</td>
</tr>
<tr>
<td>WDE</td>
<td>Wilmington, DE</td>
<td>NG817</td>
</tr>
<tr>
<td>C1</td>
<td>FBI Cincinnati, OH</td>
<td>KOC 67</td>
</tr>
<tr>
<td>CI1</td>
<td>FBI Cleveland, OH</td>
<td>KOC 77</td>
</tr>
<tr>
<td>CO1</td>
<td>FBI Columbia, SC</td>
<td>KII 50</td>
</tr>
<tr>
<td>CD2</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>CV1</td>
<td>Cleveland, OH</td>
<td>KOC 77</td>
</tr>
<tr>
<td>CT1</td>
<td>FBI Detroit, MI</td>
<td>KOC 87</td>
</tr>
<tr>
<td>DL1</td>
<td>FBI Dallas, TX</td>
<td>KII 68</td>
</tr>
<tr>
<td>DN1</td>
<td>FBI Denver, CO</td>
<td>KAG 69</td>
</tr>
<tr>
<td>EP1</td>
<td>FBI El Paso, TX</td>
<td>KII 73</td>
</tr>
<tr>
<td>HR1</td>
<td>FBI Honolulu, HI</td>
<td>KUR 20</td>
</tr>
<tr>
<td>HK2</td>
<td>FBI Honolulu, HI</td>
<td>KUR 27</td>
</tr>
<tr>
<td>HD1</td>
<td>FBI Houston, TX</td>
<td>KII 88</td>
</tr>
<tr>
<td>IP1</td>
<td>FBI Indianapolis, IN</td>
<td>KSC 63</td>
</tr>
<tr>
<td>JK1</td>
<td>FBI Jacksonville, FL</td>
<td>KII 95</td>
</tr>
<tr>
<td>JN1</td>
<td>FBI Jackson, MS</td>
<td>KII 45</td>
</tr>
<tr>
<td>KC1</td>
<td>FBI Kansas City, MO</td>
<td>KAG 78</td>
</tr>
<tr>
<td>KIH9B</td>
<td>FBI Mobile, AL</td>
<td></td>
</tr>
<tr>
<td>KT9</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>KV1</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>KW1</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>KO1</td>
<td>FBI Knoxville, TN</td>
<td>KIG 91</td>
</tr>
<tr>
<td>LA1</td>
<td>FBI Los Angeles, CA</td>
<td>KWH 66</td>
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<tr>
<td>LAS</td>
<td>FBI Los Angeles, CA</td>
<td>KWH 66</td>
</tr>
<tr>
<td>LR1</td>
<td>FBI Little Rock, AR</td>
<td>KUR 78</td>
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<td>LR2</td>
<td>FBI Little Rock, AR</td>
<td>KUR 78</td>
</tr>
<tr>
<td>LRC33</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>LS9</td>
<td>FBI Louisville, KY</td>
<td>KIH 67</td>
</tr>
<tr>
<td>LV1</td>
<td>FBI Las Vegas, NV</td>
<td>KOG 55</td>
</tr>
<tr>
<td>LV2</td>
<td>FBI Las Vegas, NV</td>
<td>KOG 55</td>
</tr>
<tr>
<td>MB4</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>ME1</td>
<td>FBI Memphis, TN</td>
<td>KIH 73</td>
</tr>
<tr>
<td>MIA1MU</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>MA1</td>
<td>FBI Miami, FL</td>
<td>KJ 22</td>
</tr>
<tr>
<td>MA1</td>
<td>FBI Mobile, AL</td>
<td>KIH 98</td>
</tr>
<tr>
<td>MF1</td>
<td>FBI Minneapolis, MN</td>
<td>KAG 81</td>
</tr>
<tr>
<td>MW1</td>
<td>FBI Milwaukee, WI</td>
<td>KSC 77</td>
</tr>
<tr>
<td>NF1</td>
<td>FBI Marlief, VA</td>
<td>KII 66</td>
</tr>
<tr>
<td>NH1</td>
<td>FBI New Haven, CT</td>
<td>KCC 76</td>
</tr>
<tr>
<td>NK1</td>
<td>FBI Newark, NJ</td>
<td>KCC 86</td>
</tr>
<tr>
<td>NG1</td>
<td>FBI New Orleans, LA</td>
<td>KKI 88</td>
</tr>
<tr>
<td>NK1</td>
<td>FBI New York, NY</td>
<td>KCC 96</td>
</tr>
<tr>
<td>OC1</td>
<td>FBI Oklahoma City, OK</td>
<td>KKI 98</td>
</tr>
<tr>
<td>OAM1</td>
<td>FBI Omaha, NE</td>
<td>KAG 98</td>
</tr>
</tbody>
</table>

Some of the unidentified ALE addresses in the NGB nets include a variety of two, three and four digit numbers (which could possibly indicate a unit number): 60 / 100 / 101 / 126 / 165 / 173 / 370 / 640 / 724 / 1001 / 1002 / 1261 / 1731 / 3701 / 6401 / 7241

Other unknowns include: 25TH / 195TH / 111 / APA / APACHE / B11 / B22 / FT / FF / HLN / HUN HHL / HUN HLN / HO1 / LA / MARML / MB / Q56 / RT1 / S56 / S06 / STN / TWC / TWC1 / WIN / YTB

Law Enforcement

The US military is not the only user of the ALE system. Federal law enforcement agencies also have a large presence on HF. The FBI/Justice Department has one of the largest nets on these frequencies.

Frequencies: 2800.5, 4991, 5058.5, 5388.5, 9311.5, 10498.5, 10913.5, 11073.5, 15953.5, 18711.5, 18666.5, 20348.5, 23402.5 kHz

Stations monitored in the FBI HF point-to-point net include:

<table>
<thead>
<tr>
<th>Station Code</th>
<th>Location</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL1</td>
<td>FBI Albany, NY</td>
<td>KEC 67</td>
</tr>
<tr>
<td>AN1</td>
<td>FBI Anchorage, AK</td>
<td>KWC 20</td>
</tr>
<tr>
<td>AQ1</td>
<td>FBI Albuquerque, NM</td>
<td>KKI 67</td>
</tr>
<tr>
<td>AT1</td>
<td>FBI Atlanta, GA</td>
<td>KEC 71</td>
</tr>
<tr>
<td>BA1</td>
<td>FBI Baltimore, MD</td>
<td>KGB 93</td>
</tr>
<tr>
<td>BF1</td>
<td>FBI Buffalo, NY</td>
<td>KEC 71</td>
</tr>
<tr>
<td>BH1</td>
<td>FBI Birmingham, AL</td>
<td>KIG 73</td>
</tr>
<tr>
<td>BS1</td>
<td>FBI Boston, MA</td>
<td>KEC 61</td>
</tr>
<tr>
<td>C3</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>CE1</td>
<td>FBI Charlotte, NC</td>
<td>KIC 81</td>
</tr>
<tr>
<td>CG1</td>
<td>FBI Chicago, IL</td>
<td>KSO 61</td>
</tr>
</tbody>
</table>

MONITORING TIMES June 2000
The US Customs service had one of the original ALE nets within the US government. Known as COTHEN (Customs Over-the-Horizon Network), this system is used by the US military and civilian law enforcement in their drug interdiction efforts.

Frequencies: 7527 8912 10242 12321 14776 17519

Very few ALE addresses have been seen, much less IDed with this system. Below is what is known at this point.

SF3P / AR1P / DABP / 157P / MY2P Unknown

TRC Orlando, Fl (Tentative)

TST Orlando, Fl

**FNARS Network**

The Federal Emergency Management Agency developed the FEMA National Radio System (FNARS) radio networks. FNARS is an example of an emergency preparedness network that has become significantly important in cases of national emergency.

Frequencies here include: 2658 3341 5402 6809 7348 9462 10194 13907 18594 20890 23214 25350

Stations heard so far in the FNARS net include:

- **906WGY** Denver, CO WGY 908
- **AL4/AL4FMA** Montgomery, AL WGY 954
- **AR1** Conway, AR WGY 966
- **ART** Unknown
- **DE3** Delaware City, DE WGY 953
- **FC0FE1** Bothell, WA Region 10/WGY 910
- **FCT/FT1FE1** Maynard, MA Region 1/WGY 901

**FAA on HF**

Another federal agency that makes extensive use of HF as a backup to their normal communication circuits is the Federal Aviation Administration (FAA). This HF system also uses ALE to keep track of things.

Here are the ALE frequencies in the FAA network:

- **FC5** Battle Creek, MI Region 5/WGY 905
- **FC6/FC6FEM** Denver, CO Region 6/WGY 906
- **FC8/FC8FEM** Denver, CO Region 8/WGY 908
- **FCBFX** Unknown
- **FC9** Santa Rosa, CA Region 9/WGY 909
- **FCSFEM** Mt. Weather Special Facility/WGY 912
- **FM5/FA5FEM** Bothell, WA Region 10/WGY 913
- **FM1/FA1FEM** Unknown
- **FM2/FA2FEM** Maynard, MA Region 1/WGY 901
- **FM4/FA4FEM** Unknown
- **FM6/FA6FEM** Unknown
- **FM6/FA6FEM** Dallas, TX Region 8/WGY 906
- **FM6/FA6FEM** Denver, CO Region 8/WGY 918

**SHARES**

The last government system we will discuss is the SHARES (Shared Resources) radio system. Hugh Stegman and I have written extensively on SHARES since its inception. To learn the latest, including ALE information, I refer you to this month's *Fed Files* column for more details and an updated list of frequencies and stations.

In Closing

This article presents just the tip of the iceberg when it comes to ALE monitoring. Space does not allow us in this article to discuss the many systems used by foreign governments, foreign military, civilian companies, and others. We also could not discuss the nearly 25 systems in our database that are still marked as unknowns. We will attempt to cover all of these radio systems in a future *MT* article on ALE systems.

This article would not have been possible without the tremendous assistance of a dedicated group of ule monitors who contributed their time and expertise to help the author in preparing this work. In particular I would like to thank Dave Bacho, Charles Brain, Jim Dunnett, Jeff Jones, Richard Lacroix, Jack Metcalfe, Roland McCormick, Hugh Stegman, Graham Tanner, David Wilson, and the many more who wish to remain anonymous. Gentlemen, my hat is off to each of you for your help. And we want to hear from you readers. If you have some updates on any of the systems discussed above or information on other ALE systems, please contact us here at Monitoring Times, PO Box 98, Brastown, NC 28902 or email: larry@grove-ent.com.

In the meantime keep an eye on the *Fed File*, *Miccom* and *The World* columns in this magazine for updates. We will also be posting information on MT's new chat board located on the Grove website at [http://grove-ent.com](http://grove-ent.com) and on the WUN email newsgroup ([http://www.qth.net](http://www.qth.net)).

So break out the HF rig, download and install Charlie Brain's PC-ALE program, and join in the communications revolution of the 21st century — monitoring HF ALE.
Occasionally, I feel the need for some stress relief. For me, that is a daylong reconnaissance trip. I always have the "Grab & Go" fanny pack ready with the necessary radios, accessories and extra batteries. All I have to decide is where to travel? A large city, busy national park, regional airport or US Air Force Base?

There are many possibilities, but my favorite trip is to go to a nearby mountain. More specifically, when I lived in the state of Washington I drove to Mt. Spokane. When I lived in the San Francisco Bay area, it was Mt. Diablo. Many such peaks have a park at the top and are easily accessible. From the top of a 3,500 ft. mountain you can hear every agency for about 100 miles. If you are ham, you can work some serious simplex! Remember to take a picnic lunch and a jacket. It is often very windy and cool at the summit.

No matter where you live, there are undoubtedly some similar landmarks near you. Here in South Dakota, I have had to settle for a high hill occasionally, I feel the need for some stress relief. For me, that is a daylong reconnaissance trip. I always have the "Grab & Go" fanny pack ready with the necessary radios, accessories and extra batteries. All I have to decide is where to travel? A large city, busy national park, regional airport or US Air Force Base?

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No matter where you live, there are undoubtedly some similar landmarks near you. Here in South Dakota, I have had to settle for a high hill overlooking two valleys!

**Step one - get ready**

The key to a successful trip is preparation. Round up all your equipment. My primary equipment includes a PRO 39, 60, 64, Icom W32A, Uniden 895XLT, and a CD-1 tone decoder. Naturally, I have DC power cords and extra batteries.

You say you don't have any of this equipment? Well, consider bringing along a friend with their scanner(s). Or borrow a radio. Or budget for a second scanner. You can find some great deals if you look in the right places. Try Grove Enterprises on the Internet or closeout specials from your local Radio Shack. Leave your name and phone number with the RS manager and tell him to call you if they have any great closeout prices on scanners. Even Wal-Mart closes out scanners for less than $50.

I also bought a new deep cycle marine battery. This energy source means I don’t have to worry about robbing my car battery for juice. A dead battery at the end of a day of scanning is a real bummer.

If you have or borrowed a Global Positioning System (GPS) unit, bring it along. Don't forget to get the exact location of the mountaintop. Later, you can do some research by searching the FCC database using the exact location, latitude and longitude. This might help in identifying some of the transmitters on the summit.

I also bring my Optoelectronics® Scout frequency counter. If you do not own a Scout or similar frequency counter, ask around if you can borrow one. You won't want to give it back! I consider my Scout to be the best "radio" I own. I just connect the Scout to a rooftop magmount antenna and drive down the road. The Scout sucks many, many frequencies out of the air. These "catches" are often frequencies that I would not normally find. Please be advised that this process works best if you use a FM broadcast and VHF pager filters. Otherwise, you will be bombarded with many unwanted frequencies.

What about antennas? Minimally, you will need a magmount - or two for better coverage. I also have four roof antennas mounted with NMO connectors. My Dodge Caravan has plenty room, so I bring a Radio Shack tripod RS# 15-517 and a five foot mast RS#15-862. I then attach a discone antenna RS#20-043 and use 20 feet of RG8 coax. Actually a rubber duck will work, but I like to do some real DX! I also round up any extra old scanners or battery packs and make sure they are ready if my primary radios decide to get sick.

Next step is to gather some area maps. If you have AAA membership, you are in luck. The maps are free. If you travel across a state border, the first rest area is often a tourist information site with free state maps. Otherwise, you need to purchase an atlas or individual state/regional maps.

From these maps, I make a list of towns and counties near my destination point. I use a yellow highlight pen to identify all the selected city and county names. I usually limit myself to about a dozen particular counties/cities within a 50-mile radius of the mountain. I also use the maps to verify geographical information like street addresses, and highway numbers that I hear over the airwaves. It is the final confirmation that I have the right frequency matched to the right agency.

Do your homework: check the books, such as Police Call. I also consult Monitoring America and several of the CD ROM FCC database programs. I can then make a list of potential frequencies, based on my selected cities and counties. I place these frequencies in banks, by geographical area, in my Pro 39. This takes an hour or so, but, hey, this is a hobby and part of the fun is anticipation of what you may hear. Remember what city/county frequencies you have in which radio and in what bank. Bring along your reference books, pens, paper and clipboard(s).

You should preprogram your scanners. Otherwise, you waste valuable time on the summit doing the routine. If your scanners are computer programmable, then it's all the easier. I use the ScanCat Gold software that works for both my Pro 64 and the Uniden 895XLT.

I have created many different databases. The one most frequently used has every VHF public safety frequency starting with 150.995 and ending with 159.465. I have room left for UHF, start-
The information is downloaded once I get home. The filters mentioned previously are worth their weight in gold. Even with them, I take a few stray hits from FM broadcasts and VHF paging. I do make hourly checks of the memory channel number to give me some idea of when a certain frequency was captured.

**Step three - the actual monitoring**

**Strategy:**

The game I play is simple. My goal is to identify every public service frequency I can hear, then categorize it as to use, callsign, agency, CTCSS (PL) tone, and status as a repeater input, output or simplex. Using the Pro 60, I try to confirm all the published frequencies for the major cities and counties that I predetermined and programmed. After I have confirmed a frequency, I lock it out and concentrate on the remaining frequencies. It is a matter of elimination.

I also have the Pro 64 running the gamut of public safety or other active frequencies. I am pretty much into public safety frequencies, but of course you can search for anything. Aircraft traffic is really impressive at this elevation!

So how do I gather all this information? I have several tactics that I employ. To quickly list the new frequencies, I use my own custom listings quickly. The frequencies are already printed in numerical order. It also keeps the new listings in an understandable and orderly fashion. Of course you can make your own.

Basically, my form lists virtually every VHF LO, VHF HIGH, and UHF public safety frequencies in numerical order. As soon as I catch a transmission, I make notes to identify it as an active channel. I can usually determine if it is

**Step two - when to go?**

The best time for such a trip is a clear, sunny, fall or spring day. However, I have found that storm days offer a unique opportunity for snowplows, public works and utility crews. Perhaps you can not “see” as far, but you can still hear an incredible range of radio communications. Weekdays are the best, since all government functions are “on duty.” Saturday is OK, but Sundays are a bust.

Let’s get going! I like to leave early, about 8:30 or 9 o’clock at the latest. When traveling enroute, I try to visit an area Radio Shack store. Check the yellow pages or Internet for store locations. They usually have a one-page list of local frequencies that they hand out for free. (Remember to buy an item or two.) If this is a new geographical region for you, why not buy their regional version of *Police Call*?

Naturally, I carry the Scout with me and just leave it running. The Scout will log 400 frequencies into memory channels and record the number of hits on each frequency. I mate it up with an MFJ Ruff Rider Hyper Gain™ antenna.

When I am ready to start monitoring, I move the car as far away from the transmitters as possible. Line of sight is still important, so I park...
Monitor, fire, police, weather, marine, military, aircraft and other transmissions with your radio scanner from CEI COMMUNICATIONS ELECTRONICS INC.

TrunkScanningRadio

SAVE $70 on the BC245XLT

Save $70 when you purchase your Bearcat 2450T scanner directly from Communications Electronics Inc. For fast delivery, enter your order through our web site: http://www.usascan.com. Terms: Good only in USA & Canada. Only one coupon is redeemable per purchase. Void where prohibited. No cash value.

Bearcat 245XLT - A TrunkTracker

Mfg. suggested list price $429.95/C.E.I. price $269.95. New Bearcat TrunkTracker BC245XLT, is the world's first scanner designed to track Motorola Type I, II, III, IV and V, Hybridge, SMARTNET, PRIVACY PLUS and EDACS/analogue trunking systems on any band. Now, follow UHF high band, UHF 900 MHz trunked public safety and public service systems just as it conventional two-way communications were used in the past. Bearcat Multi-Track - Track more than one trunking system at a time and scan conventional and trunked systems at the same time. 300 Channels - Program one frequency into each channel. Smart Search - Increases the speed search to 300 steps per second when monitoring frequency bands with 5 kHz steps. 10 Priority Channels - You can assign one priority channel in each bank. Assigning a priority channel allows you to keep track of activity on your most important channels while monitoring other transmissions for communications. Preprogrammed Service (SVC) Search - Allows you to toggle through preprogrammed public police, fire/emergency, railroad, aircraft, marine, and weather frequencies. Unique Data Skip - Allows your scanner to skip unwanted data transmissions and reduces your battery consumption. Memory Backup - If the battery completely discharges or if power is disconnected, the frequencies programmed in your scanner are retained in memory. Manual Channel Access - Go directly to any channel. LCD Back Light - An LCD light remains on during parking lot listening and scanning. Twin Frequency readout with bar signal meter. Memory Backup, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. Not compatible with AEGIS, ASTRO, EDACS, ESAS or LTR systems.

VHF/GMRS/CRB Radios

Have fun and use our CEI, GMRS, shorwave and commercial radios to keep in touch with the world, friends and family. Cobra 140GLS-AT SSB CB/SPECIAL - $114.95. RELM RHDS60 Portable Mobile Transceiver. $289.95. RELM SMM409W 40 watt VHF mobile transceiver $349.95. Uniden GRANTX A SSB CB Mobile. $174.95. Sangean ATS900 A shortwave receiver. $229.95. Sangean ATS818CS A shortwave receiver. $199.95. Sangean ATS800 A shortwave receiver $69.95. Sangean ATS804A A shortwave receiver $79.95.
along the parking lot guard rail or edge of the road. Since there are several powerful radio transmitters on the top, there is bound to be a certain amount of interference. I can lock out birdies I discover as I start operating. Oh well, it's one of the conditions you must deal with on a mountaintop. But the advantages are many, not the least of which is the breathtaking view. You can see for at least a hundred miles in every direction.

There are three key times to listen. The first is from 11 am-1 pm. This is often the heaviest radio traffic of the day. Many officers are busy asking other units where to meet for lunch, going code seven and then going 10-8. For detectives, federal agents and the like, this is often the only time you will hear them on the radio. The second window of opportunity is the afternoon shift change, usually between 2 and 4 pm.

Around 5:30-7 pm you can count on vehicle accidents to generate some radio traffic. Around this same time, most fire departments test their pagers. This is particularly true of volunteer fire departments. In my neck of the woods, they have a scanner on the basic fire VHF channels in the 153.770 to 154.445 MHz range. This is particularly true of volunteer fire departments. In my neck of the woods, they are very punctual at 5:30 pm and others at 6:30. I usually have one scanner on the basic fire VHF channels in the 153.770 to 154.445 MHz range. You need quick fingers and a speedy pen because the time window is so narrow.

This is also a good time to catch repeater inputs, links and PL tones. They usually throw in their callsign for good measure. Here is a sample of what you might hear: "This is the Day County Sheriff's Office with the test of the Day County Fire Pager system. There will be a meeting on Tuesday night at 7 pm at the firehouse. KML 702." Yes, don't be surprised if the sheriff's office does the dispatching for fire department. These days, dispatch centers have been centralized for economy. In the western states, sparsely populated counties usually have just one or two frequencies that cover all police, fire, EMS, public works, and emergency management functions.

You have to be quick to write down the callsigns. If you can get a couple of letters and numbers, you can usually figure it out. Look in Police Call: under the frequency, it lists the states in alphabetical order and within the states they are listed alphabetically by the callsign. If you want, you can tape record all this for further analysis at home.

Here is my basic operating procedure: When I hear an active frequency, I hit Manual to hold the traffic. Then, very quickly, I check the other radios to see if I can find the same traffic on another channel. This is how I can determine repeater pairs. I can then punch both frequencies into the 895XLT, which can confirm the pair and their PL tones. At home, I can download the

**Figure 2: Sample Worksheet**

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information from the Bearcat. I print out a list and then go back and flag the PL tone. I wish the software would also log the tones. It's an extra step, but this is a fun (and challenging) hobby!

If you are stalking a large 800 MHz trunked system, the process of categorizing the many ID talkgroups can take all day. The larger systems can have 300-600 different talk groups. These are usually planned in a logical manner: The fire channels might be in the 3000 range, the sheriff in the 4000 range, utilities in the 5000, etc. I have a small, five-element Yagi antenna to select just the region I want to monitor. Otherwise, in this frequency range you will bombarded by cellular and other 800 MHz interference.

To make myself comfortable, I often sit in the passenger seat or even recline in the rear seat. Every couple of hours it is good to stretch your legs. Around 1pm, I usually "hit the wall." I am suddenly very tired of listening. I often take a short nap. After a break for lunch, I am ready for some "Service Searching" for an hour. I use the Service Banks feature to search the whole range for Police, Fire, etc.

Enjoyable as these trips are, they're even better if I take along a scanner friend. You can gather information much faster and with better accuracy.

**Step four – share the wealth**

I spend my time on the mountain gathering the data. When I return home I can put the puzzle pieces together at my convenience. It usually takes me several hours spread over several days to sort and organize the frequencies. Don't wait too long to do this. The memory starts forgetting little details after a few days. If you end up with a few puzzle parts that don't fit, that is OK. Remember that some agencies use frequencies that are not licensed for, or least you cannot find the documentation.

Post your findings. Share the information with fellow scanner enthusiasts. Put it on your webpage, send it to me or to the Scanner Logs column in MT to be shared with readers, or submit it to an established site, such as www.grove-ent.com/hmpgmt.html. Look for "The MT Frequency Exchange."

Make up a final list in whatever format you wish. Personally, I like two different lists. The first one is ordered numerically, listing all active frequencies, followed by PL tone (if any), input frequency (if any) and then the Agency Name – e.g., Walnut Creek Fire District. You can do it in a database program or using a word processor in either numeric or alphabetic sort. My second list is by county, their cities, or other agencies. You may find a neat little shareware program called Frequency Filer 4.2 to be helpful. You can download it from: http://members.aol.com/jgraff/homepage.htm

I figure that such a trip costs $25-30. That covers a map or two, gas, snacks and fast food dinner. After a hard day of listening, you deserve a good burger! You will be amazed at how tired you are and the incredible amount of information you have collected. It will leave you thirsty for more. Just climb that mountain – again.

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### About the author:

Gary Webbenhurst, AB7NI, writes the new "Bright Ideas" column in MT. He welcomes email on your results from anyone using this scanner DXpedition technique at ab7ni@arrl.net

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**COMING SOON!**

*Call today to place your pre-order!*
So you think you have heard it all on your shortwave radio? Guess again. What about Somalia?

With seven stations broadcasting and more on the way, shortwave is booming here; even though Somalia no longer counts as two radio "countries" here (British and Italian Somaliland), it's rare enough to be a good catch for country chasers.

Hearing these stations is "extreme DXing" at its best. Those looking for a challenge for their ears and a supreme workout for their antennas and receivers will find it in this Horn of Africa nation. QSL hunters will have to work all their magic to verify the Somalis.

Some background

Why is Somalia such a hotbed for shortwave broadcasting? The answer lies in its recent history. When the government of strongman Siad Barre collapsed in 1991, Somalia plunged into chaos. Teen-aged soldiers known as "technicals" fought it out in the streets of Mogadishu and elsewhere in the country.

Political turmoil coupled with bad weather led to mass starvation a year later. Images of bloated bellies tugged at Americans' hearts through their television screens. Responding to the media-driven outcry, the United States launched "Operation Restore Hope."

Started as a disaster relief effort, the American effort soon expanded in nation-building and became enmeshed in the Somali political scene. But, after images of a naked American serviceman's body were shown on those same television screens, the United States quickly pulled out, concluding that Somalia was too dangerous and its people ungrateful.

Relief efforts continue today, but are much more low-key. Somalia remains a dangerous country for these agencies as they struggle with personnel being kidnapped and perhaps even being murdered. Relief work continues in areas where it is safe enough to do so, but agencies are routinely forced out of areas that are too dangerous or where their efforts are significantly hampered.

The Somali political situation remains in flux. According to Amnesty International (AI), there is no rule of law in Somalia and justice is uneven. Efforts by a number of organizations to mediate a peace process are unsuccessful. There is no central transitional government, and even after a decade of chaos, the militias apparently aren't tired of fighting.

The following Somali saying sums up Somali politics quite well: "My clan against your clan, my subclan against your subclan, my family against your family, my brother and me against you, me against my brother."

Long Distance Monitoring

So, how does one tune in to this situation of intrigue from the safety of one's home? Most Somali stations transmit in upper side band (USB) + carrier mode. That means you can hear the stations in amplitude modulation (AM) mode, but it will sound stronger on USB. Station powers are modest, ranging from 5 to 2,500 watts. Transmitters are often ex-Post Telephone and Telegraph (PTT) or ex-military units. Stations favor the range between 6700 to 7600 kilohertz (kHz), although they have operated elsewhere on the shortwave dial.

Somali stations do change frequency quite a bit, apparently to avoid interference from utility stations and because of technical difficulties. Most are active three times a day at times corresponding to local morning, afternoon, and evening. Overseas listeners will most likely hear the evening broadcasts, although North American listeners can also have quite a bit of success with the morning transmissions. Programming is mostly in Somali although there is some English. The best part of the programming is the music. The local music is a fascinating combination of African and Middle Eastern styles and is never forgotten once it is heard.
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**CALL 1-800-438-8155 NOW!**

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*price includes shipping within the US
The stations serve as mouthpieces for various political groups, which in Somalia often means clans and sub-clans. Others, such as Radio Gaalkayo, Radio Hargeisa, and Radio Baidoa also serve as voices for regions wishing to break away from Somalia or at least from Mogadishu warlords. Shortwave is the medium of choice because it allows each of these groups to communicate cheaply and reliably nationwide. Commercial media is making inroads in Somalia, but it comes in the form of FM and TV in Mogadishu, not on shortwave.

**Stations of Shortwave**

Now, let’s take a look at the stations themselves. Mogadishu is the place to start as that is where the most stations are located. **Radio Mogadishu, Voice of the People (Masses)** is the station of Somali strongman Husayn Aydid. Using an ex-PTT transmitter, this station has been on and off this year. Somali sources believe that the station receives backing and technical support from other African nations such as Egypt, Libya, and Sudan, while the Somali press reports that an Italian technician has been working on the station. 6760 kilohertz (kHz) is a good bet for this one between 1600-1900 Universal Time (UTC) and especially at 1800, when they have English. 11204 kHz at 0400 UTC is another frequency to plug into your receiver’s memory.

Another warlord, Uthman Ali Ato, is the voice behind **Radio Mogadishu, Voice of the Somali Pacification**. Try 6823 kHz from 1500-1900 UTC, and be aware that they have had English broadcasts in the past. Rival warlord Husayn Aydid has vowed to “reunite” this station with Radio Mogadishu, but this threat hasn’t been carried out just yet.

**Radio Banaadir,** which refers to the greater Mogadishu region in Somalia, is the newest station in Mogadishu and probably the most mysterious for the moment. It has been widely heard on 7214 kHz between 1600-1900 UTC. A press item, apparently based entirely on a media release from the station, describes the station as commercial and promoting peace and reconciliation. Somali media watchers scoff at this characterization and believe that warlord Husayn Haji Bod is behind the station.

The other mystery concerns the origin of this station’s transmitter. In late 1999, a transmitter was tested briefly in Germany and it was made known that the final destination for this unit was Somalia. This seems to be Radio Banaadir’s transmitter, which arrived in Somalia via Canada and was installed by a couple of Somalis living in Canada. It is known that both the power of the transmitter tested in Germany and the full power of Radio Banaadir are 2,500 watts, quite a coincidence in a land where this is considered to be a high-powered transmitter.

Rounding out the scene in Mogadishu is the status of two stations that are now off of the air. **Radio Mogadishu, Voice of the Somali Republic,** previously operated around 6522 from 1600-1800. This was the mouthpiece of Ali Mahdi Muhammad, another Mogadishu warlord. Muhammad is now allied himself with Husayn Aydid, so they both now apparently share the latter’s Radio Mogadishu.

**HornAfrik,** operating from a freshly painted compound on the outskirts of Mogadishu, has the only FM commercial service in the country. They also have one of the two television services in Mogadishu. But they have no immediate plans for shortwave, says Ahmed Adan, one of their directors. Instead HornAfrik is looking to open other FM outlets in Somalia.

**Holy Quran Radio** was the station of the Islamic Alhu-Sunna wall Jamaa (Sunnis Masses in Somali) group. Western observers describe this group as Islamic fundamentalists while Somali observers describe it as the oldest, and hence more traditional of the religious groups in Somalia. It used to be heard on 6900 kHz between 1600 and 1900 UTC, but is now off the air.

It is worth noting that a new station has popped up on Holy Quran Radio’s old frequency of 6900 kHz between 1600 and 1700 UTC. This station is from Kismaayo in the south of Somalia and is simply known as **Radio Kismaayo.** Could it be that Radio Kismaayo purchased or obtained Holy Koran Radio’s equipment? Somali media watchers interviewed for this article say that the station is run by the Marehan tribal clan living in this area, which may mean that it is connected with the Somali National Front group. Its exact affiliation isn’t known as the Front has recently split into two rival factions.

In early 2000, a station tested from Baidoa around 9400 kHz from 0900-1100 UTC. This is the station of the Rahaweyn Resistance Army, a group seeking to rid this part of Somalia from the grasp of Husayn Aydid. It is known, unsurprisingly, as **Radio Baidoa.** The station hasn’t been noted since those brief transmissions early in 2000. RRA sources interviewed for this article describe these broadcasts as “tests” and said that they would start regular transmissions quite soon. Other Somali sources say that the station has technical difficulties and will need repairs before it returns to the air. In any event, it is worth tuning in 9400 kHz.

**Radio Hargeisa** is the voice of the self-declared nation of Republic of Somaliland. Although not internationally recognized, Somaliland does handle its own affairs, including broadcasting. Radio Hargeisa operates a 1,000 watt transmitter on 7530 kHz. This has been the easiest Somali station to hear recently, especially during its 1500-1800 UTC broadcasts. Perhaps this is related to the fact that the station received assistance from Yemen in September 1999. There is also a less-heard broadcast from 0500-0600. The audibility of this station should be improving further in the future as Sam Voron [see side bar] will be visiting the station.

**Radio Gaalkayo** (Gal-kai-yo) is the station of the self-declared State of Puntland. Puntland does not want to break away from Somalia as Somaliland does, but it does want to be a “state” within a federal Somalia. Radio Gaalkayo began in 1993 as Radio Free Somalia, thanks to Sam Voron and his Australian-based International Amateur Radio Network (IARN) [see sidebar]. The main station for Radio Gaalkayo is located in its namesake city in central Somalia, where it operates with just 125 watts on 7012 kHz. The best time to hear this one is from 1600-1700 UTC, but there are also broadcasts from 1000-1200.
NGOs are your best bet for getting a reception report into the country (UNESCO photo)

Hassan Mohammed Jama, Director of Radio Gaalkacyo, explains that they are in rather difficult times right now. "We used to transmit with 800 watts, but our main amplifier is now longer working, so we are limited to 125 watts," says Jama. He added, "With just the small amplifier, we cannot cover our audience in Puntland, let alone all of Somalia." Jama also reports that Radio Gaalkayco once had a log periodic antenna that they used for international broadcasting, but this unit is beyond repair.

In spite of these problems, Radio Gaalkayco also operates the only network in Somalia. There is a 5 watt relay of the station using a YAESU FT 747 in the town of Bossasso on 6012. A second relay at Puntland’s “capital” of Garoowe is planned, but Puntland does not have the funds to put such a relay on the air at present.

Radio Gaalkayco does have a working fax machine so DXers can fax their reception reports to the station. Try 252 543 4501 [One of the paradoxes of Somalia is that the civil war destroyed the old phone system, so the telephone system is very modern, with various private companies competing to offer telephone services.

Verification of any of these stations will be tough. With its fax, Radio Gaalkayco is easy to contact. Regular mail to the country just cannot be counted on, so DXers will need someone to take their letter into the country. NGOs (non-governmental organizations) are probably their best bet.

With two radio countries and a growing number of stations, Somalia can keep you busy listening and writing for quite some time. Enjoy!

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Radio Gaalkacyo's Best Radio Friend is from Down Under

Sato Voron of Australia is Somalia’s best radio friend. Through his Australian-based International Amateur Radio Network (IARN), Sam was instrumental in establishing Radio Free Somalia, now Radio Gaalkayco, in 1993. This was a non-profit volunteer effort and involved a lot more than just sending equipment to Somalia. Sam spent months in country setting up the station and teaching the staff how to run it.

Now Sam is headed back to Somalia. Part of his trip will be restoring Radio Gaalkacyo to its 1993 level, or at least close to it. “I need to get there and see what has happened to their big amplifier,” he says. Sam will also be traveling to Hargeisa. He will be doing a lot of radio work in Somaliland and this may include some work at Radio Hargeisa. So thank Sam if you hear either of these stations in the future. If you like to help Sam in his work, you can contact him as follows: IARN, 2 Griffith Ave, Roseville NSW 2069, Australia. Or you can phone/fax him at 61 (2) 9417-1066.
GLOSSARY

A Glossary of radio related terms used in Monitoring Times. (See www.grove-ent.com/mtglossary.html for a much more comprehensive list.)

THE RADIO SPECTRUM

ULF - Ultra Low Frequency (3-30 Hz)
ELF - Extremely Low Frequency (30-300 Hz)
VF - Voice Frequencies (300 Hz-3 kHz)
VLF - Very Low Frequency (3-30 kHz)
LF - Low Frequency (30-300 kHz)
MF - Medium Frequency (300 kHz-3 MHz)
HF - High Frequency (3-30 MHz)
VHF - Very High Frequency (30-300 MHz)
UHF - Ultra High Frequency (300 MHz-3 GHz)
SHF - Super High Frequency (3-30 GHz)
EHF - Extremely High Frequency (30 GHz and above)

// - Indicates a Parallel Frequency
µF - Microfarad
µH - MicroHenry
AC/ac - Alternating Current
AGC - Automatic Gain Control
AM - Amplitude Modulation
ARRL - American Radio Relay League
BD - Band
BFO - Beat Frequency Oscillator
BNC - Coax connector commonly used with VHF/UHF equipment
CB - Citizen Band
C-band - 3.7-4.2 GHz
CB - Citizen Band
BFO - Beat Frequency Oscillator
BNC - Coax connector commonly used with VHF/UHF equipment
CB - Citizen Band
C-band - 3.7-4.2 GHz
Comm. - Communications
CO - General call to all stations
CTCSS - Continuous Tone Controlled Squelch System
CV - Continuous Wave (Morse code)
DAB - Digital Audio Broadcast
dB - Decibel: dBi- decibels over isotropic
DBS - Direct Broadcast Satellite
DC - Direct Current
de - Morse code prosign meaning “from”
DSP - Digital Signal Processing
DTMF - Dual Tone Multi Frequency
DTRS - Digital Trunk Radio System
DX - Distant Station Reception
DXer - A person who engages in the hobby of distant radio/television reception
DXKing - The hobby of listening to distant radio or television signals
DXpeditions - DX Expeditions (trips to the boonies by radio listeners)
ECAP - Electronic Communications Privacy Act
ECSS - Exalted Carrier Selectable Sideband
E-skip - Sporadic E-layer ionospheric propagation
FCC - Federal Communications Commission
FD - Fire Department
FM - Frequency Modulation
Freq. - Frequency
FRS - Family Radio Service
GHFS - Global High Frequency System
GHz - Gigahertz
GMDDSS - Global Maritime Distress and Safety System
GMRS - General Mobile Radio Service
GMT - Greenwich Mean Time (replaced in most applications by UTC)
GPS - Global Positioning System
GSM - Global System for Mobiles (900 MHz)
HT - Handi Talkie/Handheld Transceiver
Hz - Hertz
ID - Identification
IF - Intermediate Frequency
IFC - International Frequency Coordination
IPL - Indian Ocean Plateau
IAPP - International Amateur Radio Joint Committee
IRA - International Amateur Radio Union
IRC - International Reply Coupon
IS - Individual Sideband
kHz - KiloHertz
km - Kilometer
K-band - 11.7-12.2 GHz (plus 12.2-12.7 GHz in North America)
KW - Kilowatt
LCD - Liquid Crystal Display
LED - Light Emitting Diode
LNA - Low Noise Amplifier
LNB - Low Noise Block Downconverter
L Nash - Low Noise Block Downconverter Feedhorns
LSB - Lower Sideband
LT - Local time
LW - Longwave (150-300 kHz)
mb/MB - meter band/Megabyte
MDT - Mobile Data Terminal
MF - Medium Frequency
MHz - Megahertz
ms - Milliseconds
MT - Monitoring Times
MU - Maximum Usable Frequency
MW - Milliwatt
MW - Medium Wave (typically 530-1710 kHz)
MW - Megawatts
NCS - National Communications System/Net Control Station
NDB - Non-Directional Beacon
NFM - Narrowband Frequency Modulation
NCH - Nickel Cadmium Battery
NiMH - Nickel Metal Hydride battery
No Joy - Station did not answer call
NWR-SAME - National Weather Radio Specific Area Message Encoding
Ops - Operations
Packet - Amateur radio error correcting mode
PC - Personal Computer/Printed Circuit
PCS - Personal Communication System/Satellite
PD - Police Department/Primary Data
PFC - Prepared Form Card
PL - Private Line
Q - Performance rating regarding selectivity or bandwidth
QRM - Interference from another station
QSN - Interference from natural or man-made sources
QSP - QSP - Quiet Slow pileup
QTH - Location
QTH - Location
QRP - Low power operation
QSL - A card or letter confirming reception of a radio station
QSO - Communications between two or more stations
QTH - Location
QTH - Location
QTH - Location
S - Meter - Signal Strength Meter
S-band - Microwave frequencies above UHF
SCA - Subsidiary Carrier Authorization (now known as SCS)
SCC - Subsidiary Carrier Service
SCS - Subsidiary Carrier Service
SEL/CL - Selective Calling
SESTOR-A(B) - Simplex teleprinting over radio system, mode A (B)
S/Meter - Signal Strength Meter
S/N Ratio - Signal to Noise Ratio
S/N Ratio - Signal to Noise Ratio
SAS - Self Addressed Stamped Envelope
SCXML - Signal Conditioned with X-Block Logic
SS - Single Sideband
SSB - Single Sideband
SSB - Single Sideband
SCEM - Shared Carrier Entry Modulator
S/P - Separate Power
S/N Ratio - Signal to Noise Ratio
SW - Shortwave (high frequency - HF)
SW - Shortwave (high frequency - HF)
SWB - Shortwave Broadcast
SWL - Shortwave Listener
SWR - Standing Wave Ratio
Tac. - Tactical
Tent - Tentative
TIS - Traffic Information Service
TVRO - TV Receive Only
T and T - Transmit
UHF - Ultra High Frequency
UKG - United Kingdom of Great Britain and Northern Ireland
ULS - Universal License System
ULS - Universal License System
UN - Undeclared
USB - Upper Sideband
UTC - Universal Time
UTC - Universal Time
UTC - Universal Time
Vac/VAC - Volts Alternating Current
Vac/VAC - Volts Alternating Current
Vac/VAC - Volts Alternating Current
Vac/VAC - Volts Alternating Current
VFO - Variable Frequency Oscillator
VOLMET - Aviation Weather Broadcasts (on HF)
VOX - Voice Operated Relay
VSWR - Voltage Standing Wave Ratio
WAM - Wideband Amplitude Modulation
WEFAX - Weather Facsimile
WF - Wideband Frequency Modulation
WFM - Wideband Frequency Modulation
WFM - Wideband Frequency Modulation
WFM - Wideband Frequency Modulation
WFM - Wideband Frequency Modulation
wpm - Words Per Minute
WNV - National Bureau of Standards Time Station, Ft. Collins, CO
WNV - National Bureau of Standards Time Station, Ft. Collins, CO
WNVH - National Bureau of Standards Time Station in Hawaii
WX - Weather
WX - Weather
WX - Weather
WX - Weather
X-band - Expanded AM broadcast band (1610-1700 kHz)
Zulu - Military time zone (same as UTC)
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Join the Club

As a beginning radio monitor, you may have noticed that there are quite a number of radio hobby clubs that one can participate in. Clubs exist for affiliation and information exchange. They can often get targeted information to their membership in a way that a more comprehensive, monthly magazine cannot due to time and space considerations. For this reason, belonging to a club or two that relates to your areas of radio monitoring interest is something well worth considering.

