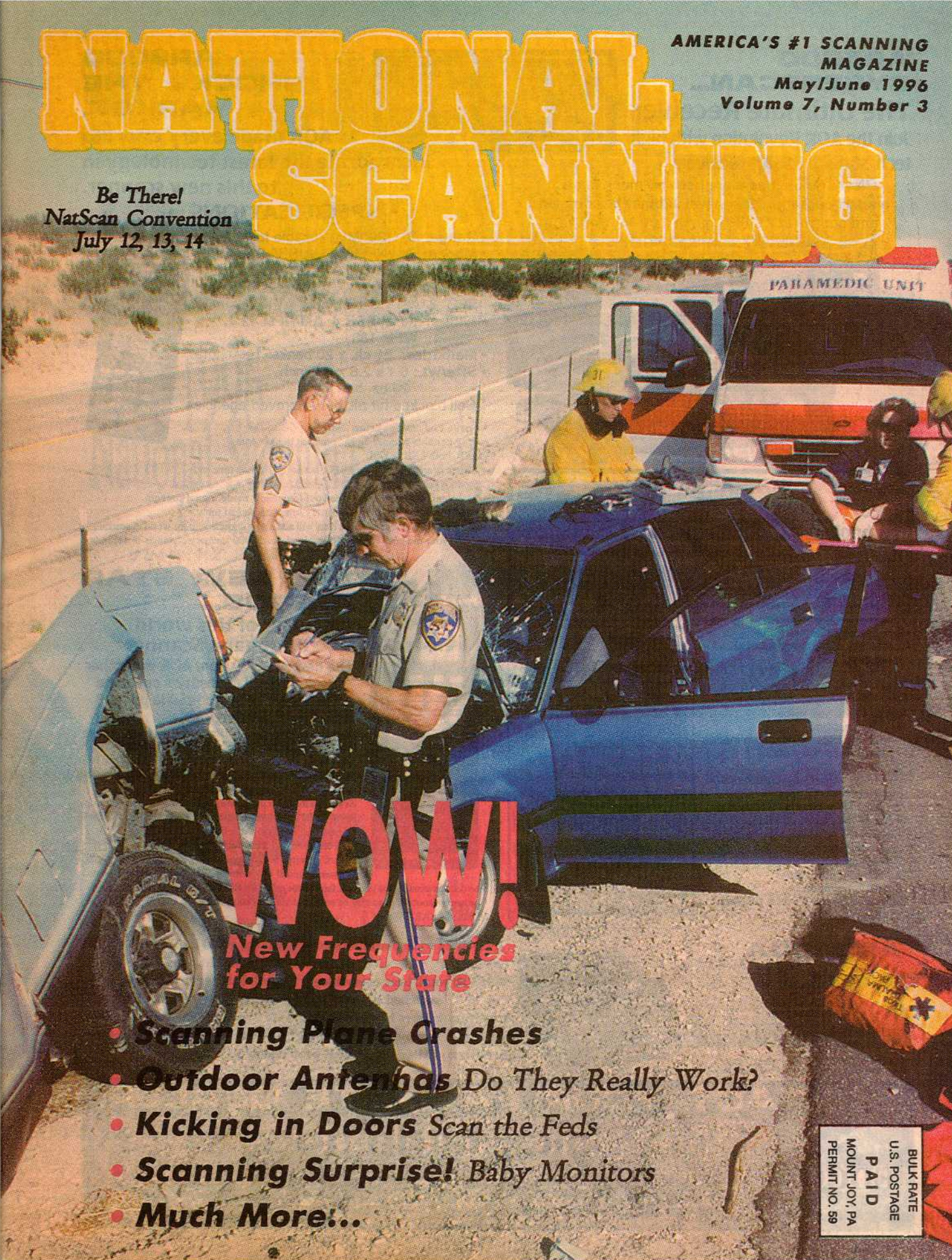
AMERICA'S #1 SCANNING MAGAZINE
May/June 1996
Volume 7, Number 3

NATIONAL SCANNING

Be There!
NatScan Convention
July 12, 13, 14



WOW!

New Frequencies for Your State

- **Scanning Plane Crashes**
- **Outdoor Antennas** *Do They Really Work?*
- **Kicking in Doors** *Scan the Feds*
- **Scanning Surprise!** *Baby Monitors*
- **Much More!...**

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AR5000 CYBERSCAN...
The Ultimate Receiver
Join the AOR Revolution with high tech, state of the art receivers

Never before has there been so much in such a small package. Hear naval submarine command and control at 21.4kHz, push a button and copy GOES WX Satellite 1691MHz.



10kHz-2600MHz

Leading Edge Technology has now become affordable.

The answer to every receiver need. Prior to the AR5000, it took two, three or even four receivers to cover this range, plus the small size and low power demands make the AR5000 ideal for field use, remote control radio, and local & remote computer control. Every circuit and component is state-of-the-art, surface mount technology. Low noise circuits and devices assure wide dynamic range and great sensitivity.

- Totally computer controllable.
- Local and remote control of all functions.
- 7 I.F. Band width filters
- Triple conversion to reduce imaging.
- Multi-Receiving modes covers today's data and voice communications.
- High speed scan and search modes
- 1000 memory channels (10 Banks x 100ch)
- 2 antenna inputs computer/front panel control.
- Varactor RF tuning .5 - 500MHz for low cross talk and intermod
- Switchable attenuator for high RF environments.
- Power 13.8VDC at <1amp, AC Adaptor included
- Small, lightweight (approx. 8.5"W x 3.5"H x 10"Deep)
- SDU5000 compatible

AR5000 Specifications

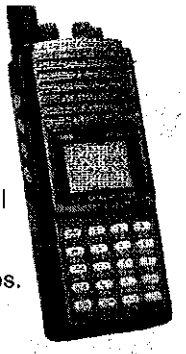
Frequency Range: 10kHz - 2,600MHz
Receiving Mode: FM, AM, LSB, USB, CW, Special
I.F. Bandwidth: 3kHz, 6kHz, 15kHz, 40kHz, 110kHz, 220kHz, 0.5kHz (Opt.)
Triple Conversion: I.F. 622.2, 10.7 & .455MHz
Frequency Stability: ±1ppm (0 to 50C) ext OSC jack
Antenna Impedance: 50-Ohm (N, BNC)
Programmable Step: 1Hz to 999.999kHz
Search/Scan Speed: 50 steps/second (less than 100kHz steps)
Power Supply: DC 12V, (<1A) 120VAC adaptor incl.

AR8000 SHOCKS THE MARKET.
AOR made every effort to incorporate the latest technology in to this new scanner.

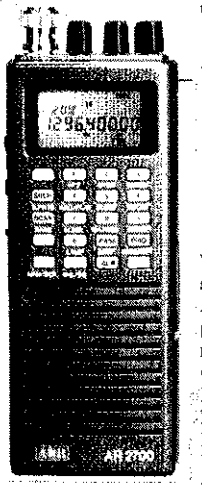
• SPECIFICATIONS •

- **Range:** .5 - 1900MHz* usable to 100kHz
- **Modes:** AM/NFM/WFM/USB/LSB/CW
- **Stepsize:** 50Mz to 999.995kHz
- **Sensitivity(μV):** 30 to 1000MHz
  SSB .2 **AM** 1.0 **NFM** .35 **WFM** 1.0
- **Filters:** (kHz) **SSB** 4 **AM/NFM** 12
  WFM 180
- **Memories:** 50 ch. x 20 banks=1000 total
- **Size/Wt.:** 6.1 x 2.8 x 1.6 inch.
  20 oz. batt. incl.

* Cell blocked for all, but Approved agencies.



- Ferrite Rod antenna below 2MHz
- Only portable scanner on U.S. market to have true SSB, both LSB & USB.
- Others attempt SSB using a BFO, but are difficult to tune and produce poor SSB audio.
- 4 level alpha numeric LCD read out frequency, mode, signal strength, band scope spectral display, battery low, remote and more.
- Computer control up/down load data, will add a new dimension to the world of scanning.
- Clone your memory banks with a friend, load 1000 memory channels in seconds

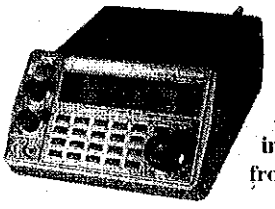


THE NEW STAR AR2700...
Out of this world Wideband Scanner
The new AR 2700 from AOR is another break-through for general coverage scanners at an affordable price.

• FEATURES •

Wide frequency range: 500kHz to 1,300MHz with various step size, 5, 6.25, 9, 10, 12.5, 20, 25, 30, 50, & 100kHz (wide FM only).
Auto Mode tuning: Comprehensive band plan has been pre-programmed to simplify the operation. The AR 2700 will automatically select the appropriate mode and channel step.
Great flexibility in programming: for Scan and Search mode. Delay, Pause and Priority intervals can be set to a specific value. Program search, Manual search, Bank link, Delay, Pause, Pass, Scan, Bank delete, Priority are provided.
High Capacity: 500 channels into 10 banks and 10 search banks.
Optional Digital Voice Recording: 20 seconds of digitized recorded conversation and playback through the use of the **RU-2700** option.
Computer control port may be connected via an optional adaptor to a computer for remote control of the AR 2700.

AR3000A
Compact, professional quality, wide range monitor receiver



Incredibly wide continuous coverage from 100kHz all the way up to 2036MHz* • Receives all modes • FM, AM, FMW, LSB, USB, and CW - so you'll hear everything! • Superb R.F. performance thru the use of 15 switched discreet band-pass filters with GaAs FET R.F. amplifier, delivers high sensitivity, wide dynamic range and excellent intermodulation rejection • Tuning rates are continuously selectable from 50Hz to 1MHz steps • True professional's choice!

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NATIONAL SCANNING

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July 12, 13, 14
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IN THE HEART OF
PENNSYLVANIA
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Our cover: California Highway Patrol at the scene of a wreck. Photo by Steve Klefer

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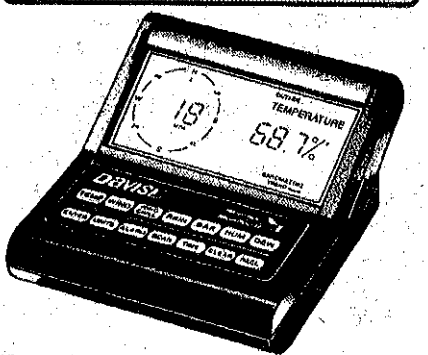
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Now, purchase your police radio scanners, digital voice loggers, CB/GMRS radios, VHF transceivers, weather forecasting equipment and more directly from Communications Electronics Inc. Your **free fax-on-demand catalog** is instantly available by calling 313-663-8888 from your fax machine.

Weather Stations



The Weather Monitor II (7440) comes complete with an emometer with 40 feet (12.2 m) of cable, external temperature sensor with 25 feet (7.6 m) of cable, junction box with 8 feet (2.4 m) of cable, AC power adapter, detailed instruction booklet and one year limited factory warranty.

Now you can be your own weather reporter with the Davis Weather Monitor II. Our top-of-the-line weather station combines the most advanced weather monitoring technologies available into one incredible package. Glance at the display, and see wind direction and wind speed on the compass rose. Check the barometric trend arrow to see if the pressure is rising or falling. Push a button, and read indoor and outdoor temperature, wind chill, humidity and barometric pressure. Using the Weatherlink with Weather Talker option and your computer, you can issue your own spoken weather reports. Call 313-994-9000 for a demonstration. Our system can even call you. Our package deal includes the new ultra high resolution 1/100 inch or 0.2 mm rain collector part **#7852**, and the external temperature/humidity sensor, part **#7859**. The package deal is order **#DAV1-Z** for $479.95 plus $16.00 shipping. If you have a personal computer, when you order the optional Weatherlink computer software for $134.95, you'll have a powerful computerized weather station at an incredible price. For the IBM PC or equivalent order part **#7862-Z**. Apple Mac Plus or higher including PowerBook, order part number **7866-Z**.

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Thermometer with transparent calender & clock display by OSI **TC188-Z** ... $19.95
Thermometer with AM/FM clock radio by Oregon Scientific **CR388-Z** $39.95
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Bearcat® 9000XLT-Z Radio Scanner

Mfg. suggested list price $769.95/**Special $357.95**
500 Channels · 20 banks · Alpha numeric display
Turbo Scan · VFO Control · 10 Priority channels
Auto Store · Auto Recording · Reception counter
Frequency step resolution 5, 12.5 & 25 KHz.
Size: 10-1/2" Wide x 7-1/2" Deep x 3-3/8" High
Frequency Coverage:
25.000-549.995 MHz., 760.000-823.995 MHz., 849.0125-868.995 MHz., 894.0125-1,300.000 MHz.

The Bearcat 9000XLT is superb for intercepting communications transmissions with features like TurboSearch™ to search VHF channels at 300 steps per second. This base and mobile scanner is also ideal for intelligence professionals because it has a selectable attenuator to help eliminate annoying intermodulation from adjacent frequencies in highly populated areas and selectable AM, Wide FM and Narrow FM modes that allow you to change the default receiving mode of the BC9000XLT. Other features include ***Auto Store*** - Automatically stores all active frequencies within the specified bank(s). ***Auto Recording*** - This feature lets you record channel activity from the scanner onto a tape recorder. **Hi-Cut filter** to help eliminate unwanted static noise. You can even get an optional ***CTCSS Tone Board*** (Continuous Tone Control Squelch System) which allows the squelch to be broken during scanning only when a correct CTCSS tone is received. For maximum scanning enjoyment, order the following optional accessories: **PS001** Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter $14.95; **PS002** DC power cord - enables permanent operation from your vehicle's fuse box $14.95; **MB001** Mobile mounting bracket $14.95; **BC005** CTCSS Tone Board $54.95; **EX711** External speaker with mounting bracket & 10 feet of cable with plug attached $19.95. The BC9000XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited Uniden warranty.

VHF Transceiver

RELM® WHS150-Z Transceiver/SPECIAL

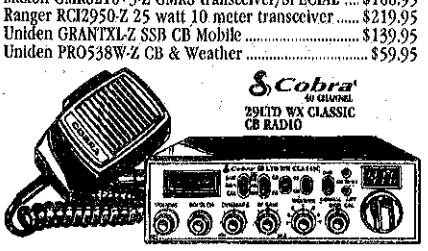
Mfg. suggested list price $481.67/**Special $289.95**

Law enforcement and fire departments depend on the RELM WHS150 transceiver for direct two-way communications with their police or fire department, civil defense agency or ham radio repeater. The WHS150 is our most popular programmable frequency agile five watt, 16 channel handheld transceiver that has built-in CTCSS, which may be programmed for any 39 standard EIA tones. Frequency range 148.000 to 174.000 MHz. Will also work 144.000-148.000 with slightly reduced performance. The full function, DTMF compatible keypad also allows for DTMF Encode/Decode and programmable ANI. Weighing only 15.5 oz., it features dealer programmable synthesized frequencies either simplex or half duplex in both 5.0 and 6.25 KHz. increments. Other features include scan list, priority channel, selectable scan delay, selectable 5 watt/1 watt power levels, liquid crystal display, time out timer and much more. When you order the WHS150 from CEI, you'll get a complete package deal including antenna, battery, belt clip and user operating instructions. Other accessories are available. A leather carrying case with swivel belt loop part **#LCWHS** is $49.95; rapid charge battery charger, part **#BCWHS** is $69.95; speaker/microphone, part **#SMWHS** is $54.95; extra ni-cad battery pack, part **#BP007** is $59.95. The radio technician maintaining your radio system must order programming instructions part **#PI150** for $18.00 to activate this radio. FCC license required for United States operation.

CB/Ham Radios

Have fun talking with your friends using CB & amateur radios from Communications Electronics. As you travel across the United States or Canada, you can receive automatic emergency broadcasts about severe weather and travel conditions with your Cobra 2010GTLWX and 29LTDWX CB radio. Order your radios from CEI today.

Cobra 2010GTLWX-Z SSB base with weather alert† . $359.95
Uniden Washington-Z SSB Base (+$25.00 shipping) $199.95
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Cobra 29LTDWX-Z CB with weather alert $114.95
Cobra HH40-Z CB 40 channel handheld transceiver .. $79.95
Maxon GMRS210+3-Z GMRS transceiver/SPECIAL $166.95
Ranger RCI2950-Z 25 watt 10 meter transceiver $219.95
Uniden GRANTXL-Z SSB CB Mobile $139.95
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Bearcat Scanners

Monitor police, fire, weather, marine, medical, aircraft and other transmissions with your Bearcat scanner.

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Sportcat 150-Z handheld with 800 MHz. .. $151.95
Bearcat 148XLT-Z base with weather alert . $83.95
Bearcat 120XLT-Z handheld $119.95
Bearcat 80XLT-Z handheld with 800 MHz. $134.95
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Bearcat BCT10-Z information mobile $139.95

Digital voice logger

Now, anyone can record and archive their telephone calls and scanner radio traffic with our affordable Eventide brand digital communications loggers. Model VR204DAT4 give you powerful performance with a single DDS-2 DAT drive that records more than 500 channel hours of storage on four channels. For monitoring trunking systems, the Eventide VR240 Mark III digital logger gives you over two months of unattended recordings on up to 24 channels when ordered with *dual* 8 mm. high density CT tape drives. All systems include 60 channel hours (250 & 500 hours optional) of instant recall. Ideal for quickly replaying fast breaking radio action. FCC approved telephone interface is built-in and beeps are selectable on a channel-by-channel basis. Other options include GPS time sync. Order your tape logger from CEI today.

VR204DAT4 4 channel, single DAT drive, 500+ channel hours $7,395.95
VR240DAT8 8 channel, single DAT drive, 500+ channel hours $12,295.95
VR240DAT16 16 channel, single DAT drive, 500+ channel hours $14,490.95
VR240DAT24 24 channel, single DAT drive, 500+ channel hours $16,685.95
VR2408MM8 8 channel, single 8 mm. drive, 875+ channel hours $15,595.95
VR2408MM16 16 channel single 8 mm. drive, 875+ channel hours $17,790.95
VR2408MM24 24 channel single 8 mm. drive, 875+ channel hours $19,985.95
Option-add 8 more record channels to a VR240 8 of 16 channel $2,095.95
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Option-ECW40, satellite chronometer GPS for external time sync. $1,895.95
Option-DTE, desktop enclosure for one VR240 Mark III system $449.95
Supplies-120 Meter DDS2 data grade DAT tape (box of 10) $374.95
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Buy with confidence

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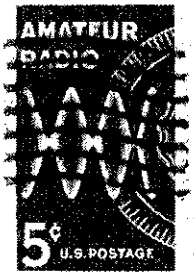
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Hams: Legends in their Own Minds? E-Mail Us!

LETTERS

With Joe Nooney

Good News! *National Scanning* has made some changes to make us more accessible to you, our valued readers. You can now e-mail the editor directly at "NSCAN@aol.com" (without the quotation marks). All e-mail will be answered. We want to hear your comments, suggestions, compliments and yes, even your gripes. If you don't have access to a computer, please write to us (Box 360, Wagontown, PA 19376) and let us know what you want to see in *National Scanning*. This is YOUR magazine and being responsive to our readers is my Job #1. Now let's go to the mailbag.