Another important thing that clubs do is to provide for affiliation and social contact in a hobby that would otherwise be pretty much a solo endeavor. Some aspects of our hobby can best be enjoyed when communicated to other “like minded” folks. Many clubs hold gatherings or conventions that allow you to get together with other hobbyists to share your radio monitoring interests. Some of my oldest and dearest friends are people I first met through membership in one radio club or another.

There are many clubs out there in radio hobby land and choosing the one most suited to your interests can be somewhat confusing for beginners. So we’ll start out with one of the best clearing houses for radio club information.

The Association of North American Radio Clubs (ANARC) was founded in 1964 with the goal of promoting close ties and interchange of ideas and information among North American radio clubs. I have had the privilege of serving on its Executive Board for a number of years. During my tenure, the President of the Board has been Mark Meece. Mark is a DC to Daylight (all bands, all frequencies) monitor and a dedicated amateur radio operator. He is also a respected author in the radio hobby. Under Mark’s direction, ANARC has taken many steps to promote the radio monitoring hobby, including the establishment of a strong World Wide Web presence for its affiliated clubs at www.anarc.org.

Membership as an affiliated club in ANARC is open to all clubs of radio monitors whose roots are clearly in the Ohio area, their journal provides frequency information and news for articles on shortwave and utility monitoring. Don’t let the club’s name fool you. While its roots are clearly in the Ohio area, their journal provides frequency information and news for any to begin a search for clubs that would be of interest to radio monitoring enthusiasts.

Membership as an affiliated club in ANARC is open to all clubs of radio monitors whose headquarters and principle places of business are located in North America or the Caribbean and publish a club bulletin no less than four times per year. So this seemed like as good a place as any to begin a search for clubs that would be of interest to radio monitoring enthusiasts.

ANARC presently has 14 member clubs. Let’s take a look at what they all have to offer the beginning radio hobbyist.

**All Ohio Scanner Club**

The All Ohio Scanner Club is one of the larger clubs devoted to primarily to VHF/UFH scanning, but their club journal also contains samples of members’ loggings to the newsletter. The club also holds an annual picnic each year for members to meet face to face. The club journal American Scannergram is published 6 times per year. Dues are $18.50 for US members, $22.00 for Canadian and $30.00 elsewhere. A sample copy is available for $3.50. You can write the club at All Ohio Scanner Club, 20 Philip Drive, New Carlisle, Ohio 45344-9108 USA. The club website is at www.aosc.org

**American Shortwave Listeners Club**

The American Shortwave Listeners Club is a non-profit hobby radio listeners club. Their motto is “world friendship through shortwave radio.” The club’s activities are directed towards advancement of the shortwave/worldband radio listening hobby and the development of the individual’s interest in worldband radio listening. The club holds monthly meetings which are held on the first Saturday of each month at 12 noon (2000 to 2400 hours UTC) at 16182 Ballard Lane in Huntington Beach, CA 92649. You can also get more information by writing to the same address. You can also write the club via email: wd6bau@earthlink.net. Their website is located at www.oscn.com/community/groups/shortwaveradio/

**Association of Clandestine Enthusiasts**

The Association of Clandestine Enthusiasts (ACE) is the most active Clandestine/Pirate radio club in North America. They publish a monthly newsletter The ACE. Sample copies are $2.00 in North America and 3 IRCs elsewhere. Club dues are: $21.00 USA and possessions; $26.00 Canada/Mexico, $40.00 elsewhere. You can write the club at P.O. Box 12112, Norfolk, VA 23541 or check out their website at www.acefrn.net

**Canadian International DX Club**

The Canadian International DX Club is a “one stop” club geared to Canadian monitors but welcomes worldwide members. The club’s interests include medium wave, shortwave, utility, amateur and FM listening as well as technical topics. Their newsletter The Messenger is published monthly. Sample copies are $2.00 in North America or 4 IRCs elsewhere. Dues are $27 $27 USA; $32 Canadian Dollars in Canada; $33 US or $42 Canadian Dollars elsewhere. For more information you can write CIDX at 79 Kipps St., Greenfield Park, Canada J4V 3B1 or visit their website at www.anarc.org/cidx/

**Cumbre DX**

Cumbre DX is a bit different in that it is a shortwave interest, E-mail-only club that relies on participation from its members for content. So for this reason the best way to learn the details of this group is to visit their website at www.cumbredx.org. The club’s electronic newsletter is distributed weekly on Fridays.

**DecalcoMania**

DecalcoMania caters to people who collect and trade radio and TV station promotional items and recordings. Membership is open to all persons interested in collecting these items. The club holds an annual get-together. Their newsletter is published 10 times per year. Sample copies are $1.00. Dues are $10.00 US; $11.00 Canada; $16.00 Europe; $17.50 Asia. You can write the club at 9705 S. Mary NW, Seattle, WA 98117. Their website is at www.anarc.org/decal/

**International Radio Club of America**

The International Radio Club of America is devoted to medium wave listening. Their newsletter DX Monitor is published 34 times per year. Sample copies are one First Class stamp in North America, 40 cent stamp in Canada and 2 IRCs elsewhere. Dues are $25.00 US, $27.00 Canadian; $25.00 Central America; $20.00 South America; $38.00 Europe/North Africa; Middle East $38.00; $41.00 elsewhere. Write them at P.O. Box 1831, Perris, CA 92572-1831 or web them at www.geocities.com/Heartland/5792/index1.html
Longwave Club of America

The Longwave Club of America, as the title suggests, specializes in longwave monitoring. Their monthly newsletter is The Lowdown. Sample copies are $1.00 North America, elsewhere $5 IRCs. Dues are $18.00 USA; $19.00 Canada; elsewhere $26.00. You can write them at 45 Wildflower Road, Levittown, PA 1905. Their website is at www.anarc.org/lowdown.

Miami Valley DX Club

The Miami Valley DX Club is an All Wave club. They also hold monthly meetings and publish a monthly newsletter DX World. Sample copies are $1.00 US and 3 IRCs elsewhere. Dues are $10.00 US and they ask that you write for other area’s rates. You can write to P.O. Box 292132, Columbus, OH 43229. Their website is at www.anarc.org/mvdxcl.

Minnesota DX Club

The Minnesota DX Club is another All Wave club that also holds regular monthly meetings, usually around the Minneapolis area. So it encourages local membership from the Minnesota and Western Wisconsin area. They publish a newsletter and dues are $10.00. You can write them at 16330 Germane Ct W, Rosemount, MN 55068 USA. Their website is at www.frontiernet.net/%7Ejadale/MDXC%20home.htm

North American Shortwave Association

The North American Shortwave Association, also known as NASWA, is one of the largest shortwave listening clubs in North America. They hold monthly meetings in various regions of the United States including the Philadelphia and Boston areas. They are also the sponsor of the Winter SWL Festival which has been held annually for 13 years in Kulpsville, PA - one of the largest gatherings of radio monitoring hobbyists in the world today. Their publication The Journal is published monthly; I’ve had the privilege of being a contributing editor in its pages for over 15 years. Sample copies of the newsletter are $2.00. Dues are $26.00 in North America; $29.00 in Central America/Caribbean/Venezuela/Columbia; $29.00 in the rest of South America/Europe; $32.00 Asia/Africa/Pacific. You can write them at 45 Wildflower Road, Levittown, PA 19057. Their website is at www.anarc.org/naswa.

Incidentally, if you noticed that this is the same address as the Longwave Club of America, that is because both magazines are managed and published by Bill Oliver, one of the most dedicated and respected radio monitoring hobbyists in the world.

Pacific Northwest, British Columbia DX Club

The Pacific Northwest, British Columbia DX Club is an All Wave club that encourages fellowship and information exchange among radio monitors in the Washington, Oregon, Idaho and British Columbia area. They hold regular meetings and get-togethers. Their newsletter PNBCDXC is published 10-12 times per year (depending on contributions.) Dues are $9.00 US, $10.00 in Canada. You can write this group at 9705 Mary NW, Seattle, WA 98117. Their website is at www.anarc.org/mbcdcx.

Southern California Area DXers

The Southern California Area DXers is an All Wave club for folks in the Southern California region. They hold monthly meetings and an annual picnic. The club dues are $10.00. You can learn more by writing to SCADS at 6398 Pheasant Dr., Buena Park, CA 90620 USA. Web them at http://scads.dgx.net/

Worldwide TV-FM DX Association

The Worldwide TV-FM DX Association, as its name suggests, covers TV and FM radio monitoring. They also are one of the major clubs covering satellite monitoring. They publish some excellent technical articles as well as many other things in their monthly newsletter the TVF-UHF Digest. A sample costs $1.00 in North America and 6 IRCs elsewhere. Annual dues are $24.00 US, $26.00 Canada, $38.00 elsewhere. The club requests US funds only. You can write them at P.O. Box 501, Somersville, CT 06072, USA. Their website is located at www.anarc.org/mvdxc.

More Options

You can find these and many other North American and international clubs and radio nets listed on the MT website at www.grove-ent.com/mtclubs.html, or send an SASE to “Club Circuit” c/o Monitoring Times for a hard copy of the 6-page list!

If your interest runs toward amateur radio, The American Radio Relay League (ARRL) serves as the parent organization for the majority of ham radio clubs in the United States. “The League,” as it is known, is a club in its own right: you can join it, participate in its activities and conventions, and receive its publication QST and other publications as well. Regular membership is $34 per year. You can get more information by contacting The American Radio Relay League, 225 Main St., Newington, CT 06111 phone (860) 594-0200 fax (860) 594-030 or e-mail circulation@arrl.org.

In addition to offering membership in the larger League organization, the ARRL maintains information on hundreds of League-affiliated local clubs and organizations to help you find hams in your area. The best direct source for this information is the ARRL website area dedicated to this task, www.arrl.org/field/club/.

By the way, the main League page at www.arrl.org is a great place for any radio hobbyist to visit. But I’ll give you fair warning. If you are not already a ham, after a few minutes at this page you will probably want to be one.

So, as they say, “Join the Club!” Have fun...and don’t be too surprised if you see Old Uncle Skip at one of your meetings.

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TrunkTrac, the first, and one of the most sophisticated trunk tracking technologies available, is now even better. New pricing and additional features make TrunkTrac your best choice if you’re serious about tracking Motorola Type I, II, III, and Hybrid systems. TrunkTrac now supports the BC895XLT, PCR1000, R7000, R7100, R8500, R9000, and the RS Pro 20xx series with an OS456/535 board installed.

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June 2000 MONITORING TIMES 31
Q. Is there any radiation danger living just a few feet from a TVRO satellite dish? (Donald Michael Choleva, Eastlake, OH)

A. None whatsoever. These dishes are receive only; like a giant concave mirror, they collect whatever waves strike their surface and reflect (focus) them to a point at the feed horn where they are conducted into the electronics of the system. They radiate no energy of their own.

Q. A recent newspaper story described a new device that can reveal what radio station a driver may be listening to as he passes by. Is this device similar to what has been used for decades in the U.K. to detect unlicensed radio receivers in use? Can it tell what frequencies I’m listening to in my scanner? Can I detect the detector if it’s in use near me? (Bob Stewart, Ft. Worth, TX)

A. Basically, it’s merely a sensitive receiver detecting the local oscillator frequency of the radio; you tune a radio, TV, or scanner by varying the frequency of that oscillator. The range is quite limited, because oscillators, by law, must be well shielded to prevent interference to other nearby devices.

Yes, it’s the same basic concept used in the U.K. by which government-outfitted vehicles can drive by a residence and listen to the tell-tale oscillator signal; if they hear it, they check their records to be sure the addressee has paid his license fee.

Although scanners do, indeed, radiate their oscillator signals, and they could be detected by such a nearby device, the user would have to know the manufacturer and model of the scanner to sort out the various oscillator frequencies used by different models.

And if you knew the oscillator frequency of the detecting device, you could conceivably listen to determine if it’s being used near you. But the likelihood of such a device being used in most U.S. cities, saturated with signals from every direction, is slim.

Q. Are you aware of a surveillance tracking device consisting of a transmitter dropped into a vehicle’s gas tank, energized like a fuel cell from the gasoline? (Pedro Zuniga, San Antonio, TX)

A. No, and I doubt that such a device exists. In the first place, a low-powered transmitter in a gas tank wouldn’t radiate anywhere because it is totally shielded by metal. In the second place, fuel cells work on the chemical oxidation of gasses produced by water and, soon, methyl alcohol, not on petroleum. And finally, there is a filter/anti-siphon barrier in the filler pipe which would prevent such a device from reaching the fuel tank. Sounds like a flight of fancy, not reality.

Q. For radio antennas, is there any difference in performance between a hollow tube and a solid rod? (Matthias A. Wirtz, e-mail)

A. No. At radio frequencies, the signal energy propagates along or near the surface of the conductor, not the center, so a hollow tube works just as well as a solid rod.

Q. How do I renew my amateur radio license? (James Ashe, S. Weymouth, MA)

A. There have been some changes. The new Universal Licensing System (ULS), intended to streamline licensing procedures, requires you to file a form 605 with the Federal Communications Commission (FCC) in Gettysburg, PA. Details are available on line by visiting the American Radio Relay League (ARRL) Web site, particularly this URL: www.arrl.org/fee/uls-qa.html. You may also write directly to the FCC at 1270 Fairfield Road, Gettysburg, PA 17325-7245 and request the ULS form 605. There is no charge.

For additional information on amateur licensing questions, visit the informative ARRL Web site at www.arrl.org or call them at (860) 594-0200. They have informed staffers there who will answer your questions thoroughly.

Q. Back in the ’80s I acquired a Regency 1000 scanner and a Kenwood R2000 shortwave receiver. Are these now too antiquated for serious monitoring of the spectrum?

A. Absolutely not. The early Regency scanners, while not being as feature-packed as modern scanners, had excellent sensitivity and selectivity. And the R2000 is still respected among those of us who remember that model.

Are there better scanners and shortwave receivers out there now? Absolutely—but they cost more, too! The two models you have will serve well to bring you up to speed on what’s going on in the spectrum now, and when you’re ready to move up, take a look at the products offered in the pages of Monitoring Times.

Q. Where can I buy crystals for my old model scanner? (A.C. Hall, Wake Forest, NC)

A. Radio Shack can normally order these for you, and you can sometimes find good used crystals by contacting Gerry Oliver at G&G Communications, 7825 Black Street Rd., Le Roy, NY 14482; phone (716) 768-8151.

Bob Parnass also recommends Crystal Manufacturing Company, 11 N. Lee Ave., Oklahoma City, OK 73102, (405)236-3741 or (800)725-1426. (See Scanner Equipment column, Oct 1999)

Q. I have a GPS vehicle tracking system with 200 foot accuracy; I would like to improve the resolution. Can it be done? (Mike McCray, e-mail)

A. No. The U.S. military won’t allow closer resolution because of the tactical implications to an aggressor or terrorist. Sometimes the accuracy is better, sometimes worse. For their own use, the military has a second frequency on the GPS birds with far tighter accuracy, but the signal is heavily digitally encrypted. (See the May Digital Digest column for more on Differential GPS: a more accurate, but primarily maritime service.)

Questions or tips sent to "Ask Bob," c/o MT are printed in this column as space permits. If you desire a prompt, personal reply, mail your questions along with a self-addressed stamped envelope (no telephone calls, please) in care of Mt, or e-mail to bgrove@grove-ent.com. (Please include your name and address.) The current "Ask Bob" is now online at our WWW site: www.grove-ent.com
When you acquire a new (or used) radio, make a photocopy of the owner's manual. Skip the pages on how to install the BNC antenna, etc. and copy how to program the radio, how the features work, and the explanation of the keyboard functions. Hole punch the copy and store it in a three ring binder. The binder serves as a central source for quick radio reference. This allows you to freely use a highlighter pen as you read the photocopy. Keep the original manual with the box and packaging materials. If you decide to return or resell the radio, you still have the manual and box in pristine condition.

I am big on three ring binders to stay organized and have at least a dozen such binders. I buy the type that has a see-through vinyl cover so I can slide in a cover page. For example, my cover for the binder mentioned above reads: "Manuals and Programming Ideas for the Bearcat 835XLT, Pro 26, 64, 75, and 94. Includes Bank Assignments and Keypad Tricks." I used large, 48-point, bold fonts for the text and added color. I searched the internet and came up with several graphics of Pro Series scanners (try http://n7olq.home.att.net/Radio/Galleryframe.htm) to toss in the middle of the page.

My HP color DeskJet makes great looking cover sheets. Use the "Best" print quality under the properties setting and always use Print Preview to make sure it looks right before the final printing. With labels and divider tabs, the end result is a very professional looking binder. The large print means I can find it in a hurry. I also use a small label for the heel of the binder. A little Scotch tape will make sure it doesn't fall out.

I always carry a small pocket-sized notepad and pen. How many times have you heard a new frequency or term and forgotten it before you could get it written down? Happens more often with age! I also carry the little sticky type note pads.

Post-it® notes come in a pad of 50 or 100. I break the big pad into several smaller ones to place in the many places I might need one. I always have sticky notes next to the scanner. The smaller pads can also be used as flags or bookmarks in your reference books.

While you are at it, buy a box of good pens. My pens always seem to disappear daily. If you know how to hang on your pens, let me know!

Check for local conventions or trade shows in your city that are based around the fire, police, EMS, or public safety industry. The admission to the trade show floor is usually free. This may also be a good workshop on emergency vehicles, radios and similar displays. Likewise, keep your eye open for an open house or similar event at public safety agencies.

When is a "Service" search not a real search? The Pro 94 and its base-mobile model twin, the Pro 2052, are the most recent Radio Shack trunk tracker radios made by Uniden. Some of the preprogrammed "service" searches are woefully lacking. In the Pro 94, weather, marine and ham coverage are comprehensive. The air group has continuous coverage 108-136.975, but a better range would have been 118.000-136.975. The 108-118 is primarily navigational aids. The 12.5 kHz steps double the scan time.

The big problem is with the police service band. Amazingly, they deleted coverage from 37.98 to 39.48 and 39.94 to 43.64. Those looking for the California highway patrol will be disappointed. They included the VHF fire frequencies, but omitted most of the VHF police. There were many holes in the 453.XXX MHz group and, incredibly, the entire 460.025-460.525 range was omitted. The 800 MHz range was better, with only partial coverage and ignoring the much-used 886.000-886.9875. The Pro 2052 has similar problems. To really search out these public safety allocations, you will need to program a limit search. Tip: Better check your radio for completeness of coverage.

Or, maybe it's time for a new scanner? While most of the hype lately has been over the newly released trunk tracker radios, many of us live in areas where most of the action is still on plain old VHF and UHF. For less than $100, you can order a new scanner from www.grove-ent.com. I also stumbled unto a good buy at Wal-Mart. They had the Uniden Bearcat 350A for $89.

Uniden has other models and made some clones for Radio Shack. They can often be found for just a few bucks at garage sales and swap meets. There is no keypad; rather there are several search options. Here is the tip that makes this radio a great value. You can lock out as many frequencies as you wish, unlike most radios where you can only lock out 20 or 30 channels.

Example: The Police Service button will start flying through several hundred preprogrammed frequencies. The majority of these are in the UHF-T band of 470-512 MHz. It took me about 10 minutes, but I locked out all these frequencies since they did not apply to my location. They are typically used in just a handful of major metropolitan cities. If I did live in one of these locations, I could do the opposite and lock out everything except the UHF-T.

More tips on the Uniden 350A and similar radios. After I locked out birds or unneeded freqs, I decided what to load into the 20 programmable slots at the end of the police preprogrammed range. Think big! You can program anything into these 20 slots. They could be Coast Guard (from the Marine service) or emergency ham repeaters, fire or emergency management frequencies. If I have some really important police frequencies, I can add them in to get double coverage.

The same strategies can be applied to the Fire Service band, except they only have 10 open slots. In my area, several Fire Departments use public safety frequencies that are "Local Government." An example is my county fire department with an output of 154.085. So how do you program this into the Fire Service band? Press the Police Service Button and then the Hold button. Use the up or down arrow keys to select 154.085. (If you hold the arrow keys down, the numbers will scroll by very fast. You need quick fingers.) When you have selected 154.085, press the Program button and then the Fire/Emg button. Using the up and down arrow keys, select an empty channel. Then press the Prog button and the frequency is now written into the memory channel you selected.

There is also a "Private Bank" with 20 programmable slots. You can use this one as your main scanning band. Remember, you can program anything into these slots from the V/X, Marine, Air or any Search Range. Best of all, these service searches truly cover most of the appropriate frequencies.

Final, important hint for the 350A class of scanners: The internal memory is supported by a small rechargeable battery. If you leave the radio unplugged from a power source for more than a couple of days, it will lose all its memory. Your careful pruning and adding of frequencies will be lost. I learned that the hard way.

Are you using your highlight marker? Making notes on the front cover of MT regarding articles of special interest? Taking advantage of sources for free books, maps etc.? Very good! I look forward to sharing more tips next month.

June 2000
Exciting New Advances in Scanners

While the scanner hobby continues to be bedeviled by the dire warnings of the advance of digital, the complexities of trunking, and the migration of hobbyists from radio to the Internet, there are bright spots on the horizon. Manufacturers continue to offer new and exciting product to support their customers. Likewise, our support of these manufacturers is critical to the long-term condition of our hobby. Let's offer some kudos to some of the following new products that are soon to be released.

**Uniden-Bearcat BC-780XL**

We'll cover this exciting new advanced receiver in a later issue. As of this writing, however, the publicly released information about the new base/mobile is pure nirvana: 500 channels, Motorola (control channel), Ericsson and LTR trunking, 2-line X 16 character alpha-numeric display, CTCSS/DCS operation, multiple tuning step sizes including the new 7.5 kHz step now prevalent in VHF, 10 service searches, repeater reverse, beep alert, multiple delay options, and much, much more.

**Icom IC-R5**

All we know of this nifty new handheld is what we've seen in the ads on the back of *Monitoring Times*—and we sure do like what we see: The first scanner ever with a TV screen built-in. For this editor, personally, I'll fall in love with the ability to go to a ballgame and be able to watch the Red Sox on TV while I listen to the security operations at the park.

**Scanner Master SmartLink**

SmartLink, developed by this editor's firm, Scanner Master, under the engineering direction of Terrence Brennan and Sean Sullivan, allows Bearcat 245 owners to Reaction Tune and store frequencies while you're busy tuning and storing frequencies you've already programmed. SmartLink also allows you to scan frequencies you've already programmed while you're busy tuning and store frequencies you receive locally on your counter. The device actually has over 60 modes of operation.

Depending on the reaction to our discussing new products, perhaps at the end of the year we'll nominate products for Scanner of the Year and Scanner Accessory of the Year. If you have other new products you would like us to cover, please just let us know.

**Association of Public-Safety Communications Officials**

A great website to check every now and then is that of APCO, the Association of Public-Safety Communications Officials at www.apcointl.org. If you're a scanner user and you haven't heard of this group before, you should really spend some time learning more about them.

APCO, in existence since 1935, is comprised of public safety communications professionals as well as communications industry leaders who serve them. These are the police, fire, EMS, emergency management and other radio officers whose influence goes far to determine the types of radio systems purchased and operated by their departments. APCO members crafted the APCO-25 standard that is the basis of most new digital radio systems implemented today.

APCO recently posted news on their website regarding some of the 12.5 kHz UHF splinter channels. While UHF splinters are now being licensed for full power operation, this document requires that, if low-power operations pre-exist on one of the below-listed frequencies in a given area, they will take precedence over any application for full-power use of the channels.

**Newly Established Low Power 12.5 kHz UHF Channels**

Per FCC Document 97-61, the PSCC coordinators agreed to the following UHF offset channels, to remain at permanent low power primary status:

<table>
<thead>
<tr>
<th>Offset Frequency</th>
<th>Primary Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>453/458.0375</td>
<td>453/458.9375</td>
</tr>
<tr>
<td>453/458.0625</td>
<td>453/458.9625</td>
</tr>
<tr>
<td>453/458.0875</td>
<td>453/458.9875</td>
</tr>
<tr>
<td>453/458.1125</td>
<td>460/465.4875</td>
</tr>
<tr>
<td>453/458.1375</td>
<td>460/465.5125</td>
</tr>
<tr>
<td>453/458.8875</td>
<td>460/465.5375</td>
</tr>
<tr>
<td>453/458.9125</td>
<td>460/465.5625</td>
</tr>
</tbody>
</table>

The new emission designator for 12.5 kHz channels is K3F3E. The APCO site also contains a link to Percon's excellent on-line FCC database research service, which you can use to see who is currently licensed for these frequencies in your area. Check it out!

The APCO site also provides interesting news in public safety communications. Two recent stories on their home page addressed Public Safety Telecommunications Week (the week of April 9th), which honors the many telecommunications professionals who aid in providing 9-1-1 emergency assistance to citizens everywhere. The second story addressed the spread of computer viruses plaguing 9-1-1 centers. The virus, found initially in Houston, was said to be erasing hard drives and clogging 9-1-1 lines. This is where the Internet really shines. The rapid dissemination of such information was certainly critical in helping other centers across the country protect their 9-1-1 systems from imminent collapse.

**APCO 2000 Convention**

APCO's yearly international convention will be held this August in our favorite city, Boston. Your scanner columnist will be there in Booth #204 and I hope some of our readers will have a chance to make it to the show and will stop by the booth for a visit. The APCO convention is a great place to see all that is new in public safety communications, particularly demonstrations of trunked and digital radio systems operating right on the show floor. You do need to be involved in public safety and/or communications in some fashion, but if you are, check out APCO's web site, or call them in Daytona Beach, Florida, for details on attending the convention.

Here's the first half of a primer on monitoring in Boston during the convention:

<table>
<thead>
<tr>
<th>FCC Channel</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>460.300</td>
<td>Car to car/Station to car/secondary</td>
</tr>
<tr>
<td>460.275</td>
<td>Car to car/Station to car/secondary</td>
</tr>
<tr>
<td>460.250</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.225</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.200</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.175</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.150</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.125</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.100</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.075</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.050</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.025</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.000</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.075</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.050</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.025</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.000</td>
<td>&quot;Harry Base&quot; information requests</td>
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<tr>
<td>460.075</td>
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<td>460.050</td>
<td>&quot;Harry Base&quot; information requests</td>
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<td>460.025</td>
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<td>460.000</td>
<td>&quot;Harry Base&quot; information requests</td>
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<tr>
<td>460.075</td>
<td>&quot;Harry Base&quot; information requests</td>
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<tr>
<td>460.050</td>
<td>&quot;Harry Base&quot; information requests</td>
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<tr>
<td>460.025</td>
<td>&quot;Harry Base&quot; information requests</td>
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<td>&quot;Harry Base&quot; information requests</td>
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<tr>
<td>460.075</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.050</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.025</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
<tr>
<td>460.000</td>
<td>&quot;Harry Base&quot; information requests</td>
</tr>
</tbody>
</table>

The World Above 30 MHz

Boston APCO-2000 Convention Monitoring
460.475 - F15 - Command (encrypted)
460.250 - F16 - Radio Shop, Command Post, ESIU
453.350 - F25 - Housing Auth. Police (ZEBRA) (D-351)
453.200 - F26 - Service (Auto repair/Facilities)
453.300 - F27 - BHA and EDIC Maintenance
158.910R - Recruits, Special Events (154.860 in)

Area "A" (ALPHA) - Downtown/Waterfront/Beacon Hill
- East Boston/North End/Charlestown
Area "B" (BRAVO) - Mattapan/North Dorchester/Roxbury/Mission Hill
Area "C" (CHARLIE) - South Boston/Dorchester
Area "D" (DELTA) - Back Bay/South End/Fenway
- Allston/Brighton/Kenmore Square
Area "E" (ECHO) - Jamaica Plain/Hyde Park
- Roslindale/West Roxbury

Boston Fire
483.1625 - F1 - General Communications 118.8
483.1875 - F2 - Fireground 1 118.8
483.2125 - F3 - Fireground 2 118.8
483.2375 - F4 - Fireground 3/Constr. 118.8
453.650 - F5 - Apparatus/Dispatch 131.8
153.890 - F6 - Subway Radio
154.220 - F7 - Methohol (simulcasted on 483.2875)

Boston Emergency Medical Services (EMS)
The new BEMS dispatch center located at

the new BPD HQ is staffed by EMT Telecommunicators that have been trained to the APCO Standard for Basic Telecommunicator and Emergency Medical Dispatch (APCO EMD). In addition to processing emergency calls and dispatching BEMS units to the 100,000 incidents yearly, the center also operates the Metro-Boston C-MED system which provides EMS communications for 61 communities around Boston.

462.950 Tac 9 On-scene/Working
462.975 Citywide 10 Boston Operations
458.1375 Tac 11 Simplex communications on-scene
460.550 Tac 12 Secondary for sustained incidents
458.0625 Ch. 13 Simplex sustained incident on-scene
460.525R Ch. 14 Command Channel (secure voice)
460.525M Ch. 15 Command Ch. (simplex-secure voice)
453.775 Tac 16 Technical Services Bureau Ops.
155.040R “040” Paging/Misc. Use (153.740 input)
868.350 GPS System (vehicle location)

Additional Medical Channels
463.050 MED 3 Ambulance-hospital channel
463.075 MED 4 Common Calling Channel
463.125 MED 5 Ambulance-hospital channel
463.175 MED 8 Ambulance-hospital channel
155.340 HEAR Amb-Hosp. outside greater Boston
155.280 HEAR Boston Hospitals Disaster Network

Realistic PRO-2052
with all these features, it does some pretty nice tricks!

For desktop scanning, the low-profile PRO-2052 follows Motorola I, II, III hybrid as well as GE/Ericsson (EDACS) trunked systems. Extended frequency coverage provides 29-54, 108-512, 806-960 (less cellular) and 1240-1300 MHz! Built in weather alerts can be encoded for your specific SAME location. The RS232C serial interface invites computer control, data uploading and downloading, and similar-unit cloning.

With 20 priority channels, data skip, and search skip, this base unit operates from its own AC adaptor, or from an optional mobile cord. Includes detachable antenna and nationwide trunked frequency list.

SCN 48, Only $299.50

GROVE
800-438-8155
828-837-9200 fax: 828-837-2216
WWW.GROVE-ENT.COM
7540 Highway 64 West
Brasstown, NC 28902

*plus $7.95 UPS shipping

June 2000 MONITORING TIMES 35
Lake City is a major metropolitan region with a wide variety of communications services. The region is also home to a core group of very active buffs, including Jon S. Van Allen, KF7YN, who has led a group that has created an excellent web site devoted to scanning in the region; you can find it at http://www.real-utah.com/scan/index.html.

Jon was kind enough to provide a sampling of some of his data on the Salt Lake City region; you can find his comprehensive profile of Salt Lake City scanning in last month’s cover feature. What we really like about the information is the breakdown of how the dispatch centers provide communications services for the various communities. This is the type of data that is not a matter of FCC records and is thus generally quite hard to find.

Valley Emergency Communications Center (VECC) Consolidated dispatch center for the following:
- Midvale Police / Fire / Rescue / Med
- Murray Police / Fire / Rescue / Med
- Sandy City Police / Fire / Rescue / Med
- South Jordan Police / Fire / Rescue / Med
- West Jordan Police / Fire / Rescue / Med
- West Valley City Police / Fire / Rescue / Med
- Salt Lake County Fire
- Bluffdale Fire / Rescue / Med
- Riverton Fire / Rescue / Med
- Draper Fire / Rescue / Med

Dispatch of Fire and rescue units is all done on channel 1 to all areas covered by VECC. One only needs to monitor Dispatch or the Plectron callout channel for all Fire & rescue calls. Units are directed to respond on Ch-2 or 3. On scene comms are on Tac Channels 4 through 10. Individual agency channels are for paging or fireground operations, otherwise all units monitor dispatch. Police frequencies are listed separately as they are dispatched separately.

Valley Emergency Communications Center Fire and Rescue
153.890 Fire & Rescue Dispatch
154.385 Municipal Paging
154.175 Response Channel 2
154.415 TAC 10
153.770 Response Channel 3
155.955 Police TAC
154.130 TAC 4

154.280 Mutual Aid Statewide
154.220 TAC 5
154.340 Salt Lake County Fire, Fireground (SLC Fire F-3)
154.235 County Paging (Pletronic pongs)
155.505 Statewide Police Mutual Aid
154.250 TAC 6
155.340 HEAR Channel, Ambulance to Hospital
154.265 TAC 7
153.845 Sandy City Fire
154.295 TAC 8
154.965 Sandy City Fire
154.355 TAC 9

Statewide County Designators for Salt Lake County (1 as in India)
1-India - Salt Lake County
2-India - West Jordan
2-India - Salt Lake City
3-India - Draper
4-India - Murray
14-India - South Jordan
4-India - Kearns
15-India - Riverton
16-India - West Valley City
16-India - Coppertron
6-India Magno
17-India - Lark
17-India - Midvale
18-India - Bluffdale
8-India - South Salt Lake
19-India - Herriman
9-India Sandy
20-India Alto

Kansas City, Here we Scan
Scanner fans and public safety professionals have heard a lot about communications Kansas City in recent years. Their trunked system was reportedly not providing the coverage that police and fire officials had assumed it would. Incidents of officers in trouble who could not hit a repeater site were much publicized by the press.

We’ve heard a repeat of such situations in some time, however. With the release of the Bearcat 245XLT, the PRO-94, and subsequently the PRO-92 and PRO-2052, it is now possible to scan EDACS trunking systems and thus, finally, Kansas City. This information submitted by Mike Wasleski on the Kansas City System.

Type: G.E. Ericsson (EDACS)
Use: Kansas City Police, Fire, EMS, Airport, City Services

Frequencies:
(1) 85.62125 (2) 85.72125 (3) 85.82125 (4) 85.92125 (5) 86.02125
(6) 85.4625 (7) 85.5625 (8) 85.625 (9) 85.725 (10) 86.025
(11) 85.625 (12) 85.725 (13) 85.825 (14) 85.925 (15) 86.025
(16) 85.7375 (17) 85.8375 (18) 85.9375 (19) 85.9375 (20) 86.0375
(21) 85.4375 (22) 85.5375 (23) 85.6375 (24) 85.7375 (25) 86.0375

Kansas City Fire/EMS:
08-000 KC Fire (Football) 08-021 KC Fire (Dispatch)
08-022 KC Fire (Marshall 1) 08-023 KC Fire (Marshall 2)
08-024 KC Fire (Fire Training 1) 08-025 KC Fire (Fire Training 2)
08-026 KC Fire (Fire Training 3) 08-027 KC Fire (Mutual Aid)
08-031 MAST (EMS Dispatch) 08-041 KC Fire (TAC 2A)
08-061 KC Fire (TAC 3A) 08-081 KC Fire (TAC 4A)
08-101 KC Fire (TAC 5A) 08-102 KC Fire (TAC 5B)
08-121 KC Fire (TAC 6A) 08-122 KC Fire (TAC 6B)
09-041 KC Fire (TAC 7A) 09-061 KC Fire (TAC 8A)
09-021 Emergency Preparedness 09-031 Emergency Prep. (KC Fire - NWS)

Police:
10-000 KCPD (Agency Call) 10-020 KCPD (Football Call)
10-021 KCPD (Central Zone) 10-022 KCPD (Metro Zone)
10-023 KCPD (East Zone) 10-025 KCPD (North Zone)
10-026 KCPD (South Zone) 14-137 KCPD (North/South Zone)
10-027 KCPD (Tactical) 10-055 KCPD (Mutual Aid)
10-045 KCPD (Special Ops #3) 10-046 KCPD (Special Ops #4)
10-047 KCPD (Special Ops #5) 10-050 KCPD (Special Ops #6)
04-121 KCPD (Tow Trucks) 10-057 Missouri Sheriffs’ Network

Airports:
12-040 KCI (Field Call) 12-041 KCI (Police)
12-061 KCI (Operations) 12-062 KCI (Emergency 1)
12-063 KCI (FM 2) 12-064 KCI (PAC 1)
12-065 KCI (PAC 2) 12-066 KCI (Ground Transportation)
12-067 KCI (Shuttle Bus) 12-082 Downtown Ground
12-101 Richards Gebaur

City Administration:
02-021 Admin (Traffic Ops)
02-022 Admin (District 2)
02-023 Admin (District 2)
02-024 Admin (District 3)
02-025 Admin (District 4)
02-026 Admin (District 5)
02-031 Admin (Tow Lot)
02-041 Public Works (Dispatch)
02-062 Solid Waste
02-081 Engineering
02-101 Operations (Field Ops)
02-102 Operations (Building Ops)

City Services:
04-021 Parks and Recreation (District 1)
04-022 Parks and Recreation (District 2)
04-023 Parks and Recreation (District 3)
04-024 Parks and Recreation (District 4)
04-041 Golf Courses (City Services)
04-042 Golf Courses (SW Maintenance)
04-046 Golf Courses (MN Maintenance)
04-047 Golf Courses (HP Club)
04-061 Horticulture
04-081 Zoo
04-082 Zoo (Special Services)
04-083 Zoo (Ops 1)
04-084 Zoo (Ops 2)
04-085 Zoo (Ops 3)
04-087 Zoo (Services)

Other:
06-021 Animal Control
06-046 Health Department (Ops)
06-060 Municipal Auditorium/Ball Hall (Football)
06-061 Municipal Auditorium/Ball Hall (Dispatch)
06-062 Municipal Auditorium/Ball Hall (Security)
06-063 Municipal Auditorium/Ball Hall (Ops)
06-064 Municipal Auditorium/Ball Hall (Park)
06-081 Kemper Arena
06-083 Kemper Arena (Ops)
06-101 Neighborhood Preservation
06-121 Municipal Corrections (General Ops)
06-123 Municipal Corrections (Court)

Radio Sparks
We'll move back west again with some anonymous information sent to us on the Sparks, Nevada, trunking system. We hope one of our readers can fill in some of the blanks on the talkgroup list.

City of Sparks Nevada Trunk Radio System (Motorola Type II)

Frequencies:
856.2125 857.2125 858.2125 859.2125 860.2125 859.7125 860.7125

Talk Groups:
16 Police - Main
48 Police - Tac 1
80 Police - Tac 2
112 Police - Tac 3
144 Talk Around
304 Police - Tac 4
336
400 Fire - Main
422 Fire - Tac 1
464
496 Fire - Tac 3
528 Fire - Tac 4
592
650 Public Works - Admin
688 Streets
720 Lines (sewer, water, etc)
784 Traffic
816 Buildings
848
880
915
944
976 Parks
1200
1232 Fire - Pre Alert
1296
2064
6544
8240
12980
12304
32816

04-090 Zoo (Supervisors)
Scanner Logs

Larry Van Horn  larry@grove-ent.com

ReLAX

Ken Hawkins passes along a correction to our April 2000 column and some additional frequencies. In the Scanner Logs. Southern Cal to Mexico frequencies, there is one small error: the first frequency listed as LAX Center (134.35) is actually a second LAX departure frequency.

Ken also passes along these frequencies for the LAX departure area:

<table>
<thead>
<tr>
<th>Freq (MHz)</th>
<th>Channel</th>
<th>Barracks</th>
</tr>
</thead>
<tbody>
<tr>
<td>39.10</td>
<td>1</td>
<td>Headquarters, Pikesville</td>
</tr>
<tr>
<td>39.25</td>
<td>2</td>
<td>Headquarters, Pikesville</td>
</tr>
<tr>
<td>39.30</td>
<td>3</td>
<td>College Park &quot;O&quot;</td>
</tr>
<tr>
<td>39.34</td>
<td>4</td>
<td>Bel Air &quot;O&quot;, Forestville &quot;L&quot;, Hooperstown &quot;O&quot;</td>
</tr>
<tr>
<td>39.15</td>
<td></td>
<td>Annapolis (State Capitol) &quot;J&quot;</td>
</tr>
<tr>
<td>39.32</td>
<td></td>
<td>Rockville &quot;N&quot;, Centreville &quot;S&quot;</td>
</tr>
<tr>
<td>39.37</td>
<td></td>
<td>Security &quot;K&quot;, Valley &quot;R&quot;, Leonardtown &quot;T&quot;</td>
</tr>
<tr>
<td>39.24</td>
<td></td>
<td>Cumberland &quot;C&quot;, Wildwood &quot;W&quot;, Berlin &quot;V&quot;</td>
</tr>
<tr>
<td>39.59</td>
<td></td>
<td>Westminster &quot;G&quot;, Prince Frederick &quot;U&quot;</td>
</tr>
<tr>
<td>39.04</td>
<td>10</td>
<td>Glen Burnie &quot;P&quot;</td>
</tr>
<tr>
<td>39.06</td>
<td>11</td>
<td>Jessup &quot;A&quot;, Solisbury &quot;E&quot;</td>
</tr>
<tr>
<td>39.44</td>
<td></td>
<td>Marine</td>
</tr>
<tr>
<td>39.20</td>
<td></td>
<td>Marine</td>
</tr>
<tr>
<td>44.74</td>
<td></td>
<td>Hello</td>
</tr>
<tr>
<td>47.66</td>
<td></td>
<td>Hello</td>
</tr>
</tbody>
</table>

UTLAX

From an anonymous contributor via email come the following frequencies for Ontario Aircraft Service. They handle all the air cargo at Toronto Pearson International Airport in Ontario – everything from Emerg to UPS to the US Post Office planes. The frequencies are: 464.7125, 466.1125, and 466.4875 MHz.

California Skip

Sol Elbaum in the Bronx, NY, reports hearing California Highway Patrol communications via VHF-low band F-2 skip on 42.06, 42.08, 42.44, 42.46, 42.50, and 42.54 MHz. Sol also monitored Nevada Highway Patrol dispatch on 42.94 MHz. Signals levels were very strong during his early afternoon Eastern Time.

Florida Milair

Jack NeSmith is back with another Florida milair report.

<table>
<thead>
<tr>
<th>Freq (MHz)</th>
<th>Channel</th>
<th>Barracks</th>
</tr>
</thead>
<tbody>
<tr>
<td>283.70</td>
<td></td>
<td>USAF Airman Park</td>
</tr>
<tr>
<td>320.04</td>
<td></td>
<td>USAF/NORAD SE US Air Defense - Osigoive</td>
</tr>
<tr>
<td>324.025</td>
<td></td>
<td>Unit (one of my spectrum holes, watch closely-LVM)</td>
</tr>
<tr>
<td>325.725</td>
<td></td>
<td>USAF 71FS out of Langley has been reported here-LVM</td>
</tr>
<tr>
<td>349.400</td>
<td></td>
<td>Air Mobility Command</td>
</tr>
<tr>
<td>384.775</td>
<td></td>
<td>Unit (one of my spectrum holes, watch closely-LVM)</td>
</tr>
</tbody>
</table>

Maryland State Police

Ron Perron provides low band skip enthusiasts with this profile of the Maryland State Police VHF low band system.

<table>
<thead>
<tr>
<th>Freq (MHz)</th>
<th>Channel</th>
<th>Barracks</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.340</td>
<td></td>
<td>KA55050 Forestry Conservation, unknown location, probably North Carolina. OM/EE weather forecast at 1420.</td>
</tr>
<tr>
<td>31.540</td>
<td></td>
<td>KF882 Forestry Conservation, Asheville, NC. OM/EE weather forecast and aircraft/helicopter availability at 1428.</td>
</tr>
<tr>
<td>31.700</td>
<td></td>
<td>KCC518 Forestry Conservation, Fairmont, WV at 1406. OM/EE weather forecast.</td>
</tr>
<tr>
<td>31.975</td>
<td></td>
<td>Unidentified OM/Chinese at 0928.</td>
</tr>
<tr>
<td>32.025</td>
<td></td>
<td>In-house pager: unidentified from the east at 0853.</td>
</tr>
<tr>
<td>32.425</td>
<td></td>
<td>Unidentified OM/Chinese. I suppose these are all from the same user at 0940.</td>
</tr>
<tr>
<td>32.825</td>
<td></td>
<td>Unidentified OM/Chinese. I suppose these are all from the same user at 0940.</td>
</tr>
<tr>
<td>32.850</td>
<td></td>
<td>Unidentified OM/Chinese. I suppose these are all from the same user at 0940.</td>
</tr>
<tr>
<td>32.925</td>
<td></td>
<td>Unidentified OM/Chinese. I suppose these are all from the same user at 0940.</td>
</tr>
<tr>
<td>32.950</td>
<td></td>
<td>Unidentified OM/Chinese. I suppose these are all from the same user at 0940.</td>
</tr>
<tr>
<td>33.220</td>
<td></td>
<td>KOB404 Buckeye Pipeline Company, Cygnet, OH with CW 10 or 1421.</td>
</tr>
</tbody>
</table>

Md State Police Identifiers

Patrol cars carry a # or # # number prefixed by the Barracks letter, e.g. P-04 is from the Glen Burnie Barracks. The helicopters on 44.74 use the callsign Trooper I-8 and are controlled by a coordination center using the callsign SysCom. Marine units use the callsign Rescue # or # # are used for law enforcement and rescue operations on the Chesapeake Bay and its tributaries.

You'll know if you're hearing the MSP if you hear patrol cars mentioning the following major highways: Interstate (1) 95; I-97; I-83; or 495 (Washington DC Beltway) or 895 (Baltimore Beltway); Ft McHenry Tunnel; Francis Key Bridge; Chesapeake Bay Bridge; or Baltimore-Washington Parkway (I-295).

Italian Skip Logs

My old friend Ciccio in Italy sends along more great VHF-low band logs:

<table>
<thead>
<tr>
<th>Freq (MHz)</th>
<th>Channel</th>
<th>Barracks</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.250</td>
<td></td>
<td>Unidentified PCSAG pager, week and coming from the east at 0950.</td>
</tr>
<tr>
<td>33.380</td>
<td></td>
<td>KKH6603 Columbia Gas Transmission Corp, Culpeod, WV with TYY asking for a &quot;second pressure increase&quot; at 1611.</td>
</tr>
<tr>
<td>33.425</td>
<td></td>
<td>CNO/PR Ministerio de Agricultura, Cuba. Identified location heard on 1545. Y/SS calling CNO/PR26 and inviting the chief of the office at a meeting of the government generals in the afternoon at the police office. At 1555 CNO/PR45 Ministerio de Agricultura, Cuba a unidentified location with an OM/SS calling CNO/P46 and giving the same message as above.</td>
</tr>
<tr>
<td>33.740</td>
<td></td>
<td>WNL724 Rockingham County Fire, Harrisonburg, VA with CW ID at 1615.</td>
</tr>
<tr>
<td>33.780</td>
<td></td>
<td>KEJ511 Ocean County Fire, Toms River, NJ with OM/EE dispatching a brush fire at 1715.</td>
</tr>
<tr>
<td>33.860</td>
<td></td>
<td>KGB901 Sunapeque County Fire, Montrose, PA with OM/EE dispatching a brush fire at 1753. United Fire Company personnel due to respond.</td>
</tr>
<tr>
<td>33.900</td>
<td></td>
<td>KYB884 Chester County Fire, West Chester, PA with OM/EE dispatch person with chest pain at 1332.</td>
</tr>
<tr>
<td>33.930</td>
<td></td>
<td>KOI316 Hamilton County Fire, Cincinnati, OH with CW ID just under Chester County Fire Dispatch above at 1332.</td>
</tr>
<tr>
<td>33.980</td>
<td></td>
<td>KGD643 Crooksville Fire Station, OH receiving dispatch from KFR674 Perry County Fire, New Lexington, OH about fallen power line in Crooksville at 1411.</td>
</tr>
<tr>
<td>34.375</td>
<td></td>
<td>Unidentified repeater (probably Russian) opened with OM/Chinese chatting at 1000. Can hear this one daily on 34.350 and 34.325 also.</td>
</tr>
<tr>
<td>34.950</td>
<td></td>
<td>Male in Hebrew, good signal strong at 0935. One was a vehicle, with motor and cabin noises on the background. Voice broken by street hollows.</td>
</tr>
<tr>
<td>35.100</td>
<td></td>
<td>KC630 General Motors Research Corp, Pontiac, MI with CW ID at strong levels at 1709.</td>
</tr>
<tr>
<td>34.325</td>
<td></td>
<td>Male in unidentified language sounds like Farsi or Urdu. Runsry hum like in military equipment at 1035.</td>
</tr>
<tr>
<td>34.250</td>
<td></td>
<td>Male in unidentified language (possibly Turkish) at 1044. Calling &quot;Elif&quot; (or similar) over and over.</td>
</tr>
<tr>
<td>34.800</td>
<td></td>
<td>Male in Hebrew exactly the same as 34.950. Mobile station with noises on the background at 0930.</td>
</tr>
<tr>
<td>39.400</td>
<td></td>
<td>Male in Russian. Repeaters open with noises at 0845.</td>
</tr>
<tr>
<td>40.500</td>
<td></td>
<td>Male in English (with Asian accent) announcing &quot;1 dot 1 dot 37 dot 2 dot R&quot; at 0954. Suspect this is the same user as 40.950.</td>
</tr>
<tr>
<td>40.950</td>
<td></td>
<td>Male in English (Asian accent) seems Indian &quot;Yenko calling Donkang&quot; (or similar), short number count test and radio check. Also calling another unidentified at 0758. No further traffic after that, but seems to be quite interesting.</td>
</tr>
<tr>
<td>40.975</td>
<td></td>
<td>Unidentified repeater opened with noises and fragments of male in Chinese at 0750. Suspect same user as 40.950.</td>
</tr>
<tr>
<td>40.989</td>
<td></td>
<td>Male in Arabic on cordless phone at 0841.</td>
</tr>
<tr>
<td>42.1575</td>
<td></td>
<td>Male in Arabic on cordless phone at 1013.</td>
</tr>
<tr>
<td>43.000</td>
<td></td>
<td>Male in English (British accent) requesting phone patch to unident with middle eastern accent at 0837. Very short patch and off. Suppose this one is the same user as 43.025 to 43.150, 25 ktt steps.</td>
</tr>
</tbody>
</table>

Till next month, good hunting and send those logs to larry@grove-ent.com or PO Box 99, Brasstown, NC 28902.
SCOPE stands for System Capable of Planned Expansion, as in SCOPE Command. It’s the US Air Force’s ongoing plan to bring order to its confusion of high-frequency (HF) radio networks. Final certification of the resulting system, which will be mostly automated and controlled from Andrews Air Force Base in Maryland, is still a couple of years off.

While the existing Global High Frequency System (GHFS) is still very much in use for routine phone patches, the new setup is starting to take over some of the direct-dialed calls. Most are tests, but we’re seeing more of the real thing.

These are spooky to hear. Instead of the familiar, “I have your party on line, please initiate,” we hear only the mechanical bleeping of Automatic Link Establishment (ALE) controllers, followed instantly by a dial tone. In a fraction of a second, far less time than manual dialing would require, the call connects and the ground party is simply there.

Confirmed frequencies for the new system are: 3059, 3137, 4721, 5708, 6715, 6721, 7632, 8965, 9025, 9057, 11226, 11250, 13215, 15043, 18003, 20631, 23337, and 27870 kilohertz (kHz), all upper sideband (USB). ALE controllers pick the best frequency, as measured in those “soundings” they’re always doing. In other words, even though it’s best to scan them all, the usual HF propagation rules apply.

Hidden ALE Messages

Quite a few people are now decoding ALE bursts with Charles Brain’s incredible PC-ALE program we’ve mentioned here before. While Charles recommends disabling the “trace” option, which he put in as a debugger, turning trace on finds some rather interesting things.

These messages use a 64-character subset of the American Standard Code for Information Interchange (ASCII), the same code used by personal computers to display text on screen. It’s the distinctive sound of the descriptively named Chirpcomm. Many ALE radios and controllers show these on alphanumeric displays, like larger versions of the ones we see on message pagers.

AMD provides operators with those little “orderwire” messages so essential to any comm system. These are the “WHAT’S YOUR STATUS?” and “GIMMIE A CALL” type of chatter used by radio people since Marconi’s time. Even in ALE, the whiz-bang automation of ALE controllers, whether at military bases, but they’re becoming more common in civilian applications such as basic research, or real-time control of advanced, adaptive, HF radio systems. BR makes a receiver which locks onto the sweeping carrier, continually records its strength, and follows it from 2 to 30 megahertz at a relentless 100 KHz per second. It can be located at the end of a path under test, or near the transmitter for vertical soundings.

All well and good, but where’s the hidden message? It’s in Chirpcomm. This quick-and-dirty, spread-spectrum mode embeds a message up to 40 characters long in the rising sweep. Again, it’s intended mostly for orderwire functions. Synchronized sounding receivers get the message. We get chirped.

ALE commands

These are the first code (byte) seen after the CMD. Not all letters are documented in the ALE standard. “Cyclic Redundancy Check,” CRC, is a place to put error-checking information, if needed.

```
<table>
<thead>
<tr>
<th>ASCII</th>
<th>Hex</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
<td>A</td>
<td>Analysis (LQA)</td>
</tr>
<tr>
<td>62</td>
<td>B</td>
<td>Data block analysis</td>
</tr>
<tr>
<td>63</td>
<td>C</td>
<td>Channels</td>
</tr>
<tr>
<td>64</td>
<td>D</td>
<td>Frequency selection</td>
</tr>
<tr>
<td>65</td>
<td>E</td>
<td>Mode selection</td>
</tr>
<tr>
<td>66</td>
<td>F</td>
<td>Request LQA</td>
</tr>
<tr>
<td>74</td>
<td>T</td>
<td>Time scheduling</td>
</tr>
<tr>
<td>76</td>
<td>V</td>
<td>Capability or version</td>
</tr>
<tr>
<td>78</td>
<td>X</td>
<td>CRC</td>
</tr>
<tr>
<td>79</td>
<td>Y</td>
<td>CRC</td>
</tr>
<tr>
<td>7A</td>
<td>Z</td>
<td>CRC</td>
</tr>
<tr>
<td>7B</td>
<td>L</td>
<td>User functions</td>
</tr>
<tr>
<td>7C</td>
<td></td>
<td>Time exchange</td>
</tr>
</tbody>
</table>
```

More Hidden Stuff

As long as we’re talking about hidden messages on today’s hot-rod HF equipment, we might as well mention Chirpcomm. Everyone’s heard that sudden DWEEEEEEP blipping across the radio’s passband, usually in the middle of picking some weak utility out of the noise. It’s the distinctive sound of the descriptively named Chirpounder. This is a propagation sweeper made by BR Communications, a division of TCI in California.

Most Chirpousters are at military bases, but they’re becoming more common in civilian applications such as basic research, or real-time control of advanced, adaptive, HF radio systems. BR makes a receiver which locks onto the sweeping carrier, continually records its strength, and follows it from 2 to 30 megahertz at a relentless 100 KHz per second. It can be located at the end of a path under test, or near the transmitter for vertical soundings.

The paired figures after CMD are computer bytes in hexadecimal (base-16) notation. Programmers understand this sort of geek-speak. Everyone else need only look at my handy table, which follows.

At least the first byte is always the computer code for an ASCII character, usually a lower-case letter, 61, for example, is the letter “a,” which stands for “analysis.” In this case, the following data, in binary bits, is ALE’s version of a signal report.
All transmissions are USB (upper sideband) unless otherwise indicated. All frequencies are in kHz (kilohertz) and all times are UTC (Coordinated Universal Time). "Numbers" stations (encrypted, usually unidentified, broadcast thought to be intelligence-related) are identified in () with their ENIGMA station designators, as issued by the European Numbers Intelligence Gathering and Monitoring Association.

335.0 FEP-Nondirectional navigation beacon, Freeport, IL, in AM at 0602. (Sue Wilden-IN)
338.0 Metropolitan-Nondirectional beacon, Indianapolis Metro Airport, AM at 0623. (Wilden-IN)
2283.0 Untd-Station with bell-like tones, then repeating CW letter "O" at 0645. (Wilden-IN)
2500.0 BPM-Xian, China, standard time beeps and identifier, in CW at 1350. (Takashi Yamasuchi-Japan)
2598.0 Canadian Coast Guard, Stephenville, with Marine Information Broadcast in French at 0220. (Ron Perron-MD)
3167.0 Uniform 2-Probable US military, in a large net with Golf 9, 6 Yanke, 9 Echo, and control station "N-6-D," using Navy NUCO/Un-NUCO procedures, at 0216. (Perron-MD)
3496.0 LBBM-Unknown CW station, repeating this possible identifier or callup, in 1200. (Yamasuchi-Japan)
4023.5 3BZ-Plaisance Air, Mauritius, with Notices To Airmen in ARQ-E, at 1730. (Bob Hall-RSA)
4372.0 "K-5-S"-US Navy, working a medical emergency with Giant Killer (Facsfac, Oceana, VA), at 0042. "3-S-X"-Military vessel in "Delta Foftxot" tracking net, asking Giant Killer the status of "Dolphin," at 0139. (Perron-MD)
4739.0 KTF-751-US Navy P-3C, with Sparce Group report for Golden Hawk (USN, Brunswick), at 0446. (Perron-MD)
5097.0 CFH-Canadian Forces, Halifax, with RTTY markers at 0419. (Hall-RSA)
5117.0 Untd-Began as Cuban "Cut number" Morse code (M8a), but in audio modulating an AM carrier at 0200. A few minutes later, abruptly cut to the Cuban "Attention" (V2a), with voice "numbers" in progress, having missed the callup. Morse "numbers" started up on the usual 10235.5 CW. (John Maky-AR) Well, well; another triumph in Cuban studio engineering. Seriously, I've heard this too, and if it doesn't prove that MB is audio-keying the same transmitters used by the V2 voice numbers, and probably also by Radio Havana, I don't know what will. -Hugh
5277.0 Panther-DEA, Bahamas, calling Coast Guard 15C, on what he called the "Alpha" frequency, while 5841 was "Bravo," at 0404. (Perron-MD)
5530.0 MIW2-Mossad, Israel, with phonetic callup only (E10a), at 1515. (Yamasuchi-Japan)
5596.0 CAMSLANT-Chesapeake-US Coast Guard, diverting Coast Guard 19C, a helicopter, to a distressed vessel at 0240. (Allan Stern-FL) US Coast Guard Rescue 1720, large rescue with CAMSLANT, also using 10991.6, at 0355. (Perron-MD)
5699.0 Pipeline-Unknown station, in position reports and comm checks with Canadian Forces Gonzo 5B, Gonzo 5C, and Gonzo 6D, at 0224. (Perron-MD)
5841.0 Coast Guard 19C-US Coast Guard aircraft, working Panther (DEA, Bahamas), at 0215. Coast Guard Rescue 9019-USCGC-H-60, giving position to Panther, at 0334. (Perron-MD)
6224.0 ZLM-Taupo Radio, New Zealand, with marine weather at 0900. (Yamasuchi-Japan)
6270.0 ULX-Mossad, Israel, with phonetic callup and "numbers" message (E10), at 1430. (Yamasuchi-Japan)
6379.0 SYN2-Mossad, Israel, with phonetic callup only (E10a), at 1545. (Yamasuchi-Japan)
6408.5 ZSO-South African Navy, Durban, using a new 32-tone mode previously unheard anywhere, at 0619. (Hall-RSA)
6480.0 YHF-Mossad, Israel, with phonetic callup and "numbers" message (E10), at 2000. (Yamasuchi-Japan)
6484.5 XSV-Taijin Radio, China, working a vessel in CW, at 1525. (Yamasuchi-Japan)
6575.0 HNC6-Rare Mossad, Israel, callup only at 1445. (Yamasuchi-Japan)
6604.0 New York Radio, VOLMET and weather warnings at 2302. (Wilden-IN)
6658.0 CIO2-Mossad, Israel, with phonetic callup only (E10a), at 1845. (Yamasuchi-Japan)
6679.0 MKL-Royal Air Force, UK, working aircraft "Z-8-Y" at 0324, and aircraft "5-Q-M" at 0335. (Perron-MD)
6712.0 Circus Vert-French Air Force, working aircraft in French at 0042. (Perron-MD)
6745.0 KPZ2-Mossad, Israel, with phonetic callup only (E10a), at 1415. (Yamasuchi-Japan) MIW2-Mossad, Israel, with phonetic callup only (E10a), at 2142. (Dean Burgess-MA)
6761.0 Hypnotize-US military, in several unsuccessful attempts to pass encrypted RTTY-like signals with Andrews AFB, MD, also several ALE bursts, starting at 0205. (Perron-MD)
6779.0 DRES-German Navy vessel Weiden, Mine Hunter M-1060, calling DHJ 59 (German Navy, Wilhelmshaven), with voice and RTTY, no joy on either, at 0140. (Perron-MD)
6795.0 "Duke"-British Royal Navy HMS Norfolk, calling "Lightning Strike" (USN Mitscher), part of a large joint exercise, at 0045. (Perron-MD)
6959.0 Lincolnshire Poacher "numbers" (E3), British M16/SIS, Cyprus, at 2139. (Burgess-MA)
6996.0 ART-Mossad, Israel, with phonetic callup and "numbers" message (E10), at 1500. (Yamasuchi-Japan)
7337.0 Lincolnshire Poacher "numbers" (E3), British M16/SIS, Cyprus, parallel on 9251, at 1900. (Yamasuchi-Japan)
7506.1 ZSJ-South African Navy, Silvermine, with coded weather and ice charts, parallel on 13536.1 and 18236.1, at 0625. (Hall-RSA)
7625.3 HZNE7-Jeddah Meteorological, Saudi Arabia, with coded weather observations in RTTY, at 1757. (Hall-RSA)
7811.0 SYN2-Mossad, Israel, with phonetic callup only (E10a), at 1345. (Yamasuchi-Japan)
7918.0 YHF2-Mossad, Israel, with phonetic callup only (E10a), at 1430. (Yamasuchi-Japan)
Utility Logs (continued)

8025.0 CIO2-Mossad, Israel, with phonetic callup only (E10a), at 1345. (Yamaguchi-Japan)
8335.0 DRAT-German Navy Emden, a frigate, working DHU 59 (German Navy, Wilhelmshaven), at 0224. DRES-German Navy Weiden, radio checks with DRJM, Garnele, a landing craft, at 0101. (Perron-MD)
8495.1 CLA-Havana Radio, Cuba, with CW marker. (Wilden-IN)
8537.9 RFTJE-French Forces, Africa, formerly "6WV," testing in RTTY at 0444. (Hall-RSA)
8581.7 PWX33-Rio de Janeiro Radio, Brazil, with weather codes in RTTY, at 0616. (Hall-RSA)
8739.0 Cyprus Radio-Cyprus, repeating voice message for telephone service, at 2158. (Burgess-MA)
8776.0 Athens Radio, Greece, with telephone calls in Greek, at 0258. (Perron-MD)
8844.0 Unid-Two shrimp boats discussing lousy fishing, sounded like Gulf of Mexico from accents, at 0316. (Perron-MD)
8939.0 Moscow Radio, with Russian language VOLMET at 0322. (Perron-MD)
8957.0 Shannon VOLMET-Shannon, Ireland, with air weather at 2210. (Burgess-MA)
8971.0 Scorpion 04-Possibly a US P-3C, coordinating "Alligator" (link-11 tracking) with Blue Star (USN, Roosevelt Roads, PR), at 0124 (Perron-MD).
8972.0 Tiger Control-Unknown Latin American military, also called self "Tigers," working Tiger 25 at 0712. (Haverlah-TX)
8983.0 Coast Guard Rescue 1716-US Coast Guard HC-130, asking CAMSLANT to relay to Port Canaveral that flares were deployed, at 0035 (Perron-MD).
8992.0 Reach Victor 7-US Air Force, in patch via Ascension to Sigonella for arrival, at 0241. (Perron-MD)
9110.2 NMF-US Coast Guard, Boston, MA [remote from NNM CAMSLANT Chesapeake -Hugh], with FAX weather charts at 0410. (Haverlah-TX)
9205.0 CIA Counting Station (E5), with callup "099," then count 1-0, then "numbers" message with 5-figure groups in 3/2 format, at 0311. (Perron-MD)
9270.0 VLB2-Abnormal Mossad transmission, Israel (E10a), repeated phonetics for over 30 minutes after 1430. (Yamaguchi-Japan)
9962.0 Cuban "Atencion," Spanish "numbers" (V2) in AM, at 0400. (Maky-AR)
10355.0 4XZ-Israeli Navy or intelligence, Haifa (M22), with CW marker at 0410. (Haverlah-TX)
10495.0 Cuban "Atencion," Spanish "numbers" (V2) in AM, at 2000. (Jay-Steimel-AR)
10665.0 CIA Counting Station, Spanish "numbers" (V5), with a possible parallel or receiver image on 4840, in R3E, at 0300. (Steimel-AR)
10780.0 Cape Radio-US Air Force, Cape Canaveral, FL, telling "George Washington," possibly the Navy vessel, and King 1, an aircraft, that a space shuttle launch was on indefinite weather hold, at 1802. (Steimel-AR)
11080.0 SANA-Syrian Arabic News Agency, Damascus, with Arabic news in RTTY, at 1726. (Hall-RSA)
11158.0 "ANG Camp Perry"-US National Guard, OH, at 1532. (Buryan-MO) Correction from erroneous location in April Utility Log - Hugh
11175.0 Andrews-US Air Force Global High Frequency System, with two EAM, then satisfied operator commented, "There's two of them," at 0614. "Station North"-Unknown, signal showing possible flutter, getting weather for Creamington from Croughton or Thula, at 0807. Hawk 51-US Air Force, calling Gessr 23, a tanker, then a patch via Hickam Global to Hawk Scheduling, then moved to 8992, at 1637. (Jeff Haverlah-TX)
11181.0 PACAF 01-Flight carrying commander of US Pacific Air Forces, in a patch via Hickam to Hickam Command Post, at 0805. Furlough-US military, in net with Pool Hall and others, at 1730. (Hall-RSA)
11232.0 CANFORCE 3025-Canadian Forces aircraft, giving its departure time to Trenton Military, at 1558. CANFORCE 3015, in patch via Trenton Military, at 1917. (Steimel-AR)
11244.0 Memorial-US military, with nightly test count at 0005. (Haverlah-TX)
11247.0 Gibraltar-British Royal Air Force Flight Watch, with VOMET at 0039. (Perron-MD)
11300.0 Cairo-Cairo Egypt, in MWARA net, also Khartoum and Mogadishu with various aircraft, at 0315. (Perron-MD)
11306.0 American 2101-American Airlines, working Flight Support, Lima, Peru, at 0341. (Perron-MD)
11454.0 Lincolnshire Poacher "numbers" (E3), British Mil6/SIS, Cyprus, parallel on 6959 and 9251, at 1900. (Yamaguchi-Japan)
11565.0 EZI-Mossad, Israel, with phonetic callup and "numbers" message (E10), parallel on 13533, at 1430. (Yamaguchi-Japan)
13242.0 Sulfuric-US military, radio check with Megaphone, at 0212. (Haverlah-TX)
13245.0 Sulfunc-US military, working Panhurast and Over Rate, at 2347. (Haverlah-TX)
13306.0 New York Radio-Atlantic MVARA net, working American 57, American 63, French 301, and Delta 71, at 1631. (Wilden-IN)
13538.0 ZSJ-South African Navy, Silvermine, with FAX schedule of weather charts and RTTY transmissions for the day, parallel on 0414, at 0445. (Hall-RSA)
13907.0 "Service Center"-US military, calling 476 with no joy, then said, "Back to scan," at 2306.
14300.0 KH2TD-Amateur aboard sailing vessel Hayat, requiring emergency medical aid for his son, who had been shot with an automatic weapon by pirates off Honduras, thus beginning a large rescue, at 2200. (Bob Puherica-PAC) The boy was saved by Honduran personnel, then ultimately transported to a US hospital with medical and financial help from hams. One of the amateur service's finest hours. - Hugh
14389.0 AFA4BR-US Air Force MARS, complaining to unheard station about weird whooshing on channel, might have been data or open-circuit noise, at 2021. (Steimel-AR)
14615.0 Moose 71-US Air National Guard tanker, in patch via Ascension to Charleston Command Post to arrange refueling, at 0113. (Perron-MD)
15962.0 Proximate-US military, working Camp Out, left net at 2100.
16985.8 CTP-NATO, Lisbon, Portugal, with RTTY "NAWS [Notice to all Allied War Ships -Hugh] de CTP" marker, at 1720. (Hall-RSA)
17350.0 HLS-Seoul Radio, Korea, with "Ode to Joy" and phone patches, at 1213. (Yamaguchi-Japan)
17410.0 EZI-Mossad, Israel, with phonetic callup and "numbers" message (E10), parallel on 19715, at 0930. (Yamaguchi-Japan)
18027.0 Nominate-US military, with EAM, then signal check with Clerical, at 2317. (Haverlah-TX)
18050.0 Unid-FAPSI, Russia (M42), with 5-letter RTTY code groups, at 1700. (Hall-RSA)
20267.5 Unid-FAPSI, Russia (M42), with 5-letter RTTY code groups, at 1634. (Hall-RSA)
21937.7 TAD-Turkish MFA, Ankara, with FEC news in Turkish, at 0510. (Hall-RSA)
22858.5 RFVi-French Forces, Le Port, with ARQ-E3 idler at 0545. EAE220-Madrid, Spain, with coded ARQ message at 1326. (Hall-RSA)
23190.0 RFGW-French MFA, Paris, with a coded embassy circular in FEC, also on 18304.7, at 0614.
23337.0 Gold 31-US or NATO air tanker, calling Andrews at 1824, Expo 91-US Air Force, working Hickam but gave up due to ALE interference, at 1945. (Haverlah-TX)
23370.0 RFGW-French MFA, Paris, with a long FEC message, in French and with plenty of those silly new "C" letter-substitution ciphers, at 1730. (Hall-RSA) See the May Utility World for an explanation of this odd system. -Hugh
25040.0 RFGW-French MFA, Paris, with FEC traffic for embassies, at 1657. (Hall-RSA)
26241.7 RFIHINVs-French Navy vessel Nivose with RTTY messages in French to French Navy routing indicators RFVIC, RFVIT, and RFFINDI, at 0945. (Hall-RSA)
26441.7 RFFLCVM-French Forces, Toulon, with ARQ-E3 messages at 1535, RFFAAC-Paris, France, with ARQ-E3 traffic for AIG 1957. [Address Indicating Group -- a multiple message delivery. - Hugh] at 1600. (Hall-RSA)
Ecoutez vous Francais?

It’s been a while since we focused on a diplomatic service and, as they’re fast disappearing in readily identifiable form, we thought it good to cover another long-term inhabitant of the HF consular world – the French.

**French Diplomatic Service Overview**

The French operate a large number of stations from their consulates and embassies across the world – at least 50 countries have been identified and many of them maintain regular, daily contact with the MFA in Paris.

Over the years, the French have employed a variety of digital systems, but during the last decade have settled on FEC-A (FEC-100) and ARQ6-90. Signal shifts are usually 400 Hz with parameters as follows:

- **Speed**: 250bd
- **Shift**: 170Hz
- **Burst Interval**: 300ms
- **Auto-correlation**: 75 or 150

The system is probably adaptive, since individual frequencies cease sending abruptly, and are then active with very short, irregular single bursts of data which probably constitute the “keep alive” or link check messages. This system has been logged on the following frequencies:

5126.6, 6756.6, 6974.6, 6976.6, 8056.6, 8127.6, 11158.6, 18203.6, 18304.6, 18308.6, 18380.6, 18499.6, 18518.6, 18760.6, 19261.6, 19542.6, 19635.6

**UMC Updates**

Recently updated at Utility Monitoring Central is the Database section which features hundreds of ALE identifiers and SITOR/TWINPLEX, PACTOR and GTOR callups in easy-to-look-up form. Extracts from our logbooks are also available on-line by frequency, or by mode.

As usual, we welcome your comments and suggestions. Until next month, happy listening.

**Table 1: Common French Diplomatic Channels**

<table>
<thead>
<tr>
<th>Embassy</th>
<th>Tactical</th>
<th>Mnemonic</th>
<th>Circuit-ID ITU</th>
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**Example 2: Typical French Off-line Diplomatic Traffic (Embassy N’Djemaena)**

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<tr>
<th>nnyxy udji 223</th>
<th>[NDJX = N’Djemaena to Paris Circuit]</th>
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</thead>
<tbody>
<tr>
<td>it cc</td>
<td>[destination is MFA Paris]</td>
</tr>
<tr>
<td>sv dipj</td>
<td>[sender is MFA]</td>
</tr>
<tr>
<td>de ndjé 80 80 133 133</td>
<td>[message intended for N’Djemaena]</td>
</tr>
<tr>
<td>tickk lekkis ngüj bukkim akzix</td>
<td>[Paris circuit]</td>
</tr>
<tr>
<td>gthyg auksa kikik kskp gikik zlakik piki</td>
<td>[answer me on channel 31 minus 8 kHz]</td>
</tr>
</tbody>
</table>

**Web Resources**

- Utility Monitoring Central
- French Diplomatic Service
- ALE Audio Sample
- ARQ6-90 Audio Sample
- TT2300b Audio Sample
- AR06-90 Audio Sample
- UNID ARO Audic Scmple
- Digital Digest

Mike Chace
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Stan Scalsky
sscalsk@mail.ameritel.net

June 2000 MONITORING TIMES 41
**Voice of Vietnam Gets Canadian Relay**

Ivan Grishin in Ontario, who keeps track of Russian relays, found VOV on new 9695 toward the end of March after the A-00 season began, a couple of seconds off the Russian relay on 7250, with English at 0100. It was irregular during the following week, but soon became clear that Sackville was being used. Bill Westenhaver provided this schedule with powers, azimutus:

- 0100-0259 9695 250 268
- 0300-0359 9795 250 227
- 0400-0459 9795 250 277

And checking the VOV website, www.vov.org.vn/doc1/english/programme/indexl.html we found

Russian frequencies had already been deleted, replaced by these without Canada being mentioned, on the language rotation previously used via Russia: 0100 English, 0130-0230 Vietnamese, 0230 English, 0300 Spanish, 0330 English, 0400-0500 Vietnamese. Mark J. Fine said these are in fact a Merlin relay. We then inquired of Merlin, who replied:

Dear Mr Hauser, Thank you for contacting us through our website. The Voice of Vietnam broadcast that you heard was part of a 10 day testing period that we are currently undertaking from a short wave site in Canada. (Merlin Marketing, March 30)

But the relays continued on into April, evidently replacing Russia.

**AFGHANISTAN** V. of Shariah was checked and heard every morning March 22 through April 2, from a beach vacation site in Kaanapali, Maui, Hawaii, including English with a young female announcer around 1458-1521 and Russian from 1632, corresponding to local dawn enhancement. Reception was occasionally nearly excellent, except for persistent QRM from names and utterances. Monitoring this station stretched my DXing capabilities to the max, with its extreme drift, and the need to constantly flip from USB to LSB for best reception. Frequency varied constantly as low as 7070.64 at first, to 7058.39 at the end of the period. Carrier off around 1647 to 1650.

(Waller R. Salmanow, MD, HI, DX Listening Digest)

Radio Voice of Shariah is the official Taleban-run broadcaster. Address: Afghan Radio, PO Box 544, Kabul, Afghanistan. Tel: +93 25241 SW portion of monitored schedule: Sat-Thur 0100-0330 7078v in Pashto/Dari; Fri 0330-0800 7075v (sic) in Pashto/Dari including news 0730. Daily 1230-1600 in Pashto/Dari 7075v including news at 1330, and unconfirmed program in Nuristani daily at 1430-1500. Foreign language service daily at 1500-1700 on 7075v and 1107: 1500 English, 1515 Urdu, 1545 Arabic, 1600 Turkmen, 1615 Uzbek, 1630-1700 Russian (@ BBC Monitoring)

**ALASKA** KNLS, English at 0800, not on scheduled new 11765, but actually on 11765 (Matt Francis, Australia, Electronic DX Press)

**CONGO DR** Clandestine, Radio Liberte, 15725: I got a note from MLC confirming that they are broadcasting to Gabadone in the Congo. MLC (871) 762-280.770 Fax: (871) 762-012.214 Email: MLCongo@compuserve.com Web: www.mlc-congo.org

Great Lakes media watchers filled us in on some of the clandestine stations in this region:

Radio Bukavu, 6713, is now controlled by the rebel Rassemblement congolais pour la democratie (RCD)- Goma faction.