"I've had it with ham radio operators," writes LuAnne Ridell of New Orleans. "While away on a business trip I broke the antenna on my handheld scanner. So I stopped in a local ham store to get a replacement. Instead of an antenna I got a raft of garbage about how, because I don't have a ham license, I'm not a real radio hobbyist and am just 'playing radio' with a scanner.

"I'm so tired of these overcranked wire heads treating me like I'm some type of inferior life form because I don't have one of their precious call letters.

"Sixty years ago, ham radio was on the cutting edge of technology and having a ham license meant something. Today it means you can memorize questions from a pre-published list and pull a thousand dollar radio from a box. Big deal."

Hams, led by the American Radio Relay League (ARRL), have tended to be a little stuffy and kind of heavy on the self-importance. No doubt such an attitude as the one you experienced has turned off a lot of would-be hams. And that's a shame because ham radio really can be a wonderful hobby and one that's quite compatible with scanning.

We suggest that scanner listeners interested in making a judgement decide for themselves. Virtually every scanner tunes in the 2-meter ham band -- 144.000 to 148.000 MHz. Give it a listen and let hams speak for themselves.

Dana Clarke from Norcross, Georgia writes to tell us that he just got back into scanning after an eight year absence from the hobby. He is wondering if anyone knows what frequencies will be used at the Olympic Games in Atlanta.

Welcome back to the hobby Dana! As far as specific Olympic Committee frequencies go, I'm afraid you're in for a bit of a letdown. Most communications will reportedly be in the 900 MHz range and will be digital. Digital means that while you may well be able to pick up the actual transmission, your scanner will not be able to make any sense if it. Your best sources of information on the Olympics will be the usual police, fire and EMS frequencies. Also give the media frequencies a try (161.640--161.730, 450--451 and 455--456 MHz) as news crews from around the world will be in Altlanta to cover the Games.

We got an unsigned letter from Johnstown, Penna. and the author tells us that we "have a great magazine, keep up the good work." He (or she) wants to know if there is anywhere one can collect patches from various police, fire, EMS or international agencies.

If you had included your name and address, I could have sent you a whole list of patch collecting information. If you have access to the internet simply type in the words patch collecting in your web searcher and get ready for a whole plethora of information. I got well over 200 hits before I stopped counting.

As usual, we want to extend an invitation to the 2nd annual National Communications Convention. We are pleased to announce that well-known communications author and expert, Gordon West will also be at this year's convention. Come and listen to Gordon's informative and sometimes hilarious seminars. Don't miss this chance to meet one of the communications hobby's best.

Of course, there will be a host of other interesting people to meet, equipment to see, things to do. We've even been told that Dave Marthouse and the gang from the popular "Spectrum" radio program will be broadcasting live from the convention to a shortwave audience around the world!

All-in-all, this is a convention not to be missed. Make sure you sign up today by calling 610-273-7823. You can also sign up via the internet at http://www.ro.com/customers/hobbystop/natscan.html. Keep those cards and letters coming.

Send your letters to National Scanning, Box 360, Wagontown, PA 19376 • NSCAN@aol.com

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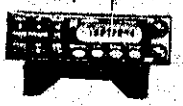


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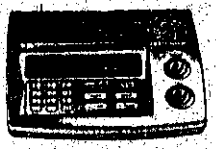
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NICAD BATTERY

BC 700A $ 159.00



50 CH 12 BANDS
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800MHZ TURBO SCAN WX

BC 144XL



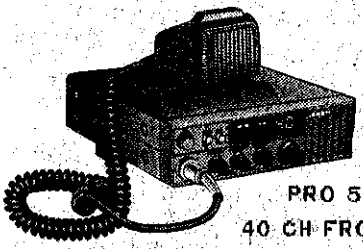
16 CH 10 BAND
ONE TOUCH
WEATHER
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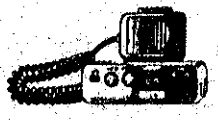
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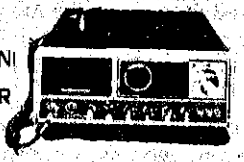
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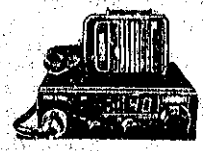


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Porno Jammer

According to newspaper reports, police in Vancouver, Canada, are being harassed by a "radio amateur" who jams their radio traffic with the sound of a couple having sex. It's extremely dangerous, Vancouver police Inspector Al Forbes said, referring to the jamming, not the sex. The fleshy blasts, believed to be from the soundtrack of pornographic movie, follow the police from channel to channel as they attempt to avoid the jammer. "They obviously know all the frequencies," says Forbes. In emergencies, police can be heard over the interference although the grunting distracts the officers. Inspector Forbes said it's unlikely the radio pervert will ever be caught.

800 MHz System Works

Not all is doom and gloom when a new 800 MHz radio system comes to town, says reader George Beard -- at least not for the people who use it as part of their job. "Interesting notice in the paper about the 800 MHz system of the Kansas City, Kansas Fire Department, " says Beard. According to the report, the new system has given the department state-of-the-art communications. "The new radio service has given us capabilities we have needed for some time," says Fire Chief John Bergman. Not one whimper about black outs, dead spots or other complaints that sometimes accompany the installation of these high-tech systems. The Kansas City, Kansas story is in contrast to the adjoining Kansas City, Missouri Fire Depasrtment 800 MHz system which reportedly does not work well. Kansas City, MO, is about three times larger in population that Kansas City, KS. In Portland, Oregon, trouble continued to nag the system when a mis-aligned microwave dish and rain combined to take that 800 MHz trunked system off the air recently. One month earlier, a windstorm froze the system, forcing police and firefighters to use cellular and wired telephones to contact their dispatchers.

Motor-Talker Tragedy

Anyone who has ever watched the person in the car in front of them (weave) as they talk on their cellular phone (Oops! Off on the shoulder again!) already knows this story. Researchers say that people with a cell phone in the car have a 34 percent higher risk of having an accident than people who do not have cell phones. What's more, people who use their cell phones a lot (50 minutes or more a month) are five times more likely to crash than motorists who talked less. The Cellular Telephone Industry dismissed the study, saying, "It has glaring research shotrtcomings." But what about other people who use radios in their cars? Researchers ignored the question of Ham and CB users.

Some Fun, Eh?

Another mayday rang out from the frigid Atlantic waters off the coast of Massachusetts. As always, the Coast Guard responded, lanuching rescuers from Boston, Gloucester and Air Station Cape Cod. The problem was that the mayday was a fake. Everyone headed home. Not too long afterwards, police heard a man bragging on his CB about making a false distress call. The man, an 18 year old living at home with his parents, was not arrested but Coast Guard officials say that sending false distress signals is a violation of federal law and that charges are possible.

Reader's Report

Reader's Report

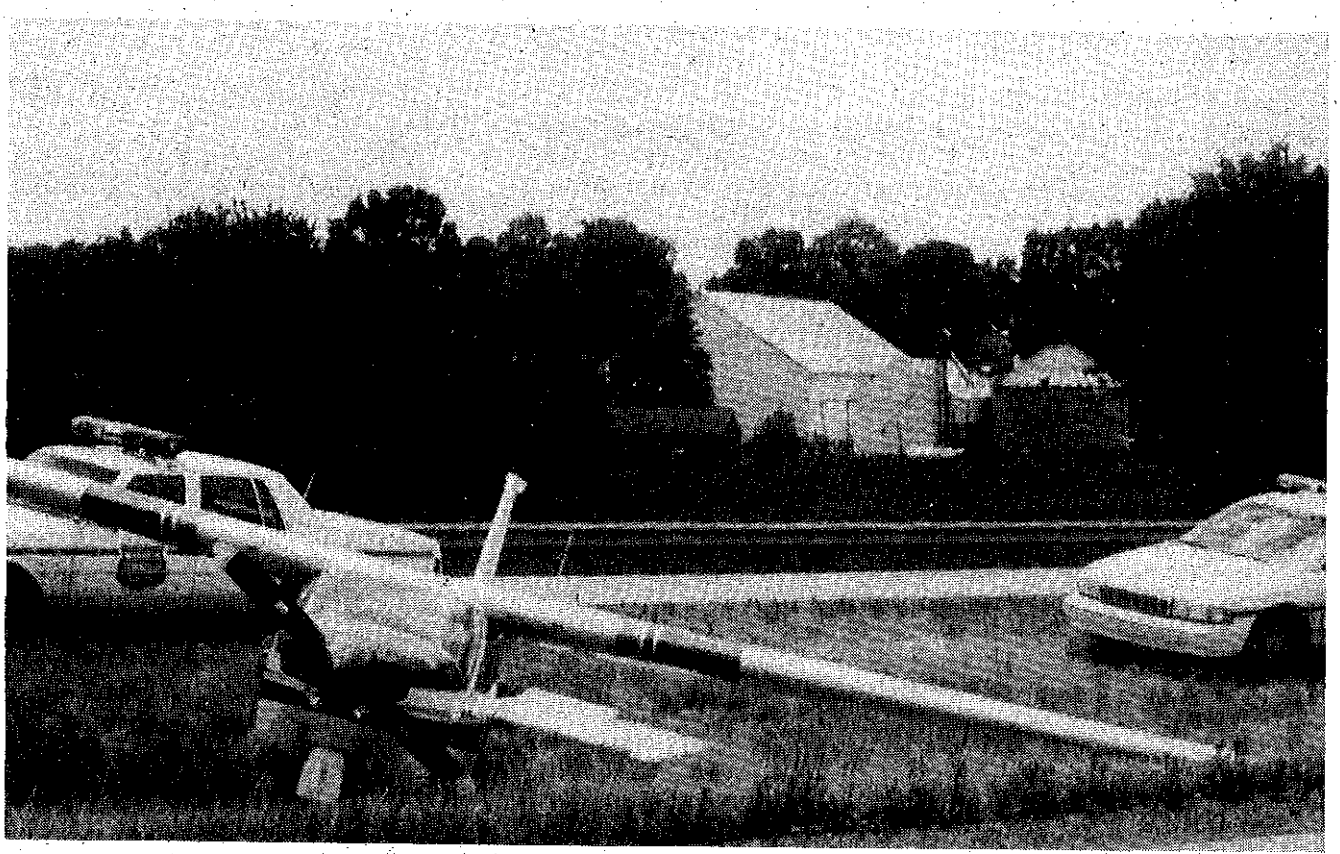
Reader's Report

Scanner Heroes

The first story -- A high school scanner listener from Hartford, Connecticut, was on the receiving end of a $1,000 reward, nomination for a civic award and lots of publicity. Sixteen year old Liam O'Rourke overheard a police radio transmission describing a vehicle sought in the robbery of a local bank. When the suspect drove by a few minutes later, O'Rourke followed and got a description of the suspect and his license plate number. He even pulled up next to the vehicle at an exit ramp to get a better look at the suspect's face. As a result of O'Rourke's action, Alvin Robertson, a seven-time bank robber out of prison only eight months, was arrested. "I don't really feel I did anything that big," said O'Rourke, "I didn't want anyone doing anthing wrong in my town."

The second story -- In Topeka, Kansas, two citizens in a truck heard a report of a robbery on their scanner. When they saw a car matching the description given out by police, they used their cell phone to call police who stopped the car. Four people were arrested. Police think the suspects may have had a hand in as many as 15 recent robberies in the area.

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Scanning Plane Crashes

BY STEVE DONNELL

Late at night, a private plane bringing five executives home from a business meeting in Atlanta, crashes in the woods outside of town. The flight was unscheduled. Because of the hour, it's entirely possible that no one is even aware that it went down. Yet there could be survivors out there. Emergency personnel will need to be notified and the exact location of the plane will need to be pinpointed. While a number of federal, state and local operations all crack into action at the first sign of a crash, the professional scanner listener could, conceivably, be the first to know of the disaster. This is because at the exact moment of impact, a tiny transmitter aboard the plane called an Emergency Locating Transmitter (ELT), goes on the air. And when it does, your scanner can pick it up. ELTs are easy to identify and are found on only three frequencies: 121.5 (civilian aircraft), 243.0 (military aircraft) and 406.025 (the new land and marine distress alerting frequency).

An ELT signal is a steady carrier transmission with a very distinct, repetitive sweeping audio tone on it. The power of the ELT transmitter is low, about 100 milliwatts, but it gets out for anywhere from one to five miles on the ground and when monitored from a rescue plane at several thousand feet, can be heard for anywhere from 20 to 30 miles or more.

Even higher overhead are a series of satellites, assisting the scanner listener by also listening for ELTs. Once detected by the satellites, the location of the ELT is relayed to the Air Force Rescue Coordination Center (AFRCC) in Langley, Virginia. The accuracy of the latitude and longitude coordinates that the satellite provides can sometimes be fairly good, within two to three miles or better. At other times, the data on the location of the ELT signal can be 10 to 20 miles or more off from where it finally turns out to be located. The location is checked against a list of known sources and if unidentified, the Civil Air Patrol is assigned the task of locating the source.

Once CAP is on the job, ground team search members will attempt to get a directional bearing on where the signal is coming from. This is accomplished by using special, highly sensitive portable receivers. Usually a number of readings will be taken at different locations. CAP search team members are trained in using maps and compasses for this very purpose.

Because they are so easily triggered, ELTs are often activated by accident. Nationally, approximately 95 percent of all reported ELT signals are of an accidental or "non-dis- tress" variety. An aircraft making a somewhat harder landing than usual, an ELT being bumped with an object (flight gear or luggage, for example) or even certain maintenance procedures have all launched countless search missions. Often the ELT is located in someone's home, in the trunk of their car, or sitting in a airplane parked at a nearby airport. Nonetheless, identifying the source of any ELT signal should be taken as a VERY serious matter until it is known for certain that the signal is not the result of an aircraft or persons in distress. Locating and securing any accidentally triggered ELT as quickly as possible is also important because these signals could possibly block reception of an ELT signal or a MAYDAY call from an aircraft in real trouble.

Another type of emergency beacon transmitter that is very similar to an ELT is a device called an Emergency Position Radio Indicating Beacon (EPIRB). These are emergency transmitters carried onboard boats. Since there is very little chance of a boat crashing into the side of a mountain, EPIRBs are designed to be triggered, not by mechanical impact, but merely if stood upright. If a boat that is carrying an EPIRB should sink or capsize, the buoy-like design of the EPIRB is designed to float clear of the boat and automatically start transmitting it's emergency beacon signal. Locating EPIRB (or ELT) signals that are determined to be originating away from land is normally the responsibility of

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the Coast Guard. However since there is no way to determine if a beacon signal being transmitted inland or along a shore line is from an ELT or EPIRB, the Civil Air Patrol is often called upon to locate the source of these signals as well. EPIRBs transmit on the same 121.5 MHz frequency as ELTs and have the same type of sweeping audio modulation sounds. Newer design EPIRBs transmit on 406.025 MHz with a data-burst type signal. Many smaller, privately owned boats still carry the older type EPRIBs that transmit on 121.5 MHz.

Virtually all scanners will pick up the civilian channel, 121.5 MHz. Check your owner's manual to see if you can also receive the military's 243.0 MHz and 406.025 MHz. You can program the frequencies in as a regular channel along with your local police and fire. Or you can assign it the coveted "priority" channel. Many scanners allow you to designate at least one frequency as "priority." The priority frequency is repeatedly checked by the scanner, sometimes as often as once every second, for activity. All of this goes on while your scanner continues to scan the local police and fire. "Priority" is perfect for ELT frequencies because they remain inactive for weeks, even months or years at a time. Assigned priority, when one finally does go off, you'll know literally within a second. If you do receive what you believe to be an ELT, do not hesitate but call your local police. Give them your name and phone number, tell them that you are a scanner listener, and that you have received a signal from a possible ELT, which indicates an aircraft in distress. If they are unfamiliar with ELTs and what your "catch" means, patiently explain to them what you've read in this magazine. You may also consider calling the local airport.

You may also consider programming the following additional frequencies into your scanner. Frequencies are courtesy of the Official Aeronautical Frequency Guide, 3rd edition ($21.95 + 3.05 shippping from 800-351-7226).

National Civil Air Patrol Frequencies

121.600 - Emergency Locator Test
122.900 - Secondary & Training
123.100 - Search & Rescue
148.125 - Secondary Repeater Output
148.1375 - Local Operations
148.150 - Primary Simplex Operations & Repeater Output
149.5375 - Air Operations
149.895 - Packet/Data Transmissions

Tracking ELTs with the Civil Air Patrol

Most of my efforts in tracking ELTs and EPIRBs have not been "life or death" situations. Still, they have very seldom been anything that could be called "a fool's errand" either. There are just so many different things that can be encountered during a mission searching for an elusive beacon. Each is different from the last one and you also just never know what you will find. One incident ended when I had to paddle a canoe out to where a float plane was moored in order to deactivate it's ELT.

On another memorable mission, my CAP Commander alerted me that the tracking satellite was picking up an ELT in southern New Hampshire. I quickly gathered together some of my RDF tracking gear and, with another CAP member along for assistance, headed out toward a nearby small airport. The first order of business for those on a CAP ground team is to check all likely locations such as airports and boat marinas for the presence of a beacon signal.

At our first stop, we could not receive any ELT beacon signal. But since the airport was located on a high ridge, I also tried using a special beam type of antenna I had devised in order to help pull in any weak signals. Still no luck. We then proceeded to check two other small airports, located across the border in Maine. One of these airports I had been at a couple of times previously, hot on the trail of an active ELT. But this time our efforts were not so easily rewarded. After running down the most likely possibilities, I began to wonder if we had a situation where a plane had actually gone astray.

We decided to standby at the third airport, until one of our search planes could be launched and try to get a bearing on the beacon signal. Our search plane approached from the west and radioed to

Tracking ELTs

us that they were in fact picking up the beacon signal and were tracking it somewhere along the coast. As the plane flew north of York, Maine, the beacon signal got stronger.

The beacon signal dropped off as the plane neared Portland which would indicate that it had passed over the target area. As the plane retraced it's first search track, it was quickly realized that the beacon was somewhere in the vicinity of Kennebunkport, the summer residence of former President George Bush. Even though Bush left the presidency almost four years ago, the air space above his home and the surrounding area is still considered a Restricted Zone by the FAA. Our search plane had to get special permission to continue.

Had this same mission occurred some years earlier, I could have easily imagined a much more serious situation unfolding. It is unlikely that our small plane would have been granted permission to enter the airspace around K-Port and any attempts to do so would have resulted in someone in the Presidential Security force taking aim on the plane with a shoulder-launched surface-to-air missile. This time at least, as we drove in the center of town, things were quiet.

As is always the case when our search for a beacon might lead onto private property, we notified the local police as to our presence and intentions. I was definitely a bit apprehensive in waiting to meet up with one of the K-Port locals in of all places, just outside the gates to George Bush's residence.

It turned out that the source of the beacon was not the former president. We headed back to town, the local police following close behind, to where the signal finally peaked. Somewhere among a couple dozen or so boats was the source of the beacon, most likely a faulty EPIRB. It took only a few minutes to find the perpretrator. In this case the culprit was an EPIRB, improperly stowed in an equipment locker. Not as exciting as a mission on the grounds of a former president but just as satisfying. And just another mission with the Civil Air Patrol. Always Vigilant.