Radio Candip, which uses both 6975 and 6966, is controlled by the RCD faction of Ernest Wamba dia Wamba: the Rassemblement congolais pour la democratie - Mouvement de libération (RCD-ML) (Hans Johnson, Cumbre DX)

R. Liberté, 15725 quite good but at 1700-1900 there is a big signal from Radio Pakistan on 15725 kHz (a move from 15735?) BTW: Why do all these new clandestines or semi-clandestines here and in Somalia use USB? (Harald Kuhl, Germany, DX Listening Digest) The technicians and equipment are more likely from the amateur or commercial fields, where SSB is the standard, not AM (gh)

No ID once music block starts around 2100-2130. Always signs off with an instrumental anthem, very tingly, like an electronic greeting card.

The Congolese Liberation Movement website [of sorts] is in French and can be found at http://members.tripod.com/kunzi/bemba.htm. It features a letter from the group’s leader, Jean Pierre Bemba, as well as an email address. The MLC should not be confused with the Congolese Rally for Democracy (RCD), another rebel movement in Congo, which has a web site at www.congo.co.za (Hans Johnson, Cumbre DX)

**COSTA RICA** In mid-April, RFPI switched from 6975 to 6970 due to an interference complaint from Portugal, and schedule was reduced to: 0300-0800 6970 to 1200 on weekends, 1200-0400 25930-USB, 1600-0400 15049 - but always check beyond these hours just in case (gh) RFPI’s new US address is P. O. Box 1094, Eugene OR 97440. A new antenna is under construction, full wave would be 189 metres or 1580 kHz; maybe new frequency range really above 1600 as alluded to before (gh) RFPI is considering moving one or more transmitters to more acreage for long-wire or rhombic antennas, to avoid the wind problem at the current site

All times UTC; All frequencies kHz; * before hr = sign on, * after hr = sign off; // parallel programming;
+ = continuing but not monitored; 2 x freq = 2nd harmonic; A-00=midyear season, March 26-October 29, 2000; [non] = Broadcast to or for the listed country, but not necessarily originating there.

Reception has not been as good as one would expect from Sackville, partly due to adjacent-channel problems, but certainly better than via Russia or direct.

The three English broadcasts had the same content, news followed by feature such as Sunday Show, about traditional music. No frequencies were mentioned at sign-off. Noticed at 0225 during the Vietnamese broadcast that Viet lessons were being presented in English, something one would expect to find on the English service.

**Look It Up, Yourself...**

The A-00 IECC schedule is on the High Frequency Coordinating Committee site: www.hfcc.org/data/a00/a00elix2.exe is the URL for the schedule, very long, as it took 180 pages to print the B-99 edition (Jim Moats, OH)

The FCC site has summer schedule data for US private broadcasters at www.fcc.gov/ib/pnd/neg/hf_web/hffo200.txt (Matt Francis, Australia, Electronic DX Press)

And IBB, US government station schedules are at http://ads.iee.com/4000/fmd_z_schedules/freqsked.txt (Bill Whitacre)
threatening antennas on high towers. Also there is a new law in CR which limits the possibility of more community radio stations in the X-band (James Latham and Joe Bernard, RFPI Mailbag).

CYPRUS CyBC External Service in Greek, Fri, Sat, Sun at 2215-2245 s on 6155 kHz. We have heard the broadcast from the cyprus Broadcasting services near Limassol. Address: CyBC, 6 Broadwick St, London WC2H 8LJ.

ECUADOR 4019.93 (tentative), La Voz de Su Amigo - (3 x 1340 harmonic), Mondays-Fridays.

CYPRUS CyBC External Service in Greek, Fri, Sat, Sun at 2215-2245 s on 6155 kHz. We have heard the broadcast from the cyprus Broadcasting services near Limassol. Address: CyBC, 6 Broadwick St, London WC2H 8LJ.

GUATEMALA The new R. Verdad, 4052.5 kHz, first reported here last month, continued to be heard almost every morning, nominally from 1125, but sometimes late, with fade-out earlier and earlier as solstice approaches, and is on air Monday-Friday only. Usually programming: after the national anthem, a talk about its history; listeners abreast sometimes greeted around 1135-1140, banjo theme and E. Ten del Eva music with hymns. Exact location of transmitter is hard to catch, but sounds like "Monte Orión, Ministerio de la Gloria" (gh, OK).

Just heard an outrageous signal from Radio Verdad on 4052.46 kHz at 1153 UTC. Where Glenn said it would be. And as you can see in the chart, it is weak and // powerful 5678 (Mark Mohrmann, VT, DX Listening Digest).

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ITALY The Santa Palomba Rai site near Rome, megawatt MW 846 kHz, was heard by Mohrmann with inspirational messages. After 1030 into Su Amigo for a long time, even though they pretend not to admit it. This mixup confirms it (gh).

KOREA SOUTH [non] RKI made their regular summer shift to 11715 kHz 1030-2200 UTC. Good strength before 1025 fade (Mark Mohrmann, VT, DX Listening Digest). We have suspected 9675 be a different transmitter site due to their medicinal properties, still not studied, attracting numerous curanderos and shamans from all over the country in search of magical visions to help them in their work, income, and/or to recharge their energy. Among the best known are Nagra, Blanca, Shimbo, and others. Garcia Silva, who told me that the name of the station comes from one of the dances in the area. Address is: Barrio El Altillo s/n (sin número) in the city of Huancabamba. They generally open at 1045 UTC and close at 0200. To phone them, dial 51-1715. Huancabamba is at 3575m above sea level, a province famous for its magical practices and traditional medicine, located in the highlands of Piura, where the best curanderos are found. Their rites habitually involve taking patients to the lakes between the peaks. These are renowned for their medicinal properties, still not studied, attracting numerous curanderos and shamans from all over the country in search of magical visions to help them in their work, income, and/or to recharge their energy. Among the best known are Nagra, Blanca, Shimbo, and others. Garcia Silva, who told me that the name of the station comes from one of the dances in the area. Address is: Barrio El Altillo s/n (sin número) in the city of Huancabamba. They generally open at 1045 UTC and close at 0200. To phone them, dial 51-1715. Huancabamba is at 3575m above sea level, a province famous for its magical practices and traditional medicine, located in the highlands of Piura, where the best curanderos are found. Their rites habitually involve taking patients to the lakes between the peaks. 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confirmed by QSL letter and should be sent to: Correo Central, Bolivar, Provincia de Bolivar, Departamento de La Libertad, Perú. Mail delivery may be via Cejamarca (Takyuki Inoue Nozaki, Japan, realmapgo DX) 1800, 0213-2187, 0213-2184, 0213-2183, 0213-2182. SWITZERLAND Worldwide Swiss Radio announced on Capital Letters that

CAm 1800 (Francisco Rubio, Spain, ADXB, Noticias DX)

and current affairs program. So dropping name completely as of March 26, multi-layered, and redesigned: http://www.swissinfo.org

Throwing more financial and people resources at Internet service, next 2-4 years, diverting resources into other things such as Internet. of hours to certain parts of world in certain languages will be reduced in the

it completely as of now. Waiting to see how digital SW works out. Amount

they are going back to their name Swiss Radio International ("jamcanner, (May -August, then back to 9495) (via Jan Nieuwenhuis, Benelux DX Club)

two week stay in Maui (Walter R. Salmaniw, MD, Maui, DX Listening Digest)

music. Possibly off at 1730. No other Somali stations were heard during

1559 either DSB or AM. Very weak audio, but same type of Horn of Africa

channel from RDPI (gh) 15580 clashing at 2115 (Chris Hambly, Australia)

matter, and I am sure overseas where it does, was marred by strong co

them on 9779.79. Interval signal and national anthem at 1759 [then English

1559 either DSB or AM. Very weak audio, but same type of Horn of Africa

15580 is to NAm, 294 degrees, 100 kW "reserved for special

15580 15270; 1730-1930 ENGLISH 11720 15190 17720 (© BBC Monitor-

ing educational programs such as Fun With Mathematics (Matematica

3955 Skelton

1600-1800 6145 Southern Africa

15120 15270; 1730-1930 ENGLISH 11720 15190 17720 (© BBC Monitor-

15580 15270; 1730-1930 ENGLISH 11720 15190 17720 (© BBC Monitor-

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and he plays hit music from the Caribbean, North America and Latin

9330-CUSB; on WWCR, Sun 2330 on 9475.

Major WRMI changes include: A new program called Worldbeat

USA About a hundred VOA European language broadcasters and supporters

Western Hemisphere, including US and several Caribbean locales for 30

be moved into a purpose-built headquarters elsewhere. (Neil Bennett,

Electro Voice via Wolf Trenck, World of Radio)

UKRAINE From 24th March Lviv’s 1000 kW transmitter is off the air for

an indefinite term. The reason is overconsumption of the electricity limit. So, these frequencies are temporarily unavailable: 13590 (from 2300 to 0400), 14190 21520 kHz (Alexander Yegorov, via Rachel Baughn) 13590 was the only frequency off on north捆绑

UNITED KINGDOM A World of Radio Editorial, not necessarily reflecting the views of the US Government: The BBC’s new setup is a royal mess. Sackville and Antigua carried different streams much of the time - not necessarily complementary. The BBC’s on-air and web programming efforts are virtually useless. Just establish a programme schedule and stick to it. (gh) BBC On Air April listings for Australia were totally off with wrong time conversions from GMT (Chris Hamblin, Victoria)

BBC The BBC’s director-general, wants to move into larger, more modern premises. The BBC’s lease on Bush House expires in 2005, and while it is likely to be renewed, the BBC believes the building needs to be completely redeveloped. The World Service

home of the World Service. Greg Dyke, the BBC’s director-general, wants

see it moving out of some of its most famous sites, including Bush House,

of the World Service. Greg Dyke, the BBC’s director-general, wants

them on 9780.28. Two days later on 9781.80 (Walt Salmaniw,

as sked? -gh] on 9780.28. Two days later on 9781.80 (Walt Salmaniw,

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Broadcast Logs

Gayle Van Horn

0057 UTC on 9675
ITALY: RAI. News item on Italy's peace-keeping forces in East Timor plan to return home to Italy. (Bob Fraser, Cohasset, MI) Audible 2214-2225*, audible English service IDs. (Harold Frodge, Midland, MI) // 11800, 0050 with IDs, freq quote and report on Bill Gates. (William McGuire, Cheverly, MD)

0056 UTC on 6225
DOMINICAN REP.: Radio Amanecer. Spanish. Religious program to "un programa de crecimiento espiritual para catolicos ..", SIO=222. (Daniele Canonica, Muggio, Switzerland)

0100 UTC on 5930
SLOVAKIA: Radio Slovakia Intl. English service with WWCR dominate on 5930; // 9440, 7300 good to fair signal quality. (Lee Silvi, Mentor, OH)

0200 UTC on 7210
BELARUS: Radio Belarus. Interval signal to ID/freq quote and evening newscast. (Ronald Schwartz, Trondheim, Norway)

0205 UTC on 6005
GERMANY: Deutschland Radio. German. News to station IDs and jazz music program, featuring saxophone great Ben Webster. (Schwartz, NOR; Tom Banks, Dallas, TX)

0230 UTC on 7325
AUSTRIA: Radio Austria Intl. Sign on interval signal to ID and national report. (McGuire, MD) News and Report From Austria magazine show 1600 on 17865. (Ben Loveless, MI)

0315 UTC on 4960

0346 UTC on 6010
MEXICO: Radio Mil. Spanish service with DX program featuring several SWBC anthems and interval signals. "RM" identification at 0400. Covered at the hour by Voice of Turkey's "0400. (Frodge, MI) Mexico's Radio Huayacocota heard 2390, 2340 with Mexican music at tune-in. Local announcements to station ID, choral national anthem to 0056*. (Banks, TX)

0400 UTC on 6010
TURKEY: Voice of. Interval signal 0355 with English ID before sign-on. Frequency quote to news and commentary, covered by Mexico's Radio Mil, fair signal, best in lower side band. (Frodge, MI)

1045 UTC on 9650
CANADA: Radio Korea relay. Cultural Promenade feature on filming the ancient Korean opera Chun Yun. Radio Japan's Canadian relay 6120, 1105 with item on Aum Shinko cult still under investigation. (Fraser, MA)

1030 UTC on 3220
ECUADOR: HCJB. Spanish. Station IDs to Andean vocals program. (Banks, TX) Unshacked series in English, audible 17660, 2000. Audible 1935 at 17660 (Fraser, MA)

1050 UTC on 9580
AUSTRALIA: Radio Australia. Law Report program, focus on children's rights and protections. (Fraser, MA)

1130 UTC on 9650
CANADA: Radio Korea Intl Sackville relay. News and national commentary to traditional Korean music. (Loveless, MI) RCI 5960, 2315 The World at Six 5960 focus on disappearing Inuit eskimo culture. (Fraser, MA; Banks, TX)

1200 UTC on 9760
PHILIPPINES: Voice of America relay. VOA News Now program, with fair signal quality. (Loveless, MI)

1245 UTC on 21810
SWEDEN: Radio Sweden. Report on the concerns of dog-wolf hybrids // 1986. (Fraser, MA)

1300 UTC on 9570
CHINA: China Radio Intl. National and world news to report on Saudi Arabia. (McGuire) Audible 1311-1315+ with CRI IDs, news and interference from Radio Marti. (Frodge, MI) China's Xinjiang PBS 5060.39 (10 kW) in local language to Chinese song, final announcement at 1648*. (Serra, Italy) Yunnan PBS 6937 at 2335

in local languages. Music program to lady announcer. (Liangas, GRC/HCDX)

1442 on 15140
OMAN: Radio Oman. English/Arabic program interviews. Pop songs to announcement and station identification. Arabic program runs 1500 with interferences on frequency. Best to monitor in lower sideband. (Giovanni Serra, Rome, Italy)

1445 UTC on 5985.85
MYANMAR: Radio Myanmar. Lady announcer's English newscast and government politics update. Station identification, very nice to listen once again with better signal! (Zacharias Liangas, Retziki, Greece, HCDX)

1555 UTC on 4950
CHINA: Voice of. Tentative ID for station, traditional Asian music under All India Radio's 1600 English newscast. Fair quality signal. (Liangas, GRC/HCDX)

1748 UTC on 9820
RUSSIA: Voice of. Features of Scandinavian language service with travelogue segment. Severe static with fading to IDs 1748 and 1754. (Schwartz, NOR)

1830 UTC on 17695
GERMANY: Radio Vlaanderan relay. English service with features to Africa. Germany's Deutsche Welle's German service 9545, 1915-2110. (Silvi, OH) Deutsche Welle's Sackville relay 0300, 9535, (McGuire)

1930 UTC on 9410
UNITED KINGDOM: BBC WS. Seeing Stars focus on the Galileo Probe studies Jupiter's moons. BBC WS Antigua's relay 17840, 1530 with Composer of the Month program, featuring Johannes Brahms. (Fraser, MA)

2015 UTC on 9895
NETHERLANDS: Radio Netherlands. Dutch Horizons feature on pre-school education in the Netherlands. (Fraser, MA) Madagascar relay to Africa noted 12090, 1440-1620 fade out. (Silvi, OH)

2108 UTC on 5940
RUSSIA: Voice of. News item on the Third Russian Festival of Arts to be held. (Fraser, MA)

2119 UTC on 11775
ANGUILLA: Caribbean Beacon. Dr. Gene Scott waxing philosophical about the discovery of America, evolution, and date of the flood. The dude IS entertaining! (Frodge, MI) — Harold, you should see how entertaining he is on TV! - ed.

2124 UTC on 15820
ARGENTINA: Radio Continental. Spanish news monitored in lower sideband. ID as, "Radio Continental, la radio mas potente de Argentina...", SIO=354. (Canonica, SUJ)

2127 UTC on 9750
ALBANIA: Radio Tirana. Albanian. Interval signal to sign-on. ID and program line-up to newscast. (Silvi, OH)

2218 UTC on 6895
ISRAEL: Galei Zahal (tentative) Mainly rap/hiphop to disco tunes. Announcer rarely talked except for occasional music titles. Fanfare 2300 into news script and more hip hop. No discernable ID for weak interference ridden signal. Kol Israel 2100-2110+ pop music to phone interviews, SIO=454. (Frodge, MI)

2233 UTC on 4770
NIGERIA: Radio Nigeria. Program commentary to easy-listening and pop music. Drum signal to ID at 2259, brief choral anthem to 2301*. (Frodge, MI)

2300 UTC on 11940
ROMANIA: Radio Romania Intl. Evening features monitored to 2355 with // 9570. (Silvi, OH) Summer sked quoted to political editorial. (McGuire, MD)

2342 UTC on 7125
GUINEA: RTV Guineenne. French. Lite Afro and Caribbean format music to lengthy commentary. ID at 2359, national anthem to 0000*. Lower side band monitoring helped due to Radio Netherlands' 2357 interval signal. (Frodge, MI)

Thanks to our contributors — Have you sent in YOUR logs?
Send to Gayle Van Horn, c/o Monitoring Times (or e-mail gayle@webworks.com)

English broadcast unless otherwise noted.
Don't Sweat it... Get Creative!

As the future of QSLing continues to change, what are your thoughts on email verifications? Personally, I remain loyal to my station letters and cards delivered by a postal clerk...throw in a pennant or sticker and I've been known to gloat shamelessly!

Times are changing, however. Mediumwave and utility stations have joined the increasing popularity of broadcast stations' quick reply with the click of a mouse. Perhaps you do save on postage, but the daily anticipation (or disappointment) is lost. I shudder to think the days of the "goodie packet" – an oversized enveloped stuffed with enough souvenirs to make fellow hobbyists green with envy – may be lost in the shuffle.

Having said that, email verifications will continue to gain popularity among the broadcasters, so why not consider an extra step to improve that drab reply letter? After all, it still is a QSL.

Cut and paste the unwanted junk from your email, or add a graphic, and get rid of that stale white paper! Printer paper in extreme or pastel colors and designer graphics greatly improve the appearance of the verification. Both will print on any ink jet, laser printer or copier. With an eye to archiving your verifications, consider acid- and lignin-free paper. My two favorites are GeoScroll by Geopapers, and Certificate of Achievement PC Papers by Ampad, both available through office supply or chain outlets.

The opportunities to create and customize are as endless as your imagination. When finished, that once plain reply is now a personalized design. Get used to it...email verifications likely are the wave of the future, so go get creative.

In case you prefer QSLing via reports with International Reply Coupon enclosures, here is an extra tip from Larry Van Horn NSFVW and Ken Holdom ZL2HU-QSL Manager. Due to the cancellation of an order for a considerable number of IRCs, the Kermadec DX Association has available a number of IRCs at ninety cents each U.S. funds, in bundles of 20. Kermadec pays the return postage; however, they would appreciate a return address label.

Payment is $18 per bundle, U.S. cash or check drawn on a U.S. bank (payable to Kermadec DX Association) preferred. All proceeds go toward their next DXpedition to ZK3 (Tokelaus Island) in 2002. Send your order to: P.O. Box 56099, Tawa, Wellington, New Zealand.

Thanks Larry and Ken! Have you sent us your tip for future DXpeditions or QSLing?

"I am a kid of 11 and my father is Raul Gonzalez and all my activities are supervised for him." (Van Horn, NC)

SOUTH KOREA
Radio Korea International. Full data QSL card unsigned, plus station sticker, newsletter and schedule. Received in 29 days for an English report and one IRC. Station address: 18 Yo-uu-do-long, Yongdung'o-gu, Seoul, South Korea 150-790. (Maslanka, OH)

SPAIN
Radio Exterior De Espana 6055 kHz. Full data Spanish letter and schedule. Received in 38 days for an English report and one IRC. Station address: Apartado 156.202, 28080 Madrid, Spain. (Maslanka, OH)

UNITED KINGDOM
GKB-Portishead Radio, 12835.4 kHz. Full data QSL card plus brochure on the history of the station. Received in 22 days for one U.S. dollar. Station address: BT Radio Station, Highridge, Somerset, TA9 3JY England. (George Clement, Powder Springs, GA) Portishead Radio recently ended 80 years of being one of the largest communications centers in the world. Your QSL is definitely one to keep for nostalgia...ed.

World Beacon 9675 kHz via Rampisham. Email verification received in 20 minutes from Scott Westerman-President. Address: reception@worldbeacon.net. Letter states QSL cards are at the printer and will be sent as soon as available, and included details about the station. (Richard Jary-Australia/ Hard Core DX) World Beacon, a Christian evangelical service to Africa, began broadcasting in April 2000.Transmission facilities are provided by Merlin Communications. Meyerton, South Africa transmissions are 1600-1800 on 6145; Rampisham, England 1800-2200 on 9675 kHz. U.S. address: 2251 St Johns Bluff Rd., Jacksonville, FL 32246. South Africa address: P.O. Box 65155, Benmore 2010, South Africa. Additional email: <info@worldbeacon.net> Station website: <www.worldbeacon.net> -ed.
Looking for a computer-hosted, wideband receiver with better specs for signal surveillance? For starters, how about continuous 150 kHz-1500 MHz reception, 65 dB image and spurious signal rejection, and 85 dB dynamic range? This is the WiNRADiO WR-3150i-DSP, designed specifically for government, military, and law enforcement applications.

Featuring AM/SSB/NFM/WFM demodulation, 10 Hz tuning steps, and selectable bandwidths (2.4, 9, 17, 270 kHz), this plug-in receiver ISA card can memorize thousands of channels and scan them at speeds up to 50 per second! It will even log intercepts unattended, storing them into virtually unlimited memory for later recall! Up to eight independent receivers can be controlled at one time.

The Visitune spectrum display spans up to 100 MHz at a time, with storage and recall of multiple scans. And you can access any signal immediately by pointing and clicking your mouse, or even rapidly tune through the spectrum by simply dragging the mouse. Double-clicking on a spike provides accurate center-frequency readout of AM and FM signals.

Built-in DSP permits audio recording, playback, and many other specific applications. A task manager permits programmable operation and response. A DSP developer's kit and technical support are available for custom requirements.

For Government sale only

**WBR31-EG - WiNRADiO 3150 External:** $1849.95  
**WBR31-IG - WiNRADiO 3150 Internal:** $1849.95

Consumer versions available, less cellular:

**WBR31-i - WiNRADiO 3150 Internal:** $1849.95  
**WBR31-e - WiNRADiO 3150 External:** $1849.95
Convert your time to UTC.

Broadcast time on 0 and time off ® are expressed in Coordinated Universal Time (UTC) – the time at the 0 meridian near Greenwich, England. To translate your local time into UTC, first convert your local time to 24-hour format, then add (during Daylight Savings Time) 4, 5, 6 or 7 hours for Eastern, Central, Mountain or Pacific Times, respectively. Eastern, Central, and Pacific Times are already converted to UTC for you at the top of each page.

Note that all dates, as well as times, are in UTC; for example, a show which might air at 0030 UTC Sunday will be heard on Saturday evening in America (in other words, 8:30 pm Eastern, 7:30 pm Central, etc.).

Find the station you want to hear.

Look at the page which corresponds to the time you will be listening. On the top half of the page English broadcasts are listed by UTC, first convert your local time to 24-hour format, using the following time zone abbreviations: EST, EDT, MST, MDT, PST, and PDT. Note that this chart can be up-to-date as of one week before publication. (October 15-21, 2000)

To help you find the most promising signal for your frequency, immediately following each frequency we've included information on the target area ® of the broadcast. Signals beamed toward your area will generally be easier to hear than those beamed elsewhere, even though the latter will often still be audible.

Target Areas

af: Africa
al: alternate frequency (occasional use only)
am: The Americas
au: Australia
cb: Central America
do: domestic broadcast
eu: Europe
me: Middle East
na: North America
om: omnidirectional
pa: Pacific
sa: South America
va: various

Consult the propagation charts.

To further help you find a strong signal, we've included a chart on page 64 which takes into account conditions affecting the audibility of shortwave broadcasts. Simply pick out the section of the chart for the region in which you live and find the line for the region in which the station you want to hear is located. The chart indicates the optimum frequencies (in megahertz-MHz) for a given time in UTC. (Users outside North America can use the same procedure in reverse to find best reception from North America.)

Choose a program or station you want to hear.

Some selected programs appear on the lower half of the page for prime listening hours. Our program manager changes the stations and programming featured each month to reflect the variety available on shortwave, though BBC programs are almost always included. Occasionally program listings will be followed by “See X 0000.” This information indicates that the program is a rerun, and refers to a previous summary of the program's content. The capital letter stands for a day of the week, using the same day codes as in the frequency listing (see above), and the four digits represent a time in UTC.

How to USE THE Shortwave GUIDE

Day Codes
s Sunday
m Monday
t Tuesday
w Wednesday
h Thursday
f Friday
a Saturday

In the same column ®, irregular broadcasts are indicated “tent” and programming which includes languages besides English are coded “vi” (various languages).

Choose the most promising frequencies for the time, location and conditions.

The frequencies ® follow to the right of the station listing; all frequencies are listed in kilohertz (kHz). Not all listed stations will be heard from your location and virtually none of them will be heard all the time on all frequencies.

Shortwave broadcast stations change some of their frequencies at least twice a year, in April and October, to adapt to seasonal conditions. But they can also change in response to short-term conditions, interference, equipment problems, etc. Our frequency manager coordinates published station schedules with confirmations and reports from her monitoring team and MT readers to make the Shortwave Guide up-to-date as of one week before publication.

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Radio Sweden's summer program guide contains an interesting item about the opening of the Fixed Link. As we reported last month, BBC switched from three programs in their archives, so the listening should be good.

Deutsche Welle printed a new style program schedule for the summer 2000 season. This is a 30-page, 4x8-inch document containing shortwave frequencies and program information, satellites, rebroadcasting via partner-stations, and DW-vw schedule. You can order the brochure from Deutsche Welle Audience Correspondence, 50588 Cologne, Germany or by e-mail to info@dwelle.de. This appears to be a replacement for the discontinued DW Plus monthly program guide.

Radio Budapest's program guide for Apr-May-Jun arrived Apr 19th. The program guide, which used to be extremely complicated and difficult to project for publication in Monitoring Times has been significantly streamlined. This 16-page booklet contains interesting glimpses of life in Hungary in their narrative pages, a seasonal recipe suggestion, and letters from listeners. You can get a copy by writing to Radio Budapest, H-1800 Brody Sandor U. 5-7, Hungary, or send e-mail to ANGOL@aolatf.radiot.hu. (Now if they can only get the funds to send via first class mail.)

Our selected programs in the centerfold pages of this issue present the entire shortwave output of BBC during the hours of 2300-0700 and 1100-1700 UTC. As we reported last month, BBC switched from three streams of programming to seven in April. But in our computer examination of this output we discovered that alternative programs to the Caribbean have not been discontinued. These "mini-streams" are detailed at 1100 and 1200 UTC. Another broadcast is the Caribbean Report that can be heard at 2115. Now what happened to the Falklands?
## Frequency List

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
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## Selected Programs

### Sundays
- **0000 UTC**: UK, BBC London (am): News Briefing, A news program of varying lengths.
- **0000 UTC**: UK, BBC London (east): World Briefing, Half-hour of news in depth.
- **0030 UTC**: UK, BBC London (am): Arts in Action, New program.
- **0030 UTC**: UK, BBC London (east/south): Agenda, Chris Gunnars ass-

### Mondays
- **0000 UTC**: UK, BBC London (east): World Briefing, See S 0000.
- **0030 UTC**: UK, BBC London (east): World Business Review, A look back at the previous week’s business and a preview of upcoming events.

### Tuesdays
- **0005 UTC**: UK, BBC London (am): Meridian Ideas, See M 0205.
- **0010 UTC**: UK, BBC London (am): The Music Mix, See M 0300.
- **0045 UTC**: UK, BBC London (east): Analysis, See M 0645.

### Wednesdays
- **0005 UTC**: UK, BBC London (am): Meridian Screen, See T 0205.
- **0010 UTC**: UK, BBC London (am): The UK Top Twenty, See T 0300.
- **0045 UTC**: UK, BBC London (east): Analysis, See M 0645.

### Thursdays
- **0005 UTC**: UK, BBC London (am): Meridian Music, See W 0205.
- **0010 UTC**: UK, BBC London (am): The UK Album Chart, See W 0300.
- **0045 UTC**: UK, BBC London (east): Analysis, See M 0645.

### Fridays
- **0005 UTC**: UK, BBC London (am): Meridian Writing, See F 0205.
- **0045 UTC**: UK, BBC London (east): Analysis, See M 0645.

### Saturdays
- **0005 UTC**: UK, BBC London (am): Meridian Masterpieces, See M 0505.
- **0045 UTC**: UK, BBC London (east): Analysis, See M 0645.

### Hauser's Highlights

**FRANCE**: Radio France Internationale
- 116 avenue du President Kennedy, BP 9516, F-75016 Paris, France;
  [englishservice@rfi.fr](mailto:englishservice@rfi.fr) Web; [http://www.rfi.fr](http://www.rfi.fr) - multilingual live audio on demand 24 hours.

**English**: SW daily:
- 1200 - 300 Eum
  - 11670 15155 15195 15540
- 1400 - 500 MEAS
  - 11610 17620 17680
- 1600 - 700 AI
  - 11995 12015 12150 17605
  - 1700 - 730 AI
  - 15210
  - (C&D Monitoring) In addition, via WRNI to North America daily at 1500-1600, i.e. just before World of Radio on Saturdays (al)

**INDIA**: All India Radio
- GOS in English:
  - 2245-0045 7410 9750 9590 11620 13625
  - 1000-1100 1053 11585 13700 15020 17485 17840 17895
  - 1330-1500 9710 11620 13710
  - 1745-1945 7410 9590 11620 11935 13570 15075 15200
  - 2045 2230 7150 7410 9590 9910 11715
  - (via Ask De Gupte, via Wolfgang Brandstet, DX Listening Digest)
**Selected Programs**

**Sundays**

**Monday-Friday**

**Mondays**

**Tuesdays**
- 0105 UK, BBC London (a): Discovery. See M 1105.
- 0145 UK, BBC London (a): Off the Shelf. See M 1405.

**Wednesdays**

**Saturdays**

**Hauser's Highlights**

**Australasia**
- Radio Australia: A-09 English schedule, portion of interest in NAM with kW powers and bearings from Sheptonham 100 kW.
- 2100-0000 17715 030
- 0000-0800 17580 030
- 2100-0100 21740 070
- 2200-0200 17795 050
- 0200-0700 15515 070
- 0700-0900 15240 090
- 0800-1200 13605 030
- 1100-1300 9580 070
- 1300-1400 16020 030
- 1200-1700 11650 030
- 1400-1800 5995 090

**Israel**
- 0400 on 9435 15640 17535
- 1300 on 15640 17535
- 1400 on 15650 17535
- 1400 on 16500 15650 17535
Sundays

0230 BBC (am/east/south-east): From Our Own Correspondent. BBC correspondents comment on the background to the news.

Mondays

0245 BBC (east): Meridian Ideas. The editor that explores big cultural ideas.
0250 BBC (east): Assignment. See S 0130.
0250 BBC (east): The Music Max. An insight into a current popular music genre.

Tuesdays

0245 BBC (east): Meridian Screen. Interviews, documentaries, features and discussions.
0250 BBC (east): The Uk Top Twenty. Tim Smith presents the UK's pop countdown.
0255 BBC (east): Analysis. See M 0645.

Wednesdays

0255 BBC (east): Analysis. See M 0645.

0245 BBC (east): The UK Album Chart. Tim Smith counts down the top ten UK album chart and plays the week's highest entries and climbers.

Thursdays

0250 BBC (east): Andy Young's World of Music. Recordings of diverse music from around the world.

0245 BBC (east): Analysis. See M 0645.

Fridays

0250 BBC (east): Music X-Press. A chance to hear the most creative new pop music on air, as heard by music critics.

0245 BBC (east): Analysis. See M 0645.

Saturdays

0255 BBC (east): Analysis. See M 0645.
**FREQUENCIES**

| 0300 0400 | Angola, Caribbean Beacoon | 6090am |
| 0300 0400 | Australia, ABC/Melbourne | 4830am |
| 0300 0400 | Australia, ABC/Katherine | 5030am |
| 0300 0400 | Australia, ABC/Tennent Creek | 4910am |
| 0300 0400 | Australia, Radio | 96250 |
| 0300 0400 | Bahrain Radio | 1541am |
| 0300 0400 | Canada, CBC Northern Service | 9625am |
| 0300 0400 | Canada, CBC/Toronto ON | 60500 |
| 0300 0400 | Canada, CFYP Calgary AB | 6030am |
| 0300 0400 | Canada, CKXU Toronto ON | 6160am |
| 0300 0400 | Canada, CKXJ St. John's NF | 6160am |
| 0300 0400 | China, China National International | 6160am |
| 0300 0400 | Costa Rica, Faro del Conde | 5054ca |
| 0300 0400 | Costa Rica, R for Peace Inti | 6790am |
| 0300 0400 | Costa Rica, University Network | 5030am |
| 0300 0400 | Cuba, Radio Havana | 61180am |
| 0300 0400 | Czech Rep, Radio Prague Int | 7345am |
| 0300 0400 | Ecuador, HCB | 9745am |
| 0300 0400 | Egypt, Radio Cairo | 9475am |
| 0300 0400 | Germany, Deutsche Welle | 9535am |
| 0300 0400 | Guatemala, Radio Cultural | 13780am |
| 0300 0400 | Guyana, Voice of | 3289am |
| 0300 0400 | Indonesia, Radio Jateng and Yogy | 3250am |
| 0300 0400 | Iraq, Radio Iraq International | 9684am |
| 0300 0400 | Japan, Radio | 17825am |
| 0300 0400 | Kenya, Kenya BC Corp | 4885am |
| 0300 0400 | Lesotho, Radio | 4805am |
| 0300 0400 | Mexico, Radio | 7295am |
| 0300 0400 | Morocco, Voice of Islam | 6175am |
| 0300 0400 | Mexico, Mexico International | 9705am |
| 0300 0400 | Namibia, Namibia BC Corp | 3270am |
| 0300 0400 | New Zealand, New Zealand Radio | 17675am |
| 0300 0400 | Oman, Oman Radio Sultanate of | 15355am |
| 0300 0400 | Panama, Panama GOBC | 11880am |
| 0300 0400 | Russia, Voice of Russia WS | 7125am |
| 0300 0400 | Rwanda, Radio | 6055am |
| 0300 0400 | Sri Lanka, Adenaur World Radio | 6055am |
| 0300 0400 | Sri Lanka, Channel Asia | 6025am |
| 0300 0400 | Singapore, Radio Singapore | 6165am |
| 0300 0400 | Solomon Islands, BBC | 9545am |
| 0300 0400 | Solomon Islands, BBC | 6025am |

**SELECTED PROGRAMS**

**Sundays**

| 0300 0400 | BBC (am/ewt) | News: Briefing. See S 0000. |
| 0315 0400 | BBC (am/ewt) | News: Briefing. See S 0000. |
| 0330 0400 | BBC (am/ewt) | Science: In Action. The latest in science and technology. |
| 0330 0400 | BBC (am/ewt) | Postmark Africa. Expert answers to any question under the sun. |
| 0300 0400 | BBC (am/ewt) | Science: In Action. See S 0030. |

**Monday-Friday**

| 0300 0400 | BBC (am/ewt) | News: Briefing. See S 0000. |
| 0300 0400 | BBC (am/ewt) | News: Briefing. See S 1200. |
| 0300 0400 | BBC (am/ewt) | World Business Review. See M 0030. |
| 0345 0400 | BBC (am/ewt) | Focus: On the World. See M 0145. |
| 0300 0400 | BBC (am/ewt) | Network Africa. Broadcast show of news, sport, personalities, music, and listener's comments. |

**Mondays**

| 0300 0400 | BBC (am/ewt) | One Planet. Charles Haviland and Richard Black host this new program about development and the environment. |
| 0300 0400 | BBC (am/ewt) | Talking Point. See S 1405. |
| 0300 0400 | BBC (am/ewt) | Popular Places. A forum to exchange views and share experiences on a global scale. |
| 0345 0400 | BBC (am/ewt) | Worldguide (26th). The latest news on international broadcasting w/ reviews of shows and news about reception. |

**Tuesdays**

| 0345 0400 | BBC (am/ewt) | Write On. Air your views about World Service; write to PO Box 76, Bush House, Smith, London WC2B 4PH. |

**Saturday-Tuesday**

| 0315 0400 | BBC (am/ewt) | Worldguide. See W 0245. |
| 0330 0400 | BBC (am/ewt) | Worldguide. See W 0245. |
| 0330 0400 | BBC (am/ewt) | Worldguide. See W 0245. |
| 0330 0400 | BBC (am/ewt) | Worldguide. See W 0245. |

**Wednesday**

| 0300 0400 | BBC (am/ewt) | New World. See W 0000. |
| 0300 0400 | BBC (am/ewt) | Health Matters. See W 0015. |
| 0300 0400 | BBC (am/ewt) | Patterns of Faith. See W 0030. |
| 0300 0400 | BBC (am/ewt) | Everydayman. See W 0045. |

**Thursdays**

| 0300 0400 | BBC (am/ewt) | The Greenfield Collection. See W 0220. |
| 0300 0400 | BBC (am/ewt) | Science Perspective (8th, 22nd). See W 0115. |
| 0300 0400 | BBC (am/ewt) | From Lab to Low (1st). See W 0115. |
| 0300 0400 | BBC (am/ewt) | Seeing Stars (8th). See W 0115. |

**Fridays**

| 0300 0400 | BBC (am/ewt) | Jazzmatazz. See F 0115. |
| 0300 0400 | BBC (am/ewt) | Sports: International. See F 0115. |
| 0300 0400 | BBC (am/ewt) | Pick of the World. See F 0115. |
| 0300 0400 | BBC (am/ewt) | Analysis. See F 0145. |

**Satrurdays**

| 0300 0400 | BBC (am/ewt) | Worldguide. See S 0000. |
| 0300 0400 | BBC (am/ewt) | Worldguide. See S 0000. |
| 0300 0400 | BBC (am/ewt) | Worldguide. See S 0000. |
| 0300 0400 | BBC (am/ewt) | Worldguide. See S 0000. |
| 0300 0400 | BBC (am/ewt) | Worldguide. See S 0000. |
**Selected Programs**

**Sundays**

- **0400 UTC**: BBC (am/wav/s): Meridian Opera. See W 0100.
- **0400 UTC**: BBC (am): Various Programmes. See W 0100.
- **0400 UTC**: BBC (am): Talk. See W 0100.
- **0400 UTC**: BBC (am): Various Programmes. See W 0100.
- **0400 UTC**: BBC (am): Talk. See W 0100.
- **0400 UTC**: BBC (am): Various Programmes. See W 0100.
- **0400 UTC**: BBC (am): Talk. See W 0100.

**Monday-Friday**

- **0400 UTC**: BBC (am/wav/s): The World Today. See S 0100.
- **0400 UTC**: BBC (am): News. See S 0100.
- **0400 UTC**: BBC (am): Various Programmes. See S 0020.
- **0400 UTC**: BBC (am): Talk. See S 0020.

**Mondays**

- **0405 UTC**: BBC (south os): Meridian Ideas. See M 0205.
- **0430 UTC**: BBC (east of): Network Africa. See M 0330.
- **0430 UTC**: BBC (south os): The Music Mix. See M 0330.

**Tuesdays**

- **0405 UTC**: BBC (south os): Meridian Screen. See T 0205.
- **0430 UTC**: BBC (east of): Network Africa. See M 0330.
- **0430 UTC**: BBC (south os): The UK Top Twenty. See T 0230.

**Saturdays**

- **0400 UTC**: BBC (am/wav/s): The World Today. See S 0100.
- **0400 UTC**: BBC (am): Global Business. See S 0430.
- **0430 UTC**: BBC (east of): To扈 aborted Africa. See M 0330.
- **0430 UTC**: BBC (south os): Assignment. See M 0330.
- **0455 UTC**: BBC (am): Assignment. See S 0130.
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**Selected Programs**

**Sundays**

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<td>0500</td>
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<td>BBC (east of/west of): Voice of America. From 0500 to 0600.</td>
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**Monday-Friday**

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<td>BBC (am): World Service.</td>
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**Mondays**

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**Tuesdays**

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<td>BBC (am): Meridian Ideas.</td>
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**Thursdays**

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**Fridays**

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**Saturdays**

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**Hauser’s Highlights**

- **AUSTRIA**: Radio Osterreich International
- **Relay via RCI to WNAm on 17865 shifted an hour earlier to 0530.**
- **1:00 AM EDT**
Today the World... Tomorrow the Universe

GRUNDIG
GRUNDIG Tunes in the

The Millennium begins. The wait is over. The Grundig Satellit Legend continues. The Satellit 800 Millennium is your assurance of staying in touch with the world... Access radio programs the world over... fast-breaking news from the farthest corners of the globe... music from faraway countries.

CUTTING EDGE IN SPACE TECHNOLOGY

- You'll appreciate the smooth flowing design and functional control panel.
- Superbly appointed, fold away, easy grip handle for portability.
- Enter any station on the key pad, then tune up or down frequency or search specific meter bands.
- The tuner receives AM/FM and all shortwave frequencies from 100 to 30,000 KHz, FM from 87 to 108 MHz and VHF aircraft 118 to 137 MHz and locks onto broadcasts with digital accuracy...
"Performance... exceptionally promising..., Audio quality is delightful, superior to that of any other portable on today's market..., This ergonomic radio is a cinch to operate straight out of the box."

Lawrence Magne,
Editor-in-Chief, Passport to World Band Radio

- Receives FM stereo with the included high-quality headphones.
- Superior audio quality for which Grundig is known.
- A direct input digital key pad combined with manual tuning.
- 70 user-programmable memories.
- Upper and lower sideband capability (USB/LSB).
- A large 6" by 3 1/2" multifunction LCD.
- Last station memory.
- Synchronous detector for superior AM and shortwave reception.
- Multi voltage (110, 220 V) AC adapter.
- Dual clocks.
- Low battery indicator.

Whether you are cruising offshore, enjoying the cottage, or relaxing on an extended vacation in some distant land, the Satellit 800 Millennium is the most powerful and precise radio in the World. Search the globe, you can discover the hottest news first hand... listen to and witness the ongoing fascination with our evolving world today... tomorrow the universe.

by GRUNDIG
The Ultimate in Digital Technology

The LCD
Big! Bold! Brightly Illuminated 6" by 3\(\frac{1}{2}\) Liquid Crystal Display shows important data: Frequency, Meter band, Memory position, Ti-r-e, LSB/USB, Synchronous Detector and more.

For direct frequency entry: a responsive, intuitive numeric keypad.

The Tuning Controls
• For the traditionalist: a smooth, precise tuning knob, produces no audio metering during use. Ultra fine-tuning of 50Hz on LSB/USB, 100Hz in SW, AM and Aircraft Band and 2KHz in FM.
• For Fixed-step Tuning: Big, responsive Up/Down tuning buttons.

The Signal Strength Meter
Elegant in its traditional Analog design, like the gauges in the world’s finest sports cars. Large, Well Lit. Easy to read.

The Frequency Coverage
Longwave, AM and Shortwave: continuous 100-20,000 KHz. FM: 87-108 MHz VHF Aircraft Band: 118-137 MHz.

The Technology
Today's latest engineering:
• Dual conversion superheterodyne circuitry.
• PLL synthesized tuner.

The Operational Controls
Knobs where you want them; Buttons where they make sense. The best combination of traditional and high-tech controls.

The Many Features
• 70 user-programmable memories.
• Two, 24 hour format clocks.
• Two 3N/Off sleep timers.
• Massive, built-in telescopic antenna.
• Connectors for external antennas - SW, AM, FM and VHF Aircraft Band.
• Line-out, headphone and external speaker jacks.

The Sound
Legendary Grundig Audio Fidelity with separate bass and treble controls, big sound from its powerful speaker and FM-stereo with the included hi-fi quality headphones.

The Power Supply
A multi voltage (100, 220V) AC adapter is included. Also operates on 6 size D batteries. (not included)

Dimensions:
20.5" L x 9" H x 8" W
Weight: 14.50 lbs.

by GRUNDIG

Lextronix / Grundig, P.O. Box 2302, Yerba Buena, CA 94026 • Tel: 650-361-1111 • Fax: 650-361-1721
Shortwave Hotlines: (US) 1-800-872-2228 (CA) 1-800-637-1648 • Web: www.grundigradio.net
0600 UTC

**Frequencies**

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**Selected Programs**

**Sundays**

- **0600 UTC**: BBC (shortwave): Play of the Week (from 0530). See S 0530.
- **0600 UTC**: BBC (east of/west as/mu/north/south as/west as): News Briefing. See S 0000.
- **0600 UTC**: BBC (east of/west as/mu/mum}): Sports Roundup. See S 0020.
- **0630 UTC**: BBC (shortwave): World Business Report. Latest news from the markets in the Far East, Europe and the USA.
- **0630 UTC**: BBC (east of): Assignment. See S 0130.
- **0645 UTC**: BBC (east of/mu/mum): Agenda. See S 0030.

**Monday-Friday**

- **0600 UTC**: BBC (shortwave): World Business Report. Latest news from the markets in the Far East, Europe and the USA.
- **0615 UTC**: BBC (shortwave): Talking Point. See S 1405.
- **0645 UTC**: BBC (east of/mu/mum): Off the Shelf. See S 0145.

**Mondays**

- **0605 UTC**: BBC (shortwave): Talking Point. See S 1405.
- **0615 UTC**: BBC (shortwave): Mindbender. See S 0430.
- **0645 UTC**: BBC (shortwave): Yontown Comedy/VoxBox. See S 0130.

**Fridays**

- **0605 UTC**: BBC (east of): Outlook. See S 1205.
- **0605 UTC**: BBC (east of): Meridian Writing. See S 0120.
- **0630 UTC**: BBC (east of): Andy Karshow's World of Music. See S 0120.
- **0645 UTC**: BBC (east of): Out of the Learning Zone. See S 0303.

**Tuesdays**

- **0605 UTC**: BBC (east of): Jump Start. See M 1205.
- **0605 UTC**: BBC (east of): Meditation Ideas. See M 0205.
- **0630 UTC**: BBC (east of): The Music Mix. See M 0230.
- **0630 UTC**: BBC (east of): The Learning Zone. See M 0303.
- **0645 UTC**: BBC (east of): From Our Own Correspondent. See S 0200.

**Wednesdays**

- **0605 UTC**: BBC (east of): Jump Start. See M 1205.
- **0605 UTC**: BBC (east of): Meditation Ideas. See M 0205.
- **0630 UTC**: BBC (east of): Meditation Screen. See S 0200.
- **0630 UTC**: BBC (east of): The UK Top Twenty. See S 0303.
- **0645 UTC**: BBC (east of): The Learning Zone. See M 0303.
- **0645 UTC**: BBC (east of): From Our Own Correspondent. See S 0303.

**Thursdays**

- **0605 UTC**: BBC (east of): Jump Start. See M 1205.
- **0605 UTC**: BBC (east of): Meditation Ideas. See M 0205.
- **0630 UTC**: BBC (east of): Mindbender. See S 0430.
- **0630 UTC**: BBC (shortwave): The Learning Zone. See M 0303.
- **0645 UTC**: BBC (east of): From Our Own Correspondent. See S 0303.
**Selected Programs**

**Sundays**
1105 BBC (east as): Concert Hall. Classical music concerts.
1105 BBC (east): Variable Features. Special features and new series.
1200 BBC (am/east os/west of): British News. Ten min.
1230 BBC (east af): Voice of America.
1230 BBC (east os/nu): Voice of America.
1300 BBC (east af): People and Places.
1300 BBC (east os): Discovery.
1300 BBC (east af): Variable Features.
1300 BBC (east os/nu): Arts in Action. See S 0630.
1330 BBC (east af): Arts in Action. See S 0630.
1330 BBC (east os): Arts in Action. See S 0630.
1330 BBC (east af): Voice of America.
1330 BBC (east os/nu): Voice of America.
1330 BBC (east af): Discovery.
1330 BBC (east os): Discovery.
1330 BBC (east af): Variable Features.
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<td>Hausa</td>
<td>News/Talk</td>
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</table>

## Selected Programs

**Sundays**

- **1200** BBC (en) - Play of the Week (from 1130). See S 5:05.

**Mondays**

- **1200** BBC (en) - Science/Medicine/Environment.

**Tuesdays**

- **1200** BBC (en) - Heart and Soul.

**Wednesdays**

- **1200** BBC (en) - Best of the Edge. A 15-minute replay of pop music.
**Selected Programs**

**Sundays**
- **1330 UTC**: BBC (fr). Messia Kart. See S 1300.
- **1330 UTC**: BBC (de). Messia Kart. See S 1300.
- **1330 UTC**: BBC (ar). Digital Broadcasting. See S 1300.
- **1330 UTC**: BBC (ja). Digital Broadcasting. See S 1300.
- **1330 UTC**: BBC (k). Digital Broadcasting. See S 1300.

**Monday-Friday**
- **1330 UTC**: BBC (ar). News. See S 1200.
- **1330 UTC**: BBC (de). News. See S 1200.
- **1330 UTC**: BBC (ja). News. See S 1200.
- **1330 UTC**: BBC (k). News. See S 1200.

**Mondays**
- **1330 UTC**: BBC (fr). Varied Content. See S 1305.
- **1330 UTC**: BBC (de). Varied Content. See S 1305.
- **1330 UTC**: BBC (ja). Varied Content. See S 1305.
- **1330 UTC**: BBC (k). Varied Content. See S 1305.
- **1330 UTC**: BBC (ar). Varied Content. See S 1305.

**Tuesdays**
- **1330 UTC**: BBC (de). The Music Mix. See S 1305.
- **1330 UTC**: BBC (k). The Music Mix. See S 1305.
- **1330 UTC**: BBC (es). Varied Content. See S 1305.

**Wednesdays**

**Thursdays**
- **1330 UTC**: BBC (de). The Music Mix. See S 1305.
- **1330 UTC**: BBC (k). The Music Mix. See S 1305.
- **1330 UTC**: BBC (ar). Varied Content. See S 1305.
- **1330 UTC**: BBC (es). Varied Content. See S 1305.
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<td>Australia, ABC/Perth</td>
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**Selected Programs**

**Sundays**

- **1500** BBC (am/est/wst): News. See S 1200.
- **1500** BBC (me): Concert Hall. See S 1110.
- **1500** BBC (au/seas): Play of the Week. See S 0530.
- **1500** BBC (au/seas): Concert Hall. See S 1110.
- **1500** BBC (wst): Play of the Week. See S 0530.
- **1500** BBC (wst): The Alternative. A time spot for a changeable music program such as John Peel or Steve Lamacq.

**Monday-Friday**

- **1500** BBC (wst): Focus on Africa. Up-to-the-minute reports on the day's events from all over the continent.
- **1500** BBC (wst): The Learning Zone. See M 0630.

**Mondays**

- **1500** BBC (am): One Planet. See M 0305.
- **1500** BBC (wst): What's On. See M 0305.
- **1500** BBC (wst): Outlook. See M 1205.
- **1500** BBC (wst): People and Places. See M 0330.
- **1500** BBC (wst): The Music Hour. See M 2030.
- **1545** BBC (wst): People and Places. See M 0330.
- **1545** BBC (wst): Analysis. See M 0445.

**Tuesdays**

- **1500** BBC (am): Discovery. See M 1105.
- **1500** BBC (wst): Meridian Screen. See T 0205.
- **1500** BBC (wst): Outlook. See M 0605.
- **1500** BBC (wst): Visible Features. See S 1105.
- **1500** BBC (wst): The UK Top Twenty. See T 0230.
- **1545** BBC (wst): Analysis. See M 0445.

**Wednesdays**

- **1500** BBC (am): Health Matters. See M 1105.
- **1500** BBC (wst): Meridian Music. See W 0205.
- **1500** BBC (wst): Outlook. See M 1205.
- **1500** BBC (wst): Evergreen. See M 1105.
- **1530** BBC (wst): The UK Album Chart. See W 0245.
- **1545** BBC (wst): From Our Own Correspondent. See S 0230.

**Thursdays**

- **1500** BBC (am/wst): Meridian Writing. See H 0205.
- **1500** BBC (wst): Outlook. See M 1205.
- **1500** BBC (wst): Science Perspective. See T 1105.
- **1500** BBC (wst): From Lab to Law (15th). See M 1105.
- **1500** BBC (wst): Following Trends (29th). See S 1115.
- **1500** BBC (wst): World Music. See H 0215.
- **1545** BBC (wst): Seeing Stars. See B 1115.
- **1545** BBC (wst): Soundbyte (22nd). See S 1115.
- **1545** BBC (wst): Analysis. See M 0445.

**Fridays**

- **1500** BBC (am): Sports International. See W 1105.
- **1500** BBC (wst): Meridian Masterpiece. See H 0505.
- **1500** BBC (wst): Outlook. See M 1205.
- **1500** BBC (wst): Pick of the Week. See W 1130.
- **1500** BBC (wst): Music X-Press. See F 0230.
- **1545** BBC (wst): Analysis. See M 0445.

** Saturdays**

- **1500** BBC (am/wst): The Next 28. See E 0230.
- **1500** BBC (am/wst): Soundbyte (22nd). See S 1115.

** PROPAGATION FORECASTING **

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DISTRIBUTOR ASAPS PROPAGATION SOFTWARE E-MAIL: MONITOR@BBC.CA
Selected Programs

Sundays

1600 BBC (east of/south as/west of): Play of the Week. (From 1503).
See S 0530.
1605 BBC (am/west to/south to/west of): Sunray Sportsworld. The Sunday sports magazine.

Monday-Friday

1600 BBC (am/west to/europe): Europe Today. All the latest news, analyse and comment.
1600 BBC (me): News Briefing. See S 0000.
1600 BBC (au): World Business Review. See M 0300.

Mondays

1600 BBC (au): Sport. Mier delaying Africa. See M 0205.
1600 BBC (au): Health Matters. See M 1130.
1600 BBC (au): First Track. The latest African sports news and action.

1630 BBC (me): The Music Makers. See M 0230.
1630 BBC (south as): Emergency. See M 1130.
1630 BBC (west of): Fast Track. See M 1630.

Tuesdays

1615 BBC (au): Following Trends (27th). See T 1 05.
1630 BBC (au): The Lk Top Twenty. See T 0230.
1630 BBC (au): Focus on Faith. See T 1130.

Wednesdays

1605 BBC (au): Meridian Screen. See W 0205.
1630 BBC (me): The #1 Album Chart. See W 0245.
1630 BBC (au): Pick of the World. See W 1130.

Thursdays

1645 BBC (au): People and Places. See M 0300.

Fridays

1605 BBC (au): Discovery. See M 1130.
1605 BBC (au): Fast Track. See M 1630.
1630 BBC (au): Variable Feature. See S 1 05.
1630 BBC (au): Fast Track. See M 1630.

Saturdays

1600 BBC (au): All About Africa. Telephone conversations with BBC correspondents: late-breaking African events.
1600 BBC (au): Pick of the World. See W 1130.

June 2000
MONITORING TIMES
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### SELECTED PROGRAMS

- **Sundays**
  - **2300** BBC (am): The World Today. See S 0100.
  - **2300** VOA Washington DC (News Now): Station Break.
  - **2300** VOA Washington DC (am): The Greenfield Collection. This classical music program replaces Ray on Record.

- **Monday-Friday**
  - **2300** BBC (east): The World Today. See S 0100.
  - **2300** VOA Washington DC (News Now): Station Break.

- **Mondays**
  - **2345** BBC (am): Patterns of Faith. See M 1245.

- **Tuesdays**
  - **2345** BBC (am): Pimpin English. See M 1230.

- **Wednesdays**
  - **2345** BBC (am): Heart and Soul. See T 1230.

- **Thursdays**
  - **345** BBC (am): Blast of the Edge. See W 1230.

- **Fridays**
  - **2330** BBC (east): Global Business. See S 0430.
  - **2435** BBC (am): Body and Mind. See T 0330.

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**Thank You ...**

Additional Contributors to This Month's Shortwave Guide:

John Babbis, Silver Springs, MD; Dan Elyea/WYFR; Bob Fraser, Cohasset, MA; Glen Hauser, Enid, OK/World of Radio; DX Report, Jack Hubby, Cupertino, CA; Hans Johnson, AZ/Unis Fleming, MD/Cumbre DX/DXing With Cumbre; Al Quaglieri/NASWA Journal; Robert Thomas, Bridgeport, CT; George Woods/Media Scan; Adam Sainsbury, R NZ Intl; Giovanni Serra/The Four Winds; BBCM; BBC Cn-Air; Harold Seegers, DX Ontario; Gafflash!; Hard Core DX; MARE; Radio Sweden/Media Scan; Usenet Newsgroups; Worldwide DX Club.

June 2000
How To Use This Table

The Monitoring Times propagation table is set up to cover three main areas of the continental US and similar circuits are calculated for each area. If you live in Canada or along the 49th parallel, and have access to the Internet, you can check the following sites for similar tables for the Canadian and northern US users at http://www.odxa.on.ca/rac2txt99.htm.

In the MT tables and on the Canadian web site, the OWF (Optimum Working Frequency) frequency for a particular circuit is displayed. This frequency should give you the best chance, 90% of the time, to hear a station located at the other end of the circuit. If you feel adventurous, look up higher than the OWF for possible signals.

The tabulated OWF is approximately equivalent to 80% of the MUF (Maximum Usable Frequency) so you could still go up in frequency in your search for a signal. For example, if the tabulated OWF is 8.0 MHz, the MUF would be 10 MHz, so you could go looking in the upper reaches up to 10 MHz. When you reach the MUF, your chances of hearing a good signal have now decreased to about 10%. When the solar activity is high you might find some of the MUF in the 35 to 45 MHz area, you never know what you can find “up there.”

The OWF can, at times, have a calculated value of “0.” This value is replaced by an asterisk (*) and the cells are shaded in the Monitoring Times chart and on the Web pages. When you see this, do not despair, keep on looking in the vicinity of the last frequency listed for that circuit. The reason why the OWF can have a calculated value of “0” is simply that the ALF (Absorption Frequency) on this circuit, at that particular time of day, is higher than the OWF and, in theory, communication at the OWF should be impossible. But I have been in the radio field long enough to know that theory and practice do not always agree!

As it is relatively safe to assume reciprocity in the forecasts most of the time, the MT circuits are labeled “TO/FROM.” There are some technical arguments against this assumption, but we know that the MT forecasts have been used with success by overseas listeners to listen to North American broadcasts.

A “P” after the name of a circuit indicates that the signal on that particular circuit can be influenced by auroral zone disturbances while traveling over the pole.

Enjoy DXing and use the propagation charts to help you locate unusual signals.

OPTIMUM WORKING FREQUENCIES (MHz)
For the Period 15 June 2000 to 14 July 2000  Flux = 194  SSN = 150
Predictions prepared using ASAPS for Windows

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UNFAVORABLE CONDITIONS: Search around the last listed frequency for activity.
(P) denotes circuit across polar auroral zone; reception may be poor during ionospheric disturbances.
The BBC (Yes, Again!)

Lately, a good deal of space in this column, as well as in other forums, has been filled with discussion about the BBC World Service. Perhaps that is as it should be, given the commanding position "Aunty" has held in the fields of both public service and international broadcasting for so many years. It is perhaps an unfortunate sign-of-the-times that much of this discourse has centered around a worry that the BBC is displaying a willingness to embrace lesser values in pursuit of more pedestrian objectives and, in the process, surrendering that traditional high ground.

So, it is a deep appreciation – and even some reverence – for the BBC, rather than disdain, that is driving these discussions. The round of changes implemented by the World Service beginning on April 3 has only served to reinvigorate the debates.

What is it that listeners want from the BBC? I dare say that this is the question which is being asked by those driving these changes, as much as it is being asked by the listeners themselves. If nothing else, the April 3 changes are a rather bold and decisive attempt to respond to these queries. In the early going, it appears to this observer (despite all the misgivings I express in the March column) that there is a measure of success evident in the outcome. How this observer (despite all the misgivings I express) sees this is replicated with other types of programming - arts/cultural, music, literature, human interest, etc.

The new custom of concentrating news and current affairs programming around meal times and freeing time in-between for information and entertainment series features also works well in practice, especially for North American listeners. It makes it possible once again to tune into the World Service and remain with it for hours at a time without hearing lengthy, repetitive news reports.

Where the Jury is Still Out

It remains to be seen whether strong and diverse feature programming, on which the BBC built its reputation as a full service broadcaster, grows and flourishes within this new format or withers and dies. With the new schedules, one gets the nagging suspicion that the "product line" is a little thinner than in the past.

This impression is somewhat reinforced by the BBC’s cancellation of some specialist programs and the merging of that content into more generalist titles (such as when "The Farming World," a 40 year World Service mainstay, was canceled and its content merged into "Global Concerns," an environmental program). However, new BBC Director General Greg Dyke has expressed a strong commitment to improving and increasing programming content. It will be interesting to observe how, if at all, this will affect the World Service.

In addition, the decision to base listings in BBC On-Air on local times within the seven shortwave streams is, at best, a mixed bag. It is manageable, and even useful, if one wishes to listen only to the program stream intended for one’s own geographic region. However, as we all know, shortwave, unlike satellite, transmissions do not stay within a defined "footprint." The use of seven different local times is quite cumbersome when one is attempting to determine what can be heard via other streams.

Also, the BBC has promised that this group of changes is coming; nor are listeners given direction to a new regime. Transmitter and frequency switches are impossible for the listener to conclusively determine the stream to which he or she is tuned – and even with BBC On-Air it is not easy. This can and should be addressed by the BBC providing regular on-air identifications for each stream.

Other serious problems persist from the old regime. Transmitter and frequency switches are often made before a program ends, and sometimes in mid-program by schedule. Usually, no announcements are made to warn that a switch is coming; nor are listeners given direction to a new frequency. This, at one time, was de rigeur at the BBC and seen as a hallmark of professionalism.

In sum, there remains a yawning need for improved coordination between the program continuity and transmission arms of the World Service that must be addressed. Anything less bespeaks a disrespect for the listening audience that mars the service in a way that all other attempts at improvement will never be able to overcome.

Until July, good listening!
Ireland on the Internet

This is another column in our series about Internet Broadcasting. This edition focuses on the stations that broadcast over the Internet from the Emerald Isle – both the country of Ireland and Northern Ireland that is part of the United Kingdom.

✦ Everyone's Irish on St. Patrick's Day

Are you Irish? Do you have any Irish blood in you? The chances are quite good that you do. The nineteenth century saw a flood of immigration to the shores of America. The Irish potato famine brought about the first great wave of new Irish settlers, but that was only the start. They continued to come through Ellis Island and other ports such as Galveston, Texas. They came in such numbers that the State of New Jersey, in the State censuses of 1885 and 1895, had a special column to be checked if the individual being counted was Irish.

The Irish who came here, for the most part, were a hardy people of the sod. At home in Ireland, many planted their land in the spring and then worked in the factories of the nearby cities during the growing season. They were an industrious people who helped to make our country what it is today. The Irish not only settled in the great cities of New York and Boston, they were also pioneers who moved westward during the great expansion of the United States.

The Irish people of today are far better off than their ancestors. The Irish economy is booming, thanks to the infusion of high-tech industries. Culturally, things are much the same. Irish music, song and dance are still very popular, as it has become here in the United States, thanks to the recent popularity of Irish dance. That very culture is available to you at your convenience by way of Internet radio. So, let’s talk about it.

✦ National Radio

Ireland’s national public radio service, known as Radio Telefis Éireann (RTE), was formed in 1926 and now consists of five radio channels employing 1,934 people:

RTE Radio 1 is the flagship radio channel broadcasting a mixture of speech and music, news and information, as well as a host of drama, variety and features programming. This is the station that you hear in live streaming RealAudio six hours a day via World Radio Network (WRN) and 24 hours from the Radio 1 web site (www.rte.ie/aertel/P185.HTM). Radio 1’s programs are completely indexed by local time on the Aertel web site (www.rte.ie/aertel/P186.HTM).

Raidió na Gaeltachta was established in 1972 for the Irish-speaking people of Gaeltacht and around the country. It broadcasts between 06:30 and 23:00 local time and is streamed live.

Lyric FM, formerly called FM3, was launched last year (www.lyricfm.ie/). It opened up the sound of classical music to a massive audience around the country and beyond with live streaming from 0800-2000 UTC. For detailed programming, consult Aertel (www.rte.ie/aertel/P187.HTM)

Radio One World is RTE’s multicultural channel created as a service to the many new communities in Ireland with programs in Albanian, Bosnian, Romanian, Polish, Nigerian, Indian, Chinese, and Vietnamese. This is the only RTE channel that is not on the Internet.

✦ Commercial Radio

Irish radio stations are licensed by the Independent Radio and Television Commission (IRTC). Radio stations are categorized as National Independent Commercial, Local Independent Commercial, Community Radio, Hospitals and Institutions, and Special Interest. Visit the web sites of these stations to access their on-line broadcasts:

XFM has been broadcasting on 107.9 FM to Dublin city and surrounding areas since 1991 as an alternative radio station to the mainstream and top 40. Program types are mostly new music. (www.isis.ie/sfm/)

FM104. Dublin’s news, talk radio, and top 40 music station. (www.fm104.ie/)

98FM. Dublin’s “Sound of the City” uses a format of hits, news, and entertainment. The wider your bandwidth, the better the sound. (www.98fm.ie/)

Clare FM. County Clare’s stereo signal pumps out traditional music and culture to their region of the west coast of Ireland. (www.clarefm.ie/)

Galway Bay FM provides an experimental RealAudio stream. (www.wombat.ie/gbfm/)

✦ Northern Ireland

Northern Ireland, as part of the United Kingdom, is primarily served over the airwaves by BBC Ulster. BBC is on line, of course, from London. Irish stations also are heard well. Several Northern Ireland commercial stations that are streamed live:

Downtown Radio - Transmits mostly pop music for the folks in Belfast. (www.downtown.co.uk/)

Cool FM - A sister station of Downtown Radio transmitting high quality contemporary rock/pop music. (www.coolfm.co.uk/)
Belfast CityBeat - Offers music and requests. (www.citybeat.co.uk/)

- Rebroadcasting
RTE Radio One (www.rte.ie) provides World Radio Network (WRN) with six hours of programming each day, two of which are retransmitted via satellite and four of which can be heard in RealAudio via WRN1 to North America (all times UTC):

0400 - "The Irish Collection" - A late-night service with selected highlights from the previous day’s RTE schedule, news and sport, music, documentaries, and drama.

1200 - "The News at One" - 45 minutes of Irish news with live interviews and reports (Mon-Sat).

1200 - "This Week" - A review of the significant events of the week (Sundays).

1245 - "Liveline" - The first 15 minutes of Marian Finucane’s afternoon chat show (Mon-Sat).

1730 - "News and Business News" - A half-hour news roundup.

2100 - "Tonight with Vincent Browne" - A late-night talk and phone-in program with a strong, loyal listenership.

- Irish Radio Resources
Several web sites offer links to Irish and Northern Ireland radio stations broadcasting on the Internet:
Aertel - RTE’s Teletext Service (www.rte.ie/aertel/index.html)
BRS Media International (www.web-radio.fm/in_list.html)
Independent Radio & Television Commision (www.irtc.ie/stations.htm)
Media UK Internet Directory (www.mediu.uk.com/directory/radio/index.html)
The Northern Ireland Site (www.thenisite.com/)
World Radio Network (www.wrn.org)

- Summary

There are many regional commercial stations in Ireland, but most of them are not yet on line. They may not have found the need to venture beyond their listening areas. Nevertheless, the stations which can be heard in RealAudio offer a wide variety of material. If music is your forte, then you have the classical, the pop, the rock, and the traditional Irish. The talk and call-in shows on RTE Radio One are fascinating to hear and will give you an up-to-date insight into the culture of Ireland and the everyday life of its people.

One of the best reasons for listening to Irish radio is that broadcasts are in English. A thick Irish brogue may sometimes give you difficulty, but you generally will have no trouble understanding the language.

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June 2000 MONITORING TIMES 71
Single Channel Per Carrier (SCPC) Services

An SCPC transmitted signal is transmitted with its own carrier, thus eliminating the need for a video carrier to be present. Dozens of SCPC signals can be transmitted on a single transponder. In addition to a standard TVRO satellite system, an additional receiver is required to receive SCPC signals.

The frequency in the first column is the 1st IF (typical LNB frequency) and the second column frequency (in parentheses) is the 2nd IF (commercial receiver readout) for the SCPC listing. Both frequencies are in MHz.

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<tr>
<th>GE-2 Transponder-Vertical 13 (C-band)</th>
<th>1178.70 (81.3)</th>
<th>NASA space shuttle audio (missions only)</th>
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<tr>
<td>Galaxy 4R Transponder 1-Horizontal (C-band)</td>
<td>1443.80 (56.2)</td>
<td>Voice of Free China (International Shortwave Broadcaster) Taipei, Taiwan</td>
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<tr>
<td>1443.60 (56.4) KBLA-AM (1580) Santa Monica, CA-Radio Korea</td>
<td>1438.30 (61.7) WWRV-AM (1330) New York, NY-Spanish religious programming and music, ID-Radio Vision Christiana de Internacional</td>
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<tr>
<td>Galaxy 4R Transponder 3-Horizontal (C-band)</td>
<td>1404.60 (55.4) WGN-AM (720) Chicago, IL-news and talk radio/Cubs MLB radio network</td>
<td>1404.40 (55.6) WMVP-AM (1000) Chicago, IL-&quot;ESPN Radio 1000&quot;/White Sox MLB radio network</td>
</tr>
<tr>
<td>1404.20 (55.8) Tribune Radio Networks/Wisconsin Radio Network</td>
<td>1402.90 (57.1) USA Radio Network</td>
<td>1402.70 (57.3) WLAC-AM (1510) Nashville, TN-news and talk</td>
</tr>
<tr>
<td>1402.20 (57.8) NorthWest Ag News Network-Agriculture info for the Pacific Northwest</td>
<td>1402.00 (58.0) Occasional Audio</td>
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<tr>
<td>1399.00 (61.0) Sports Byline USA/Sports Byline Weekend</td>
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<tr>
<td>1398.30 (61.7)</td>
<td>1397.80 (62.2) Occasional audio</td>
<td>1397.50 (62.5) Minnesota Talking Book Radio Network-reading service for the blind</td>
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<tr>
<td>1397.10 (62.9) Wisconsin Radio Network</td>
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<td>1396.70 (63.3) Radio America Network</td>
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<tr>
<td>1396.60 (63.4) WMJ-AM (620) Milwaukee, WI-talk radio/Brewers MLB radio network</td>
<td>1395.40 (64.2) Michigan News Network-news feeds/WPLT-FM (96.3) Detroit</td>
<td>1395.40 (64.6) Michigan News Network-network news feeds/WPLT-FM (96.3) Detroit</td>
</tr>
<tr>
<td>1395.00 (65.0) Occasional audio</td>
<td>1394.70 (65.3) WRJ-AM (760) Detroit, MI-news and talk radio/Michigan News Network/Tigers MLB radio network</td>
<td>1394.30 (65.7) Michigan News Network-network news feeds</td>
</tr>
<tr>
<td>1383.10 (76.9) KIRO-AM (710) Seattle, WA-news and talk radio/Mariners MLB radio network</td>
<td>1382.60 (77.4) Soldiers Radio Satellite (SRS) network-U.S. Army information and entertainment radio</td>
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</tr>
<tr>
<td>1382.30 (77.7) Motor Racing Network (occasional audio) NASCAR racing</td>
<td>1382.00 (78.0) Occasional audio</td>
<td>1381.60 (78.4) KEX-AM (1190) Portland, OR-news and talk radio</td>
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<td>1381.40 (78.6) Occasional audio</td>
<td>1381.20 (78.8) KJR-AM (950) Seattle, WA-sports talk radio</td>
<td>1380.90 (79.1) Occasional audio</td>
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<tr>
<td>1377.10 (82.9) In-Touch-reading service</td>
<td>1376.00 (84.0) Kansas Audio Reader Network-reading service</td>
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### Anik E2 Transponder-1-Horizontal (C-band)

<table>
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<th>1446.00 (54.0) Canadian Broadcasting Corporation (CBC) Radio-North (Quebec) service</th>
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### Anik E2 Transponder-5-Horizontal (C-band)

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<tr>
<th>1366.00 (54.0) Canadian Broadcasting Corporation (CBC) Radio-North (Eastern Arctic) service</th>
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</table>

### Anik E2 Transponder-7-Horizontal (C-band)

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<tr>
<th>1326.00 (66.0) Canadian Broadcasting Corporation (CBC) Radio-North (Newfoundland and Labrador) service</th>
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</thead>
</table>

### Anik E2 Transponder-23-Horizontal (C-band)

| 1006.00 (54.0) Societe Radio-Canada (SRC) Radio-AM Network | 1005.50 (54.5) Canadian Broadcasting Corporation (CBS) Radio-Occasional feeds/events |
|---|

### Solidaridad 1 Transponder-1-Vertical (C-band)

| 1447.90 (52.1) Antenna Radio/Antenna Radio Noticias | 1447.60 (52.4) Antenna Radio/Antenna Radio Noticias | 1447.20 (52.8) La Grande Cadena Raza |
|---|

### Anik E2 Transponder-21-Horizontal (C-band)

| 1036.70 (63.3) Wal-Mart In-store music | 1037.00 (63.0) Wal-Mart In-store music | 1037.50 (62.5) Wal-Mart In-store music |
|---|

### Galaxy 10R Transponder 4 (Ku-band)

| 1012.75 (87.25) Wal-Mart In-store network |---|
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June 2000 MONITORING TIMES 73
Satellite TV DXing for Tight Spaces and Budgets

In the April 2000 issue of *MT* I did an article about antennas and the law which prompted me to think about the possibilities of satellite TV DXing within the parameters of the size of dish allowed under FCC rules. For those not up to speed on the rules here’s a brief sketch: Section 207 of the Telecommunications Act of 1996 prohibits state and local laws that restrict the installation, maintenance or use of antennas to receive video programming. These include Direct-to-Home satellite dishes that are under one meter in diameter. The rule includes people living in detached houses, town houses, condominiums, or mobile home parks regardless of whether the consumer owns or rents. Now, of course, FCC rules are irrelevant in locations in which there are no restrictions on any type of video reception.

With that in mind I went looking for a dish which would fit the bill. What I needed was an inexpensive, well designed, high performance dish under 39". After looking in the usual places I found the 76 cm dish offered by smallear.com. What I liked in this dish was the solid one-piece reflector, the sturdy Azimuth/Elevation mount, and the price: $100 (plus $25 S&H). This price is for the unit when sold as a “combo,” which includes a .6 dB Ku-band LNBF, 60 feet of lead-in cable and a 4' cable to go from your satellite receiver to your TV set. You’d be hard pressed to find a good Ku-band LNB at that price, let alone the dish and all cables!

**EZ AZ/EL!**

Assembling the 76 cm offset dish is very easy thanks to the fact that parts are kept to a minimum with just the solid reflector, the offset arm, and the Azimuth/Elevation (AZ/EL) mount to assemble. A single instruction sheet is packed with the dish showing an exploded view of the dish as well as a parts list. I found that assembling the dish took a little over an hour with a minimum of confusion on my part. The unit is packaged in one flat box with a shipping weight of 28 pounds.

The thing about an AZ/EL mount is that, unlike a polar mount, it does not track the equatorial arc on which all the satellites are parked. The dish must be aligned in the Azimuth, the direction East and West, and Elevation, the direction up and down, for each satellite you wish to see. Once you get it lined up properly, simply tighten the mount bolts. This type of mount is mainly used for installations where only one satellite is to be viewed. Still, this doesn’t mean it can’t be used for budget satellite TV DXing. Unfortunately, it just won’t have the convenience of a motorized mount triggered from the friendly confines of your recliner.

**Finding a Receiver**

I used an old General Instrument analog C/Ku-band receiver of 15 year old vintage and it did an excellent job with Ku-band signals from this antenna. You can use any analog receiver provided it has Ku-band reception capability. If you don’t have one or can’t find one, smallear.com sells a very inexpensive analog receiver to go along with the “dish combo” and the whole system is $159 plus $25 S & H. That’s an amazing price for a complete satellite system capable of tuning in the entire Ku-band. I haven’t used the analog receiver offered by smallear.com, but from what’s written it seems to be a bare minimum receiver. They have “upgrades” with more features, but to get started this receiver will probably suffice. Good results might also be had with a cheap, used receiver from a hamfest.

You can use an MPEGII digital receiver with this antenna to pick up the dozens of digital “Free-to-Air” channels broadcast on many Ku-band satellites. In fact, this system is really designed for single satellite reception. Thousands of these systems are sold every month to downlink ethnic programming to audiences who are left out of most local programming line-ups.

**What You’ll See**

One of the most common uses of this system is to pick up CCTV 4 which is a channel from China Central Television, Beijing, China. This is the international service of CCTV with many hours a day of English programming and provides an interesting look into daily life in China today. This analog service is found on Galaxy 3R (95°W) channel 24.

Among the other analog services found are numerous sports back hauls and feeds on SBS 6 at 74° W. There’s no schedule of what will be transmitted when, but, a few weeks of monitoring this satellite will give you and good idea of what’s happening. NBC has a number of time zone feeds for its network on GE 1 at 103°W.
and, throughout the year you'll find many analog sports feeds can be found on GE 5 at 79°W.

Among the digital services found in the MPEGII FTA format are four PBS feeds including PBS East, PBS You, PBS X (the national feed) and PBS Kids on GE 3 at 87°W; Sky Angel home schooling channel, Chinese programming from Taipei; and ethnic programming from Saudi Arabia, Thailand, Kuwait, and Syria are all found on Telstar 5 at 97°W.

If you have a 4DTV DigiCipher II receiver from General Instrument you'll find even more programming on the Ku-band. Look for South Carolina Educational TV with several channels as well as Louisiana Public Broadcasting on Telstar 4 at 89°W, PBS X, The Annenberg/CPB Channel and PBS HDTV broadcasts can be found on GE 3 at 87°W.

Unlike C-band transmissions there are no audio subcarriers which can be tuned in. Ku-band is mostly a workhorse band used for news, sports and some network feeds. The subscription music service DMX, which transmits over 100 channels of commercial-free digital music formats can be found on the Ku-band side of T4. While the 76cm dish would do an excellent job of tuning in the signal, their special DMX receiver is needed to get the programming. Still, if you have a DMX receiver, setting up the 76cm dish as a stand-alone system would free up the big dish for the rest of the family to watch their favorite shows.

**Small Dish Limitations**

Even though this dish works well in the Ku-band, it does have its limitations. First, forget about replacing the Ku-band LNBF with a C-band LNBF, there's just not enough gain with a 76cm dish at C-band frequencies to pick up satisfactory analog signals let alone digital ones. Second, it will not do very well on weaker satellites and ones in inclined orbits.