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TG-1 Tone Grabber

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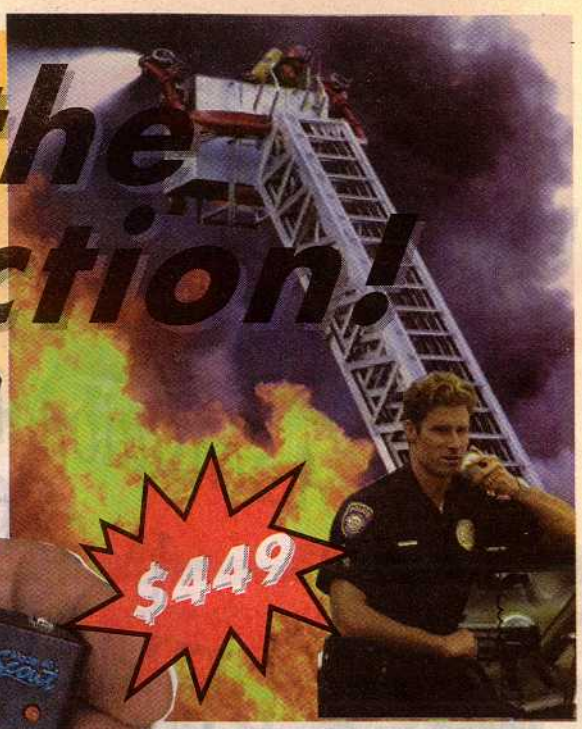
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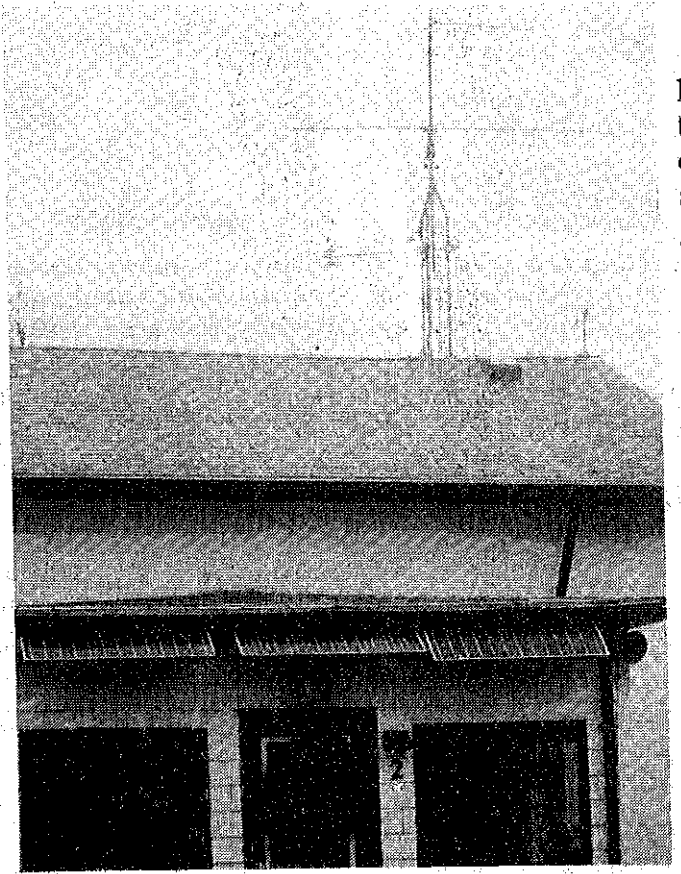




Independent Scanning

BY JIM SUTTON

The beautiful glaze that coated everything back on the morning of March 4, 1991 was very deceptive. The fact was that one of the most devastating ice storms ever had all but wiped out electrical power to the greater Rochester, New York area. Many would wait for up to two weeks to see their power restored. A once-in-a-lifetime listening opportunity was lost to nearly all listeners for lack of power. Al McMullen, sitting in his radio room in the little village of Scottsville, heard everything that was happening on his base scanner and monitors. In fact, unlike his neighbors, McMullen not only heard all that was happening, but he was warm while he did it. The warmth was courtesy of natural gas. The power to run his radios and light his listening post was direct from the sun. Electrical lines be damned. McMullen's power came direct from the sun -- free, quiet, and out of this world.



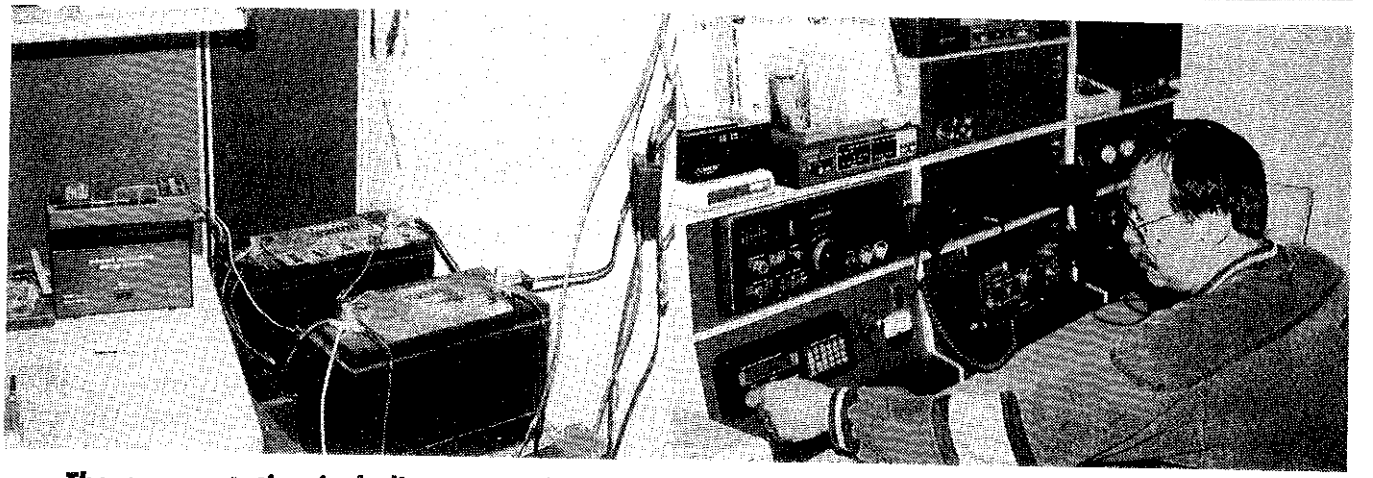
A view of McMullen's solar panels and antenna power

How It All Began

In 1988 McMullen, a technician at Rochester Gas and Electric, became interested in solar power for his radios after reading an advertisement from a firm called Antennas West in Provo, Utah. It wasn't long until McMullen was mounting solar panels on the south side of his upstate New York home. From the panels the power goes to the basement where McMullen's listening post is located. The power travels first to the charge controller which makes sure the proper voltage is getting to a pair of 12 volt marine batteries. From there it's on to an impressive assortment of receivers, including a Realistic 2021 two hundred channel scanner, a DX302 shortwave receiver and a home-made weather alert radio. The entire array of equipment is handsomely mounted in a console that would be the envy of many professional dispatchers.

Turning Him On

To the right of the PRO 2021 scanner is the switch that allows McMullen to operate continuously for up to three days when the regular electrical power is interrupted. After a quick check of the voltmeter, McMullen can simply switch over to the solar charged batteries and not only run and light his listening post, but provide 12 volt lighting at key points throughout his home. The list of solar powered items doesn't stop there. For severe weather situations a digital weather station indicates wind speed and direction, high and low temperatures, and amount of



The power station including two Delco S2000 deep cycle marine batteries, nicad battery charger, power inverter provides electricity for McMullen's radio panel

precipitation. For AC devices such as the antenna rotor, there is a power inverter. A power inverter converts the DC electricity that the solar panels provide and changes it into AC. A nicad battery charger keeps batteries charged for several handheld radios.

The Challenge

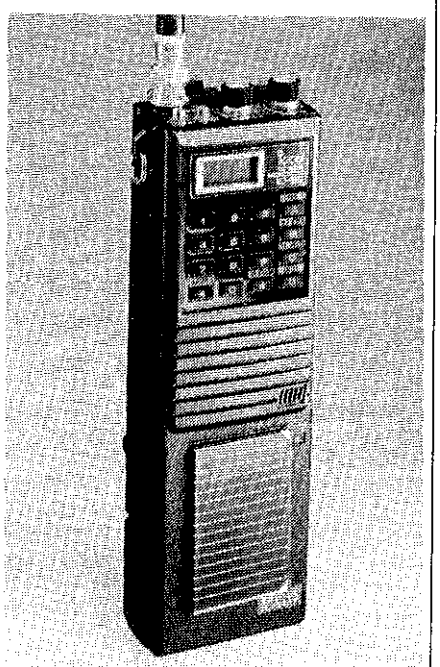
Those familiar with the amount of sunshine at McMullen's location in Western New York must realize that if solar power can work in an area with the least number of sunshine hours of any continental US location, it can work anywhere. Even during winter months when the sun is at it's lowest angle of radiation and the hours of daylight are few, McMullen's listening will go uninterrupted.

You Can Use the Sun's Energy for Your Radio

Only thirty years ago, solar panels were so expensive they were found only on satellites headed for outer space. Since then, solar panels are found on everything from watches to calculators and at prices that almost anyone can afford. Like to get started with solar power for your radios? Edmund Scientific sells a mini panel (1 1/2" x 2 1/2") that can be attached to the front of your handheld scanner. All you have to do it solder the 2" leads into the battery and you're radio will be charging whenever it's in the sun. Ask for part C52,169. It's just $12.95. To order call 609-573-6250 or write Edmund Scientific at 101 E. Gloucester Pike, Barrington, NJ 08007-1380.

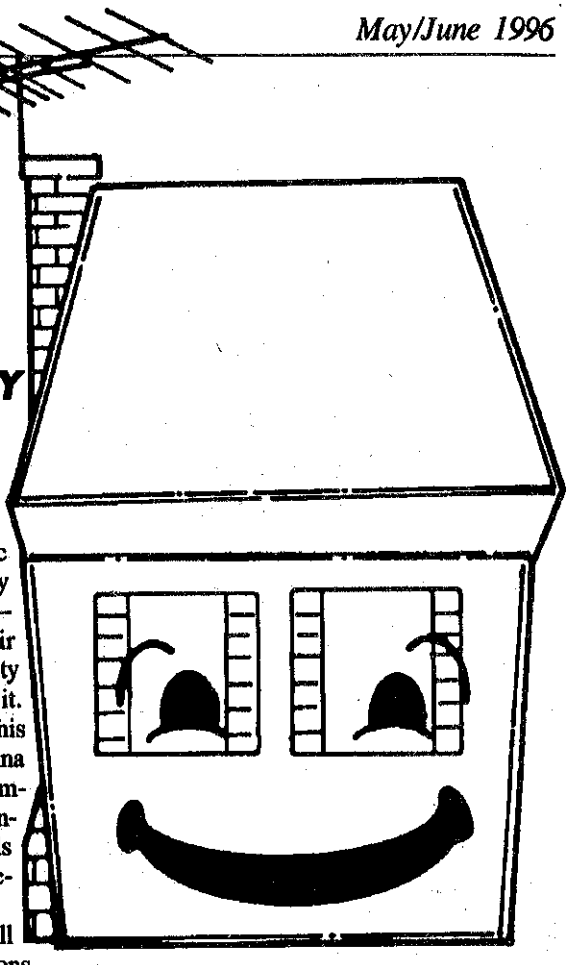
Want more information on solar-powering your radio room? Contact the following firms for information. They'll be happy to send you information. Please mention National Scanning when you call or write.

- *Antennas West, Box 50062, Provo, UT 84605 (801-373-8425)*
- *Backwoods Solar Electric Systems, 8530 Rapid Lightning Rd., Sandpoint, ID 83864 (208-263-4290)*
- *Campmor, P.O. Box 700, Saddle River, NJ 07458 (800-CAMPMOR)*
- *Sunelco, 100 Skeels St., Hamilton, MT 59840-1499 (800-338-6844)*



Outdoor Antenna Guide

BY JOE NOONEY



You've seen the ads. Put up an outside antenna for your scanner and hear the world. Is an outside antenna for your scanner really worth it? And do they really work? Which one should I get and how do I put it up? The answer is yes, and which one you should get is limited only by your needs and the amount of money you want to spend. Fortunately, you don't have to spend a lot.

Which Antenna?

The antenna is the heart of any scanner setup. In fact, there's an old saying, "It's better to have a cheap scanner with a good antenna than a good scanner with a cheap antenna." Think about it this way: you wouldn't buy a $10,000 stereo, noted for its fine audio, and then listen to it on a pair of $9.00 car speakers from K-Mart. Scanning is something like that. Scanners are very sensitive receivers that can pick up all kinds of things. It'd be a shame to use only that tiny whip that came with the scanner.

So now its settled. You need an outside antenna. The problem of which to buy depends on two things, your needs and your checking account balance. If you are looking for good performance at a decent price, try an antenna like the Scantenna. It's got what's probably the leading price-perfor- mance ratio in the industry, meaning that it really packs some bang for the buck. It'll set you back about 40 bucks.

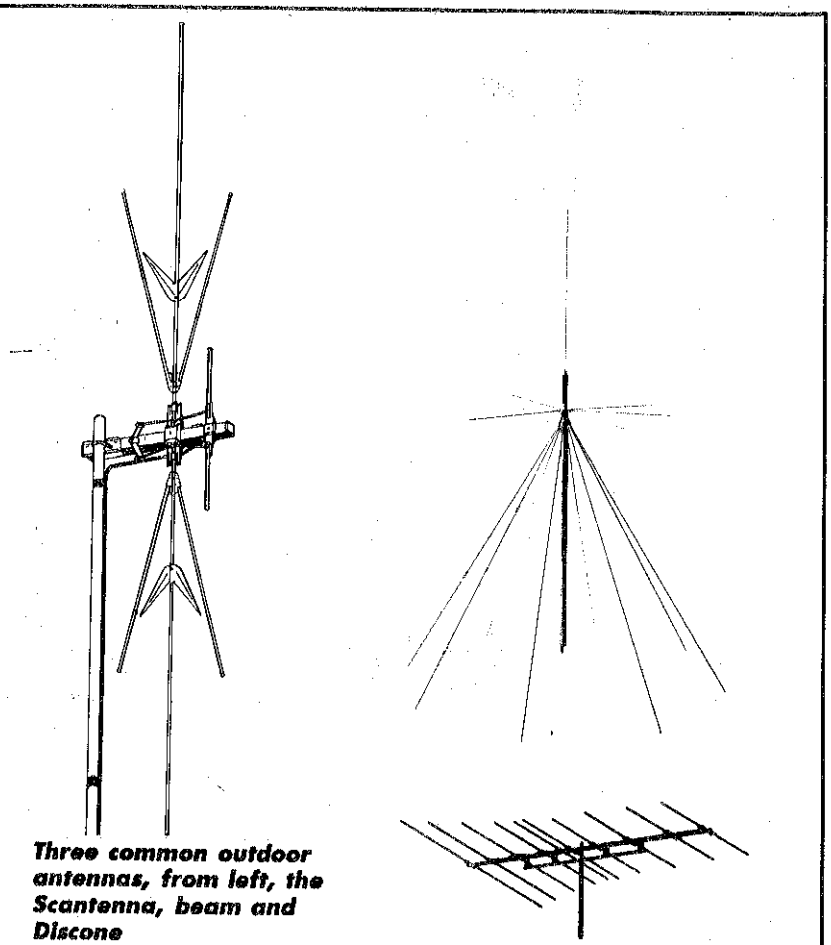
I tend to favor discone-type antennas. A discone is just what the name implies, two cones formed by radials connected to a disc in the middle. Although they cost considerably more -- around 100 dollars -- their performance and heavy duty construction are well worth it. It's also good to mention at this point that both the Scantenna and the Discone are both omnidirectional antennas, meaning that they pick up signals equally well from all directions.

If you are looking to pull out those weak signal stations, try a beam antenna. A beam antenna basically resembles a TV aerial and is a directional antenna. It receives signals -- even increases their strength -- from the direction it is pointed in. Signals coming in from other directions do not do so well and sometimes are attenuated or decreased in strength. If you decide to go with a beam, remember that you will need a TV rotor and control box to turn it in the direction you want it to point. No matter which antenna you choose, I suggest you shop around for the one that best suits your needs and pocket book. There are a number of reputable advertisers in National Scanning that would be happy to talk to you.

Where Do I Put It?

Now that you have your new antenna, your next problem is where to install it. Generally, the old axiom, "the higher, the better," runs true. Sure, you can buy your own tower and get it up really high. The easiest way of mounting the antenna, however, is to attach it to the chimney. This can easily be done by using a Chimney Ratchet Mount or a Chimney Corner Mount (Radio Shack part nos. 15-839A and 15-527B respectively) and a section or two of galvanized steel antenna mast. Before you attach your antenna make sure your chimney is in good condition. Keep in mind that it will now have to bear the weight of the antenna and mast under wind load. If your chimney is in a state of disrepair, get it fixed or consider using a tripod-type roof mount which will enable you to put your antenna on the peak of your roof.

Another way to install your antenna is by using wall mounts. These screw right into the side of your house and come in three sizes, 4, 8 and 12. The larger sizes will enable the mast to clear any overhangs. You might want to check with your spouse before drilling holes in the side of your humble abode



Three common outdoor antennas, from left, the Scantenna, beam and Discone

as the thought of you assaulting her pristine aqua blue aluminum siding with a Binford 9000 Super Power Drill may be too much for her to handle.

OK, your chimney is crumbling so bad that Santa has filed a personal injury lawsuit and your spouse has threatened divorce and huge alimony payments if you even go near the side of your home with a power drill. All is not lost. If you have a vent pipe on your roof, go get a Vent Pipe Mount (Radio Shack part no. 15-893A) Again, check to see that the pipe is in good condition before you attach anything to it.

Installation

Before you even think about climbing up on a ladder, plan your installation step-by-step. Decide where your ladder is going to go, what tools you'll need, and how you are going to run the coax. Don't forget to take extra nuts, washers, adapters and a roll of electrical tape with you. Climbing up and down the ladder to get needed items or searching in the grass for a dropped washer is a proverbial pain in the posterior. Above all, if you don't want to be climbing back up the ladder every other week, follow the directions for installing both the hardware and the antenna.

No matter how you decide to install your antenna, NEVER, EVER do it by yourself. The results can range from comedic, with you sitting on the roof for hours waiting for someone to put a fallen ladder back up, to the tragic, with you lying on the ground with a broken back and nobody knowing it. It's well worth the price of a six pack of brewskis and a couple of pizzas to get your buddies to come over and help. (Drink the beer after you get the antenna up!) Also check to be sure that if your antenna and mast do fall (and that includes during installation), it won't come in contact with any power lines. One mistake -- and you only get one in this part of the game -- can end your life in a bright flash. The rule of thumb is that the nearest power line should be twice the length of the mast and antenna away from your set up.

If you have any doubt about how secure your antenna is, especially when using a short vent pipe to secure it, consider using three guy wires for stabilization. Again, Radio Shack has the needed turnbuckles, guy wires, etc.