Setting this dish up for what it was designed to do, look at one satellite in the Ku-band will give excellent results. Using it to scan the skies because of its lack of polar mount makes it an outdoor activity.

And, finally, don't bother trying to hook up a DirecTV, Primestar or other DBS receiver as the LNBF on this dish will not pick up signals in the DBS broadcast band which is 12.2-12.7 GHz as opposed to regular Ku-band 11.7 to 12.2 GHz.

**Bottom Line**

Setting up this dish was a snap. It's fun to deal with such a small antenna with so few parts. Its low profile makes it a natural for town houses, or mobile home parks alike.

I found tuning in with an analog receiver amazingly simple. Loosening the AZ/EL mount and rotating the dish in the direction of the Clarke Belt, it's possible to see when you're anywhere near a satellite by what's happening on the TV screen. Watch the screen for sync bars and listen for audio.

This is not so easy with a digital receiver. There's very little leeway when trying to lock-in a digital signal. The best thing to do is watch the "locked" LED on the receiver. I've found most MPEGII receivers are very sensitive and if you can get the LED to even flicker you know you're almost there.

Of course, once you've locked on to a digital signal the picture is perfect. But, I was very surprised to see the sharp analog pictures this dish was also capable of receiving. I even happened onto SBS4, an old Ku-band satellite long past its expected life span, wobbling away in an inclined orbit and giving startlingly good pictures.

If you're living in a tight space and thought you'd never be able to have fun in the Clarke Belt you're in for a treat with this little dish. If you're interested in watching programming not found in most cable or DBS line-ups, you'll find this little dish a great place to start. For more information visit www.smallear.com or call 877-463-3212 (orders only) or FAX: 888-731-1834.
The fortieth anniversary of the launch and operation of the first weather satellite was celebrated on April 1st, and I had my own small celebration (more on this later). The Commerce Department's National Oceanic and Atmospheric Administration noted the anniversary by launching a web site devoted to the event – see below. With today's advanced technology, and with satellite images of clouds on every television weather forecast, it may be difficult to remember when there were no weather satellites!

The world's first was a polar-orbiting satellite (named TIROS for Television Infrared Observation Satellite), launched from Cape Canaveral on April 1, 1960. It quickly demonstrated the ability to monitor earth's cloud cover from satellite altitudes. At that time there was no such thing as a domestic computer, and definitely no one was monitoring the telemetry as a hobby. How times have changed!

My own station, a previously little-used basement room full of junk, acquired its first weather satellite receiver in the mid-1980s when I obtained a “kit.” Although the kit worked, it required a casing, and by the time I had bought a metal cover, knobs, wiring and switches, there seemed little financial saving for the many hours spent locating the parts. Not too many months later I upgraded the “station” by buying a proper receiver. In this way, APT (automatic picture transmission) entered the household. The results were very pleasing, perhaps due in no small part to the fact that it was mainly WX SATs that used the 137 MHz band – interference from non-APT satellites was minimal. Decoding was performed by a framstore.

My next upgrade was the purchase of a downconverter from the only UK firm that I could identify as manufacturing and selling them – Microwave Modules. If you are already receiving APT, this could be the cheapest way into WeFAX reception – as discussed in last month’s review of an active feed and downconverter that has recently arrived on the market from Timestep and is supplied by Swagur Enterprises. In Britain, the geostationary WeFAX satellite is Meteosat-7. Continental America is served by both GOES-8 on the east and GOES-10 on the west.

My third upgrade was a significant one: I bought a PDUS system to receive Primary Data from Meteosat. GOES provides a similar facility. The constant stream of high resolution images was enough to satisfy any hobbyist. Sadly, this is no longer the situation for Europeans because Eumetsat encrypts almost all home-produced images, and demodulator units are extremely costly for amateurs.

One more step up
House repairs, summer holidays, birthday presents for the family – all these take precedence in the family budget. Well, usually! After consulting my financial adviser (wife Marion), the buying of a high resolution picture telemetry (HRPT) system was approved! I must say that this was the last item that I ever expected to buy. You may read a short note about it in next month’s column, as I now await delivery.

Operational WX SATs
One that should not be operating – NOAA-9 – apparently returned to haunt us again around April 9. My utility scanner (non-WX SAT) sprang to life, locking for a few seconds on 136.77 MHz, and – just as I feared – then locked for a few seconds on 137.50 MHz. I checked the satellite predictions program for each NOAA WX SAT: sure enough – there was NOAA-9 near maximum elevation. Because NOAA-11 was also above the horizon, I monitored two or three passes and quickly eliminated other satellites.

Transmitting telemetry in a more official capacity, satellites NOAA-14, NOAA-15, Resurs 01-N4 and Meteor 3-5 have continued fairly nominal operations. Here in southwest Britain we have had a few sunny, clear days so I did some contrast stretching of the Resurs images. Because its sensors respond mostly to cloud and snow, rather than land, a typical image tends to lack land detail. If you use an image processing...
program to enhance the brightness of pixels in the near-black region, land jumps out at you. Because of the higher resolution of Meteor and Resurs images, careful enhancement can give a pleasing result.

Peter Venlet sent a picture (see figure 4) from NOAA-14, showing his home state of Michigan and some of the great lakes. I believe Peter has recently become interested in the reception and demodulation of WXSAT signals, and kindly sent this picture received on April 8, 2000, during the afternoon.

Fig 4: NOAA-14 APT image of Michigan and the Great Lakes from Peter Venlet, N8YEL

Fengyun-2A ceases operations

Mike Kenny of Satellite Engineering, Bureau of Meteorology, Melbourne, Australia, keeps us all up-to-date with Fengyun operations, and advised us that the geostationary Fengyun ceased operations on March 2 because of a de-spin system problem. This WXSAT will be moved from its location at 105°E to a new one at 86.5°E. China plans to launch the next FY-2 series satellite in May.

The nomenclature of Chinese satellite names initially confused me, but Mike kindly explained how the system works. Basically, Chinese satellites are only named after a successful launch. Consequently, the satellite that exploded on 2 April, 1994, causing fatalities, did not receive a name — although one could reasonably call it Fengyun-2A. The first successful launch was classified by the Chinese as FY-2A, although we would list it as FY-2B.

The Chinese FY-2B will be the same type as FY-2A (that is, having a 3-channel VISSR instrument) and is to be launched into the 105°E position. FY-2C. D and E are expected to follow on at two to three year intervals, and each will carry a 5-channel VISSR. The S-FAX experiment is to be stopped.

GOES-L (potentially GOES-11) operations

Steve Arnett of the Satellite Analysis Branch advised the Internet weather satellite forum that the launch of GOES-L was still on schedule for May 3, 2000, though there has been a change in the planned location. The satellite is being launched to a position above 104 W instead of 90 W. The satellite will be named GOES-11 after checkout, and there is an extensive science test period prior to the satellite being placed into on-orbit storage. The main mission is carried out by the primary instruments — the Imager and the Sounder. The imager is the multi-channel radiometer that senses direct radiant energy together with reflected solar energy from the Earth's surface and atmosphere. The Sounder provides data to determine the vertical temperature and moisture profile of the atmosphere, surface and cloud top temperatures, and ozone distribution.

Many other instruments are carried on board: a search and rescue transponder, a data collection and relay system for ground-based data platforms, and a space environment monitor. The latter consists of a magnetometer, an X-ray sensor, a high energy proton and alpha detector, and an energetic particles sensor. All are used for monitoring the near-Earth space environment or solar "weather."

GOES Wefax transmissions

The launch of GOES-L (to be renamed GOES-11 when in orbit) is a timely event that will provide an on-orbit spare for future use. A few editions ago, I started an occasional series covering the Wefax transmissions available from GOES-8, positioned above longitude 75 west, over the east coast of America. Those previous notes covered transmissions from 0000 UTC until the first actual GOES-8 image transmitted at 0046 UTC — originating from 2345 UTC the previous day. Apart from three transmissions of meteorological information from the W series (W500 through W502), the remaining GOES infrared quadrant images are transmitted in sequence.

At 0126 UTC, the larger scale continental US image of 4 km resolution is transmitted, followed by the full disk (FD) infrared image of 16 km resolution. A study of the entire sequence shows that all images form part of various sequences transmitted during each 24-hour period. The GOES-8 FD infrared image is also transmitted at 0406, 0722, 1322, 1602, 1902, and 2254 UTC. Complementing this sequence is the GOES-8 full-disk water vapor, and of course the GOES-10 images as well.

Water vapor quadrants from GOES-8 follow the infrared transmissions in five slots until 0514 UTC. Following more images from GOES-10, the first sequence of NOAA-14 images is transmitted. During its orbit, NOAA-14 is recording data from the imaging scanner. Data is recovered during passes over the ground station, and formatted for transmission from GOES. Visible-light and infrared images recorded over both poles are transmitted. At 0210 UTC, a sequence of five images is transmitted; the first is from the northern hemisphere region from 10 east to 80 west, in visible-light — labeled W026. Subsequent imaging complete the W026 through W030 group, covering both poles and a Mercator projection.

A second sequence of NOAA-14 polar images is transmitted between 0514 and 0554 UTC, followed by later sequences as well as "odd" images transmitted singly. This all adds up to a comprehensive collection of imagery covering almost the whole planet.

For more details about NOAA's web provision of these images visit:

Frequencies

| NOAA-14 transmits APT on 137.62 MHz |
| NOAA-15 transmits APT on 137.50 MHz |
| NOAA transmit beacon data on 137.77 or 136.77 MHz |
| Resurs 1-4 transmits APT on 137.85 MHz |
| Okean-4 and Sich-1 sometimes transmit APT briefly on 137.40 MHz |

GOES-8 and GOES-10 use 1691 MHz for Wefax

NOTICE: It is unlawful to buy cellular-capable scanners in the United States made after 1993, or modified for cellular coverage, unless you are an authorized government agency, cellular service provider, or engineering/service company engaged in cellular technology.

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<thead>
<tr>
<th>Scanner</th>
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<th>Features</th>
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<tr>
<td>AR-8200 (unblocked)</td>
<td>$699</td>
<td>Wideband Portable receiver, Spectrum scan, Computer control</td>
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<td>$499</td>
<td>Wideband Portable receiver, Alphanumeric memory indentification, 1200 memory channels</td>
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July 2000 MONITORING TIMES 77
SHARES on ALE

While we have talked about SHARES (Shared Resources) in this column before, in this month's column we take a look at this government system from the perspective of ALE (Automatic Link Establishment) (see the feature this month on ALE by yours truly).

While there are a couple of hundred frequencies that are assigned to the SHARES frequency pool (contributed by each of the agencies that are part of the system), we find that the majority of the SHARES activity occurs on the SHARES Coordination Network (SCN). SCN channels 3 through 8 are reserved for ALE activity.

SHARES Coordination Network (SCN)

Channel 1 5123.6 Voice
Channel 2 14396.5 Voice
Channel 3 4490.0 ALE
Channel 4 5711.0 ALE
Channel 5 9106.0 ALE
Channel 6 11217.0 ALE
Channel 7 15094.0 ALE
Channel 8 17487.0 ALE

Channel 9 6800.0 BBS (digital operations AMTOR/PACTOR/G-TOR/CLOVER)

Channel 10 13242.0 BBS (digital operations AMTOR/PACTOR/G-TOR/CLOVER)

By monitoring the SHARES HF ALE network a variety of government stations will be heard. Table 1 is an abbreviated list of some of these stations heard recently on the SCN.

- FBI Aircraft

Ron up in the Middle Atlantic area passes along the following info regarding FBI aircraft he has monitored in his area of the country.

"The FBI is operating several light aircraft, at least one of which has been identified as a Cessna 172, out of Harry P. Davis/Manassas Regional Airport in Manassas, Virginia. The aircraft use the callsign Ross # and usually perform low-level surveillance flights in various parts of the Washington DC area. I have logged Ross 88 flying up the coast to the New York area, probably ferrying some FBI personnel to/from FBI headquarters in New York City. So far I've logged Ross 11, 12, 15, 33, 41, 83, 84 and 88."

Thanks, Ron, for the heads up on these fascinating aircraft.

- FEMA Freqs

Someone dropped me a note recently and asked if I would run all of the known FEMA HF frequencies. For our readers and that anonymous correspondent, here are FEMA's shortwave frequencies (kHz).

2320 Fax 1 13955 Fax 37
2360 Fax 2 13956
2377 Fax 3 14450 Fax 41
2445 Fax 4 14567 Fax 39
2668 Fax 5 14716 Fax 42
3341 Fax 6 14836 Fax 43
3379 Fax 7 14871 Fax 47
3388 Fax 8 14885 Fax 44
4403 Fax 9 14989 Fax 45
4780 Fax 10 14908 Fax 46
5211 Fax 11 15509 Fax 48
5378 Fax 12 15708 Fax 50
5402 Fax 13 15840 Fax 51
5921 Fax 14 16201 Fax 51
5961 Fax 15 16238 Fax 52
6049 Fax 16 17519 Fax 53
6106 Fax 17 18463 Fax 54
6108 Fax 18 18744 Fax 55
6151 Fax 19 19969 Fax 57
6716 Fax 20 20027 Fax 58
6809 Fax 21 20063 Fax 59
7346 Fax 22 20206 Fax 60
7426 Fax 23 20414 Pacitic
9462 Fox 24 21166 Fax 60
10194 Fax 25 21911 Fax 61
10493 Fax 26 22982 Fax 62
10588 Fax 27 23062 Fax 63
10899 Fax 28 23457 Fax 65
11108 Fax 29 23550 Fax 66
11545 Fax 35 23814 Fax 67
11721 Fax 28 24006 Fax 68
11801 Fax 29 24118 Pacitic
11957 Fax 30 24060 Pacitic
12112 Fax 31 24105 Pacitic
12129 Fax 33 24135 Pacitic
12219 Fax 35 24160 Pacitic
13446 Fax 36 24191 Pacitic
13451 Pacitic 24228 Fax 69
13783 Fax 40 24526 Fax 70
13889 Fax 38 24919 Fax 71

The FBI also operates on the system, frequency 27528 kHz, which is not listed here.
Table Two: Federal Frequency Allocations: 173-173.9875 MHz


173.0375 (No reported activity)

173.0500 Air Force, Animal/Plant Health Inspection Service, Army, Bureau of Prisons, Energy Department, FAA, FIB, Forestry Service, NASA, National Environmental Satellite, Data and Information Service, Railroad Transportation Test Center, TVA

173.0625 (No reported activity)

173.0750 Air Force, Army, FIB, (Nationwide), Federal Law Enforcement Training Center, LEOJAC-stolen vehicle recovery devices (Nationwide), National Environmental Satellite, Data and Information Service

173.0875

173.1000 Air Force, Animal/Plant Health Inspection Service, Army, Energy Department, FIB, (Nationwide), NASA, National Weather Service, Veterans Administration

173.1125 (No reported activity)

173.1250 Air Force, Army, Bureau of Prisons, FIB, Federal Law Enforcement Training Center, Navy, Veterans Administration

173.1375 (No reported activity)

173.1500 Air Force, Army, Energy Department, FIB, (Nationwide), Railroad Transportation Test Center

173.1625 (No reported activity)


173.1875 (No reported activity)

173.1906 Low power, non-voice 5 kHz bandwidth splinter frequency (until January 1, 2005)

173.1937 Low power, non-voice 5-10 kHz bandwidth splinter frequency (until January 1, 2005)

173.1968 Low power, non-voice 5 kHz bandwidth splinter frequency (until January 1, 2005)

173.2000 (No reported activity)

173.2125 (No reported activity)

173.2250 Civilian Assignment: Video Production/Press Relay Service (Newspapers)

173.2375 (No reported activity)

173.2500 Civilian Assignment: Power and Water Utilities

173.2675 Army

173.2750 Civilian Assignment: Video Production/Press Relay Service (Newspapers)

173.2875 (No reported activity)

173.3000 Energy Department and Civilian Assignment: Power and Water Utilities

173.3125 (No reported activity)

173.3250 Civilian Assignment: Video Production/Press Relay Service (Newspapers)

173.3375 Forest Service (NC)

173.3500 Civilian Assignment: Power and Water Utilities

173.3625 (No reported activity)

173.3750 Civilian Assignment: Video Production/Press Relay Service (Newspapers)

173.3875 (No reported activity)

173.4000 Experimental Testing

173.4125 Air Force, (Nationwide), Army (Nationwide), Corps of Engineers, National Environmental Satellite, Data and Information Service

173.4206 Air Force

173.4250 Air Force, Coast Guard, NASA (Nationwide)

173.4285 Air Force

173.4375 Air Force, Army, Corps of Engineers, FAA, Navy

173.4500 Coast Guard

173.4625 Air Force (Nationwide), Army (Nationwide), Corps of Engineers

173.4750 (No reported activity)

173.4875 Air Force (Nationwide), Army (Nationwide), Corps of Engineers

173.5000 Army, Customs, NASA, Navy, NOAA Aircraft Operations Center

173.5125 Air Force (Nationwide), Army (Nationwide), Energy Department, Navy

173.5250 (No reported activity)

173.5375 Air Force, Army, Energy Department, Navy

173.5500 NASA

173.5625 Air Force (Nationwide), Army (Nationwide), Energy Department, FIA, Veterans Administration

173.5750 Air Force

173.5875 Air Force (Nationwide), Army (Nationwide), Coast Guard, Navy

173.6000 Army

173.6125 Agriculture Department, Air Force, Army, Bureau of Prisons, Energy Department, FIA, Labor Department, NASA, Post Office, Veterans Administration

173.6250 (No reported activity)

173.6375 Air Force, Army, Energy Department, Geologic Survey, NASA, Post Office, Railroad Transportation Test Center, Veterans Administration

173.6500 Air Force

173.6625 Air Force, Army, Energy Department, NASA, Veterans Administration

173.6750 Interior Department (Nationwide)

173.6875 Air Force, Army, Energy Department, NASA, Post Office

173.7000 Army

173.7125 Air Force, Army, Energy Department, FIB, Veterans Administration

173.7250 (No reported activity)

173.7575 Air Force, Army, Coast Guard, Energy Department, FIB, Federal Law Enforcement Training Center, Fish and Wildlife Service, NASA, Post Office, State Department (Nationwide), Veterans Administration

173.7500 (No reported activity)

173.7625 Agriculture Department (Nationwide), Animal/Plant Health Inspection Service, Bureau of Indian Affairs, Bureau of Land Management, Food Safety and Inspection Service, Forest Service, Geologic Survey, Interior Department (Nationwide), Mine Safety and Health Administration (Nationwide), National Park Service, TVA

173.7750 Agriculture Department (Nationwide)

173.7875 Air Force, Army, Bureau of Prisons, Energy Department, Federal Law Enforcement Training Center, FEMA (Nationwide), Forest Service, NASA, National Park Service, Post Office

173.8000 Army

173.8125 Air Force, Army, Bureau of Land Management (Nationwide), Energy Department, FIB, NASA, Veterans Administration

173.8250 Interior Department (Nationwide)

173.8375 Air Force, Army, Bureau of Prisons, Coast Guard, Energy Department, FIB, Post Office, Veterans Administration

173.8500 Air Force

173.8625 Air Force, Army, Bureau of Land Management, Bureau of Prisons, FIB, IRS (Nationwide), NASA, Small Business Administration (Nationwide)

173.8750 Agriculture Department (Nationwide)

173.8875 Air Force, Army, ATF (Nationwide), Energy Department, FIB, Small Business Administration (Nationwide)

173.9000 FIA, NASA (Nationwide)

173.9125 Air Force, Army, EPA (Nationwide), FIB, Forest Service, Railroad Transportation Test Center, Veterans Administration

173.9250 (No reported activity)

173.9375 Civilian Assignment: Video Production/Press Relay Service (Newspapers)

173.9500 (No reported activity)


173.9750 National Weather Service (Hydrologic)

173.9875 Air Force, Army, Energy Department, FIA, FIB, Forest Service, Geologic Survey

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June 2000 MONITORING TIMES 79
The Case for APCO Project 25

In January 1982, during a snowstorm, Air Florida flight 90 crashed into the 14th Street bridge in Washington, D.C. Half an hour later a Metrorail accident occurred just a few miles away. Responding rescue personnel from federal, state, and local public safety agencies quickly discovered that coordinating their efforts was extremely difficult because radios from each agency used different frequencies and signaling techniques. On-scene commanders were forced to borrow radios from one another to coordinate their crew activities.

More recently, the Oklahoma City bombing further emphasized the need for interoperability. More than a dozen search and rescue teams arrived, each with at least fifty personnel and their own communications systems. The systems, for the most part, could not communicate with each other. Two-way radio was the only way to relay information back to dispatchers and request specific support, since wireline and cellular phone lines were damaged or overloaded. At one point it became so bad that one agency had to resort to sending runners with messages.

Major natural disasters such as hurricanes, earthquakes, and floods are typically handled by several different public safety agencies where the ability to communicate between agencies is also a necessity.

Project 25

To address the problem of interoperability as well as make better use of scarce radio frequencies, in 1989 the Association of Public Safety Communications Officials International (APCO) established Project 25 (P25). Representatives from Federal, state, and local governments began an effort to develop a set of common technical standards for land mobile radio systems. An additional benefit of a common standard would allow any number of manufacturers to produce compatible equipment, thus increasing competition and lowering prices. P25 promised to avoid locking customers into a proprietary system from a single manufacturer.

Equipment manufacturers control most standards processes. In contrast, P25 documents were developed by the Telecommunications Industry Association (TIA) based on user community needs, then approved by the APCO Project 25 Steering Committee. Phase 1 of P25 is nearly complete, with 30 of 32 standards documents now available, totaling more than 1800 pages.

P25 is not a single standard but really a number of individual protocols that can be mixed and matched. A "Project 25 compliant" system may really use only a few of the many standards. For instance, a P25 system may be conventional or trunked, use encryption or transmit in the clear, and carry voice, data, or both.

Common Air Interface

P25 systems use what is called the Common Air Interface (CAI). This standard specifies the type and content of signals transmitted by compatible radios. One radio using CAI should be able to communicate with any other CAI radio, regardless of manufacturer.

At present, most public safety channels are 25 kHz wide. Current P25 radios are designed to use 12.5 kHz wide channels, allowing two conversations to take place where only one used to fit. Eventually, P25 radios will use 6.25 kHz channels, allowing four times as many conversations compared to analog.

P25 radios must also be able to operate the old way – in analog mode on 25 kHz channels. This is called backward compatibility and allows agencies to gradually transition to digital while continuing to use older equipment.

P25 transmissions may be protected by encryption. The standards specify the use of the U.S. Data Encryption Standard (DES) algorithm, but other algorithms may be used. There is an additional specification for over-the-air rekeying (OTAR) to deliver new encryption keys to radios.

P25 channels that carry voice or data, called traffic channels, operate at 9600 bits per second (bps). These channels are protected by a substantial amount of forward error correction, which helps receivers to compensate for poor radio frequency conditions and improves usable range.

P25 also supports data transmission, either piggybacked with voice (so-called slow data), or in several other modes up to the full traffic channel rate of 9600 bps.

Digitized Voice

The most important difference to scanner listeners is the fact that voice transmissions are now digital rather than analog. P25 uses a specific method of digitized voice called Improved MultiBand Excitation (IMBE). The IMBE voice encoder-decoder (vocoder) listens to a sample of the audio input and only transmits certain characteristics that represent the sound. The receiver uses these basic characteristics to produce a synthetic equivalent of the input sound. IMBE is heavily optimized for human speech and doesn’t do very well in reproducing other types of sounds, including dual-tone multifrequency (DTMF) tones.

The IMBE vocoder samples the microphone input every 20 milliseconds and produces 88 bits of encoded speech, or said another way, the vocoder produces speech characteristics at a rate of 2800 bps, and signaling overhead brings the total rate to 9600 bps. P25 standards specify exactly how that information is structured and transmitted.

Project 25 Manufacturers

Only a handful of manufacturers have demonstrated P25 mobile and portable radios, and all of them have been non-trunked. These companies include Motorola, Transcrypt International/EF Johnson, Racal, RELM and Ida. However, it appears most agencies have chosen to purchase Motorola radios, specifically the Spectra mobiles, ASTRO portables and the XTS-3000 portable.

Project 25 versus Motorola Astro

There is some confusion regarding the similarities and differences between Project 25 and Motorola’s ASTRO product line.

ASTRO equipment is capable of operating using the P25 CAI, transmitting and receiving IMBE digital voice at 9600 bps. Depending on configuration, ASTRO equipment may also use a
different method of digital speech called Vector-Sum-Excited Linear Prediction (VSELP), which is also used in some digital cellular systems but is not compatible with Project 25.

ASTRO systems may also use an "analog" control channel (usually Motorola Type II format) operating at 3600 bps rather than the P25 trunking standard at 9600 bps. This is commonly done to support older analog radios that can only understand the 3600 bps control channel.

Many public safety agencies are moving to P25 systems, switching their voice traffic from analog to digital IMBE.

**Michigan**

The State of Michigan claims their Public Safety Communications System is the first APCO Project 25 compliant statewide radio system. The Motorola 800 MHz ASTRO SmartZone digital trunked communications system complies with P25 standards for common air interface, trunked operation, and encryption. All seven State Police districts are part of the system, as well as a number of other public safety agencies, including park rangers, highway workers, county and municipal police and fire departments, and 9-1-1 dispatch centers. The complete system is scheduled to be in operation by the spring of 2002 serving a total of more than 14,000 mobile and portable radios.

**Florida**

The Florida Highway Patrol shares a large 800 MHz P25 system in central and southern Florida with a number of other state agencies including the Florida Department of Law Enforcement, Alcohol and Tobacco, Fish and Wildlife Conservation, and Motor Carrier Compliance. The system has recently experienced some problems, described as a "glitch" that occasionally disables the system for its 3,000 users. Technicians are working with Motorola to identify and correct the problems in the $350 million system, but have not conclusively fixed the glitch.


**Project 25 scanners**

Although the APCO Project 25 standards are expensive for non-governmental agencies (more than $2000 for the full set), they are open and available. It is certainly possible to produce a scanner or an add-on box to an existing scanner, that could decode the IMBE voice portion of P25 traffic channels. Stay tuned to the column for further developments along this line.

One possible stumbling block to a hobby P25 scanner is the fact that the IMBE vocoder is covered by patents assigned to Digital Voice Systems, Inc. DSVI has licensed IMBE for use in P25; it is not clear whether they would do so for a scanner application.

Both Motorola and IFR manufacture communications analyzers that will decode P25, but they are priced well above the price range of an average scanner listener.

That's all the space I have for this month. I welcome comments, questions, frequency lists, talkgroups, and general updates via electronic mail to dan@decodesystems.com. My web page at www.decodesystems.com also has a variety of radio-related subjects.

41 towers provide coverage for nearly all areas of the 5,800 square mile state. The system is expected to be in full operation by mid-2000.

**Mesa, Arizona**

The city of Mesa, Arizona, recently approved a $15 million contract with Motorola for a new 800 MHz digital trunked radio system for police, fire, and other city workers. Nearby municipalities of Gilbert and Apache Junction will share the system.

**Fairfax County, Virginia**

Fairfax County, Virginia, is in the process of replacing their 20 year old analog system with a twenty channel, 800 MHz P25 trunked radio system that will use IMBE voice. Although scanner listeners won't be able to hear the 800 MHz transmissions, county Fire and Rescue have promised to simultaneously broadcast dispatch information on 460.575 MHz.

Eight repeater sites will be located in Butts Corners, Fair Oaks, Great Falls, Lorton, Merrifield, Mount Vernon, Reston, and Springfield.

**Baltimore, Maryland**

Last fall the City of Baltimore switched to a digital system using an IMBE vocoder for all voice communications. Control channels are reportedly still operating at 3600 bps.

Active frequencies include 866.2250, 866.2500, 866.2625, 866.3500, 866.4500, 866.9375, 866.9625, 866.9750, 866.9875, 867.4375, 867.4500, 867.4750, 867.9375, 867.9500, 867.9625, 867.9750, 867.9875, 868.4500, 868.4750, 868.4875, 868.9375, 868.9500, 868.9625, 868.9750, and 868.9875 MHz.

**Connecticut**

Last December the State of Connecticut announced the activation of their $47 million wireless voice and data system. Motorola sold them an 800 MHz ASTRO SmartZone trunked voice system, including equipment for a dozen dispatch centers and more than 2,000 P25-compliant digital radios.

In addition, an RD-LAP wireless data communications system connects patrol car lap tops and global positioning system (GPS) receivers to the nearest dispatch center, providing in-car access to state and federal criminal information databases. The data system operates on a different set of frequencies than the voice network.

Are We Alone?

That question has haunted humankind since first we realized that the points of light in the night sky are other suns. Today we have the technology to seek a definitive answer! The SETI League is participatory science. We are the international grass-roots organization dedicated to privatizing the Search for Extra-Terrestrial Intelligence. Together, hundreds of members in dozens of countries are keeping alive the quest for our cosmic companions. Learn how you can join this team of ordinary citizens in completing the research which Congress wouldn't let NASA finish.

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Pocket Loop Antenna + PRM Air-core loop antenna that collapses to fit in your pocket. Ideal for portables and travelers. Tunes 530 kHz to 23 mHz. The PRM (P.L. accessory) provides regeneration to >10 mHz.

BCB Rejection Filter Ideal filter to eliminate BCB interference.

Shortwave Preamp Extremely low noise and high immunity to overload (gp = +14 dBm). Includes BCB rejection filter. 10 dB gain 1.72 to 30 mHz.

Broadband Preamp Same high performance as the SW Preamp but without the BCB rejection filter. Response: 100 kHz to 30 mHz. 10 dB gain

Earth Monitor ELF receiver that receives 50 Hz to 15 kHz. I hear twitches, whistles, dawn chorus and other natural radio signals from planet Earth!

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Products that make the difference!

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FAX: 509-453-5492 or 1-800-396-1146 (orders)
Fast Food Frequency Pairs for the United States

The master of the fast food kiosk is hack. Bob Eisen provides the latest info on this interesting and universally available aspect of the scanner hobby. You will also find new and detailed listings for various companies only on the Grove Enterprises website. Click on the Monitoring Times link and go to the MT reference library.

The most common frequency pairs to check for fast food restaurant are:

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Headset</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.840</td>
<td>154.570</td>
</tr>
<tr>
<td>33.160</td>
<td>154.515</td>
</tr>
<tr>
<td>33.400</td>
<td>154.540</td>
</tr>
<tr>
<td>35.020</td>
<td>154.600</td>
</tr>
<tr>
<td>35.570</td>
<td>170.245</td>
</tr>
<tr>
<td>35.600</td>
<td>171.105</td>
</tr>
<tr>
<td>457.5125</td>
<td>467.7375</td>
</tr>
<tr>
<td>457.5250</td>
<td>467.7500</td>
</tr>
<tr>
<td>457.5500</td>
<td>467.7750</td>
</tr>
<tr>
<td>457.5625</td>
<td>467.7875</td>
</tr>
<tr>
<td>457.5750</td>
<td>467.8000</td>
</tr>
</tbody>
</table>

Headset/ Speaker frequency pairing for UHF band:

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Headset</th>
</tr>
</thead>
<tbody>
<tr>
<td>154.600</td>
<td>171.105</td>
</tr>
<tr>
<td>154.600</td>
<td>170.245*</td>
</tr>
</tbody>
</table>

Headset/ Speaker frequency pairing for VHF low / VHF high band:

Note: The frequency pairs marked with an "*" are either odd or missing.

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Headset</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.840</td>
<td>154.570</td>
</tr>
<tr>
<td>31.000</td>
<td>170.305</td>
</tr>
<tr>
<td>31.240</td>
<td>151.745</td>
</tr>
<tr>
<td>31.400</td>
<td>151.895</td>
</tr>
<tr>
<td>33.140</td>
<td>170.305*</td>
</tr>
<tr>
<td>33.160</td>
<td>154.515</td>
</tr>
<tr>
<td>33.400</td>
<td>154.540</td>
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<tr>
<td>33.400</td>
<td>154.570*</td>
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<td>151.745</td>
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<td>154.490*</td>
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<tr>
<td>35.120</td>
<td>151.775</td>
</tr>
<tr>
<td>35.880</td>
<td>151.835</td>
</tr>
<tr>
<td>35.960</td>
<td>151.805</td>
</tr>
</tbody>
</table>

Headset/ Speaker frequency pairing for ISM band Wide FM (ISM Headsets):

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Headset</th>
</tr>
</thead>
<tbody>
<tr>
<td>920.0125</td>
<td>903.0125</td>
</tr>
<tr>
<td>920.0250</td>
<td>903.0250</td>
</tr>
</tbody>
</table>

25 kHz spacing up through
921.0000 904.0000
12.5 kHz spacing up through
921.9750 904.9750
921.9875 904.9875

Headset/ Speaker frequency pairing for ISM band (ISM Electronics):

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Headset</th>
</tr>
</thead>
<tbody>
<tr>
<td>902.0125</td>
<td>926.0125</td>
</tr>
<tr>
<td>902.0250</td>
<td>926.0250</td>
</tr>
</tbody>
</table>

25 kHz spacing up through
903.0000 927.0000
12.5 kHz spacing up through
903.9750 927.9750
903.9875 927.9875

CTCSS PL Tones used by various headsets for internal and external communications

<table>
<thead>
<tr>
<th>Outside</th>
<th>Inside</th>
</tr>
</thead>
<tbody>
<tr>
<td>77.0</td>
<td>162.2</td>
</tr>
<tr>
<td>88.5</td>
<td>123.0</td>
</tr>
</tbody>
</table>

Most Common PL Tones used by HM Electronics

<table>
<thead>
<tr>
<th>Outside</th>
<th>Inside</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.0</td>
<td>131.8</td>
</tr>
<tr>
<td>107.2</td>
<td>141.3</td>
</tr>
<tr>
<td>114.8</td>
<td>107.2</td>
</tr>
<tr>
<td>114.8</td>
<td>127.3</td>
</tr>
<tr>
<td>118.8</td>
<td>110.9</td>
</tr>
<tr>
<td>156.7</td>
<td>Not applicable</td>
</tr>
<tr>
<td>162.2</td>
<td>Not applicable</td>
</tr>
<tr>
<td>162.2</td>
<td>173.8</td>
</tr>
</tbody>
</table>
Welcome aboard and fasten your seatbelts! Today we will look at frequencies from the Chicago ARTCC and some military freqs as well. Thanks to Fred Shabec, the Web Master of CARMA – the Chicago Area Radio Monitoring Association – for contributing his assistance and permission to use these. He extends a warm welcome to all visitors to CARMA’s website at http://www.theramp.net/shabec/carma.htm.

Incidentally, pilot communications on these frequencies can be heard from a long distance, because they are located at remote transmitters, some of which are quite far away from the Chicago ARTCC (ZAU).

**PLANE TALK**

**MAKING SENSE OF CIVILIAN AERONAUTICAL COMMUNICATIONS**

Jean Baker, KIN9DD

jeanieandbob@earthlink.net

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**Chicago, and the Funnies**

It’s that time of year again for some aero/ATC funnies! Our contributor today is Robby, a controller friend who wanted to share “controller humor” with us.

A Huey Cobra practicing auto rotations during a military night training exercise had a problem and landed on the tail rotor, separating the tail boom. Fortunately, it wound up on its skids, sliding down the runway doing 360s (complete circles) in an brilliant shower of sparks. As the Cobra passed the tower, the following exchange was overheard: Tower - “Sir, do you need any assistance?” Cobra - “I don’t know, Tower. We ain’t done crashin’ yet!”

The controller working a busy pattern told the 727 on downwind to make a 360 (usually to provide spacing between aircraft). The pilot of the 727 complained, “Do you know it costs us two thousand dollars to make a 360 in this airplane?” Without missing a beat, the controller replied, “Roger, give me four thousand dollars worth!”

PSA was following United, taxing out for departure. PSA called the tower and said “Tower, this is United 586. We’ve got a little problem, so go ahead and let PSA go first.” The tower controller promptly cleared PSA for takeoff before United 586 had a chance to object to the impersonation!

A DC-10 had an exceedingly long landing rollout after landing with his approach speed just a little too high. The local (tower) controller told the pilot, “American 751 Heavy, turn right at the end if able. If not able, take the Guadeloupe exit off of Highway 101 back to the airport!”

A male pilot is a confused soul who talks about women when he’s flying and about flying when he’s with a woman.

It was a really nice day, right about dusk, and a Piper Malibu was being vectored into a long line of airliners in order to land at Kansas City: KC Approach - “Malibu three-two Charlie, you’re following a 727, at one o’clock and three miles.” Three-two Charlie - “We’ve got him. We’ll follow him.” KC Approach - “Delta 105, your traffic to follow is a Malibu, eleven o’clock and three miles. Do you have that traffic?” Delta 105 (long pause and then in a thick southern drawl) - “Well...I’ve got something down there. Can’t quite tell if it’s a Malibu or Chevelle, though.”

Tower: “Eastern 702, cleared for takeoff, contact Departure on 124.700.” Eastern 702: “Tower, Eastern 702 switching to Departure...by the way, as we lifted off, we saw some kind of dead animal on the far end of the runway.” Tower: “US Airways 635, cleared for takeoff, contact Departure on 124.700...did you copy the report from Eastern?” US Airways 635, cleared for takeoff...and yes, we copied Eastern and we’ve already notified our caterers!” (I’ve always wondered about their food!)

Thanks, Robby! That’s all for now; see you next month. Until then, 73 and out.

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**Military UHF Frequencies**

<table>
<thead>
<tr>
<th>Location</th>
<th>UHF</th>
<th>VHF</th>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aurora</td>
<td>123.750</td>
<td>354.000</td>
<td>Low</td>
</tr>
<tr>
<td>Bradford</td>
<td>124.550</td>
<td>398.900</td>
<td>Low</td>
</tr>
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<td>Bradford</td>
<td>127.950</td>
<td>353.600</td>
<td>Low</td>
</tr>
<tr>
<td>Burlington</td>
<td>135.600</td>
<td>370.950</td>
<td>Low</td>
</tr>
<tr>
<td>Cedar Rapids</td>
<td>132.800</td>
<td>261.500</td>
<td>Low</td>
</tr>
<tr>
<td>Cedar Rapids</td>
<td>135.975</td>
<td>335.550</td>
<td>Super High</td>
</tr>
<tr>
<td>Chicago Hts</td>
<td>132.950</td>
<td>272.700</td>
<td>Low</td>
</tr>
<tr>
<td>Crown Point</td>
<td>127.800</td>
<td>387.050</td>
<td>Low</td>
</tr>
<tr>
<td>Danville</td>
<td>135.750</td>
<td>353.950</td>
<td>Low</td>
</tr>
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<td>Dells</td>
<td>133.300</td>
<td>380.350</td>
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<tr>
<td>Des Moines</td>
<td>127.050</td>
<td>319.800</td>
<td>Low</td>
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<tr>
<td>Des Moines</td>
<td>120.350</td>
<td>317.400</td>
<td>Low</td>
</tr>
<tr>
<td>Des Moines</td>
<td>133.200</td>
<td>360.800</td>
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<tr>
<td>Des Moines</td>
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<td>298.900</td>
<td>Low</td>
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<tr>
<td>Downers Grove</td>
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<td>Dubuque</td>
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<tr>
<td>Dubuque</td>
<td>125.225</td>
<td>285.500</td>
<td>Super High</td>
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<tr>
<td>Fort Wayne</td>
<td>119.850</td>
<td>362.300</td>
<td>Low</td>
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<tr>
<td>Ottumwa</td>
<td>118.150</td>
<td>354.100</td>
<td>Low</td>
</tr>
</tbody>
</table>

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**MONITORING TIMES**

June 2000

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**See you in the comics**

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Listening to Major League Baseball

There is a peculiar rhythm in the sound of a baseball game on the radio. Like the progress of the game itself, the delivery is slow yet filled with an intangible tension, the crowd noise in the background, the deliberate pauses in the announcers' narration. And, in an instant, the spell is broken with the unmistakable crack of a wooden bat colliding with a major league fastball.

The best baseball on radio is a personal affair. The play-by-play announcer has to speak directly into the ear of the listener to trigger the sensation of virtually being there. And the best announcers do this well, adding their own idiosyncrasies of voice and nuance of talent. That's why there's only one Jon Miller, Ernie Harwell, Jack Buck, Vin Scully or Skip Caray.

This year there are 30 Major League Baseball teams all playing a 162 game schedule and, while many of those games will be shown on network, cable, or individual TV stations, every single one of the thousands of games will be broadcast on radio. Even the most down-and-out of baseball's millionaire owners can't do without a radio connection for their team. And, despite the emergence of computer driven Internet radio broadcasts, this is a sport where radio is still king.

Back to the Future

In 1921 radio was the future of communications and it wasn't long after Pittsburgh's KDKA took to the airwaves on August 5 of that year, with the first official broadcast of a game, that America's affection for baseball on the radio took hold. Crystal set radios were the hi-tech hardware of the day. Those who couldn't spring for the $25 price tag could build their own from dozens of plans published every month in a stack of popular radio magazines. As the decades passed and broadcast technology improved, avid baseball fans found they could tune in a game being played not just in their own cities, but across the country.

Tradition is the stock of baseball and there's a deep sense of tradition in the lineage of baseball's broadcast heritage. KDKA still broadcasts the Pittsburgh Pirates. In Chicago WGN has been broadcasting Cubs baseball nearly every year since 1924. KMOX has carried the Cardinals since before World War II. Listening to games on those venerable old stations has been as reliable as the arrival of spring and Opening Day itself. For some teams new traditions are just now starting as with the Colorado Rockies flagship station KOA, Denver, or the Tampa Bay Devil Rays and WFLA, Tampa.

It was inevitable that baseball would finally end up on the FM band. With its clear audio reproduction, no fading or atmospheric noise, FM is a baseball/radio fan's dream. Most major league team networks include many FM outlets among their affiliates. Still, FM, unlike its AM counterpart, doesn't allow distant listening, which is why it's advantageous to have all those old 50,000 watt clear channel stations carrying the flag for their teams. No doubt the next step up the radio evolutionary ladder will be satellites. Look for many games to be heard next year on XM or Sirius satellite radio channels coast to coast.

The Internet Connection

The advent of the Internet has made a profound change in fans' participation in their team's progress. Not only does every team have a well designed web site (see Table One), but fans from all over the world can tune into the game in progress directly from each team's home page. Of course, you still need a decent computer to do this and so far it's not practical to listen in a portable mode. That means there's still room for old-style radio broadcasts.

What the Internet also adds is an instant deluge of team data. On each web site fans can check out last night's box score, tonight's game line-up, latest news from the front office, photos, interviews, even prerecorded video and audio clips. Fans can send E-mail to their favorite players, check out press releases from the team's PR office or even order tickets on-line.

Most Major League web sites have the complete radio and television network affiliate list available, often buried under headings such as "Game," "Schedule," "Media" or "Press box." Check the site map first to navigate your way around the site.

Tuning In

Some of the best AM radios made are car radios. Who hasn't enjoyed listening to a baseball game on a distant radio station from the comfort of the front (or back) seat of a car? Last year, during the World Series, I happened to be on the road during one of the night games and enjoyed switching from WABC New York, for the Yankees' perspective, to WSB Atlanta for the Braves' perspective. It was a great way to listen to the game. Avid AM DXers know that the best radios for tuning in baseball action are the pricey shortwave radios many MT readers already have. Their sensitive tuning sections and low noise amplifier stages, coupled with a good outdoor antenna make radio listened to a real pleasure at night on these radios. I use the general coverage receiver in my Kenwood HF transceiver. By adding a good Hi-Fi speaker I can get fairly decent game audio.

You never know which radio is going to turn out to be a great AM DX machine. I've had success tuning in baseball games on everything from a Uniden 2021, a junk shelf 30 year old Radio Shack receiver, to a 1936 RCA Victor with original tubes. The most important thing is to have a good outdoor antenna and turn off any dimmer switches or appliances in the house which can generate noise in the AM frequencies.

Nearly all team flagship stations are putting out 50 kW though there are some notable exceptions. Tampa's WFLA, Kansas City's KMBZ, Miami's WQAM, Oakland's KABL, Arizona's KATU, San Diego's KOGO, are all only 5 kW. The Brewer's WTMJ drops to 10 kW and the Marlin's WQAM drops to 1kW at night. The Dodgers' KXTA runs 5 kW during the day and goes to 44 kW at night.

The hardest stations to catch will be the West coast stations if you're on the East coast and vice versa. But, probably the rarest of all will be the Arizona Diamondbacks' Spanish language station KPHX with 1 kW daytime and .5 kW at night. As a result of the advent of the Internet, these stations are now available, often buried under headings such as "Game," "Schedule," "Media" or "Press box." Check the site map first to navigate your way around the site.
night. Six teams have Spanish language flagship stations. If you speak English and happen to be an Expos fan you'd better start learning French. The games heard on their flagship station CKAC are in French only. They have no English broadcast outlets.

The National League's Atlanta Braves have the biggest affiliate station list with 166, including nine states and the U.S. Virgin Islands. The American League honors go to the Kansas City Royals with 74 affiliates. The smallest network is the NY Mets' with five. For the American League it's the Anaheim Angels with 13. And the Los Angeles Dodgers have special honors offering not only English and Spanish broadcasts, but Korean as well. Korea has enjoyed a long tradition of baseball, their Little League teams winning numerous Little League World Series' over the last few decades. However, only recently have Korean players made it to the "Big Show." Now Korean fans in the L.A. area can tune into Dodgers play-by-play in their native language via KYPA, 1230 AM.

Check out the following list and see how many teams you can catch. Listen for the voices of today's broadcast legends and, for a real treat, build a crystal set and tune in the way your grandfather might have in the early 1930's. My deep appreciation to the Broadcast and Media Relations staffs of the 30 participating Major League Baseball teams for making available the information in Table One.

### Table One

<table>
<thead>
<tr>
<th>Major League Baseball Flagship Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>*indicates Spanish flagship station</td>
</tr>
<tr>
<td>Team, Flagship Call Letters, Frequency, Announcers, Web Site</td>
</tr>
</tbody>
</table>

#### American League East
- Baltimore Orioles WBAL 1090 Jim Hunter, Fred Manfra [www.theorioles.com](http://www.theorioles.com)
- Boston Red Sox WEEI 850 Joe Castiglione, Jerry Trupiano [www.redsox.com](http://www.redsox.com)
- New York Yankees WABC 770 [www.yankees.com](http://www.yankees.com)
- Tampa Bay Devil Rays WFLA 970 Paul Olden, Charlie Slowes [www.devilrays.com](http://www.devilrays.com)
- Toronto Blue Jays CHUM 1270 [www.bluejays.com](http://www.bluejays.com)

#### American League Central
- Chicago White Sox WMVP 1000 John Rooney, Ed Farmer, Bill Melton [www.whitesox.com](http://www.whitesox.com)
- Cleveland Indians WTAM 1100

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**American League West**
- Anaheim Angels KLAC 570 (KIK-FM 94.3, KCTD 1540 when conflict with L.A. Lakers)
- Oakland Athletics KABL 960 Bill King, Ken Korach, Ray Fosse [www.oaklandathletics.com](http://www.oaklandathletics.com)
- Seattle Mariners KIRO 710 Dave Niehaus, Rick Rizz [www.mariners.org](http://www.mariners.org)
- Texas Rangers KRLD-AM 1080 [www.texasrangers.com](http://www.texasrangers.com)

**National League East**
- Atlanta Braves WSB 750 Skip Caray, Pete Van Wieren [www.atlantabraves.com](http://www.atlantabraves.com)
- Florida Marlins WQAM 560 [www.flamarians.com](http://www.flamarians.com)
- Montreal Expos CKAC 730 Jacques Doucet, Rodger Brulotte [www.montreal expos.com](http://www.montreal expos.com)
- New York Mets WFAN 600 [www.nymets.com](http://www.nymets.com)

**National League Central**
- Chicago Cubs WGN 720 Pat Hughes, Ron Santo [www.cubs.com](http://www.cubs.com)
- Cincinnati Reds WLW 700 Marty Brennan, Joe Nahall [www.cincinnatireds.com](http://www.cincinnatireds.com)
- Houston Astros KTRH 740 [www.astros.com](http://www.astros.com)
- Milwaukee Brewers WTMJ 620 Bob Uecker, Jim Powell [www.milwaukeebrewers.com](http://www.milwaukeebrewers.com)
- Pittsburgh Pirates KDKA 1020 Lanny Frattare, Steve Biss [www.pirateball.com](http://www.pirateball.com)
- St. Louis Cardinals KMOX 1120 Jack Buck, Mike Shannon, Joe Buck [www.stlcardinals.com](http://www.stlcardinals.com)

**National League West**
- Arizona Diamondbacks KTAR 620 Greg Schulte, Rod Allen [www.azdiamondbacks.com](http://www.azdiamondbacks.com)
- Colorado Rockies KOA 850 Wagne Hагin, Jeff Kingery [www.coloradorockies.com](http://www.coloradorockies.com)
- Los Angeles Dodgers KXTA 1150 Vince Scully, Ross Porter, Rick Monday [www.dodgers.com](http://www.dodgers.com)
- San Diego Padres KOGO 600 Jerry Coleman, Ted Letner [www.padres.com](http://www.padres.com)
- San Francisco Giants KNBR 680 Jon Miller, Ted Robinson, Duane Kuiper [www.sfgiants.com](http://www.sfgiants.com)

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Go to the MT website to find Ken Reitz's complete listing of flagship and affiliate stations for all 30 teams.
More Low Power FM

The new LPFM service I reported on in April continues to be controversial. I have not yet received word of any move to bring the Oxley bill (which would rescind the creation of LPFM) to a vote in the full Congress, but it does continue to receive attention in subcommittee. It also receives plenty of attention among FM DXers: it’s the most controversial issue to come along in years. Virtually all DXers agree LPFM will hurt FM DX, but some believe the service is necessary and should exist anyway. Others agree with the NAB, that LPFM will interfere with the regular service of local stations and shouldn’t be allowed.

An unusually blunt statement appeared on the FCC website in late March. Dale Hatfield, Chief of the Office of Engineering and Technology, and Roy Stewart, Chief of the Mass Media Bureau, expressed concern that the National Association of Broadcasters (NAB) has been attempting to mislead Congress. The statement refers to a CD NAB has been distributing that alleges to demonstrate the interference LPFM will cause. The Commission replies that the interference heard on the CD was generated artificially, and does not reflect the way interference actually works on the FM band. Read the statement for yourself at [FCC website link].

Also on the LPFM front, a five-stage filing window has been announced for applications. The states and territories have been divided into five geographically-diverse groups. For example, group #2 includes Colorado, Delaware, Hawaii, Idaho, Missouri, New York, Ohio, South Carolina, South Dakota, Wisconsin, and American Samoa. Anyone wishing to locate a LPFM transmitter in one of these states must apply during the five-day filing window for the group that state is in. The order in which the groups’ filing windows will open will be determined by random selection. Once this order is determined, an announcement will be made of the date of the first filing window, at least 30 days in advance. The FCC expects to open filing windows at 90-day intervals, which would result in the original batch of 100-watt LPFM applications being taken over a 1-year period. Applications for 10-watt LPFMs won’t be accepted until the 100-watt applications have been resolved.

Bits and Pieces

- Here’s something that doesn’t happen every day: a new three-letter callsign has been assigned. Back in the early 1980s, the owners of KHIJ-930 and KHIJ-TV decided to sell their stations to two separate companies. Under FCC regulations, one of the stations had to change its call; the AM station added a K, becoming KKIJJ. That caused a problem, though. KKIJJ broadcasts in Spanish, and the pronunciation of the letters “KK” in Spanish is the same as a common Spanish-language obscenity. (They worked around the problem by giving the calls in English.) The station succeeded in getting the FCC to waive its normal policy, and reassign the old KHIJ calls.

In Canada, there were only two three-letter callsigns issued to private broadcasters: CKX-1150 in Brandon, and CKY-580 Winnipeg. Soon, there will only be one. CKX has been granted permission to move to 101.1 FM, and has been assigned the call letters CKX-AFM for the new station. The FM station is already on the air. CKX-AM will be allowed to simulcast it for a few months; then, 1150 – and a piece of Canadian broadcasting history – will go silent.

- David Parsons of Tucson is another reader who’s done some daytime DXing. David heard two Los Angeles AM stations in broad daylight at Cascabel, 40 miles east of Tucson and 465 miles east of Los Angeles. He was thinking it must have been groundwave because of the time of day, but asks “Or could the low sun angle at the near equinox time have helped a sky wave?” I have to think that’s possible. There are many reports of unusual long-distance daytime reception in mid-winter, some of which I’ve observed myself.

David also asks whether there’s a web site that would provide a topographic (elevation) map of the terrain between Cascabel and Los Angeles. I don’t know of one, but I’d be interested in such a thing too – if you know where to find one, please let us know.

- George Appleton wrote in to elaborate on his “Slinky” antenna. The “induction coil” used to couple the signal into the radio is roughly 30-footh wire (the amount is not critical) wound loosely around a can. (Pop, beer, soup, whatever.) The can is then removed. The last few turns are used to bind the coil, and it’s flattened into an oval shape. You then tune in a weak station, and move the coil around for best results.

George uses it with a Slinky, but he got the idea from a friend who wrote a newsletter for RV owners. Good AM reception is difficult inside a metal box! The original antenna used a single 50-footh piece of wire. 15 feet was left outside the RV; 32 feet made the coil; and the remaining 3-foot section was grounded (if necessary) to the window frame. This idea may also be helpful for those trying to listen from inside a metal office building or college dorm. (By the way, I’m seeing ads for Stinkys (Slinkyks?) on TV again. It looks like we’ll have a supply of these unusual antenna parts for some time to come, hi?)

We’re at the peak of the FM/TV DX season. (If we have a good one, I expect to log my 1,000th FM station this year.) Are you hearing/seeing anything interesting? Please write: Box 98, Brastown NC 28902-0098, or by email to w9wi@bellsouth.net. Good DX!
Clandestine Radio Web Sites Reinvigorated

The world's two best clandestine radio DX web sites just got better. Nick Grace, the driving force behind *Clandestine Radio Intel*, has introduced a major upgrade to this amazing resource. The award-winning web site, found at **www.qsl.net/ybOrmi/cland/** on your internet dial, now provides political background and DX information for shortwave clandestines all over the world. Spiffy graphics, an easy to navigate site, and an enormous volume of clandestine radio content is on this site.

Germany's Martin Schöch, the editor and author of *Clandestine Radio Watch*, has also refocused his internet service. At the **www.srlnet/swl-de/swl-cla.html** URL, CRW’s monthly digest of worldwide clandestine radio loggings is the standard reference in the field. Martin no longer sends out CRW via e-mail, but all issues for the last three years are available for free on the web site.

Nick and Martin are superb examples of how the internet and shortwave radio are moving toward a new information synergy. Even if you’re not a clandestine station DXer, you'll be fascinated by the content on these sites.

### New ACE Publisher

Well known DXer and broadcaster Pat Murphy has stepped down as President of the Association of Clandestine Radio Enthusiasts, along with Managing Editor Steve Rogovich. Pat and Steve say that they “had a ball” in their years at the helm of North America's largest unlicensed broadcast DX club, but demands of work and family have caused them to take a breather. Pat increased ACE membership, forged an alliance with John Cruzan’s excellent *Free Radio Network* web site at **www.frn.net/** and strengthened the content of the club’s monthly publication, *The ACE*.

ACE has not yet announced a permanent President and Publisher, but longtime pirate radio advocate John T. Arthur is serving on an interim basis as the club works to fill Pat's shoes. Membership, still $21 in the USA, $26 in Canada, and $40 elsewhere, go to the new ACE address at **7994 Route 19, Belfast, NY 14711**.

### What's on the Air

Warmer weather with longer daylight hours did not distract *MT* readers. Lots of North American shortwave pirates remain active in the summer; let us know what you have logged! Most stations operate within 10 kHz of 6955 kHz, but it pays to tune around the band. Other good places to check for daytime pirate activity include 13910 kHz and the 15000-15100 kHz area. Station programming formats and contact maildrops are shown here:

**Blind Faith Radio** - Dr. Napalm has the only consistent classic rock format on shortwave radio. (Merlin)

**KMUO** - Their west coast music is a superb DX catch on the east coast. (Lone Pine)

**KRMU** - Radio Michigan International combines rock and comedy. (None)

**Jolly Green Radio** - In the same genre as Green Acres Radio, they kick dead horses until they are really, really dead. (None)

**Psycho Radio** - A new one with a "decadendio" slogan. (None)

**Radio Azteca** - Bram Stoker's funny original comedy is all about D-Xing. (Belfast)

**Radio Bingo** - The winner of all their games is the interim publisher of ACE. (uses radiobingo@chef.com e-mail)

### Winter SWL Festival

More than two dozen stations got low power relays at the Fest last March; we don't have room for all of them.

**WLIS** - Jack Boggan is the world's only signal DJ. (Blue Ridge Summit)

**WMFQ** - If you don’t get a QSL from this one, you just didn't send a report. (Providence)

**WMOE** - The call letters are from their Three Stooges theme music. (uses wmoee6955@yahoo.com e-mail)

**WPN** - We don't yet know if this is a new or reactivated station. (None)

**WRRX** - Jimmy the Weasel is back with his famous blunt wit and a new address. (Wilton)

### Reports and QSLs

Reception reports to pirate stations require three first class stamps for USA maildrops or $2 US to foreign addresses. Send your letters to **Box 1, Belfast, NY 14711; Box 28413, Providence, RI 02908; Box 109, Blue Ridge Summit, PA 17214; Box 29, Wilton, ME 04294; Box 24, Lula, GA 30554; Box 293, Merlin, Ontario NOP 1W0; PO Box 928, Lone Pine, CA 93545; Box 25302, Pittsburgh, PA 15242; Some stations verify logs in *The ACE*; Free Radio Weekly (free to contributors via yukan@mdn.net), or via the Free Radio Network web site (see above). The rest solicit reception reports via postal or e-mail addresses noted here.

### Thanks

Your input is always welcome via **PO Box 98, Brastown, NC 28902**, or via the e-mail addresses atop the column. This month’s contributors include T. J. Arey, Beverly, NJ; John T. Arthur, Belfast, NY; Shawn Axeltrod, Winnipeg, Manitoba; Ranier Brandt, Hoefer, Germany; Jerry Coatsworth, Merlin, Ontario; Steve Coletti, New York, NY; Ross Comeau, Andover, MA; Nick Grace, Washington, DC; Joe Filipkowski, Providence, RI; Harold Flood, Midland, MI; Randy Gillis, Ottawa, Ontario; Saul Gonzalez, Santiago, Chile; Frank Grelle, Mt. Carmel, CT; Paul Griffin, Berkeley, CA; Sheldon Harvey, Montreal, Quebec; William T. Hissig, Mt. Prospect, IL; Roger Henderson, Memphis, TN; Dave Kirby, Willowick, OH; Greg Majewski, Oakdale, CT; Bill McClintock, Minneapolis, MN; Pat Murphy, Chesapeake, VA; Pat Nobel, Monroe, MI; Mike Prindle, New Suffolk, NY; Tim Rahto, Baltimore, MD; Steve Rogovich, Virginia Beach, VA; Martin Schöch, Mersburg, Germany; Lee Silvi, Mentor, OH; Paul Smith, Bradenton, FL; Bud Stacey, Setsuma, AL; DJ Stevie, Basel, Switzerland; Vladimir Titarev, Kremenkiuk, Ukraine; and Niels Wolfish, Toronto, Ontario.

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**OUTER LIMITS**

**THE CLANDESTINE, THE UNUSUAL, THE UNLICENSED**

George Zeller

George.Zeller@acclink.com

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**June 2000**
Catching Up

One of the biggest challenges to writing a monthly column is deciding what not to include. Rarely do I have trouble filling a page: Usually I must (regretfully) omit some things to fit the constraints of a one-page limit. This month, I'll present an assortment of loggings and news that I've been holding onto over the past few issues. This will give these contributions the attention they deserve, and allow me to "catch up" on column topics.

Loggings

Our loggings this month come from three contributors. First, with a rather large list, is MT's own Jacques d'Avignon, VE3VIA. Jacques monitors from Peterborough, ON with a Kenwood R-5000 and a Wellbrook Communications ALA 100 wire loop. The circumference of the loop is 100 ft and it is suspended between two trees in an East-West direction. (See loop review in April '00 MT.)

I'm also pleased to welcome newcomer Dean Burgess (MA). Dean uses a Drake R8B with an 80 foot eavesdropper dipole to make his longwave loggings. Burgess (MA). Dean uses a Drake R8B with an 80 foot wire loop. The circumference of the loop is 100 ft and it is suspended between two trees in an East-West direction. (See loop review in April '00 MT.)

One of the biggest challenges to writing a monthly column is deciding what not to include. Rarely do I have trouble filling a page: Usually I must (regretfully) omit some things to fit the constraints of a one-page limit. This month, I'll present an assortment of loggings and news that I've been holding onto over the past few issues. This will give these contributions the attention they deserve, and allow me to "catch up" on column topics.

Selected LF Loggings

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
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<tr>
<td>12.6</td>
<td>Russia (Alpha Polus)</td>
<td>J.O.</td>
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<tr>
<td>53.5</td>
<td>Frankfurt, Ger.</td>
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<tr>
<td>62.6</td>
<td>Paris (Fr. Navy Station)</td>
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<tr>
<td>162</td>
<td>Allies, France</td>
<td>J.C.</td>
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<tr>
<td>189</td>
<td>Iceland (BSCT)</td>
<td>J.O.</td>
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<td>209</td>
<td>Chibougamau, QC</td>
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<td>220</td>
<td>Blanc Sablon, QC</td>
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<td>J.B.</td>
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<td>Lee's Summit, MO</td>
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<td>Greenwood, NS</td>
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<td>269</td>
<td>Beverly, MA</td>
<td>D.B.</td>
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<td>271</td>
<td>Kansas City, MO</td>
<td>D.H.</td>
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<td>284</td>
<td>Mosby, MO</td>
<td>D.H.</td>
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<td>Argenta, MO</td>
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<td>355</td>
<td>Concordia, KS</td>
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<td>Lawrence, KS</td>
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<td>East Farnham, QC</td>
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<td>Kansas City, MO</td>
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<td>Boston, MA</td>
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<td>Riviere Ouelle, QC</td>
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<td>Lynden, WI</td>
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<td>358</td>
<td>Oglethorpe, NY</td>
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A feature I found to be especially helpful is the program's ability to automatically calculate the distance to an NDB based on your own altitude and longitude. No more running to the atlas with ruler in hand for every DX catch!

NDLOG is available for $15.00 (US funds), plus $4.95 shipping in the US. It may be ordered from Stan Forsman, 515-A Westchester Drive, Campbell, CA 95008-5046. Telephone inquiries are welcome at 408-879-9604 Tuesday through Friday, 9am to 5pm PST; Saturday, 10am to 2pm PST. For more details on NDLOG, surf to www.aimnet.com/~caengravindblog/. There you'll find an expanded description of the program and an e-mail address for product inquiries.

A Souped-up Loop

Dick Pearce (VT) sent along some pictures of his remotely-tuned, remotely-turned homespun loop. Dick took the basic loop design we published here back in September 1992 and added some impressive refinements. He started with a sturdy outdoor mounting frame, and then added a servo motor, remote direction indicator and remote tuning control. Perhaps we can get Dick to write up something for MT readers who wish to build an outdoor loop of their own. Figure 1 shows the finished loop at Dick's station.

High-Tech Logging

Looking for a good logging program for your computer? You might want to consider NDLOG produced by Stan Forsman (CA). To my knowledge, this is the only logging program specifically designed for beacon hunters. I recently had the opportunity to evaluate version 7.4 of the program and I was impressed with its array of features.

Although NDLOG is designed for use on DOS-based computers, Windows can restart their computers in MS-DOS mode and run the program with no problems. Unfortunately, the program is not available for use on a Macintosh at this writing.

NDLOG stores up to 9,999 loggings, and includes columns for over 20 parameters. Below is a sampling of some of the logging fields included in NDLOG:

- **ID**: Location (City, State, Country)
- **Frequency**: Elevation
- **Date Heard**: Transmitter Power
- **Time Heard**: Latitude/Longitude
- **Service Type**: Distance (Miles or Kilometers)
- **ID Type**: Miles-per-Watt
- **ID Length**: QSL Address
- **ID Cycle Time**: Miscellaneous

A homebuilt frame highlights Dick Pearce's remote control outdoor loop.

Summer Reading

Speaking of loops, a new book by Joe Carr deals extensively with this subject. The Loop Antenna Handbook is a 133 page guide loaded with loop building theory and techniques. Considering the popularity and benefits of loops for MF and LF work, beacon chasers will definitely want to check out this recent arrival.

The Loop Antenna Handbook is available for $19.95 + shipping & handling from Universal Radio, Inc., 6830 Americana Pkwy, Reynoldsburg, OH 43068-4133. Telephone orders may be placed at 800-431-3939.
Amateur Radio beacons have been around for many years. Essentially they are devices to enable hams to know when a particular band is open to a given area.

Beacon hunting can be fun. I find particular pleasure in tuning beacons on ten, six and two meters. There are, of course, beacons on other bands, but the VHF beacons are what we will concentrate on this month. We will include ten-meter beacon info because it is the beginning of VHF frequencies and ten is affected by many of the same propagation phenomena that enhance propagation on VHF.

Beacons normally transmit CW signals at low power. I am not familiar with any beacons transmitting in any other mode, and would appreciate hearing from anyone who has knowledge of digital or phone modes.

The beacon owner may have several different set-ups for operation. While most beacons simply transmit a signal to alert operators to propagation conditions on the band, some beacons may switch power levels, or transmit CW signals at different points in propagation phenomena. Of course all of this is to define the level of usefulness of the band at a given time.

Where Can I Find Beacons on VHF?

On ten meters beacons are located between 28.190 and 28.225 for manually controlled beacons. Automatic beacons (no control operator present) are located between 28.200 and 28.300. The six-meter beacon band is between 50.060 and 50.080. And two-meter beacon bands are between 144.275 and 144.300.

Build Your Own Beacon?

Building your own beacon can be as easy or complex as you wish. For example, for two years I operated a beacon on two meters that ran one-watt power to a pair of stacked turnstile antennas. I sent my message with a simple perforated tape driven by a small motor. During the two years the beacon was on the air I received QSL cards from over 100 hams who copied the beacon. A lot of mail asked about the beacon and thanked me for making it available.

Today options for control are numerous, from the perforated tape loop to computer control. Most use memory keyers, and some will change messages from time to time. Power is usually five watts or less and the message will normally be call sign/b with power level, antenna type, location/grid square and QSL information, and email address.

Every beacon operator I know loves to get reports on his/her beacon and will answer you at length for your QSL card.

The N7LT Beacon Station

I copied N7LT beacon on ten meters (28.248.5MHz.) a while back and received a nice reply from the owner/operator Lyndel.

N7LT beacon message is VV de N7LT/bcn DN45 Bozeman, MT, QSL SASE or email to N7LT@arrl.net. VV de N7LT/bcn DN45 Bozeman, MT, Ant wave gp. Tx 5w, _wm 50 mw ar then repeats.

Lyndel went on to give details of his beacon stating the antenna is a converted CB ground plane 15 feet above ground and the transmitter is a Hy-gain Cybernet CB board converted to 10 meters.

He has a second beacon on six meters which may be operational at this time made from the same Hy-gain CB board. Frequency will be 50.073 a third beacon from N7LT will be on 144.300.

Lyndel states that the beacon is more fun than all of his repeaters and remotes put together. It is the emails, letters and QSLs that make it so enjoyable. He built the beacons entirely from available (junk) parts and is having a ball with them.

Try this beacon hunting stuff, it’s fun and informational!

Summer Plans

June is traditional Field Day and VHF contest month. Hope all of you are planning to be active on these great event weekends.

Here at N3IK we will be spending several periods of operating from remote locations with our QRP rigs. I hope this year to be active as a Bumblebee in the Adventure Radio Societies “Flight of the bumblebees” coming up in July (details next month). I have two canoe camping trips planned and several Mountain bike trips. If you should work me, the QSL will be a photo of the location.

I am gathering parts for a kite and hope to use it for an antenna platform on some of my trips. I have used a kite several times in the past and am always impressed with the results a truly high antenna can provide.

This particular kite is minimal and construction appears to be very simple. If you decide to try a kite-lofted antenna, do use caution in several areas: first, electric lines must be avoided at all costs; second, use gloves when flying as the line can give serious cuts. Also, notify the local FAA office and if you fly it after dark you must use a strobe. It is also wise to provide static protection in form of a spark gap for the antenna to avoid damage to the rig.

I am semi-retired and hope to be a lot more active than previous summers, although present workload seems anything but retired! Have fun and keep me informed of what is going on with your hamming. 73 de Ike, N3IK
Some Antenna Tests and Measurements

Anyone who experiments with different kinds of antennas and is concerned about maximizing their performance will at times become concerned with measuring antenna resonance and feedpoint impedance.

In the past we’ve discussed that antenna resonance isn’t always necessary for good reception, especially on the HF band and lower frequencies. On the other hand, at VHF and higher frequencies antenna resonance is important for optimizing reception. However, even on HF, when we have a low level of received noise and a weak signal, we still may profit from using resonant elements to deliver the best possible reception. If the antenna is used for transmitting, resonance can be quite important at any frequency.

Knowing the value of an antenna’s feedpoint impedance can also be important. It is often difficult to obtain sufficient coupling between the antenna wire and the dip-meter coil. If you make a special “coat-hanger” coil as shown in fig. 1, it is much easier to get sufficient coupling for measurements. The special “coat-hanger” coil can be coupled to the antenna by positioning the meter’s coil at the center of the antenna wire. When the meter’s resonant frequency is found, the coil is moved farther from the antenna to reduce coupling between the coil and antenna. This allows more accurate measurement.

The frequency of operation if the readings are to be accurate.

At antenna resonance, reactance is zero. The resistance then shown is the feedpoint impedance.

Noise bridges can also be used for some measurements on transmission lines and tuned circuits.

**Dip Meters**

Dip meters are used from LF through UHF to find the resonant frequency of inductor-capacitor circuits, and also of antennas. To begin, you should short the feedpoint break. The dip meter must then be coupled to the antenna by positioning the meter’s coil at the center of the antenna wire. When the meter’s resonant frequency is found, the coil is moved farther from the antenna to reduce coupling between the coil and antenna. This allows more accurate measurement.

It is often difficult to obtain sufficient coupling between the antenna wire and the dip-meter coil. If you make a special “coat-hanger” coil as shown in fig. 1, it is much easier to get sufficient coupling for measurements. Try one or two turns about eight inches wide at the top for HF. It will take some cut-and-try to get the coil functioning at the frequency you want, but by monitoring the frequency of the dip meter with a general-coverage receiver you can adjust the coil until you find the size coil you need. Larger coils give lower frequencies.

When listening to the dip meter’s signal don’t mistake a harmonic for the fundamental frequency: the lowest signal will be the fundamental frequency. You may find that a single loop of wire will work; for lower frequencies more loops may be necessary.

Dip meter dials are calibrated in frequency, but the frequency changes with changes in coupling. More accurate measurement of dip meter frequency is had by tuning in the signal from the dip meter on a receiver with an accurate frequency readout.

**Antenna Topics**

Buying, Building and Understanding Antennas

Clem Small, KR6A

email: clemsmal@bitterroot.net

A Starting Point

Element length for the antennas most often constructed by hobbyists is usually determined by using one of the equations given below. There are other useful length equations, but we will limit our discussion to the most common ones:

\[ L_n = \frac{468}{F} \text{ and } L_q = \frac{234}{F} \]

In these equations \( L \) is the appropriate length in feet for a halfwave \((L_n)\), or quarterwave \((L_q)\) wire antenna element, and \( F \) is the desired operating frequency in megahertz. Using the answers we get from these equations gives the approximate length for resonance in such antennas as halfwave dipoles and quarterwave groundplanes.

The environment around an antenna affects that antenna, and so the exact length for truly resonant elements will vary somewhat from one environment to another. The feedpoint impedance will also vary for the same reason. The length given by the above equations can be adjusted more accurately to resonance in the operating environment by using the test instruments discussed below. They can also measure the antenna’s feedpoint impedance in that environment.

**Some Useful Antenna Test Instruments**

Considering the usefulness of the equations given above, we could say that a tape measure is one necessary tool for antenna measurement! For measuring long antenna elements get a long tape measure; it is difficult to accurately measure a long antenna element using a foot ruler or yardstick measure.

**Noise Bridges**

One useful antenna test instrument for HF or lower frequencies is the noise bridge. This device will indicate the resonant frequency and both inductive and capacitive reactance of an antenna if the measurement is done at the antenna. If a feedline is used to access the antenna the feedline should be a halfwave long at the frequency of operation if the readings are to be accurate.

In operation the bridge is connected both to your receiver and to the antenna (or feedline), and its two controls are adjusted for a null in the noise received from the bridge. The dials on the controls then indicate the resistance and reactance of the antenna or system being measured.

**SWR Measuring Devices**

Antenna resonance can be checked at any frequency with a
standing wave ratio (SWR) meter by feeding a signal from a transmitter to the antenna via the SWR meter. Then find the most pronounced dip in SWR in the vicinity of the frequency used for the equations above. If the antenna is inaccessible, then a length of low-loss feedline which is 1/2 wavelength at the operating frequency will allow measurement of both SWR values and resonance which are sufficiently accurate for most purposes.

* Automated SWR Measurement

Some modern, automated SWR measuring devices are not only simple to operate, but very useful in antenna work. Depending on the model used, they perform from MF through UHF. These include the MFJ SWR Analyzers™, the Autek Antenna Analysts™, and the AEA HF and VHF Analyzers™. With instruments such as these, antennas can be quickly checked for SWR across wide bands of frequencies, and their resonance determined. Some instruments can obtain information about other antenna or transmission line variables such as antenna resistance, reactance, etc..

**RADIO RIDDLES**

Last Month:

I said: “Ohmic resistance is mentioned above. Isn’t all resistance ‘ohmic’? What other kind of resistance could an antenna possibly have anyhow?”

Well, all resistance is measured in ohms, but some variables measured in ohms are not resistance. So we use the term “ohmic resistance” if we want to specifically indicate resistance which is the opposition to direct current (DC) flow.

For instance, nonresonant antennas offer reactance at the antenna feedpoint. Reactance is measured in ohms although it is not ohmic resistance. For one more example of non-ohmic ohms, consider that when an antenna radiates a radio signal the energy so radiated represents a loss of electrical power to the antenna circuit. Similarly, the heat lost from a resistor represents a loss of electrical power to a DC circuit when a DC current heats that resistor.

By measuring the RF current flowing in an antenna we could calculate the resistance to that current which would be necessary to convert to heat the same amount of power which is lost as signal radiation. We call this calculated “resistance” the “radiation resistance.” Radiation resistance is measured in ohms, but it is obviously not ohmic resistance.

This Month:

What widely-known information do you suppose leads to the derivation of the antenna-length equations given above?

You’ll find an answer for this month’s riddle, another interesting, antenna-related web site, and much more, in next month’s issue of Monitoring Times. Till then Peace, DX, and 73.

n the last column, we took a look at two parallel developments in radio receiver design: (1) the introduction of screen grid tubes that gave the TRF circuit a new lease on life and (2) the application of more sophisticated manufacturing techniques that allowed receiver layout to be planned in a more integrated manner. Power supplies moved onto the main chassis, tuning capacitors were ganged, with related parts grouped around them for shortest leads, loudspeakers moved inside the cabinet. This is a trend that began in the late 1920s and continued into the early to mid 1930s. It was the era of the large "tombstone" and "cathedral" table models and the massive living room consoles.

**Enter the Pentode**

In this installment, we’ll take a look at the combined effects on radio design of two additional developments: the introduction of pentode (five-element) tubes and the deepening of the world-wide “Great Depression.” The pentode was born in the research laboratories of the Holland-based Phillips Company. It was invented as a way to resolve the problem of screen grid tubes that gave the TRF circuit a new lease on life and (2) the application of more sophisticated manufacturing techniques that allowed receiver layout to be planned in a more integrated manner. Power supplies moved onto the main chassis, tuning capacitors were ganged, with related parts grouped around them for shortest leads, loudspeakers moved inside the cabinet. This is a trend that began in the late 1920s and continued into the early to mid 1930s. It was the era of the large “tombstone” and “cathedral” table models and the massive living room consoles.

The solution was the introduction of an additional grid, known as the suppressor grid, between the screen grid and the plate. It was connected (usually internally) to the cathode or filament. Because the suppressor grid was at the same potential as the cathode or filament, it neither hindered nor accelerated the stream of electrons emitted by these elements. However, being negative with respect to the plate, the suppressor grid tended to repel the electrons knocked loose from the plate, sending them back towards that element. There they were re-attracted to become part of the plate current, improving linearity, efficiency and power-handling capability.

Pentode tubes suitable for both r.f. and audio amplification were released in the early 1930s. The dramatic increase in amplification and efficiency they provided was made possible with virtually no increase in a set manufacturer’s parts count. And though presumably pentode tubes had higher first cost than tetrodes, radio sales were skyrocketing as cash-starved families took radios into their homes as a means of inexpensive entertainment. I don’t have numbers to give you, but it’s obvious that the economies of mass production must have driven the cost of tubes and other radio components ever downward.

**The International Kadette – A Minimal Set**

Add to the enhanced tube performance the fact that radio stations were becoming more numerous and more powerful, throw in the financial hardship faced by many families, and you’ll see that the time was ripe for the introduction of a truly minimal radio design. This was realized in the form of the International Kadette Universal TRF receiver (Fig. 1).

Excluding the power supply rectifier (far right), the set had exactly three tubes: a type 39 (pentode) r.f. amplifier, followed by a type 36 (tetrode) r.f. amplifier and a type 38 (pentode) detector-audio power amplifier. Compare this to the typical “three-di- aler” battery set with five triode tubes: two r.f. amplifiers, a detector, and two audio amplifiers. The Atwater Kent Model 42 we used earlier as an example of one of the first a.c.-operated sets had six triodes, the extra one being an additional stage of r.f. amplification.

I don’t have a picture of an International Kadette to show you, but take a look (Fig. 2) at a detail from an ad for the Emerson "Universal Compact Radio." This receiver presents the Amazing New UNIVERSAL COMPACT RADIO.
Fig. 1. International Kadette had only three tubes plus rectifier, used series string heaters.

Series String Heaters

Take another look at the schematic of Fig. 1 and you'll spot another reason for the diminutive size and price of the Kadette or Emerson Universal. There is no power transformer. Receivers have power transformers to perform two functions: (1) step up the line voltage from 115 to the perhaps two or three hundred volts required to energize the plates and screens of the tubes and (2) step down the line voltage to the low voltage (typically 2.5, 5 and/or 1.5) required to light the tube filaments.

Because of the factors of higher tube efficiency and more powerful and numerous broadcast stations already mentioned, the tube plates and screens could be operated with reasonably good results from the lower voltages derived directly from the 115-volt power line. Lighting the tubes was a different problem.

Think of a Christmas-tree light set—the series-connected kind where all the lamps go dark when one burns out. The ones from the 1940s typically had a dozen lamps with 10-volt filaments. They were in series, so (as long as each lamp had the same current drain) the 120-volts or so from the line divided equally among the lamps, providing each with the necessary ten volts.