Coax

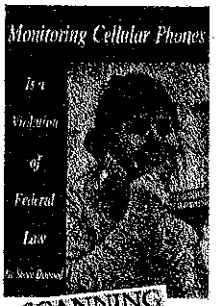
If you ask ten hobbyists what kind of coax should you use, you'll get eleven opinions. For runs of under fifty feet you'll be able to get away with RG58U (R.S. part no. 278-1314). The advantage to RG58 is that it is thin and easily bends around corners. For runs over 50 feet, I suggest RG8. It is thicker than the '58U and therefore less pliable, however there is less signal loss. Some enthusiasts will sing the praises of Belden 9913 as the ultimate in low signal loss coax for hobby use. While this is true, there are two distinctive disadvantages to using 9913. First it's about as flexible as a pencil and when compared to RG58U or RG8, it's considerably more expensive. Depending on where you buy it, RG58 can be had for around $.13 a foot, RG8 for around .30 a foot and Belden 9913 as high as a dollar per foot. I was able to get a 50 foot piece of 9913 a few years ago for my discone and the truth be known, there was not enough noticeable increase in signal strengths to justify the cost and the difficulty in working with it. I'm told that there is something called

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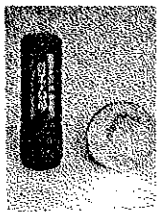


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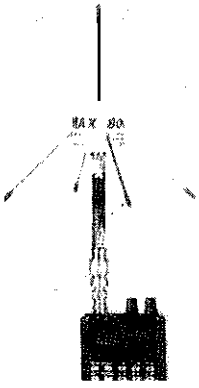
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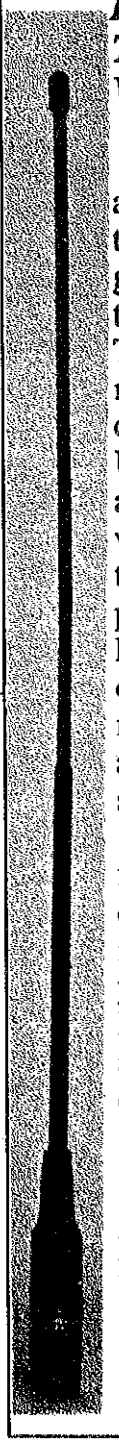
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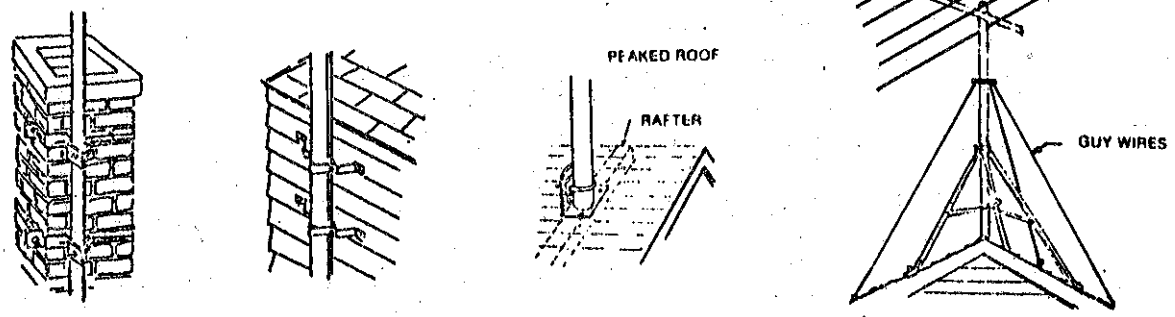


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Popular mounting techniques: chimney, side of house, roof and tripod



Flexible 9913 but I have never worked with it and it still costs around 70 cents per foot.

When connecting your coax to the antenna make sure you leave some slack or a "drip loop" between the connector on the antenna and the first place you tape the coax to your mast (about 6 inches down from the connector). The loop should bow out about 3-4 inches. This will keep the coax from pulling down and possibly out of its end connector. Use some kind of sealant where the antenna connector and the coax join to prevent water from entering your coax. When using more than one antenna or when using coax plus wiring for an antenna rotor, think about binding all wiring for a neater look using wall standoffs to secure the wiring..

Run your coax to where it is going into the house using the shortest possible route. When connecting it to your scanner, make sure that it can be easily removed in case of a thunder storm. (Don't try and unplug it during the thunderstorm, though, champ.) I dont care how well an antenna is grounded, a direct lighting strike will turn your radio in a smoking pile of junk. Speaking of grounding, make sure that you do ground your antenna. The easiest way is to get a copper grounding rod from your local hardware store, drive it into the ground and connect it to the mast with a grounding strap.

Alternative Installations

Right now, some of you are saying, "but my landlord or my development won't let me put up an outside antenna." We haven't forgotten you, poor souls. In fact, I lived in an apartment for 5 years with a landlord who made Simon LaGree look like Mother Teresa so I have experimented with just about every type of indoor installation. Although indoor installations are a compromise, almost anything is bound to work better than the telescoping whip that comes with your scanner. First, if there is an attic or large crawl space above your apartment, consider putting your antenna there. You can then run the coax through a window or that little trap door in your ceiling. Another trick to the attic antenna, especially if you own your home or your landlord isnt the real nosy type, is to drill holes in the attic floor through a closet in a lower floor. Then drill a hole through the bottom of the closet floor and run your coax underneath the flooring and up to your scanner shack location. Very neat, tidy and virtually unseen! If you are going to use an attic set-up, try to locate the antenna close to a window for better reception. If you're not worried about how it looks, you can place the antenna in the corner of the room or hang it from the ceiling using an eye hook and a piece of fishing line. If that is not an option, try buying a magnetic mount mobile scanner antenna and placing it on a piece of metal plate somewhere in the room. I have actually done this in hotels and it works.

If none of these suggestions are feasible, we've got one final suggestion that's cheap, easy to do, and it works. Get a 25 foot piece of coax, strip five feet of the outer black plastic jacket off, slice the copper braid so that you can separate it from the plastic insulator which covers the center conductor but do not cut it off. Then strip away about one inch of the insulator and voila!, hang it in a window. Let the copper braid hang down. If you rather not go to all that trouble, a company called Grove (704- 837-9200) sells an item called a Hidden Antenna which is basically the same thing but comes with all the connectors and none of the aggrevation. In fact, this was the first antenna I used in my apartment.

So, Is It Really Worth It?

The answer is a resounding, "yes." You will hear things with an outside antenna that you never heard before. Reception of signals from 100 miles away is not at all uncommon. So, for as little as $40.00 bucks, you can put a set of ears on your scanner that's going to make it seem like a new radio. Remember one final thing and remember this above all else: Safety First. An outside antenna won't do any good at all if your spouse and kids are collecting on your life insurance policy.

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On Being a Firefighter

By Joe Nooney

To be honest, I cannot tell you what brand of insanity caused me to fill out an application to become a volunteer firefighter. I would like to think it was a sense of civic duty. Maybe it was the dedication of the firefighters I met during an Open House at the local station. Perhaps it was some unknown, higher purpose. I can only tell you that three months after taking the oath, I found myself standing inside a burning barn and wondering if I had really lost my marbles.

For three months I responded to routine calls and alarm activations. So when a neighboring department was dispatched to a working barn fire, my heart raced. All I could think of was, "This is the real thing" -- and "Where is my wife with the car?" Sure enough, just a few minutes after that neighboring department was called out, so were we. Still no sign of my wife.

I decided to run the 1/3 mile to the fire house thinking I could catch the last truck out. No such luck. The last truck was heading down the street just as I rounded the corner. Fortunately, a rescue squad member was coming up the street on the way to the scene and I was able to hitch a ride. Hitchhiking to a fire. I wonder if that was a first.

Arriving at the scene I spotted one of our trucks and reported to the pump operator. I was told to gear up and help feed a 2 1/2 line through a window. It took me all of one minute to learn two things. First, a charged hose line is a lot heavier and more difficult to maneuver than one that is not charged. Second, a 95 degree summer day and full turnout gear don't mix.

After getting the hose line fed through the window, I was instructed to enter a section of the barn that was not on fire and help evacuate several cows that were still inside. Evacuate cows, I thought, You have got to be kidding! Although I grew up in a fairly rural area, my experience with animals of a bovine nature was rather limited. I found out quickly that cows can be somewhat uncooperative even though their living quarters are on fire. One particular Bossy decided she did not appreciate my efforts and knocked me down dead on my pride. To add insult to my already injured pride, when I tried to stand back up I stepped in a trough and found myself thigh deep in water. Extricating myself from that undignified position and the rest of the cows from the barn, I reported back to the pump operator.

My next assignment was to back up Ralph as we were to re-enter the barn and attempt to fight the fire. Ralph is what old-timers call a real smoke eater. Wear a Scott Pack? Why those are for wimps. I dutifully followed Ralph into the barn and backed him up as he manned the nozzle. By now the barn was beginning to fill with smoke. Ralph showed me how to breath fresh air by adjusting the nozzle to fog spray and putting my face near it. Simple, I thought. I've got this firefighting thing licked.

Just about then all hell broke loose. First pieces of the loft started falling about ten feet in front of us. Ralph didn't look the least bit concerned. In fact, he seemed to be right in his natural element.

Despite our best efforts, the fire continued to rage. I began to wonder if I had paid my life insurance premium that month. Then I felt the hose go limp. To this day I get the same sick feeling in the pit of my stomach whenever

I think about it. I tried to keep one eye on the loft above us and the other on the advancing fire. With no water, the smoke and intense heat soon overtook us and the fire slowly advanced in our direction. At first my eyes began to sting and my nose and throat became irritated. Finally, I had to shut my eyes and I started coughing. Still no water. I thought we would be hotfooting it out of there any second. Meanwhile, Ralph is taking all this in like it's a day at the beach. After what seemed like an eternity I tapped Ralph on the shoulder and informed him I was leaving. Reluctantly and with a look of disdain, he followed me out.

I got back to the truck and was stripping off my bunker gear when the pump operator took one look at me and told me to report to the triage area to get cooled down. Later, he told me that I was as red as the firetruck. After drinking about a gallon of Gatorade and being dunked in the portable pond that was being used as a water supply, I had sufficiently recovered enough to report back for duty.

The fire was now being brought under control and I was instructed to go back inside and hit some of the remaining hot spots. I had no sooner got inside and turned the nozzle on when I heard a loud BANG! Hearing an explosion while you are inside of a burning structure will not do wonders for your confidence or the rhythm of your heart. I later found out that a state trooper had shot a cow that had been badly burned. Now that my heart had started beating again I tended to the job at hand. Everything was going good until a heavy stream of water came through a now missing section of roof and drenched both me and my partner. Someone had ordered another fire company to hit the barn with a deck gun without checking if anyone was inside. Ironically, the firefighter manning the deck gun was my own brother, a member of another company. Now that's taking sibling rivalry a bit too seriously!

After I exited the barn for the last time, I was told that we were being relieved and to go back to the firehouse. As I stripped off my gear I realized that my jeans were a lot looser. When I got home and weighed myself I saw that I had lost 8 pounds fighting this fire. However, I DO NOT recommend firefighting as a weight control program. The one lasting effect my first fire had on me was a deep respect for the guys like our chief who have been doing this for 20-30 years. Although I have fought many fires since, like a first love, you never forget your first fire.

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Jun – HamCon '96, Arlington, TX
Jun – SeaPac, Seaside, OR
July 12-14 – National Scannig Convention, Lancaster, PA
Aug 17-18 – Huntsville Hamfest, Huntsville, A
Sep – Peoria Hamfest, Peoria, IL
Sep – Virginia Beach Hamfest, Va. Beach, V
Oct 18-20 – MT Convention, Atlanta, GA
Oct 26-27 – Chattanooga Hamfest, Chattanooga, TN
Oct – Southwest Div. Convention, Phoenix, A
Oct – Boxborough Hamfest, Boxborough, MA
Nov – Odessa Hamfest, Odessa, TX
Nov 18-19 – Ft. Wayne Hamfest, Ft. Wayne, I

Scan this frequency: 145.380! The Bearcat Radio Club offers a two meter repeater for hams to use at the show site and should be heard for miles around.

Portland's Fire Station #1

By Norm Schrein

The men of Fire Station #1 in Portland, Oregon are not short on "war stories." A typical Sunday evening will find the firefighters trying to top each other with the best tale. In the case of Station #1, the stories are true. As is often the case with peope who face the grittier side of life in their daily work, they are also sometimes macabre.

"One time we had a six hundred pound woman that needed to be moved from her bed to a waiting vehicle so she could be transported to the hospital," one firefigher began. "She was so big that we had to make an army-type stretcher out of pike poles and canvas. As we were carrying her down the stairs she fell through the stretcher. When her family returned home from the hospital with her, she became stuck in the vehicle. They left her in there for almost three days before finally calling us to remove her," he said.

Station #1 is the largest station in the city. Firefighters working there even have the advantage of a permanent cook. During any one shift there are fourteen firefighters, one investigator and a chief on duty. The men work a shift of 24 hours on and 48 hours off. The shift begins at eight AM. All the firefighters have a minimum rating of EMT-1 (a basic qualification for rescue work). The firefighters that work the rescue are rated at EMT-4.

Another fireman chimes in, "Do you remember the time we were called to recover the body of a man who fell down a chimney? Apparently the man was wandering around the roof of a building and fell into a chimney opening. The fall was between seven to eight stories. Nobody missed him and his body ended up in the boiler -- it was there for ten days. We had to wear airpacks and disposable coveralls. When I pulled on his arm, it came off."

Fire Station #1 consists of several pieces of equipment. Engine 1 answers fire dispatch calls and certain medical calls. They assist the rescue and squad on minor calls. Truck 1 (ladder truck) answers structural fire calls and some BLS (Basic Life Support) medical calls. Rescue 1 answers ALS (Advanced Life Support) medical calls, such as heart attacks or I-V therapy. Squad 1 (the only one in the city) will respond to such calls as shootings or an automobile accident involving a pinned person.

During the dinner break, taken in front of a big screen TV, another experienced fireman recalls a fire on Burnside. "I opened the door and when I did, oxygen was added to the fire and it re-ignited. All I had was a small hand pump can of water. It held maybe 2 to 2 1/2 gallons of water. I could have been in a real fix there," he said.

As dinner progresses, run 2387 rings into the station. Lieutenant Mark Lewis and his crew answer the call. "The reporting party," the dispatcher radios at 19:39 hours, "believes that there is some sort of hazardous material coming from the building at 532 North East Davis Street." At 19:43 hours the crew is on the scene. Checking buildings in the area in

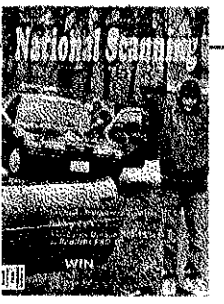


Engine #1 answers fire dispatch calls and certain medical calls

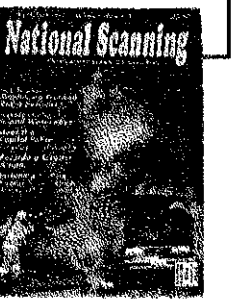
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the rain, it was determined that the hazardous material appeared to be soap suds coming from a downspout in a nearby office building. At 19:55 hours the crew cleared the scene. Lieutenant Lewis completes the report over the mobile data terminal in the engine.

The Portland Fire Department as well as the Police and other city services use a 800 MHz trunked radio system. For the most part the system works better than the old one, the firefighters believe. If necessary Fire can speak directly to Police or Police to the Public Works to Public Works to Fire, and so forth, over the city's Motorola 800 Trunked radio system.

When Lieutenant Lewis' crew returns they hear another firefighter telling yet another story. "Remember," he said, "we were on a fire call and the building was fully involved. The man who called in the fire said that someone was in the building. We went in and could hear moaning and saw a woman on a bed. The bed was on fire. I grabbed her arm and she fell back into the fire, so I grabbed her legs and pulled her outside. Her arms were smoking -- she said, 'I need a doctor,' -- she died four days later."

EMT-4 Scott Gotter has worked on Rescue 1 for 18 years. "The most runs I had in one day was 24," he said. Six of them were not breathing from heroin OD in an hour and a half period. Down here you see that kind of stuff all the time. It's really sad," he said. Scott was Portland's "Firefighter of the Year" in 1993.

The stories and the calls keep coming, "Remember the woman who fell out the window and we had to use a stokes stretcher to rescue her?" one fireman said. Another chimed in with, "Remember when I fell through the floor? I was off duty for a while after that one."

Another EMT call comes in for a drunk man who fell out of a tree while trying to watch a parade. "He will live, but will be paralyzed," was one EMT's evaluation.

Firemen tend to re-live their experiences. They must make light of what are serious situations in order to keep their sanity. "Remember when we had the vehicle that ran off the road and both parties were dead? Then you (speaking to another firefigher) backed the engine into a police cruiser?" Laughter erupted.

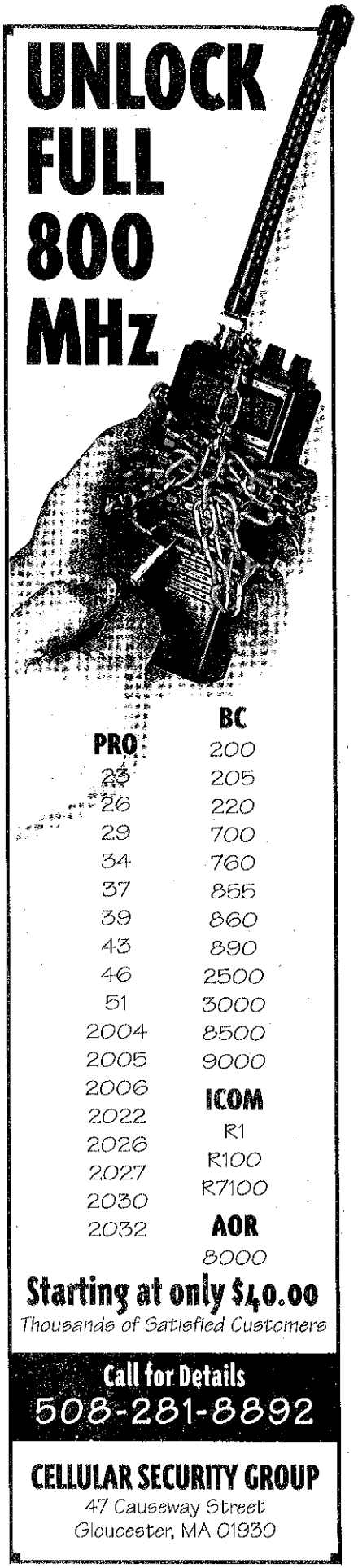
They see so much, some humorous, but most situations are life threatening either to themselves or the people they are called out to assist. It is a way of relieving the extreme emotional pressure they face daily.

The citizens of Portland can rest easy at night because the men of Station #1 and the other stations of this Northwest US city are on the job, telling stories and ready to risk their lives to save the life of someone else.

PORTLAND, OREGON
800 MHZ RADIO SYSTEM

852.5375, 853.3375, 856.2625, 856.4625, 856.7375, 857.2375, 857.4375, 857.4625, 857.7375, 858.2625, 858.4375, 858.4625, 858.7125, 858.7375, 859.2625, 859.4375, 859.4625, 859.7125, 860.2625, 860.4375, 860.4625, 860.7125





FREQUENCY UPDATES *by Police Call Plus*

The information below consists of new Federal Communications Commission licenses and new frequencies or transmitter locations added to exisitng FCC licenses. The records were obtained directly from copies of licenses as they were recently issued by the FCC.

Use this list to help keep your 1996 edition of Police Call Plus current. A new list will be printed in every issue of National Scanning.

This information was furnished by the publisher of Police Call Plus, for over thirty years, America's best-selling frequency directories for scanner users.