The Kadette and Emerson radios used tubes that had been developed primarily for auto radio use, and thus were designed to use, and thus were designed to take another look at "floating" fully charged on the generator) auto radio use, and thus were designed to tubes that had been developed primarily for each with the necessary ten volts.

Provided equally among the lamps, providing drain) the 120-volts or so from the line divided equally among the lamps, providing each with the necessary ten volts. The ones from the series-string kind where all the lamps go dark when one burns out. The ones from the 1930s, the downtown Chicago had d.c. power. And I remember that, during my teen years, my father's business office and my uncle's medical office (both Boston area) had d.c. power. My uncle kept an impressive dynamotor type power inverter in a supply closet to operate some of his medical equipment. Also a reader (name unknown) recently wrote me that many early farm battery light plants delivered d.c. at the standard 110-115 volts. So an a.c.-d.c. set certainly could be handy at times!

See you next time, and remember that I'm always interested in hearing from you! E-mail address at top of this column; snail mail me at P.O. Box 1306, Evanston, IL 60204-1306.

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June 2000 MONITORING TIMES 93
More DSP Filter Programs

Last time we looked at software programs that could be used to clean up the whistles and beeps that have affected radio monitors since the days of Marconi. Using the power of a PC these digital signal processing programs (DSP) can be easily configured to emulate low pass, high pass and notch audio filters. These provide the user with not just one, but many simultaneous filter types. Not only that, but each is "tunable" with just the use of a mouse. Just image how much hardware, soldering and cost this capability would have commanded just a few years ago!

Well, since last time I have discovered a number of other DSP filter programs. This month's column should complete the list of DSP filter programs currently available from which to choose demos or full programs.

Recap

First, let's go back over the basics of DSP. An audio DSP chip, or program, connects between a receiver and a speaker. First, the DSP hardware/software converts the audio into digital data. Once in the digital domain, the DSP simulates high quality audio filters via software routines. The "filtered" digital signal is then reconverted back to audio sans whistle or noise.

We started this DSP odyssey looking at the GNASP1 and Swezey DSP programs (see last month's Computers & Radio). Since then Swezey has released a new version, 3.3, which I encourage you to evaluate.

Since our DSP search began we have found more DSP programs on the Web. Chromasound, and SR5 are DSP programs with filtering capabilities. We will take a look at a group of related DSP programs, which provide visual analysis of an audio spectrum. Just a few years ago it would have taken tens of thousands of dollars to have such a capability. Now it is just a download away with programs such as Analyzer 2000, Spectrogram and Spectran.

Most of these programs require Windows 95, 32 MEG of RAM, a duplex capable sound card and a Pentium 166 MHz. I used a Fujitsu Lifebook 7350 to put these programs through their paces.

Chromasound

This DSP audio filter program provides one of the slickest presentations and user interfaces. See Figure One. Everything you need is accessed from this main screen. Filter parameters, such as start/stop of notch filters, are changed by dragging vertical bars on the display. Corraling the offending whistle, which appears as a constant peak on the graph, with the vertical bars, makes monitoring pleasurable and easy on the ears. In fact, select the "Auto Notch" feature on the right of the displays, and the program does the corraling for you! Very nice.

You'll notice that Chromasound has been designed specifically for monitoring applications. Although the user can customize just about any audio filter to their liking, Chromasound is preprogrammed with multiple single side band (SSB), Morse code (CW) and radio teletype (RTTY) filters. These are accessed via the tabs at the bottom of the display.

Chromasound has many more convenient features, such as preprogrammed high pass, low pass, band pass and band reject filters. Don't be fooled by the simplicity of the display. Much thought and consideration has gone into this product resulting in simple, yet very effective, operational capabilities. Chromasound's computer requirements are: Pentium 90 MHz minimum, 200 MHz or above for best results, 16MB RAM with 32MB recommended, 16-bit card with full-duplex drivers and Windows 95/98 or above.

Chromasound is priced at $50, via email registration of downloaded trial version from Silicon Pixels at www.siliconpixels.com.

SR5 Spectrum Analyzer V2.0

This product, from AR5, has one foot in each of the program type camps: Filter and Analysis. Its screen has three display regions and a command bar. See Figure Two. The middle region, where three peaks are displayed, displays the input audio signal. Directly below is the command area. From here we have chosen the notch filter and the result can be seen in the upper display region.

SR5's notch filter routine tracks frequencies which constantly have a component amplitude (i.e., whistle). It then notches out that frequency, or in this case, three frequencies. The threshold level where the filter takes over is set via the horizontal line seen in the input signal region.

In addition, SR5 has user-definable, realtime linear filters. Filter coefficients, which define the operation of the filter, have been preloaded to provide a CW filter of 200 Hz width at the -3dB points, and centered on 900 Hz when sampling at 6400 Hz. The bandwidth is 300 Hz when sampling at 8192 and 11025 Hz.

With a little bit of reading (check SR5's Help file) and experimentation, a user can customize this filter to their monitoring needs. After seeing all the features of SR5 (we have not covered them all) it is clear that it was written with the radio user in mind. SR5 version 2.00 is available from their website www.ar5.com for a cost of $25

Analyzer 2000

Some programs are very useful to radio monitoring by providing visual presentations
of audio signals. These programs act just like expensive digital oscilloscopes, while providing many new features. Analyzer 2000 Version 4.0 by Brown Bear is one such program.

In Figure Three the center of the screen displays the input signal. Here we can see a real whistle, which the large digital display at the left center indicates, is centered at 1,656 kHz. The user can select these digits to display peak frequency, signal-to-noise ratio or, for you audiophiles, percent harmonic distortion. The window at the bottom of the screen gives spectral representation of the input signal with respect to time. You can see the black line directly under the input peak. Options for static and dynamic frequency markers abound, as do many other options.

Analyzer 2000 has built-in decoders for RTTY and Morse. In Figure Three the location of the decoders is highlighted by the cursor and “FSK Demodulator” flag. So clearly, this program has also been written with direct application to radio monitoring. Analyzer 2000 is $98 for the full version. Give their 30-day trial version a try at www.brownbear.de.

**Spectrogram**

As the name implies, Spectrogram version 5.0.8 is another audio spectrum program. Although its operation takes some getting used to, it has many useful features, a simple display and it is free. Their site is www.monumental.com/rshone/gram.html.

**Spectran**

Spectran, beta version 2c, also provides a very nice graphical presentation of the audio spectrum. It is simple to use, a nice layout and has many useful features. However, as the “beta” tag implies, some buttons do not work. The one that I was interested in, B Pass, which invokes a band pass filter, is only a button right now. However, even in its current stage of development it is very useful. Keep an eye on their website, http://sr10.xoom.com/spectran/ for future developments.

If you want to learn about Fast Fourier Transforms, the stuff DSP is made of, check out FFT Properties version 3.5 at www.regsoft.com. This program promises the full menu of DSP capabilities plus a programmable signal generator.

Other DSP programs, which run only in the DOS mode are Hamview, and DQA. If you are a DOS fan you can find them at their respective websites: For Hamview – www.freeyellow.com/members/padan and www.daqarta.com for DQA.

And don’t forget the two we started with last time: GNASPI at http://members.tripod.com/~gniephaus/gnasp1/gnaspi1.html and the Swezey website at http://www.winternet.com/~swezey/dsp.htm.

**DSP-ed to Death**

I think that should just about cover everything you wanted to know about availability of DSP audio filter and spectrum programs! Due to space and time constraints we have left out lots of neat features of these programs. I encourage you to try each one out to find the one that’s right for your monitoring habits. Next time we’ll leave DSP, but dig further into a topic that ten years ago did not exist – computers & radios.
What's New with CB?

In case you thought that all the radio fun without a license was focused solely on Family Radio Service or General Mobile Radio Service, let me remind you that the Citizens Band radio is still very much alive and well.

Citizens Band in the United States is allocated to 40 channels:

<table>
<thead>
<tr>
<th>Channel</th>
<th>Frequency</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>26.965</td>
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<tr>
<td>2</td>
<td>26.975</td>
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<tr>
<td>3</td>
<td>26.985</td>
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<tr>
<td>4</td>
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<td>39</td>
<td>27.365</td>
</tr>
<tr>
<td>40</td>
<td>27.375</td>
</tr>
</tbody>
</table>

CBers can operate without a license in either AM or single sideband mode on any of the 40 channels, and lots of people still use CB.

As if to affirm the health of the CB marketplace, two manufacturers have recently unveiled new radios.

The New Cherokees

Cherokee’s brand new CBS-2100 base station is a real eye popper: 19 inches wide by 6 inches high by 14 inches deep. It offers a full four-watt power output in AM mode and 12 watt power output in single sideband mode, and it is not designed to be readily modifiable for operation outside the legal CB frequencies. Described so that it can be rack mounted, it has a brushed silver front panel, and all the features a CBer might want: AM and SSB modes, a true frequency counter, and the right knobs and switches to put this impressive rig through its paces.

A compander circuit called Clear Drive compresses audio on transmit and expands it on receive. When both stations at either end of a conversation are using ClearDrive it can really boost the signal for long-haul communications, but the technology can also help in single station use as well.

The performance of the CBS-2100 on both transmit and receive is outstanding. I give it my highest personal recommendation. The suggested retail price is $499.95.

Also from Cherokee come two new Nightrider mobile radios. They have a backlit front panel that glows like one of those Indiglo watches. When the display is turned off, it looks like white plastic. When the power is on, the front panel lights up with a soft blue light that backlights the lettering for each of the controls.

The Cherokee Nightrider 100 is a 40-channel AM-only mobile rig. Measuring 2-3/8 inches high by 7-3/16 inches wide by 9-1/8 inches deep, this rig has a bottom-firing speaker and connectors for antenna, public address speaker, external speaker, and power cord on the back panel. To boost performance under noisy conditions, it is equipped with Cherokee’s Clear Drive system.

The Nightrider 150 measures 2-3/8 inches high by 7-7/8 inches wide and 9-1/4 inches deep and offers all the features of the Nightrider 100, plus sideband mode, which can nearly double the communication range between CBs (when both are using sideband). While the Nightrider 150 has the same back panel layout and bottom-firing speaker as the 100, the front panel setup is actually simpler.

Both Nightrider mobiles deliver excellent performance. Suggested retail price of the Nightrider 100 is $199.95, and SRP for the Nightrider 150 is $239.95. For more information about any of the Cherokee radios, contact Wireless Marketing Corporation at 1-800-259-0959 or visit www.wirelessmarketing.com.

Cobra Strikes Again

Cobra, a venerable name in CB, has also joined the “radios that glow in the dark” club with the Cobra NightWatch 29 WX NW ST. It features seven weather channels, NightWatch technology (more about that in a moment) and Cobra’s SoundTracker system.

This 40-channel, AM-only rig measures 8-5/8 inches deep by 7-9/32 inches wide by 2-13/16 inches high. The NightWatch fully illuminated display consists of an electroluminescent panel that glows under an overlay. Switch it on and the lettering for each of the controls glows. Crank up the dimmer switch and the lettering gets brighter while the entire faceplate of the radio is glows faintly.

This radio not only receives NOAA weather channels but also weather alert tones. It will receive the alert tones even if the rig is turned off or if the rig is in CB mode, so long as there is power to the rig. This means that you can be driving down the road using the radio in CB mode, and if the weather service issues an alert of threatening weather you will hear it.

The performance of this radio is classic Cobra 29 – excellent audio on both receive and transmit. In addition, the SoundTracker system, when activated, can provide a noticeable reduction in noise on receive and, in certain situations, can help to boost transmitted audio. Suggested retail price of this new CB is $149.95. For additional information visit www.cobraelec.com or call 1-773-889-3087.
The Palstar R30 is a lot of radio for under $500. This radio plays.”
- Wayne Mischler, MT, June, 2000

The New
Palstar R30

NOW AVAILABLE!

High performance and low price, an unbeatable combination! And the new Palstar R30 claims both! With a frequency coverage of 100 kHz through 30 MHz, multimode AM/USB/LSB reception, and 20 Hz fine tuning steps with variable rate tuning, the R30 is a double up-conversion superheterodyne (45 MHz/455 kHz) with 6 kHz and 2.5 kHz selectivity, six-digit LCD frequency display, a true analog S-meter, and 100 memory channels.

And Palstar doesn't mind publishing their excellent low-intermod specification: +15 dBm third-order intercept point for strong-signal-overload immunity, with 90 dB second-IF image rejection! And if you do need to reduce overload, simply press the 10 dB attenuator. AGC speed is also selectable, slow or fast for AM and SSB.

High sensitivity (0.5 uV) nabs those weak signals, and interference is reduced by switchable 7-pole input filters. Reviewers give the R30 “thumbs up” for adjacent channel interference rejection, but for even sharper selectivity, order the R30C with a 455 kHz Collins mechanical (torsional) filter!

The 5 watt audio amplifier sends low distortion sound to the high-quality internal speaker, with plenty of reserve power for an external speaker! And there’s a line output for recording.

Its compact size (8”W x 2.5”H x 9”D) belies its big performance, and it may be powered by 120 VAC, 12 VDC, or 10 internal AA cells (not included) for portable/emergency operation.

ORDER TODAY!

RCV18 $495.95
FTR06 Collins filter $103.95
Palstar presents its new R30 receiver as the “ultimate in listening.” That’s a tall order in today’s competitive world of radio technology. But the R30 backs the claim with demonstrated performance. From the first click of the power knob, you sense that you are at the controls of a quality receiver. This radio has the heft, the quality sound, the sleek profile, the aesthetic styling, the feel of durability that we have come to expect from true DX machines.

You can see the entire line of Palstar radio products at www.palstarinc.com.

The solid-state R30 is a no-nonsense “made in USA” shortwave receiver with the sensitivity and dynamic range needed to hear fly-speck stations in a jungle of powerhouse signals and cosmic noise.

Today, bells and whistles are expected and convenience is king. When you meet the R30, prepare for some surprises and a sentimental journey back to the future. Don’t rush to judgment. And don’t expect keypad entry. This radio tunes stations the old-fashioned way — by turning a knob.

Manual tuning in a new-millennium receiver? Yep. And with no apologies. Nostalgia aside, the R30 tunes with the solid feel of rigs of yesteryear combined with the stability of tomorrow’s digital wonders. That’s a mix you have to experience to appreciate.

**Tuning the bands**

The R30 features continuous frequency coverage from 100 kHz to 30 MHz.

Tuning is simplified by three dialing speeds and a user-friendly memory system. There are two buttons next to the tuning dial that change frequency up or down in one MHz jumps. This skips across the shortwave spectrum in a hurry. You soon start thinking in MHz. “Let’s see what’s happening on 5, 9, or 15 MHz.”

Pushing on the tuning dial until it clicks toggles between two additional tuning speeds that help you maneuver between MHz. The faster of the two speeds changes frequency in 500 kHz steps. The slower setting varies from 20-200 Hz steps, depending on how fast you spin the dial.

**User-friendly memory**

The 20-page operations manual is well written, clearly illustrated, comprehensive, and easy to understand. After reading the manual and practicing with the controls, you’ll soon be navigating the bands with ease. And your navigational skills will improve when you get the feel of the R30’s user-friendly memory system.

The process of storing frequencies is almost intuitive. Press the memory button for about 2 seconds and a channel number appears in the display window. There are 100 memory channels. You can either accept the default channel or select another one by turning the dial. With your channel selected, press the memory button again and the displayed frequency is stored in the displayed window. There are 100 memory channels.

**An overall good performer**

The slight inconveniences of manual tuning do not detract from the quality feel and the overall good performance of this fine radio.

Portability is one of the R30’s really strong points. It is small enough to fit in a briefcase, and with an amplified antenna would be a great travel companion. It runs on 12 volts DC and comes with an AC adapter. You can also power it with ten AA batteries. The receiver draws between 350-600 milliamps. The internal battery and they look alike. After tuning a frequency, and then deciding to change from AM to SSB mode, you can accidentally hit the memory button which switches you from your tuned frequency to a memory channel. To get back where you were, you have to redial your frequency, which may be many MHz away, and no cab to take you home.

On the upside, you can use the taxi technique to greatly speed the tuning process. For example, store 5900 kHz AM in channel 49 (for the 49 meter band); 7100 kHz AM in channel 41 (for the 41 meter band); 9400 kHz AM in channel 31 (for the 31 meter band), and so on.

Then, when you want to tune in the 41 meter band, press the memory button, dial to channel 41, press the memory button again, and there you are, at 7100 kHz, within easy dialing distance of all AM stations in that band, with a minimum of tuning effort.

The same technique could be used to quickly take you to your favorite utility frequency ranges.

The memory system is great as is. But possibly some sort of compromise — either an escape route back to the VFO frequency or relocation of the memory button to avoid accidents — might be an opportunity for improvement in future versions.

Paul Hrivnak, owner of Palstar, Inc., says change may be considered if it becomes an issue. “It would require a software change (that we would weigh carefully) against commitments we’ve made to our European distributors,” he explains.

**MONITORING TIMES**

Review by Wayne Mishler, KG5BI

PALSTAR INC. A MULTI-MILLION DOLLAR BUSINESS

**SHORTWAVE EQUIPMENT**

**EQUIPMENT AND ACCESSORIES FOR YOUR MONITORING POST**

Review by Wayne Mishler, KG5BI
Pack is automatically disconnected from the circuit when you plug in an external 12-volt DC power source.

To load or change batteries, remove four screws and lift off the top cover. The internal battery holder sits on top of the chassis. A metal strap holds the batteries in place. Remove another screw, lift the strap, insert fresh batteries, replace the strap and top cover, and you are ready for operation on the go. No amount of buffeting will dislodge those batteries. And there is no plastic battery compartment cover to lose. Bravo!

✧ Test results

Palstar claims 2 microvolts sensitivity on AM from 100 kHz to 2 MHz. MT’s tests (performed by Ben Hester) indicated 0.51 microvolts (at 1.5 MHz), 0.54 at 13.5 MHz, and 0.78 at 28.5 MHz. For an average of 0.61 microvolts at 10 dB signal plus noise versus noise ratio on AM.

We measured 0.49 microvolts at 9.5 MHz on SSB. Palstar claims 0.5.

In other MT tests, image rejection measured greater than 65 dB at 45 MHz, and greater than 90 dB at 455 kHz. Dynamic range measured greater than 90 dB at 50 kHz spacing. Third order intercept measured at +15 dBm.

Inside, the R30 is immaculate with nicely finished circuit board and professional soldering that are marks of quality.

✧ But does it play?

Okay, so the R30’s got a pretty face, clean innards, and some muscle. But does it play?

Let’s talk about that. The R30’s internal speaker, mounted in the top cover, provides rich sound for its size. The audio really sounds good though a high-quality external speaker or good set of headphones. The headphone jack is located on the lower left corner of the front panel. The headphone jack is a line audio jack on the back panel enables you to connect a tape recorder.

There is no clock, timer, notch filter, or AM synchronous detection, but the receiver performed so well on the air that fading was not a problem, even in times of moderate propagation.

The two ceramic IF filters do a good job of quieting interfering stations on the edge of the pass band, dropping out heterodynes very effectively, even without a notch filter. You can use either filter in AM and SSB modes. A third option for a slightly tighter AM filter would be nice, but of course would affect price. For an extra hundred bucks, you can get the R30C, with Collins mechanical filters in the IF, if that is your preference.

The 2.4 kHz single-side band ceramic filter works well in reducing interference while operating in AM mode. With the push of the mode button and slight readjustment of the tuning knob, you can listen to either of the station’s sidebands and possibly avoid an interfering signal on the edge of the AM passband. This greatly increases IF flexibility, and adds to the power of the R30 in AM DXing.

✧ Bring on the transmitter!

The R30 would be a great sidekick on a ham radio field expedition. It even has a mute jack on the back panel for use with a transmitter. Could there be a companion transmitter to the R30 in the future?

Palstar is not saying...exactly.

“I do have something that might be of great interest,” says Hrivnak, “but will discuss it only when I have produced some units and am ready for an official introduction.”

With or without a transmitter, the Palstar R30 is a lot of radio for under $500. This radio plays.

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June 2000 MONITORING TIMES 99
Radio Shack PRO-2052 Trunk Tracker Scanner

The Radio Shack PRO-2052 is a 1000 channel table top scanner capable of selectively following conversations in VHF and UHF Motorola and Ericsson trunked radio systems. The PRO-2052's front panel looks identical to the earlier PRO-2050 we reviewed in May 1998. Uniden manufactures both models in the Philippines for Radio Shack.

Physical resemblance aside, the PRO-2052 has several improvements over the PRO-2050. The new model tunes the 225 - 400 MHz UHF military air band, VHF television channels 7 - 13, the 216 - 225 MHz band, and a 1240 - 1300 MHz sliver. The designers censored frequencies adjacent to the cellular phone bands so our PRO-2052 will not receive 823.9625 MHz - a frequency commonly allocated to local and state government agencies.

Memory capacity is increased from 300 channels in 10 banks to 1000 channels in 20 banks. A new 9 pin jack permits the PRO-2052 to be connected to a personal computer, though software is not included. The user manual documents the computer commands so programmers can write software to "drive" and download the PRO-2052.

The PRO-2050 tracks only 800 MHz Motorola trunked systems. The new PRO-2052 has expanded trunking to Ericsson systems and can track conversations in the 137 - 174, 406 - 512, 800, and 900 MHz bands.

The PRO-2052 is compatible with NOAA's SAME system (Specific Area Message Encoding) and you can program the PRO-2052 with FIPS codes for up to 15 areas.

Conventional Features

A 2 second rescan delay may be programmed on a per channel basis. A query feature identifies duplicate memory channels. Our PRO-2052 scans a mixture of frequencies at 73 channels/sec., skipping over empty channels.

One channel per bank can be designated a priority channel and sampled every 2 seconds. A single pair of frequency limits can be programmed for searching up or down, but searching and priority cannot be used simultaneously. Up to 50 frequencies may be locked out from a limit search.

There is no Direct key or direct search facility. Factory preprogrammed frequencies for police, fire/emergency, commercial air, public service, and weather can be scanned by pressing the SVC key. You can lock out up to 20 frequencies from a service bank search.

Frequency step sizes and AM, WFM, and NFM emission modes are selected automatically depending on the frequency and cannot be overridden. There is a 6 MHz step size when searching the VHF television bands and you cannot program the PRO-2052 for frequencies in between the TV audio channels.

Trunk Tracking

Each of the PRO-2052's 20 banks can be programmed with the frequencies for a single trunked system or with frequencies for conventional use. You must identify the type of trunked system before programming a bank using a needlessly complicated procedure. For instance, you must differentiate between Motorola VHF, UHF, 800 or 900 MHz systems. The PRO-2052 firmware should know this by the frequencies you program in memory, but it does not.

You can scan several banks of trunked systems but the PRO-2052 cannot follow trunked conversations and scan conventional systems at the same time. We scanned three trunked systems and observed a 5 second delay before our PRO-2052 switched to the next bank, even during silent periods.

You can search or scan for active talk groups in the trunked domain and lock out up to 100 uninteresting talk groups. You can program up to 5 lists per bank with talk group numbers for scanning. Each list can hold up to 10 group IDs.

Usability and Performance

The PRO-2052 keyboard, display, and cabinetry resemble the PRO-2050 closely. The LCD display is easy to read and brilliantly backlit by an incandescent bulb through an orange filter.

The volume and squelch knobs are too close together and it's difficult to adjust one knob without a finger bumping into the other knob. The tiny dimple marker on each knob is virtually invisible.

The rubber keypad has a good feel and a keypress confirmation beep can be disabled. We must squint to read the tiny keytop lettering of the center keys. The Manual key is perhaps the most important key in any scanner, but it is small, and the same color and shape as most other keys. Radio Shack had two years to make the keypad and knobs easier to use but they did not.

Figure 1: Radio Shack PRO-2052 scanner

Figure 2: Discriminator tap is labeled "TP DS" (most components omitted for clarity)
The PRO-2052 is lightweight because there is no chassis and the cabinet is entirely plastic. It feels "cheap." A 12 VDC wall wart (supplied) furnishes power. Components are surface mounted on a main printed circuit board and a second board located behind the front panel. We connected a CTCSS/DCS display to the discriminator test point (marked TP DS) using the solder pad portrayed in Figure 2.

The triple conversion PRO-2050 employs IFs (intermediate frequencies) near 380.7, 10.85, and 0.450 MHz. The PRO-2052 is built around the same IFs but uses a first IF of 254 MHz when tuning 311 - 512 and a 10.7 MHz second IF for WFM reception of TV audio (179.75 - 215.75 MHz). Image rejection on our test unit exceeded 65 dB and that's outstanding.

Harmonics of the crystal controlled 10.4 MHz local oscillator are responsible for weak birdies at 31.2 and 41.6. Our PRO-2052 is fairly sensitive, except in the 1240 - 1300 MHz band. Our PRO-2052's crisp audio gives us a headache unless we use an external speaker or amplifier with adjustable frequency response. Monaural headphones or an external speaker can be connected through a 1/8" jack on the front panel, though you must increase the setting of the volume control because the audio available at the earphone jack has been attenuated.

° Summary

It's great to have military air band coverage and fast scanning. Our PRO-2052's reception is excellent and the radio contains many useful features. The PRO-2052 Owner's Manual is quite good, though programming trunked systems and fleet maps is still too complex. We found the ergonomics and audio quality annoying. Physically, the PRO-2052 feels like a cheap scanner but carries a price tag in the $370 range.

PRO-2052 $299.95 from Grove. See ad on pg 35.
Active Select-A-Tenna

Intensitronics, manufacturer of the popular Select-A-Tenna for mediumwave DXing, has just released a new model. Unlike its fore-runner, which augmented mediumwave signals by passive coupling, the Super Select-A-Tenna adds a built-in 40 dB amplifier and similar electronics to the respected Kiwa loop. Controls are provided for coarse, fine tune, and peak control for adjusting gain. It can be used with or without direct connection to your radio. The amplified antenna runs on one 9-volt battery (included).

The Super Select-A-Tenna is available for $189.95 from Grove Enterprises (800-438-8155), CCrane (1-800-522-8863), and other dealers. Watch for our review in an upcoming issue.

Radio Shack Multiband Radio

Reader Norman Hill called our attention to a new, inexpensive, multiple band radio from Radio Shack called the Optimus Multi-band PLL (phase lock loop) Radio. For $69.99, the radio tunes the AM, FM, SW (3800-12,500 KHz), TV sound (channels 2-13), and weather bands.

Features include 50-station memory; ten stations in each of the five bands may be stored into memory. A full keypad allows the selection of memory. A full keypad allows the selection of

Backlit liquid-crystal clearly shows the time and displays the currently selected station. You can set time on (alarm) or off (sleep). A dual time feature allows you track the time in a different time zone. Power is by four AA cells. Radio Shack does not elaborate on whether there is a power adapter input or whether the clock can display 24-hour (and, therefore, UTC) time. Check out Radio Shack catalog number Cat.# 12-808.

Coax Switch

Convenient for your radio shack or for DXpeditions, the new coax switch console from Alpha Delta is surge protected, accepts connections from four antennas, and is sturdy enough to stay put without coax pulling the box backward off the desk! The heavy cast housing is an attractive, powder coated black. The console comes in two models: Delta-4C console made to accept UHF connectors ($139.95), or the Delta-4CN, designed for N connectors ($149.95). See the dealer nearest you, or call Alpha-Delta Communications at 606-598-2029 for information.

The MFJ-115 is $29.95 from MFJ Enterprises. Another 24-hour clock of interest to hobbyists centers on a world map. With the clock set to 0000 hours in England, the clock will always tell you the time in UTC. The clock will also act as a visual aid in calculating local time anywhere in the world. This 12-inch diameter clock features a blue and brown map background, bright red hands, and silver hour digits against a black trim ring. Detailed cities with + or - hours are lined on the outside silver trim in red and blue. The MFJ-115 is $24.95.

Luxury for the VX-5

Another in the line of protective pouches that fit your radio like a glove is the PowerPort Radio Glove for the Yaesu VX-5. Not only does it protect your radio in luxurious glove leather, but the sturdy belt clip holds it securely to your belt and a convenient pocket holds your extra antenna tip close at hand.

The Voice of the Crystal

Have you ever wondered what it would be like to live in the early days of radio, fashioning components out of various raw materials? H. Peter Friedrich’s new book will show you how to live that experience through the magic and fun of the crystal set.

Imagine assembling your own headphone, rolling your own capacitor, contriving a cat’s whisker detector. Yep, it can be done, and when you’re finished, your crystal radio can rival the old timers!

Friedrichs also provides insights into boosting performance, while still following the home-brew approach. His conversational style of writing, hand-drawn illustrations and useful building tips combine to make this a most enjoyable read. And while you’re at it, request their free catalog of other excellent publications.

The Voice of the Crystal, $14.95 plus $3.50 shipping from The Xtal Set Society, PO Box 3026, St. Louis, MO 63130; phone (314) 725-1172.

Speaking of Science

“Man will never reach the moon
The 112-page book covers many of the aspects of operating an amateur radio station on these bands showing how much variety there is and how to make the most of the hobby. Chapters include propagation characteristics of the band, bandplans, equipment, DXing and awards, modes, and more.

**Guide to VHF/UHF Amateur Radio**

**THE FORREST MIMS CIRCUIT SCRAPBOOK**
Volume I, $19.95, and Volume II $24.95, are available from LLH Technology Publications, 3578 Old Rail Rd., Eagle Rock, VA 24085.

**Let your computer do the math**

The venerable HAMCALC computer disk loaded with "painless math and design programs for radio amateurs and professionals" has outgrown its boots and moved to CD. HAMCALC version 43 contains 250 programs, many of them entirely new or upgraded versions of existing programs.

Anyone who has used this amazing resource - provided since 1993 for the cost of materials and airmail by George Murphy, VE3ERP - doesn't need any further introduction. There's something for everyone on this CD, you don't have to be a ham radio operator. If you haven't tried it, you have nothing to lose; just send your US$7.00 check or money order to George Murphy VE3ERP, 77 McKenzie St., Orillia, ON L3V 6A6, Canada (email, ve3erp@encode.com)
A relative newcomer to the consumer antenna marketplace is Nil-Jon, offering several models for TV and FM broadcasting, amateur, and scanner listening. We decided to take a look at two wideband scanner antennas since the promotional literature issued by the company gives them rave reviews.

**The Big Base**

It seemed fair to compare the big base model with two perennial favorites, the Channel Master 5094 Monitenna and the AntennaCraft Scantenna. Both of these antennas have so far been unbeaten for wide frequency coverage, excellent reception, and low cost. Their receiving performance and architecture are virtually indistinguishable.

With the Nil-Jon selling at nearly three times the cost ($129.95 vs. $49.95) of its two competitors (which include 50 feet of coax as well), it had better offer something special.

The Nil-Jon is shipped as a semi-kit, roughly a dozen element pieces, interconnect cables, splitter, boom, and a bag of nuts and bolts. Using the enclosed (old edition) directions to sort parts and then assemble the rig took about half an hour. The new manual is a vast improvement.

The competitors' antennas come fully assembled, requiring only fanning out the elements which then latch into position. All three antennas require attaching their respective balun transformers and U-bolt brackets. Common tools (screwdriver, pliers, etc.) are required to assemble the antenna.

The marked difference between the Nil-Jon and its two competitors is its use of three independently fed elements. While the competitive antennas are essentially comprised of a single vertical element with parasitic elements hinged to it in an “X”-like configuration, the Nil-Jon’s three separate vertical dipoles are mounted on clear acrylic plates and spaced wide enough to avoid interaction which could skew the omnidirec-

tional pattern of the antenna.

The piping used for the elements is seamless aluminum conduit (3/4”D, .035” thick) bearing the mill’s stamp; this is much larger than used in either of the competitors, and gives it an edge in the durability department. It is rather crudely cut, however, giving the ends of the tubing a ragged, home-brew look. But that doesn’t affect its performance.

The elements are off-center fed like the Groove Omni, resulting in a balanced, high-impedance feed point, matched by three conventional VHF/UHF TV balun transformers. Three lengths of F-connector-fitted RG6/U coax route the signals from the balun transformers to a three-way VHF/UHF TV splitter, connected in reverse as a signal combiner. The combined signals are then led to the receiver or scanner via the owner’s F-connector-fitted cable. We would recommend anchoring the longest of the three interconnect cables to the boom with PVC electrical tape to keep it from flapping in the wind, possibly subjecting it to premature failure.

**So How Does It Work?**

To do a fair comparison, the Nil-Jon was mounted in the same position as a Scantenna, separated by several feet to avoid incorrect readings resulting from interaction of the elements. Using an Icom R7100 receiver as the test instrument, several steady carriers were selected in the 30, 90, 120, 150, 160, 300, 420, 450, and 860 MHz bands.

After a reading was taken from the Scantenna, the coax lead-in was switched to the Nil-Jon. Just to confirm the results, the coax was then reattached to the Scantenna and signal strengths were again measured. Unexpectedly, within visual limits, every signal was identical on all frequencies!

No attempt was made to measure characteristic impedance or VSWR. Transmitting into the antenna is probably possible if the power is low, limited primarily by the small components used in the transformers and splitter.
In order, the flimsiest construction is the Scantenna, although its history shows very little damage from wind and weather—most damage is incurred from rough handling during shipping! It is made from rolled and seamed aluminum tubing of the TV antenna variety. Next, the Monitenna, which is assembled from seamless tubing and is more durable. Both antennas reflect typical assembly line construction and finishing.

Strongest of all is the Nil-Jon with its heavy-gauge tubing and heftier boom, in spite of its homemade appearance. While we noted no difference in signal reception among the three contenders, the Nil-Jon’s durable construction may give it an edge under severe wind load conditions.

**The Bottom Line**

So does it really do this? You bet! The Super-M was compared to an 18” whip, the Grove ANT-30 Stealth, and even a cellular gain antenna, all popular favorites for scanner monitoring as well as VHF/UHF transmitting.

In every case, the Nil-Jon Super-M equaled or outperformed the contenders, sometimes by a substantial amount! And even though the manufacturer advertises it for 140-170/400-480 MHz communications, for receiving purposes, it works well past the 800 MHz band.

The antenna consists of three black-enameded and rubber-tipped elements (16” to 18-1/4”), a machined brass base, and a Larsen 3-1/2” magnetic mount. A 12-foot length of RG-58/U coax terminates in a PL-259 connector for attachment to two-way radios; an optional UHF/BNC adaptor is required for scanners.

HD-SCAN-WB-OMNI-F base antenna, $129.05 plus shipping. HD-V/U-Super-M mobile antenna, $64.95 plus $7.50 shipping. From Nil-Jon Antennas, PO Box 764, Amherst, OH 44001; ph. (440) 989-2295. Web site [www.nil-jonantennas.com](http://www.nil-jonantennas.com); e-mail pfb@eriecoast.com.

**The Mag Mount Mobile**

This was a pleasant surprise. The appearance of the HD-V/U-Super-M mobile antenna itself is unusual, with three slightly different-length VHF-Hi band whips all radiating upward at an angle from the base (see photo). At first glance, one might think that the purpose of the separation is to prevent interaction which might degrade a broadbanding design, similar to a dipole cluster of different lengths, each resonant at a different frequency.

But there is an added advantage to this design. At higher frequencies, as an element becomes electrically longer, the radiation and reception pattern starts to favor the ends. By angling the whips downward, this pattern is also lowered toward the horizon. Now the extra length has gain over the quarter-wave whip, providing better performance. And angled downward, the antenna cluster is less likely than a comparative single vertical element to strike overhead obstacles.

**The Bottom Line**

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New Senate Bill Could End Scanner Use!

Over the last two years, the Senate wisely ignored HR-514, a Bill introduced by the House of Representatives pretending to add privacy protection to cell phone users. An obvious concoction by the Cellular Telephone Industry Association (CTIA), HR-514 would have penalized the scanner industry and scanner owners to cover up cellular's failure to provide privacy for their customers.

Fortunately, the Senate wasn't moved; they recognized the commercial taint of the Bill and ignored it until it died of natural causes. But sadly, as we learned from Billy Tauzin's shameful performance in front of his telecommunications subcommittee, personal agendas of politicians are fashioned from campaign contributions, and the CTIA is a major contributor.

The Bill has a persistent commercial history. During the 105th Congress, Edward Markey (D-MA) introduced HR 1964; fortunately, it never got out of Committee. The failure was re-ignited as HR 2369 by Billy Tauzin (R-LA), chairman of the House Subcommittee on Telecommunications, Trade, and Consumer Protection, where it passed the House vote, but subsequently – and appropriately – died in Senate Committee.

Then it was re-wrapped by Heather Wilson (R-NM) as HR 514, where it passed the House and was referred to the Senate, where it, too, languished with no action taken. But the repeated Senate messages apparently had little effect on the cellular puppets of the House Subcommittee.

Now we see a "new" Bill, S.2326, fabulously introduced by CTIA's Senatorial representative, Ron Wyden (D-OR), whose favors cost his communications and electronics contributors nearly a half million dollars over the past five years. It doesn't take a lot of effort to make good money in Congress – this Bill is word for word the previously ignored HR-514!

The Bill is cosponsored by Senator Conrad Burns (R-MT), whose Web site proudly boasts that successful passage of his Bill will "End Use of Some Scanners." Burns is Chairman of the Senate Subcommittee on Communications. The Bill is being introduced as only a part of a larger privacy package the two Senators are currently preparing.

Let's take a more pragmatic look at why this Bill must never be taken seriously. First, the majority of it is a rehash of existing laws – prohibitions against modifying scanning receivers, manufacturing of alterable scanning receivers, marketing of cellular-capable scanning receivers, and on and on. These regulations are all in place and are being enforced.

More important, however, is that it introduces a vague, sweeping mandate to the FCC to protect the privacy of shared-frequency users, a poorly worded paragraph which could conceivably outlaw scanning receivers altogether, to wit:

"The Commission shall, with respect to scanning receivers capable of receiving transmissions in frequencies that are used by commercial mobile services and that are shared by public safety users, examine methods, and may prescribe such regulations as may be necessary, to enhance the privacy of users of such frequencies."

Note the absence of the logical and affordable recommendation that the service provider encrypt or scramble the transmissions. The paragraph clearly provides a means to outlaw scanners that can receive the frequencies, and not just telephone frequencies. A quick look at the table of frequency allocations, which shows the number of shared frequencies, to be compounded by spectrum reforming and the ability of public safety users to operate on virtually any mobile radio frequency, reveals the inevitable consequence.

When I testified in front of Tauzin's subcommittee in Washington during 1997 to protect the listening privileges of radio hobbyists, he told me that he had been asked by law enforcement representatives to prohibit the monitoring of police radio transmissions. This single paragraph, if passed, could do it. And since public safety is the number one interest in scanner monitoring, such a prohibition would ring the death knell for scanners.

The consequences would be enormous. Radio, TV, newspapers, magazines, and other newsgathering organizations would lose their ability to monitor public safety transmissions. Sports enthusiasts would be denied the radio excitement of air and auto races. Radio amateurs could no longer use scanners to assist in life-saving services during natural disasters and civil emergencies. Military and government agencies – including public safety – would be denied inexpensive scanning receivers presently used in their daily operations. And most frightening of all, the American public would be denied the ability to monitor the appropriate behavior of their law enforcement agencies, and even to assist – as they often do – in the apprehension of suspects through monitoring police channels.

But it isn't too late for you to protest ill-proposed Senate Bill S.2326. Let your Senator know your feelings now! If you don't know your Senator's name and address, you can find it at the library, by contacting your local newspaper, by looking in your telephone white pages under U.S. government, or by visiting the Web site www.senate.gov/ and selecting your state.
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