1	2	3	4	5	6	7
AL	ALBERTVILLE CITY OF	ALBERTVILLE	L	460.4250	KNNG275	OF
AL	BALDWIN COUNTY OF	BAY MINETTE	R	156.1800	KNNG792	BA
AL	BALDWIN COUNTY OF	MALBIS	R	156.1800	KNNG792	MR
AL	CARROLLS CREEK FIRE DISTRICT	NORTHPORT	F	453.1250	KNNG610	MR
AL	CARROLLS CREEK FIRE DISTRICT		F	458.1250	KNNG610	MO
AL	HOOVER TOWN OF	BIRMINGHAM	P	460.9000	KNNK570	MR
AL	HOOVER TOWN OF	HOOVER	P	460.9000	KNNK570	MR
AL	JEFFERSON COUNTY OF	LEEDS	L	460.9250	KNNK571	MR
AL	JEFFERSON COUNTY OF		L	812.9875	KNNJ873	MO
AL	JEFFERSON COUNTY OF		L	813.4875	KNNJ873	MO
AL	JEFFERSON COUNTY OF		L	813.9875	KNNJ873	MO
AL	JEFFERSON COUNTY OF		L	857.9875	KNNJ873	MO
AL	JEFFERSON COUNTY OF		L	858.4875	KNNJ873	MO
AL	JEFFERSON COUNTY OF	BIRMINGHAM	L	858.9875	KNNJ873	MR
AL	KNIGHTS AMBULANCE SVC INC	THOMASVILLE	S	155.1750	WNWF258	BM
AL	LAWRENCE COUNTY OF	TRINITY	L	461.4250	WPIN358	RP
AL	LOXLEY VFD	LOXLEY	F	453.1250	KNNH618	MR
AL	LOXLEY TOWN OF	LOXLEY	P	453.3250	KNNK342	MR
AL	LOXLEY TOWN OF		P	458.3250	KNNK342	MO
AL	MC INTOSH TOWN OF		P	153.7550	WPEZ517	MO
AL	MC INTOSH TOWN OF	MC INTOSH	P	155.5800	WPEZ517	MR
AL	RUSSELL COUNTY OF	SEALE	F	154.3250	KNNM950	MR
AL	TALLAPOOSA COUNTY OF	ALEXANDER CITY	P	151.2350	KXU311	BR
AL	VINEMONT PROVIDENCE FD		F	153.8900	WNIA968	MO
AL	WASHINGTON COUNTY OF		P	153.9050	KZV383	MO
AL	WASHINGTON COUNTY OF	CHATOM	P	158.7450	KZV383	MR
AR	ADONA CITY OF	ADONA	L	156.1500	KNNK334	BM
AR	BI STATE JUSTICE CENTER	TEXARKANA	L	158.7450	WPCH892	BM
AR	CLAY COUNTY OF	POLLARD	P	155.2500	KNNM893	MR
AR	CLINTON TOWN OF	CLINTON	F	154.4150	KNNI573	MR
AR	CUSHMAN VFD	CUSHMAN	F	154.2350	KNNM951	BM
AR	GOSNELL CITY OF	GOSNELL	P	453.8750	KNNK307	MR
AR	GOSNELL CITY OF		P	458.8750	KNNK307	MO
AR	GRANNIS CITY OF	GRANNIS	P	155.5650	KNNI869	MR
AR	JONESBORO CITY OF	JONESBORO	L	453.9250	KNNI402	MR
AR	JONESBORO CITY OF		L	458.9250	KNNI402	MO
AR	KENSETT CITY OF	KENSETT	L	154.7250	KNNI705	BM
AR	LAKE MAUMELLE FIRE DEPT	ROLAND	F	151.2350	WPAQ359	MR
AR	LAKE MAUMELLE FIRE DEPT		F	151.3250	WPAQ359	MO
AR	LAKE MAUMELLE FIRE DEPT		F	153.8900	WPAQ359	MO
AR	LEOLA CITY OF	LEOLA	L	155.6550	KNNJ515	BM
AR	MAUMELLE CITY OF	MAUMELLE	L	158.7600	WNKB391	BM
AR	MENA CITY OF	MENA	L	155.6400	WNWY942	MR
AR	MISSISSIPPI COUNTY OF		P	460.1500	KNNN229	MO
AR	PALESTINE TOWN OF	PALESTINE	F	154.2200	KNNK547	BM
AR	PALESTINE TOWN OF	FORREST CITY	F	154.2200	KNNK547	BA
AR	ST JOSEPH REGIONAL HEALTH CTR	HOT SPRINGS	M	151.3100	WPCS302	MR
AR	STAR CITY CITY OF	STAR CITY	L	155.0100	KNNG279	BR
AR	STAR CITY CITY OF	STAR CITY	P	155.5350	KNNG993	BR
AZ	APACHE COUNTY OF	ST JOHNS	P	155.4750	KNNK250	BA
AZ	APACHE COUNTY OF		P	460.3750	KNNK250	MO
AZ	APACHE COUNTY OF		P	465.3750	KNNK250	MO
AZ	COLORADO RIVER INDIAN TRIBES	PARKER	F	460.5750	KNNJ743	MR
AZ	COLORADO RIVER INDIAN TRIBES		F	460.6250	KNNJ743	MO
AZ	COLORADO RIVER INDIAN TRIBES		F	465.6250	KNNJ743	MO
AZ	FIRST MESA CONSOLIDTD VILLAGES	POLACCA	L	158.7900	KNNJ284	BM
AZ	KYKOTSMOVI VILLAGE TOWN OF	KYKOTSMOVI VILL	L	155.5650	KNNG321	BM
AZ	LINDEN CITY OF	LINDEN	F	159.1800	KNEN597	MR
AZ	MARICOPA COUNTY OF	YARNELL	T	866.0125	KNNN306	BR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	866.0125	KNNN306	BR
AZ	MARICOPA COUNTY OF	GILA BEND	T	866.0125	KNNN306	BR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	866.1250	KNNN306	BR
AZ	MARICOPA COUNTY OF	SCOTTSDALE	T	866.1500	KNNN306	BR
AZ	MARICOPA COUNTY OF	YARNELL	T	866.1750	KNNN306	BR
AZ	MARICOPA COUNTY OF	SUNFLOWER	T	866.1750	KNNN306	BR
AZ	MARICOPA COUNTY OF	SCOTTSDALE	T	866.2000	KNNN306	BR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	866.2250	KNNN306	BR
AZ	MARICOPA COUNTY OF	SCOTTSDALE	T	866.2500	KNNN306	BR
AZ	MARICOPA COUNTY OF	PRESCOTT	T	866.5625	KNNN305	BR
AZ	MARICOPA COUNTY OF	GILA BEND	T	866.5625	KNNN306	BR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	867.1375	KNNN306	BR
AZ	MARICOPA COUNTY OF	SCOTTSDALE	T	867.1500	KNNN306	BR
AZ	MARICOPA COUNTY OF	PRESCOTT	T	867.1625	KNNN305	BR
AZ	MARICOPA COUNTY OF	GILA BEND	T	867.1625	KNNN306	BR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	867.1875	KNNN306	BR
AZ	MARICOPA COUNTY OF	SCOTTSDALE	T	867.2125	KNNN306	BR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	867.2375	KNNN306	BR
AZ	MARICOPA COUNTY OF	SCOTTSDALE	T	867.2875	KNNN306	BR
AZ	MARICOPA COUNTY OF	TONTO NTL FORST	T	867.3125	KNNN306	BR
AZ	MARICOPA COUNTY OF	YARNELL	T	867.3125	KNNN306	BR
AZ	MARICOPA COUNTY OF	CAREFREE	T	867.3625	KNNN305	BR
AZ	MARICOPA COUNTY OF	GILA BEND	T	867.3625	KNNN306	BR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	867.4375	KNNN306	BR
AZ	MARICOPA COUNTY OF	YARNELL	T	867.6750	KNNN306	BR
AZ	MARICOPA COUNTY OF	SUNFLOWER	T	867.6750	KNNN306	BR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	867.7375	KNNN306	BR
AZ	MARICOPA COUNTY OF	SCOTTSDALE	T	867.7500	KNNN306	BR
AZ	MARICOPA COUNTY OF	PRESCOTT	T	867.7625	KNNN305	BR
AZ	MARICOPA COUNTY OF	GILA BEND	T	867.7625	KNNN306	BR
AZ	MARICOPA COUNTY OF	SCOTTSDALE	T	867.8125	KNNN306	BR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	867.8375	KNNN306	BR
AZ	MARICOPA COUNTY OF	CAREFREE	T	867.8625	KNNN305	BR
AZ	MARICOPA COUNTY OF	GILA BEND	T	867.8625	KNNN306	BR
AZ	MARICOPA COUNTY OF	YARNELL	T	867.9125	KNNN306	BR
AZ	MARICOPA COUNTY OF	TONTO NTL FORST	T	867.9125	KNNN306	BR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	868.0375	KNNN306	BR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	868.1375	KNNN306	BR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	868.5375	KNNN306	BR

Explanation of columns:

1 -- State. Hawaii and Alaska are not included.

2 -- Name of licensee. Licenses issued to states are not included.

3 -- City nearest transmitter site. A "(*xxx.xxxx)" indicates that transmitter locations are listed under that frequency in a multi-frequency, multi-site system.

4 -- FCC service classification
- C = Forestry conservation
- F = Fire suppression
- L = Local government
- M = Emergency medical
- P = Law enforcement
- R = Highway maintenance
- S = Special emergency
- T = Trunk system

5 -- Frequency

6 -- FCC call sign

7 -- Type of unit(s)
- BA = Base station
- BM = Base and mobile units
- BR = Base repeater
- FX = Operational fix
- MO = Mobile units
- MR = Mobile relay repeater
- OF = Operational fixed

AZ	MARICOPA COUNTY OF	SCOTTSDALE	T	868.6500	KNNN306	BR	CO	COLUMBIA HEALTHONE LLC	CASTLE ROCK	S	462.9750	WSL665	BA
AZ	MARICOPA COUNTY OF	YARNELL	T	868.6750	KNNN306	BR	CO	COLUMBIA HEALTHONE LLC	AURORA	S	462.9750	WSL664	BA
AZ	MARICOPA COUNTY OF	SUNFLOWER	T	868.6750	KNNN306	BR	CO	COLUMBIA HEALTHONE LLC	CASTLE ROCK	S	463.1750	WSL665	BA
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	868.7750	KNNN306	BR	CO	COLUMBIA HEALTHONE LLC	AURORA	S	463.1750	WSL664	BA
AZ	MARICOPA COUNTY OF	SCOTTSDALE	T	868.8000	KNNN306	BR	CO	EAGLE COUNTY OF		T	811.7625	KNNK872	MO
AZ	MARICOPA COUNTY OF	SCOTTSDALE	T	868.8500	KNNN306	BR	CO	EAGLE COUNTY OF	AVON	T	856.7625	KNNK872	MR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	868.8750	KNNN306	BR	CO	EAGLE COUNTY OF	GLENWOOD SPRGS	T	856.7625	KNNK879	MR
AZ	MARICOPA COUNTY OF	LITCHFIELD PARK	T	868.9250	KNNN306	BR	CO	EAGLE COUNTY OF	EAGLE	T	856.9375	KNNK872	MR
AZ	NAVAJO NATION	CHAMBERS	L	453.3250	WPIX250	BA	CO	EAGLE COUNTY OF	AVON	T	856.9875	KNNK872	MR
AZ	NAVAJO NATION		L	458.3250	WPIX250	MO	CO	EAGLE COUNTY OF	AVON	T	857.7625	KNNK872	MR
CA	BURBANK CITY OF		L	810.7375	KNNB483	MO	CO	EAGLE COUNTY OF	GLENWOOD SPRGS	T	857.7625	KNNK879	MR
CA	BURBANK CITY OF	BURBANK	L	855.7375	KNNB483	BA	CO	EAGLE COUNTY OF	EAGLE	T	857.9375	KNNK872	MR
CA	CALABASAS CITY OF	CALABASAS	L	453.1000	KNNI814	BR	CO	EAGLE COUNTY OF	VAIL	T	857.9625	KNNK872	MR
CA	CALABASAS CITY OF		L	460.1625	KNNI814	MO	CO	EAGLE COUNTY OF	AVON	T	857.9875	KNNK872	MR
CA	CALABASAS CITY OF		L	465.1625	KNNI814	MO	CO	EAGLE COUNTY OF	RED CLIFF	T	858.7625	KNNK872	MR
CA	CALIFORNIA STATE UNIVERSITY	HAYWARD	P	154.8900	KNNK407	BM	CO	EAGLE COUNTY OF	AVON	T	858.7625	KNNK872	MR
CA	CALIFORNIA STATE UNIVERSITY	CONCORD	P	154.8900	KNNK407	BA	CO	EAGLE COUNTY OF	GLENWOOD SPRGS	T	858.7625	KNNK879	MR
CA	CARSON CITY OF		L	453.9250	KNNM304	MO	CO	EAGLE COUNTY OF	BOND	T	858.7625	KNNK879	MR
CA	CLOVIS CEMETERY DISTRICT		L	155.8650	WPIZ326	MO	CO	EAGLE COUNTY OF	EAGLE	T	858.9375	KNNK872	MR
CA	COMPTON CITY OF		L	154.0550	KMK404	MO	CO	EAGLE COUNTY OF	VAIL	T	858.9625	KNNK872	MR
CA	DELANO CITY OF	DELANO	P	460.3250	WPIX286	BR	CO	EAGLE COUNTY OF	GYPSUM	T	858.9625	KNNK872	MR
CA	DELANO CITY OF		P	460.4000	WPIX286	MO	CO	EAGLE COUNTY OF	AVON	T	858.9875	KNNK872	MR
CA	DELANO CITY OF		P	465.3250	WPIX286	MO	CO	EAGLE COUNTY OF	BOND	T	859.7625	KNNK879	MR
CA	DOWNEY CITY OF	DOWNEY	L	482.4500	WIM839	MR	CO	EAGLE COUNTY OF	RED CLIFF	T	859.7625	KNNK872	MR
CA	DUNSMUIR CITY OF		L	158.8200	KNFQ707	MO	CO	EAGLE COUNTY OF	EAGLE	T	859.9375	KNNK872	MR
CA	EL DORADO COUNTY OF		P	159.5550	WPEE203	MO	CO	EAGLE COUNTY OF	GYPSUM	T	859.9625	KNNK872	MR
CA	FARMERSVILLE CITY OF	FARMERSVILLE	L	453.7250	KNNG573	BR	CO	EAGLE COUNTY OF	VAIL	T	859.9625	KNNK872	MR
CA	FARMERSVILLE CITY OF		L	458.7250	KNNG573	MO	CO	EAGLE COUNTY OF	AVON	T	859.9875	KNNK872	MR
CA	GARDEN GROVE CITY OF	SANTIAGO PEAK	L	858.3375	WNCE549	BR	CO	EAGLE COUNTY OF	BOND	T	860.7625	KNNK879	MR
CA	GLENDALE CITY OF		L	460.4875	WPIZ333	MO	CO	EAGLE COUNTY OF	RED CLIFF	T	860.7625	KNNK872	MR
CA	GLENDALE CITY OF		L	460.5625	WPIZ333	MO	CO	EAGLE COUNTY OF	EAGLE	T	860.9375	KNNK872	MR
CA	GLENDALE CITY OF		L	460.5875	WPIZ333	MO	CO	EAGLE COUNTY OF	VAIL	T	860.9625	KNNK872	MR
CA	LIVERMORE CITY OF		L	453.0375	KNNK379	MO	CO	EAGLE COUNTY OF	GYPSUM	T	860.9625	KNNK872	MR
CA	LIVERMORE CITY OF		L	458.0375	KNNK379	MO	CO	EAGLE COUNTY OF	AVON	T	860.9875	KNNK872	MR
CA	LOS GATOS CITY OF	CAMPBELL	P	484.8625	WIJ285	MR	CO	MONTROSE COUNTY OF	NUCLA	P	156.6400	WNFO652	BM
CA	LOS GATOS CITY OF	LOS GATOS	P	484.8625	WIJ285	MR	CO	N CHAFFEE COUNTY FPD	SALIDA	F	154.4150	KNBL277	MR
CA	MARTIN LUTHER KING MIDDLE SCHL	(MADERA)	S	155.2200	WPIX797	MO	CO	PIKES PEAK LIBRARY DISTRICT	RUSH	L	155.0550	WNYN404	MR
CA	MERCED CITY OF	MERCED	L	858.4875	KNNH810	MR	CO	WASHINGTON YUMA COMBINED COM	YUMA	M	155.3400	KNNH924	BM
CA	MONTECITO FIRE DISTRICT	MONTECITO	F	154.2800	KMA506	BM	CT	BERLIN HOUSING AUTHORITY		L	453.2875	KNNH991	MO
CA	MONTECITO FIRE DISTRICT	MONTECITO	F	460.6000	KMA506	MR	CT	BERLIN HOUSING AUTHORITY		L	458.2875	KNNH991	MO
CA	ORANGE COUNTY OF	LA PALMA	S	155.2800	WNVM991	BA	CT	BRANFORD TOWN OF	BRANFORD	M	453.4500	WNYU332	MR
CA	ORANGE COUNTY OF	LA PALMA	S	155.4000	WNVM991	BA	CT	GROTON TOWN OF	GROTON	P	155.1300	KCH235	BM
CA	OROVILLE CITY OF		L	458.6625	KNNL724	MO	CT	HUNTERS AMBULANCE SVC	MERIDEN	S	33.0800	KNNL413	BM
CA	PLACER FOOTHILLS CONSOLDTD FPD	AUBURN	F	154.1750	KTS763	BR	CT	LAIDLAW TRANSIT INC	WILTON	S	155.2200	KNNI702	BM
CA	PLACER FOOTHILLS CONSOLDTD FPD	AUBURN	F	154.2800	KTS763	BM	CT	LAIDLAW TRANSIT INC	DANBURY	S	37.9800	KNNI722	BM
CA	PLACER FOOTHILLS CONSOLDTD FPD		F	154.2950	KTS763	MO	CT	M & J BUS LINES INC	WINDHAM	S	155.2350	WPIZ907	BM
CA	PLACER FOOTHILLS CONSOLDTD FPD	AUBURN	F	154.3550	KTS763	BM	CT	MED STAR INC	WOLCOTT	M	155.2050	WNMI240	BM
CA	PLACER FOOTHILLS CONSOLDTD FPD		F	156.3900	KTS763	MO	CT	MED STAR INC	WOLCOTT	M	155.3250	WNMI240	BM
CA	RED BLUFF CITY OF		F	153.8300	WNJZ628	MO	CT	PLAINFIELD TOWN OF	STERLING	S	155.2950	KNNG568	BM
CA	RED BLUFF CITY OF		F	154.2050	WNJZ628	MO	CT	SHERMAN TOWN OF	SHERMAN	F	33.8600	WPIY661	BM
CA	REDWOOD CITY CITY OF		L	821.3500	WPIX206	MO	CT	W HAVEN CITY OF	W HAVEN	F	46.5000	WPBE934	BM
CA	REDWOOD CITY CITY OF	REDWOOD CITY	L	866.3500	WPIX206	MR	CT	WALLINGFORD HOUSING AUTHORITY	WALLINGFORD	L	461.2000	KNNM547	MR
CA	RIVERSIDE COUNTY OF		F	169.4450	WPIX451	MO	CT	WALLINGFORD HOUSING AUTHORITY		L	466.2000	KNNM547	MO
CA	SAN LUIS OBISPO CITY OF	SAN LUIS OBISPO	L	153.9200	WPIX246	BA	CT	WILLIMANTIC CITY OF	LEBANON	F	460.6250	KNNG683	MR
CA	SAN JOSE CITY OF	SAN JOSE	L	155.0250	KNNK261	BM	CT	WILLIMANTIC CITY OF		F	465.6250	KNNG683	MO
CA	SAN BRUNO CITY OF	SAN BRUNO	R	151.0400	KNNG320	BM	CT	WOODBURY TOWN OF	WOODBURY	P	45.9000	KNNJ985	BM
CA	SAN DIEGO COUNTY OF	SAN DIEGO	T	856.2500	KNNH522	BR	DE	SUSSEX COUNTY OF		F	154.0100	KNNM536	MO
CA	SAN DIEGO COUNTY OF	(* 856.2500)	T	857.1750	KNNH522	BR	FL	BREVARD COUNTY OF	MELBOURNE	L	453.4750	KNNJ508	MR
CA	SAN DIEGO COUNTY OF	(* 856.2500)	T	857.2500	KNNH522	BR	FL	CITRUS COUNTY OF	LECANTO	L	153.7850	WZG314	BM
CA	SAN DIEGO COUNTY OF	(* 856.2500)	T	858.2500	KNNH522	BR	FL	CLAY COUNTY OF	DOCTORS INLET	L	154.0250	KNNM962	BR
CA	SAN DIEGO COUNTY OF	(* 856.2500)	T	859.2500	KNNH522	BR	FL	COLLIER COUNTY OF	NAPLES	T	856.4875	WNLK955	MR
CA	SAN DIEGO COUNTY OF	(* 856.2500)	T	860.2500	KNNH522	BR	FL	COLLIER COUNTY OF	MARCO ISLAND	T	856.4875	WNLK955	MR
CA	SANTA CRUZ COUNTY OF		F	156.0000	WNLW821	MO	FL	COLLIER COUNTY OF	MARCO ISLAND	T	856.9375	WNLK955	MR
CA	SANTA BARBARA COUNTY OF	CARPENTERIA	L	153.9050	KNNH323	BR	FL	COLLIER COUNTY OF	MARCO ISLAND	T	856.9625	WNLK955	MR
CA	SANTA CLARA COUNTY OF		L	453.4125	KNNI798	MO	FL	COLLIER COUNTY OF	MARCO ISLAND	T	857.4875	WNLK955	MR
CA	SANTA CLARA COUNTY OF	SAN JOSE	L	453.6500	WPIW736	MR	FL	COLLIER COUNTY OF	MARCO ISLAND	T	857.9625	WNLK955	MR
CA	SANTA CLARA COUNTY OF	LOS GATOS	L	453.6500	WPIW736	MR	FL	COLLIER COUNTY OF	MARCO ISLAND	T	858.9375	WNLK955	MR
CA	SANTA BARBARA COUNTY OF	CARPINTERIA	M	462.9750	KNNG688	BR	FL	COLLIER COUNTY OF	EVERGLADES CITY	T	858.9375	WNLK955	MR
CA	SANTA CLARA COUNTY OF	CAMPBELL	P	39.9200	KNNK382	BA	FL	COLLIER COUNTY OF	MARCO ISLAND	T	858.9625	WNLK955	MR
CA	SANTA CLARA COUNTY OF	LOS ALTOS	P	39.9200	KNNK382	BA	FL	COLLIER COUNTY OF	IMMOKALEE	T	858.9625	WNLK955	MR
CA	SANTA CLARA COUNTY OF	SAN JOSE	P	39.9200	KNNK382	BR	FL	COLLIER COUNTY OF	MARCO ISLAND	T	859.4375	WNLK955	MR
CA	SANTA CLARA COUNTY OF	GILROY	P	39.9200	KNNK382	BA	FL	COLLIER COUNTY OF	MARCO ISLAND	T	859.4875	WNLK955	MR
CA	SANTA CLARA COUNTY OF	SUNNYVALE	P	39.9200	KNNK380	BA	FL	COLLIER COUNTY OF	MARCO ISLAND	T	859.7625	WNLK955	MR
CA	SANTA CLARA COUNTY OF	LOS GATOS	P	39.9200	KNNK382	BA	FL	COLLIER COUNTY OF	MARCO ISLAND	T	860.4375	WNLK955	MR
CA	SCHAEFERS AMBULANCE SVC	EL CENTRO	S	47.5800	KNNH623	BM	FL	COLLIER COUNTY OF	MARCO ISLAND	T	860.4875	WNLK955	MR
CA	STANISLAUS CONSOLIDATED FPD	MODESTO	F	153.7700	KNBB795	BA	FL	COLLIER COUNTY OF	MARCO ISLAND	T	860.7625	WNLK955	MR
CA	STANISLAUS CONSOLIDATED FPD	EMPIRE	F	153.7700	KNBB795	BA	FL	COLLIER COUNTY OF	MARCO ISLAND	T	860.9625	WNLK955	MR
CA	STANISLAUS CONSOLIDATED FPD	EMPIRE	F	154.4300	KNBB795	BA	FL	FAIRCHILD TROPICAL GARDEN	CORAL GABLES	C	151.4450	KNNI712	BM
CA	STANISLAUS CONSOLIDATED FPD	MODESTO	F	154.4300	KNBB795	BA	FL	FERNANDINA BEACH CITY OF	CALLAHAN	L	155.1000	KBR640	BA
CA	VENTURA COUNTY COLLEGE DIST	SANTA PAULA	P	155.6850	KNNN385	MR	FL	FLAGLER COUNTY OF	PALM COAST	P	155.4900	KNNI562	BM
CA	VENTURA COUNTY COLLEGE DIST	VENTURA	P	155.6850	KNNN385	BM	FL	FT LAUDERDALE CITY OF		M	462.9500	KNNJ660	MO
CA	VENTURA COUNTY COLLEGE DIST	MOORPARK	P	155.6850	KNNN385	BA	FL	FT LAUDERDALE CITY OF		M	462.9750	KNNJ660	MO
CA	VENTURA COUNTY COLLEGE DIST	OXNARD	P	155.6850	KNNN385	BA	FL	FT LAUDERDALE CITY OF		M	463.1750	KNNJ660	MO
CA	WALNUT CITY OF		L	453.4375	KNNI940	MO	FL	FT LAUDERDALE CITY OF		M	467.9500	KNNJ660	MO
CA	WALNUT CITY OF		L	458.4375	KNNI940	MO	FL	FT LAUDERDALE CITY OF		M	467.9750	KNNJ660	MO
CO	COLUMBIA HEALTHONE LLC	AURORA	S	462.9500	WSL664	BA	FL	FT LAUDERDALE CITY OF		M	468.1750	KNNJ660	MO
CO	COLUMBIA HEALTHONE LLC	CASTLE ROCK	S	462.9500	WSL665	BA	FL	GILCHRIST COUNTY OF	BELL	M	462.9750	KNNH973	MR

FL	GILCHRIST COUNTY OF	BELL	M	462.9750	KNNL333	MR	ID	ADA COUNTY OF		L	458.2250	KNNJ463	MO
FL	LEE COUNTY OF	FT MYERS	L	453.9250	KNNK336	MR	ID	ADA COUNTY OF		L	458.3250	KNNH990	MO
FL	LEE COUNTY OF		L	458.9250	KNNK336	MO	ID	ADA COUNTY OF		L	458.4000	KNNH990	MO
FL	MADISON COUNTY OF		F	154.4000	WPFV592	MO	ID	CAREY FPD	KETCHUM	L	154.0850	WPGN212	MR
FL	MONTICELLO CITY OF	MONTICELLO	L	453.6250	KNNM873	MR	IL	ALTON CITY OF		L	153.7550	KNNK341	MO
FL	MONTICELLO CITY OF		L	458.6250	KNNM873	MO	IL	ALTON CITY OF		L	153.9350	KNNK341	MO
FL	PINELLAS COUNTY OF	CLEARWATER	L	460.4250	WPIX278	MR	IL	AMBULANCE SERVICE	TROY	S	155.1600	KNJX363	BM
FL	PINELLAS COUNTY OF		L	465.4250	WPIX278	MO	IL	AVON FPD		M	155.3400	KNNK948	MO
FL	PLANTATION CITY OF		M	462.9500	KNNL465	MO	IL	BARSTOW FPD	BARSTOW	M	155.3400	KNNL332	BM
FL	PLANTATION CITY OF		M	462.9750	KNNL465	MO	IL	BENSON COMMUNITY FPD		F	154.1900	KNNH245	MO
FL	PLANTATION CITY OF		M	463.1750	KNNL465	MO	IL	BERWYN CITY OF		F	154.1900	KNNJ588	MO
FL	PLANTATION CITY OF		M	467.9500	KNNL465	MO	IL	BLOOMINGTON CITY OF	BLOOMINGTON	L	859.4875	WPIX238	MR
FL	PLANTATION CITY OF		M	467.9750	KNNL465	MO	IL	BRIDGEVIEW VILLAGE OF		M	155.2200	KNNL331	MO
FL	PLANTATION CITY OF		M	468.1750	KNNL465	MO	IL	BRIDGEVIEW VILLAGE OF		M	155.3400	KNNL331	MO
FL	PUTNAM COUNTY OF	SAN MATEO	F	156.1200	KWH431	MR	IL	BRIDGEVIEW VILLAGE OF		M	462.9500	KNNL331	MO
FL	ST GEORGE ISLAND VFD INC	ST GEORGE ISLD	F	154.3700	WNKR525	MR	IL	BRIDGEVIEW VILLAGE OF		M	463.1750	KNNL331	MO
FL	STARKE CITY OF	STARKE	P	155.5500	KNNN920	BM	IL	BRIDGEVIEW VILLAGE OF		M	467.9500	KNNL331	MO
FL	TALLAHASSEE CITY OF	MICCOSUKEE	T	855.9625	WPBH782	MR	IL	BRIDGEVIEW VILLAGE OF		M	468.1750	KNNL331	MO
FL	TALLAHASSEE CITY OF	BLOXHAM	T	855.9625	WPBH782	MR	IL	BUSH VILLAGE OF	BUSH	F	154.0700	KNNJ592	BM
FL	TALLAHASSEE CITY OF	ST MARKS	T	855.9625	WPBH782	MR	IL	CAIRO TOWN OF		P	155.9100	KNHN513	MO
FL	TALLAHASSEE CITY OF	(* 855.9625)	T	857.7125	WPBH782	MR	IL	CHICAGO METRO SANITARY DIST OF	HANOVER PARK	L	453.9250	KNBZ605	BA
FL	TALLAHASSEE CITY OF	(* 855.9625)	T	858.2125	WPBH782	MR	IL	CICERO VILLAGE OF	CICERO	L	155.7150	KNNI796	BM
FL	TALLAHASSEE CITY OF	(* 855.9625)	T	858.7125	WPBH782	MR	IL	DALEYS AMBULANCE MED SUPPLY		M	150.7900	KSE515	MO
FL	TALLAHASSEE CITY OF	(* 855.9625)	T	859.2125	WPBH782	MR	IL	DALEYS AMBULANCE MED SUPPLY	DOLTON	M	155.4000	KSE515	MR
FL	TALLAHASSEE CITY OF	(* 855.9625)	T	859.7125	WPBH782	MR	IL	DOWNERS GROVE VILLAGE OF	DOWNERS GROVE	P	470.6625	WIM395	MR
FL	TALLAHASSEE CITY OF	(* 855.9625)	T	860.2125	WPBH782	MR	IL	DOWNERS GROVE VILLAGE OF		P	473.6625	WIM395	MO
FL	TALLAHASSEE CITY OF	(* 855.9625)	T	860.7125	WPBH782	MR	IL	DUNLAP COMMUNITY FPD	KICKAPOO	F	154.1750	KFV554	BA
FL	TAMARAC CITY OF		M	462.9500	KNNG597	MO	IL	DUNLAP COMMUNITY FPD	PEORIA	F	154.2650	KFV554	BA
FL	TAMARAC CITY OF		M	462.9750	KNNG597	MO	IL	DUNN AMBULANCE SVC	(CHRISTIAN)	M	155.2200	KNNI811	MO
FL	TAMARAC CITY OF		M	463.1750	KNNG597	MO	IL	DUNN AMBULANCE SVC		M	155.3400	KNNI811	MO
FL	TAMARAC CITY OF		M	467.9500	KNNG597	MO	IL	ELBURN & COUNTRYSIDE FPD		M	155.3400	KNNL469	MO
FL	TAMARAC CITY OF		M	467.9750	KNNG597	MO	IL	ELBURN & COUNTRYSIDE FPD		M	462.9500	KNNL469	MO
FL	TAMARAC CITY OF		M	468.1750	KNNG597	MO	IL	ELBURN & COUNTRYSIDE FPD		M	462.9750	KNNL469	MO
FL	VOLUSIA COUNTY OF	ORANGE CITY	P	158.7450	KNNI711	BA	IL	ELBURN & COUNTRYSIDE FPD		M	463.1750	KNNL469	MO
GA	ATLANTA CITY OF		T	821.0125	KNNH557	MO	IL	ELBURN & COUNTRYSIDE FPD		M	467.9500	KNNL469	MO
GA	ATLANTA CITY OF		T	821.5125	KNNH557	MO	IL	ELBURN & COUNTRYSIDE FPD		M	467.9750	KNNL469	MO
GA	ATLANTA CITY OF		T	822.0125	KNNH557	MO	IL	ELBURN & COUNTRYSIDE FPD		M	468.1750	KNNL469	MO
GA	ATLANTA CITY OF		T	822.5125	KNNH557	MO	IL	FORD COUNTY OF	GIBSON CITY	F	154.1900	WNZW397	BA
GA	ATLANTA CITY OF		T	823.0125	KNNH557	MO	IL	FORD COUNTY OF	GIBSON CITY	F	154.4000	WNZW397	BA
GA	ATLANTA CITY OF	ATLANTA	T	866.0125	KNNH557	MR	IL	FORD COUNTY OF	GIBSON CITY	F	154.4150	WNZW397	BA
GA	ATLANTA CITY OF	ATLANTA	T	866.0625	KNNH557	MR	IL	GENESEO FPD		M	155.3400	KNNM531	MO
GA	ATLANTA CITY OF	ATLANTA	T	866.3125	KNNH557	MR	IL	GLENVIEW VILLAGE OF		M	155.3400	KNNF503	MO
GA	ATLANTA CITY OF	ATLANTA	T	866.5125	KNNH557	MR	IL	GLENVIEW VILLAGE OF		M	155.4000	KNNF503	MO
GA	ATLANTA CITY OF		T	866.5375	KNNH557	MO	IL	GLENVIEW VILLAGE OF		M	463.1750	KNNF503	MO
GA	ATLANTA CITY OF	ATLANTA	T	866.8625	KNNH557	MR	IL	GLENVIEW VILLAGE OF		M	468.1750	KNNF503	MO
GA	ATLANTA CITY OF	ATLANTA	T	867.0125	KNNH557	MR	IL	HAMPSHIRE FPD		M	155.3400	KNNI575	MO
GA	ATLANTA CITY OF		T	867.0625	KNNH557	MO	IL	HAMPSHIRE FPD		M	155.4000	KNNI575	MO
GA	ATLANTA CITY OF	ATLANTA	T	867.1875	KNNH557	MR	IL	HAMPTON VILLAGE OF		M	155.3400	KNNK412	MO
GA	ATLANTA CITY OF	ATLANTA	T	867.3125	KNNH557	MR	IL	HENDERSON COUNTY OF		M	155.3400	KNNG220	MO
GA	ATLANTA CITY OF		T	867.4625	KNNH557	MO	IL	HOFFMAN ESTATES VILLAGE OF		M	155.3400	KNNG309	MO
GA	ATLANTA CITY OF	ATLANTA	T	867.5125	KNNH557	MR	IL	HOFFMAN ESTATES VILLAGE OF		M	155.4000	KNNG309	MO
GA	ATLANTA CITY OF	ATLANTA	T	868.0125	KNNH557	MR	IL	HOFFMAN ESTATES VILLAGE OF		M	463.1750	KNNG309	MO
GA	BAINBRIDGE CITY OF	BAINBRIDGE	P	158.7750	KIB566	MR	IL	HOFFMAN ESTATES VILLAGE OF		M	468.1750	KNNG309	MO
GA	CAMDEN COUNTY OF	KINGSLAND	T	854.9875	WPIZ593	MR	IL	JEFFERSON COUNTY OF		L	809.9625	KNNH528	MO
GA	CAMDEN COUNTY OF	KINGSLAND	T	855.4625	WPIZ593	MR	IL	JEFFERSON COUNTY OF	MT VERNON	L	854.9625	KNNH528	MR
GA	CHEROKEE COUNTY OF	HOLLY SPRINGS	P	154.7400	KTO324	BM	IL	KEWANEE CITY OF		M	155.3400	KNNH925	MO
GA	CHEROKEE COUNTY OF	HOLLY SPRINGS	P	154.9050	KTO324	BM	IL	LAUGHLIN AMBULANCE SVC	TROY	M	155.3400	WPIZ714	BM
GA	CHEROKEE COUNTY OF	HOLLY SPRINGS	P	154.9350	KTO324	BM	IL	LIFECARE AMBULANCE SVC INC		M	155.1600	KNNL416	MO
GA	CHEROKEE COUNTY OF	HOLLY SPRINGS	P	155.3700	KTO324	BA	IL	LIFECARE AMBULANCE SVC INC		M	155.3400	KNNL416	MO
GA	CLAYTON COUNTY OF	JONESBORO	M	155.3400	KNNI699	BM	IL	LIFECARE AMBULANCE SVC INC		M	155.4000	KNNL416	MO
GA	CLAYTON CITY OF	CLAYTON	P	159.8850	WPIX434	BM	IL	LITTON AMBULANCE SVC	MT VERNON	M	155.2650	WQH725	BM
GA	CLAYTON CITY OF	CLAYTON	P	160.1550	WPIX434	BM	IL	MATTOON CITY OF	MATTOON	L	155.0850	KNNN227	BM
GA	FT VALLEY STATE COLLEGE	FT VALLEY	L	453.1000	KNNI708	MR	IL	MC LEAN COUNTY OF	BLOOMINGTON	T	856.7625	KNNK867	MR
GA	GRADY COUNTY OF	WHIGHAM	L	159.8550	KNNI568	MR	IL	MC LEAN COUNTY OF	ARROWSMITH	T	856.7625	KNNK867	MR
GA	HABERSHAM COUNTY OF	MT AIRY	L	153.4850	KNNG758	MR	IL	MC LEAN COUNTY OF	LEXINGTON	T	856.7625	KNNK867	MR
GA	HAPEVILLE CITY OF		F	153.9800	KGR253	MO	IL	MC LEAN COUNTY OF	(* 856.7625)	T	857.7625	KNNK867	MR
GA	LEE COUNTY OF	LEESBURG	L	453.8000	KNNN232	MR	IL	MC LEAN COUNTY OF	ARROWSMITH	T	858.2375	KNNK867	MR
GA	LEE COUNTY OF		L	458.8000	KNNN232	MO	IL	MC LEAN COUNTY OF	(* 856.7625)	T	858.7625	KNNK867	MR
GA	LIBERTY COUNTY OF		L	151.3400	KNNH209	MO	IL	MC LEAN COUNTY OF	LEXINGTON	T	858.9375	KNNK867	MR
GA	LIBERTY COUNTY OF	MC INTOSH	L	155.8200	KNNH209	MR	IL	MC LEAN COUNTY OF	ARROWSMITH	T	859.2375	KNNK867	MR
GA	LIFESTAR INC	SAVANNAH	S	462.9500	WNCE405	MR	IL	MC LEAN COUNTY OF	(* 856.7625)	T	859.7625	KNNK867	MR
GA	PORTAL CITY OF	PORTAL	L	453.4500	WNSA798	MR	IL	MC LEAN COUNTY OF	LEXINGTON	T	859.9375	KNNK867	MR
GA	PUTNAM COUNTY OF		P	154.9350	WNVM897	MO	IL	MC LEAN COUNTY OF	ARROWSMITH	T	860.2375	KNNK867	MR
GA	ROME CITY OF	ROME	L	153.3950	KNNG245	MR	IL	MC LEAN COUNTY OF	(* 856.7625)	T	860.7625	KNNK867	MR
IA	ADAIR CITY OF	ADAIR	L	158.9550	WPIX266	BM	IL	MC LEAN COUNTY OF	LEXINGTON	T	860.9375	KNNK867	MR
IA	ALLAMAKEE COUNTY OF		P	153.9200	WPIX290	MO	IL	MERRIONETTE PARK VILLAGE OF		M	155.3400	KNNG797	MO
IA	ALLAMAKEE COUNTY OF	WAUKON	P	155.1300	WPIX290	MR	IL	MOLINE CITY OF	MOLINE	P	460.1750	KNNM964	BR
IA	CENTRAL VET CLINIC	SIOUX CENTER	S	47.6600	KNNJ529	BM	IL	MOLINE CITY OF		P	465.1750	KNNM964	MO
IA	CLARION CITY OF		L	153.9050	WNUE652	MO	IL	MONTGOMERY COUNTY OF	HILLSBORO	L	155.0550	WPIZ334	BM
IA	HAMILTON COUNTY HOSPITAL	WEBSTER CITY	M	155.2200	KQS751	BM	IL	MT CARROLL FPD	MT CARROLL	F	154.3100	KTE457	BM
IA	MANNING TOWN OF	MANNING	L	158.7750	KCK854	MR	IL	MT OLIVE COMMUNITY USD #5	MT OLIVE	S	155.2050	KNNM523	BM
IA	MARION CITY OF	MARION	L	453.7500	KNNG526	MR	IL	NEW BOSTON AMBULANCE SVC INC		M	155.3400	KNNF405	MO
IA	POLK COUNTY OF	DES MOINES	L	460.3500	WPIX270	MR	IL	NORMAL CITY OF	LEXINGTON	L	860.4875	WPIX239	MR
IA	SAC COUNTY OF	SAC CITY	M	155.3400	KMA723	BM	IL	OAKBROOK TERRACE FPD		M	155.3400	KD35753	MO
IA	SAC COUNTY OF	SAC CITY	M	462.9750	KMA723	BM	IL	OAKBROOK TERRACE FPD		M	463.1750	KD35753	MO
IA	W DES MOINES CITY OF		P	158.9700	KAB788	MO	IL	OAKBROOK TERRACE FPD		M	468.1750	KD35753	MO
ID	ADA COUNTY OF		L	453.3250	KNNH990	MO	IL	ORLAND PARK VILLAGE OF		L	823.5500	KNNH535	MO
ID	ADA COUNTY OF		L	453.4000	KNNH990	MO	IL	ORLAND PARK VILLAGE OF	ORLAND PARK	L	868.5500	KNNH535	BA

STARTEK INTERNATIONAL INC.
U.S. MADE FREQUENCY COUNTERS



ACTUAL SIZE

FAST and CONVENIENT, RELIABLE and COMPACT describe the *STARTEK ATH™* series, *Auto Trigger & Hold* Frequency Counters.

USE to find unknown frequencies, locate RF sources, check equipment for operation and frequency calibration. Use with antenna analyzers for antenna tuning, monitor the output frequency of transmitters, signal generators and more.

POCKET SIZE for convenient portable use – internal Ni-Cad batteries and AC charger/adapter are included.

EASY to use – no complicated controls or multi-function switches.

BRIGHT red LED digits for excellent readability and reliability.

BAR GRAPH indicating signal strength, on most models.

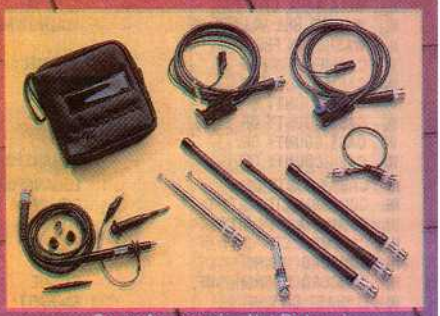
PREAMPLIFIER circuits are built into all *ATH™* series counters for maximized – ultra high sensitivity.

5 YEAR all parts and 1 year labor limited factory warranty.

U.S. made and very affordable – prices start under $120.



Model 1350
Basic Model, 1-1300 MHZ, Hold Sw (No ATH or Bar Graph) **$129.** CALL



Some Accessories Not Pictured

ACCESSORIES

#CC-90	Soft Case for All Models	$12
#TA-90	Telescope BNC Antenna	12
#TA-90-L	Telescope Elbow BNC Antenna	16
#RD-150	150 MHZ Rubber Duck Antenna	16
#RD-2750	27 & 50 MHZ Rubber Duck Antenna	19
#RD-450	450 MHZ Rubber Duck Antenna	16
#RD-800	Cellular phone band RD Antenna	16
#P-110	200 MHZ 1X-10X Probe	39
#LP-22	Low Pass, Audio Probe	25
#DC-10	Direct, 50 OHM Probe	20
#DC-5	BNC Cable to Clip Leads	12
#M-207-IC	Interface Cable MFJ Ant. Analyzers	10
#APA-9	9VDC Auto Power Adapter	6

FEATURES

	ATH-10 CALL reg $179	ATH-15 CALL reg $235	ATH-30 CALL reg $299	ATH-50 CALL reg $339
FREQUENCY RANGE	1 MHZ - 1200 MHZ	1 MHZ - 1500 MHZ	1 MHZ - 2800 MHZ	5 HZ - 2800 MHZ
AUTO TRIGGER & HOLD	YES	YES	YES	YES
SIGNAL BAR GRAPH	NO	YES	YES	YES
LOW BATTERY IND.	NO	YES	YES	YES
ONE-SHOT & RESET	NO	OPTIONAL	YES	YES
HI-Z LOW RANGE	NO	NO	NO	YES

All instruments are true Pocket Size: 4" High x 3.5" Wide x 1" Deep, <14 cubic in. and are shipped with factory installed Ni-Cad batteries and AC charger/adapter.

Antennas and various accessories are optional.

OPTION #HST-15 is a high accuracy, high stability, time base upgrade that can be ordered with any *ATH* ™ series model (±0.2PPM TCXO) ..... **$125** CALL

BAND PASS FILTERS EXTEND READABILITY DISTANCE. **Call For Price**

#LP-60	DC - 60 MHZ	**#BP-150**	130 - 500 MHZ
#HP-400	400 - 1500 MHZ	**#HP-800**	800 - 2000 MHZ

Call Startek Direct or your Dealer For Special Pricing
FACTORY DIRECT ORDER LINES
Orders & Information 305-561-2211
Orders Only 800-638-8050

Terms: Shipping/handling charges U.S. & Canada 5% ($5 min., $10 max.) Others add 15%. FL residents add 6% tax. COD fee $5. VISA, MC, Discover accepted. Prices & specifications subject to change without notice or obligation.

STARTEK INTERNATIONAL INC.
398 NE 38th St., Ft. Lauderdale, FL 33334

MasterCard VISA DISCOVER

IL	PALATINE TOWNSHIP OF	PALATINE	L	151.7450	KNGG285	BM	KS	BARTON COUNTY OF		P	39.7000	KNAO550	MO
IL	RANDOLPH TOWNSHIP FIRE DIST	ARROWSMITH	L	858.4875	KNNH520	MR	KS	CHAPMAN CITY OF	PEARL	L	158.8500	KNNM960	MR
IL	RIVER GROVE CITY OF		M	155.3400	KNNH921	MO	KS	CHASE COUNTY FIRE DISTRICT #1	COTTONWOOD FLS	F	453.1750	KNNJ576	MR
IL	RIVER GROVE CITY OF		M	463.1750	KNNH921	MO	KS	CLARK COUNTY OF	ASHLAND	M	155.4000	KNNG219	MR
IL	RIVER GROVE CITY OF		M	468.1750	KNNH921	MO	KS	CLAY TOWNSHIP OF		R	158.9850	KA83476	MO
IL	ROANOKE CITY OF		M	155.2200	KNNK414	MO	KS	COLBY TOWN OF		L	153.7850	KNNJ356	MO
IL	ROANOKE CITY OF		M	155.3400	KNNK414	MO	KS	COLBY TOWN OF		P	154.7100	KNNI800	MO
IL	ROCK ISLAND CITY OF		M	155.3400	KNNK415	MO	KS	COLBY TOWN OF	COLBY	P	159.2100	KNNI800	BM
IL	ROCK ISLAND COUNTY OF	MOLINE	T	856.2375	KNNF757	MR	KS	DOUGLAS COUNTY OF	LAWRENCE	L	866.7625	KNNJ870	MR
IL	ROCK ISLAND COUNTY OF	MOLINE	T	856.4375	KNNF757	MR	KS	DOUGLAS COUNTY OF	LAWRENCE	L	867.3375	KNNJ871	MR
IL	ROCK ISLAND COUNTY OF	MOLINE	T	856.7625	KNNF757	MR	KS	DOUGLAS COUNTY OF	BALDWIN CITY	L	868.0500	KNNJ871	MR
IL	ROCK ISLAND COUNTY OF	MOLINE	T	857.2375	KNNF757	MR	KS	FIRE DISTRICT #5	ROSALIA	F	453.0750	KNNH243	MR
IL	ROCK ISLAND COUNTY OF	MOLINE	T	857.4375	KNNF757	MR	KS	GEARY COUNTY OF	JUNCTION CITY	P	39.5800	KNJY493	BM
IL	ROCK ISLAND COUNTY OF	MOLINE	T	857.7625	KNNF757	MR	KS	GEARY COUNTY OF		P	453.4625	KNJY493	MO
IL	ROCK ISLAND COUNTY OF	MOLINE	T	858.2375	KNNF757	MR	KS	GEARY COUNTY OF		P	453.8875	KNJY493	MO
IL	ROCK ISLAND COUNTY OF	MOLINE	T	858.4375	KNNF757	MR	KS	JACKSON COUNTY OF	MAYETTA	L	155.9550	KFG454	MR
IL	ROCK ISLAND COUNTY OF	MOLINE	T	858.7625	KNNF757	MR	KS	JOHNSON COUNTY OF		L	158.9250	KNNJ980	MO
IL	ROCK ISLAND COUNTY OF	MOLINE	T	859.2375	KNNF757	MR	KS	JOHNSON COUNTY OF	OLATHE	L	867.1375	WPIZ647	MR
IL	ROCK ISLAND COUNTY OF	MOLINE	T	859.4375	KNNF757	MR	KS	JOHNSON COUNTY OF	MISSION	L	867.1375	WPIZ647	MR
IL	ROCK ISLAND COUNTY OF	MOLINE	T	859.7625	KNNF757	MR	KS	JOHNSON COUNTY OF	OVERLAND PARK	L	867.1375	WPIZ647	MR
IL	ROCK ISLAND COUNTY OF	MOLINE	T	860.2375	KNNF757	MR	KS	JOHNSON COUNTY OF	(* 867.1375)	L	867.3875	WPIZ647	MR
IL	ROCK ISLAND COUNTY OF	MOLINE	T	860.4375	KNNF757	MR	KS	JOHNSON COUNTY OF	(* 867.1375)	L	867.6375	WPIZ647	MR
IL	ROCK ISLAND COUNTY OF	MOLINE	T	860.7625	KNNF757	MR	KS	LANE COUNTY OF	HEALY	L	154.0400	KNNL678	MR
IL	ROME TOWNSHIP OF		R	156.1950	KNNG317	MO	KS	OBERLIN CITY OF		L	158.9250	KNEH535	MO
IL	RUSHVILLE CITY OF	RUSHVILLE	L	155.7750	KNNI375	BM	KS	PHILLIPS COUNTY OF	PHILLIPSBURG	L	155.1000	KNNJ979	MR
IL	ST CLEMENT HOSPITAL	RED BUD	M	155.1600	KNNH923	BA	KY	COLUMBUS VFD INC	COLUMBUS	F	151.4300	KNNG315	MR
IL	ST CLEMENT HOSPITAL	RED BUD	M	155.2800	KNNH923	BA	KY	COMMUNITY METHODIST HOSPITAL	HENDERSON	M	156.1800	WPIX793	BM
IL	ST CLEMENT HOSPITAL	RED BUD	M	155.3400	KNNH923	BA	KY	DAWSON SPRINGS INDEP SCHOOL SY	DAWSON SPRINGS	S	155.2200	KNNL943	BM
IL	STEPHENSON COUNTY OF		P	453.1625	WPCG855	MO	KY	GREEN COUNTY OF	GREENSBURG	L	155.0400	WNWT702	MR
IL	STEPHENSON COUNTY OF		P	453.9375	WPCG855	MO	KY	LOUISVILLE CITY OF	LOUISVILLE	T	856.2125	KKV802	MR
IL	SW CENTRAL DISPATCH	PALOS HEIGHTS	L	860.4375	WNYE736	MR	KY	LOUISVILLE CITY OF	LOUISVILLE	T	856.9375	KKV802	MR
IL	SW CENTRAL DISPATCH	MOKENA	L	860.4375	WNYE736	MR	KY	LOUISVILLE CITY OF	LOUISVILLE	T	857.4625	KKV802	MR
IL	SW CENTRAL DISPATCH	LEMONT	L	860.4375	WNYE736	MR	KY	LOUISVILLE CITY OF	LOUISVILLE	T	858.2125	KKV802	MR
IL	TRI STATE FPD		M	155.3400	KNNG307	MO	KY	LOUISVILLE CITY OF	LOUISVILLE	T	858.9375	KKV802	MR
IL	UNION COUNTY OF		L	153.8600	KNNJ353	MO	KY	LOUISVILLE CITY OF	LOUISVILLE	T	859.4625	KKV802	MR
IL	UNION COUNTY OF	ALTO PASS	L	159.1500	KNNJ353	MR	KY	LOUISVILLE CITY OF	LOUISVILLE	T	860.2125	KKV802	MR
IL	VILLA PARK CITY OF		M	462.9500	KNNM537	MO	KY	LOUISVILLE CITY OF	LOUISVILLE	T	860.9375	KKV802	MR
IL	VILLA PARK CITY OF		M	462.9750	KNNM537	MO	KY	LOUISVILLE CITY OF	LOUISVILLE	T	862.9875	KKV802	MR
IL	VILLA PARK CITY OF		M	463.1750	KNNM537	MO	KY	LOUISVILLE CITY OF	LOUISVILLE	T	864.9875	KKV802	MR
IL	VILLA PARK CITY OF		M	467.9500	KNNM537	MO	KY	MERCY HOSPITAL	OWENSBORO	M	463.1750	KNNL418	BA
IL	VILLA PARK CITY OF		M	467.9750	KNNM537	MO	KY	MURRAY CITY OF	MURRAY	P	154.8600	KNNJ655	BM
IL	VILLA PARK CITY OF		M	468.1750	KNNM537	MO	KY	NICHOLASVILLE TOWN OF	NICHOLASVILLE	L	154.0850	KNNJ509	BR
IL	WALNUT HILL VILLAGE OF	WALNUT HILL	L	453.8250	KNNK340	OF	KY	PERRY COUNTY OF	HAZARD	P	154.8750	WPIZ328	MR
IL	WASHBURN FPD		M	155.3400	KNNM536	MO	KY	RAYWICK FD		F	154.2350	KNNM525	MO
IN	CARMEL TOWN OF	CARMEL	L	460.3750	KNNL734	BA	KY	SHOPVILLE STAB VFD INC	SOMERSET	F	453.0750	KNNN521	MR
IN	CARMEL TOWN OF		L	465.3750	KNNL734	MO	KY	ST CLAIRE MEDICAL CENTER	(MOREHEAD)	S	453.0125	KNNH638	MO
IN	CASS COUNTY OF		L	158.9400	KNNK338	MO	LA	MORGAN CITY HARBOR & TERMINAL		L	453.9125	KNNM897	MO
IN	CASS COUNTY OF		L	809.9625	KNNH526	MO	LA	PLAQUEMINE TOWN OF	WHITE CASTLE	F	33.9800	KNFH973	BA
IN	CASS COUNTY OF		L	810.9875	KAU450	MO	LA	PLAQUEMINE TOWN OF	GROSSE TETE	F	33.9800	KNFH973	BA
IN	CASS COUNTY OF	LOGANSPORT	L	854.9625	KNNH526	MR	LA	SICILY ISLAND VFD	SICILY	F	154.2950	KNNL464	BM
IN	CASS COUNTY OF	LOGANSPORT	L	855.9875	KAU450	MR	LA	VERNON PARISH FIRE DIST #1	CRAVENS	F	154.2650	WPCG663	MR
IN	COLUMBIA CITY CITY OF	COLUMBIA CITY	F	154.1450	KNNL463	BM	LA	W BATON ROUGE PARISH OF		L	153.7550	KNNK264	MO
IN	COLUMBIA CITY CITY OF		F	154.2800	KNNL463	MO	MA	DENNIS TOWN OF	DENNIS	L	154.9800	KNNJ460	BA
IN	COLUMBIA CITY CITY OF		F	154.3850	KNNL463	MO	MA	DENNIS TOWN OF	S DENNIS	L	154.9800	KNNJ460	BA
IN	CONCORD TOWNSHIP OF	ST JOE	F	154.2800	KNNN704	BM	MA	DENNIS TOWN OF	W DENNIS	L	154.9800	KNNJ460	BM
IN	CONCORD TOWNSHIP OF	ST JOE	F	154.3550	KNNN704	BM	MA	DOVER TOWN OF	DOVER	P	472.3125	WIL981	MR
IN	ELKHART CITY OF	ELKHART	L	155.0250	KNNK546	BA	MA	FAIRHAVEN TOWN OF	FAIRHAVEN	R	452.3250	KNNJ544	MR
IN	HARRISON TOWNSHIP OF	MONTGOMERY	F	151.2650	KNNG684	MR	MA	GRAFTON TOWN OF	GRAFTON	F	33.6200	WPIY726	BM
IN	HARRISON TOWNSHIP OF		F	159.4350	KNNG684	MO	MA	GRAFTON TOWN OF		F	46.3000	WPIY726	MO
IN	HARRISON COUNTY OF		L	153.8600	WQA831	MO	MA	HUBBARDSTON TOWN OF	HUBBARDSTON	R	156.2250	KNNH308	BM
IN	HENDRICKS COUNTY OF	DANVILLE	L	158.7600	KNNK262	BM	MA	MANSFIELD TOWN OF	MANSFIELD	P	159.6750	KNNK572	BM
IN	HUNTERTOWN VF CO INC		M	155.2800	WPIQ928	MO	MA	MASSACHUSETTS TURNPIKE AUTH	BRIMFIELD	R	159.1650	WPAX921	MR
IN	HUNTERTOWN VF CO INC		M	155.3400	WPIQ928	MO	MA	MIDDLEBORO TOWN OF	MIDDLEBORO	F	154.4000	WPHU786	BM
IN	HUNTINGTON COUNTY OF	HUNTINGTON	T	856.7375	KNNH556	MR	MA	MONTAGUE TOWN OF	MONTAGUE	L	158.7600	KNDA350	BA
IN	HUNTINGTON COUNTY OF	HUNTINGTON	T	857.7375	KNNH556	MR	MA	MONTAGUE TOWN OF	GREENFIELD	L	159.0900	KNDA350	MR
IN	HUNTINGTON COUNTY OF	HUNTINGTON	T	858.7375	KNNH556	MR	MA	NORFOLK TOWN OF	NORFOLK	L	851.3875	WNVT402	MR
IN	HUNTINGTON COUNTY OF	HUNTINGTON	T	859.7375	KNNH556	MR	MA	SHELBURNE FIRE DISTRICT		F	453.1625	KIT866	MO
IN	HUNTINGTON COUNTY OF	HUNTINGTON	T	860.7375	KNNH556	MR	MA	SHELBURNE FIRE DISTRICT		F	458.1625	KIT866	MO
IN	KOKOMO CITY OF		L	153.7850	KNNK337	MO	MA	WELLESLEY CITY OF	WELLESLEY	P	159.9900	KNNK248	BM
IN	MADISON COUNTY OF		L	810.4625	KNNF707	MO	MD	BLAKEY RACHEL	GLYNDON	S	33.0400	KNNM522	BM
IN	MADISON COUNTY OF		L	811.2625	KNNF707	MO	MD	CARROLL COUNTY OF	MAYBERRY	T	867.1375	WPIU695	MR
IN	MADISON COUNTY OF		L	814.4625	KNNF707	MO	MD	CARROLL COUNTY OF	WESTMINSTER	T	867.1375	WPIU695	MR
IN	MADISON COUNTY OF	ANDERSON	L	855.4625	KNNF707	MR	MD	CARROLL COUNTY OF	MT AIRY	T	867.1375	WPIU695	MR
IN	MADISON COUNTY OF	ANDERSON	L	856.2625	KNNF707	MR	MD	CARROLL COUNTY OF	TAYLORSVILLE	T	867.1375	WPIU695	MR
IN	MADISON COUNTY OF	ANDERSON	L	859.4625	KNNF707	MR	MD	CARROLL COUNTY OF	HAMPSTEAD	T	867.1375	WPIU695	MR
IN	PARKE COUNTY OF	NEWPORT	L	155.8200	KNNK263	MR	MD	CARROLL COUNTY OF	(* 867.1375)	T	867.1875	WPIU695	MR
IN	PENDLETON TOWN OF		L	815.7375	KNNL584	MO	MD	CARROLL COUNTY OF	(* 867.1375)	T	867.2250	WPIU695	MR
IN	PENDLETON TOWN OF	PENDLETON	L	860.7375	KNNL584	MR	MD	CARROLL COUNTY OF	(* 867.1375)	T	867.3875	WPIU695	MR
IN	PORTER COUNTY OF		C	453.1500	WPIZ913	MO	MD	CARROLL COUNTY OF	(* 867.1375)	T	867.4250	WPIU695	MR
IN	PORTER COUNTY OF	VALPARAISO	L	158.7750	KNNJ355	BM	MD	CARROLL COUNTY OF	(* 867.1375)	T	867.4500	WPIU695	MR
IN	PORTLAND CITY OF	PORTLAND	R	151.4600	KNNG319	BM	MD	CARROLL COUNTY OF	(* 867.1375)	T	867.4750	WPIU695	MR
IN	RIPLEY COUNTY OF	BATESVILLE	F	154.1900	WQM259	BA	MD	CARROLL COUNTY OF	WESTMINSTER	T	867.5000	WPIU695	MR
IN	RIPLEY COUNTY OF	BATESVILLE	P	155.4150	KSC597	BA	MD	CARROLL COUNTY OF	(* 867.1375)	T	867.5875	WPIU695	MR
IN	RIPLEY COUNTY OF	BATESVILLE	S	155.2050	KNEQ243	BA	MD	CARROLL COUNTY OF	(* 867.1375)	T	867.9375	WPIU695	MR
IN	SHELBY VFD	SHELBY	F	154.2350	KNNN523	BM	MD	ROCKVILLE CITY OF	POTOMAC	L	156.0150	KNNJ984	BM
IN	WHITING TOWN OF		M	155.3400	KNNL363	MO	ME	BATH CITY OF		L	153.8000	WPIX454	MO
IN	WORTHINGTON TOWN OF		L	153.9350	KNNL940	MO	ME	BUXTON TOWN OF	BUXTON	L	453.8000	KNNJ512	MR

ME	CAPITAL AMBULANCE	E EDDINGTON	S	155.2200	WNRE382	BM	MI	PONTIAC CITY OF	PONTIAC	T	866.1625	KNNK714	MR
ME	CAPITAL AMBULANCE		S	467.9375	WNRE382	MO	MI	PONTIAC CITY OF	PONTIAC	T	866.2500	KNNK714	MR
ME	CARRABASSETT VALLEY TOWN OF	CARRABASSETT	L	153.9050	KNNI398	BM	MI	PONTIAC CITY OF	PONTIAC	T	866.6750	KNNK714	MR
ME	FAIRFIELD TOWN OF	FAIRFIELD	L	453.2250	KFO886	OF	MI	PONTIAC CITY OF	PONTIAC	T	866.7500	KNNK714	MR
ME	FAIRFIELD TOWN OF	FAIRFIELD	L	458.2250	KFO886	OF	MI	S CLINTON COUNTY MUN UTILITY		L	453.9125	KNNN714	MO
ME	FRIENDSHIP TOWN OF	FRIENDSHIP	F	151.2950	KRZ275	MR	MI	SISSON KEITH R		S	150.7900	KLL616	MO
ME	SEARSPORT TOWN OF	STOCKTON	L	153.7550	KNNM305	BA	MI	STURGIS CITY OF	STURGIS	P	159.0300	KQA915	BM
ME	SEARSPORT TOWN OF	STOCKTON	L	453.4250	KNNM305	BA	MI	WASHTENAW LIVINGSTON MED CNTL	ANN ARBOR	M	462.9500	KNNM947	MR
ME	SEARSPORT TOWN OF	STOCKTON SPRGS	L	453.4250	KNNM305	BA	MI	WASHTENAW LIVINGSTON MED CNTL	HOWELL	M	462.9500	KNNM947	BA
ME	YORK COUNTY EMERGENCY COMM	CORNISH	F	460.5500	WPCT517	MR	MI	WASHTENAW LIVINGSTON MED CNTL	HOWELL	M	462.9750	KNNM947	BA
ME	YORK COUNTY EMERGENCY COMM	SHAPLEIGH	F	460.5500	WPCT517	MR	MI	WASHTENAW LIVINGSTON MED CNTL	HOWELL	M	463.1750	KNNM947	MR
MI	ALLEN PARK CITY OF		L	155.0550	KNNJ682	MO	MI	WASHTENAW LIVINGSTON MED CNTL	ANN ARBOR	M	463.1750	KNNM947	MR
MI	CALHOUN COUNTY OF		P	158.9100	KQB615	MO	MI	WASHTENAW LIVINGSTON MED CNTL	ANN ARBOR	M	463.1750	KNNM947	MR
MI	CROSWELL CITY OF	CROSWELL	L	154.9950	WPHS424	BM	MI	WYANDOTTE CITY OF		F	460.5875	KNNH336	MO
MI	DOWNRIVER MUTUAL AID		T	821.5750	WPIU702	MO	MI	WYANDOTTE CITY OF		F	465.5875	KNNH336	MO
MI	DOWNRIVER MUTUAL AID		T	821.6000	WPIU702	MO	MN	AMERICAN RED CROSS	E GRAND FORKS	S	47.4200	WNFR478	BA
MI	DOWNRIVER MUTUAL AID		T	821.6250	WPIU702	MO	MN	ARROWHEAD EMS		M	155.3400	KR4525	MO
MI	DOWNRIVER MUTUAL AID		T	821.8250	WPIU702	MO	MN	BAYPORT CITY OF		L	453.3625	KNNJ464	MO
MI	DOWNRIVER MUTUAL AID		T	822.0500	WPIU702	MO	MN	BECKER CITY OF		L	453.1625	WPIW738	MO
MI	DOWNRIVER MUTUAL AID		T	822.1250	WPIU702	MO	MN	DULUTH CITY OF	DULUTH	F	154.3100	WPIQ879	BA
MI	DOWNRIVER MUTUAL AID		T	822.2000	WPIU702	MO	MN	HENNEPIN COUNTY OF	MAPLE PLAIN	F	154.3850	KVD531	BA
MI	DOWNRIVER MUTUAL AID		T	822.2625	WPIU702	MO	MN	HENNEPIN COUNTY OF		M	150.7750	KKV897	MO
MI	DOWNRIVER MUTUAL AID		T	822.5750	WPIU702	MO	MN	INDEPENDENT SCHOOL DIST #622		L	810.3375	WPIZ363	MO
MI	DOWNRIVER MUTUAL AID		T	822.7750	WPIU702	MO	MN	INDEPENDENT SCHOOL DIST #622		L	812.4375	WPIZ363	MO
MI	DOWNRIVER MUTUAL AID		T	822.8000	WPIU702	MO	MN	INDEPENDENT SCHOOL DIST #622	MAPLEWOOD	L	855.3375	WPIZ363	MR
MI	DOWNRIVER MUTUAL AID		T	822.8250	WPIU702	MO	MN	INDEPENDENT SCHOOL DIST #622	MAPLEWOOD	L	867.4375	WPIZ363	MR
MI	DOWNRIVER MUTUAL AID		T	823.0750	WPIU702	MO	MN	INDEPENDENT SCHOOL DIST #2170	MOTLEY	S	155.1750	KZR478	BA
MI	DOWNRIVER MUTUAL AID		T	823.1000	WPIU702	MO	MN	INDEPENDENT SCHOOL DIST #2170	STAPLES	S	155.1750	KZR478	BM
MI	DOWNRIVER MUTUAL AID		T	823.1250	WPIU702	MO	MN	ITASCA COUNTY OF		L	153.9350	WNAH478	MO
MI	DOWNRIVER MUTUAL AID		T	823.3375	WPIU702	MO	MN	PEQUOT LAKES TOWN OF	PEQUOT LAKES	L	155.0250	WPIX262	BM
MI	DOWNRIVER MUTUAL AID		T	823.5875	WPIU702	MO	MN	PRINCETON CITY OF	PRINCETON	L	154.8600	WPEI411	MR
MI	DOWNRIVER MUTUAL AID		T	823.6500	WPIU702	MO	MN	RAMSEY COUNTY OF	ST PAUL	L	155.8350	KNNL729	MR
MI	DOWNRIVER MUTUAL AID		T	823.7500	WPIU702	MO	MN	RAMSEY COUNTY OF		L	158.8800	KNNL729	MO
MI	DOWNRIVER MUTUAL AID		T	823.8375	WPIU702	MO	MN	ST JAMES CITY OF		L	453.7375	KNNF939	MO
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	866.5750	WPIU702	MR	MN	VERNDALE PUBLIC SCHOOL	VERNDALE	S	155.2350	KNNG670	BM
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	866.6000	WPIU702	MR	MN	WARROAD CITY OF		L	453.3625	KNNN726	MO
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	866.6250	WPIU702	MR	MN	WASHINGTON COUNTY OF	STILLWATER	P	453.5250	WNZM268	MR
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	866.8250	WPIU702	MR	MN	WASHINGTON COUNTY OF		P	458.5250	WNZM268	MO
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	867.0500	WPIU702	MR	MO	BOLES FPD	GRAY SUMMIT	F	154.2800	KVA310	BM
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	867.1250	WPIU702	MR	MO	BOLES FPD		F	154.3550	KVA310	MO
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	867.2000	WPIU702	MR	MO	BOLES FPD	GRAY SUMMIT	F	154.4300	KVA310	BM
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	867.2625	WPIU702	MR	MO	BOLES FPD		F	453.1125	KVA310	MO
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	867.5750	WPIU702	MR	MO	BOLES FPD		F	453.7125	KVA310	MO
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	867.7750	WPIU702	MR	MO	BOLES FPD		F	453.9125	KVA310	MO
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	867.8000	WPIU702	MR	MO	BOLES FPD		F	458.1125	KVA310	MO
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	867.8250	WPIU702	MR	MO	BOLES FPD		F	458.7125	KVA310	MO
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	868.0750	WPIU702	MR	MO	BOLES FPD		F	458.9125	KVA310	MO
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	868.1000	WPIU702	MR	MO	BOLLINGER CO CD FIREFIGHTERS	GRASSY	F	154.4300	KNNH244	MR
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	868.1250	WPIU702	MR	MO	CENTRAL MISSOURI STATE UNIV	WARRENSBURG	P	155.4750	KRZ868	BM
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	868.3375	WPIU702	MR	MO	CENTRAL MISSOURI STATE UNIV		P	158.9100	KRZ868	MO
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	868.5875	WPIU702	MR	MO	DONIPHAN CITY OF	DONIPHAN	L	154.0550	KNNJ981	BM
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	868.6500	WPIU702	MR	MO	EMINENCE CITY OF		L	153.9650	KNNJ532	MO
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	868.7500	WPIU702	MR	MO	EXCELSIOR SPRINGS CITY OF	EXCELSIOR SPGS	F	151.3850	KNGY670	BM
MI	DOWNRIVER MUTUAL AID	TAYLOR	T	868.8375	WPIU702	MR	MO	JEFFERSON COUNTY OF	FESTUS	F	160.0950	KNNJ408	BA
MI	FRUITPORT TOWNSHIP OF		L	158.8500	KLB951	MO	MO	JEFFERSON COUNTY OF	DE SOTO	F	160.0950	KNNJ408	BA
MI	GENESEE COUNTY OF		L	821.5125	KNNL529	MO	MO	JENNINGS CITY OF	JENNINGS	L	460.2250	KNNF498	MR
MI	GENESEE COUNTY OF		L	822.0125	KNNL529	MO	MO	JENNINGS CITY OF		L	465.2250	KNNF498	MO
MI	GENESEE COUNTY OF		L	822.5125	KNNL529	MO	MO	LAWRENCE COUNTY OF	PIERCE CITY	L	159.9150	KNNJ742	MR
MI	GENESEE COUNTY OF		L	823.0125	KNNL529	MO	MO	LINCOLN COUNTY OF	TROY	P	153.2900	WZZ284	MR
MI	GENESEE COUNTY OF	ROGERSVILLE	L	866.2750	KNNL529	MR	MO	MARION COUNTY OF	PALMYRA	L	155.8650	KZE637	BA
MI	GENESEE COUNTY OF	SWARTZ CREEK	L	866.3250	KNNL529	MR	MO	MOUND CITY CITY OF	MOUND CITY	F	154.4000	KNNJ584	BM
MI	GENESEE COUNTY OF	FLINT	L	866.5375	KNNL529	MR	MO	MOUNTAIN GROVE TOWN OF	MOUNTAIN GROVE	F	154.1750	WPIW554	MR
MI	GENESEE COUNTY OF	FLINT	M	155.1600	WZJ235	BM	MO	NOEL VFD		F	154.2800	WNLQ630	MO
MI	GENESEE COUNTY OF	FLINT	M	155.2800	WZJ235	BM	MO	OSCEOLA CITY OF		L	153.9200	KNNG322	MO
MI	GENESEE COUNTY OF		M	155.3400	WZJ235	MO	MO	POTOSI HOUSING AUTHORITY	POTOSI	L	154.9650	KNNJ978	BM
MI	GREATER DETROIT HOSPITAL	DETROIT	M	155.3400	KNNI215	BA	MO	PROTEM VFD	PROTEM	F	154.1900	KNNG221	BM
MI	HILLSDALE COUNTY OF	PITTSFORD	F	154.2650	WPIQ917	BM	MO	ST LOUIS HOSPITAL ASSN	BRIDGETON	M	462.1250	KXZ427	BA
MI	HILLSDALE COUNTY OF	PITTSFORD	F	154.3400	WPIQ917	BM	MO	ST LOUIS COUNTY OF		S	463.1750	KB21164	MO
MI	KENT COUNTY OF	GRAND RAPIDS	L	453.3000	KVJ450	MR	MO	WARREN COUNTY OF	WARRENTON	F	154.2350	WPIY650	BM
MI	KENT COUNTY OF		L	458.3000	KVJ450	MO	MO	WESTON CITY OF	WESTON	L	153.9200	KNNJ417	BM
MI	KENT COUNTY OF	GRAND RAPIDS	S	462.9500	KTD550	BA	MS	COLLINS CITY OF	COLLINS	P	155.4900	KNNM901	BM
MI	LIFECARE AMBULANCE SVC INC	COLDWATER	M	155.3250	KNNJ533	BM	MS	COLLINS CITY OF	COLLINS	P	155.6550	KNNM901	BR
MI	LIFECARE AMBULANCE SVC INC		M	460.5125	KNNJ533	MO	MS	GAUTIER CITY OF	GAUTIER	L	855.9875	KNNJ872	MR
MI	LIFECARE AMBULANCE SVC INC		M	462.9625	KNNJ533	MO	MS	HINDS COUNTY OF	TERRY	R	156.2250	KNAY904	BA
MI	LIFECARE AMBULANCE SVC INC		M	465.5125	KNNJ533	MO	MS	HINDS COUNTY OF	JACKSON	S	47.4600	WPIW515	BM
MI	LIFECARE AMBULANCE SVC INC		M	467.9625	KNNJ533	MO	MS	INDIANOLA CITY OF	INDIANOLA	P	158.7300	KNNL723	MR
MI	MANISTEE COUNTY OF	COPEMISH	L	158.7300	KNNG767	MR	MS	MENDENHALL CITY OF	MENDENHALL	L	39.8200	KNNJ513	BM
MI	MANISTEE COUNTY OF	BEAR LAKE	P	39.8000	KSX251	BA	MS	MENDENHALL CITY OF	MENDENHALL	L	45.6400	KNNJ513	BM
MI	MICHIGAN STATE UNIVERSITY		L	155.9100	KNNN701	MO	MS	MONROE COUNTY OF	ABERDEEN	P	155.6700	KNNF888	BA
MI	MT MORRIS TOWNSHIP OF	MT MORRIS	L	153.9200	KNFW469	BM	MS	MONROE COUNTY OF	AMORY	P	155.6700	KNNF888	MR
MI	ODAWA INDIANS BAY BANDS OF		L	153.8450	KNNN203	MO	MS	MONROE COUNTY OF		P	159.0600	KNNF888	MO
MI	PONTIAC CITY OF		T	821.0125	KNNK714	MO	MS	NEW ALBANY TOWN OF		L	37.1000	KKL905	MO
MI	PONTIAC CITY OF		T	821.5125	KNNK714	MO	MS	PONTOTOC CITY OF	PONTOTOC	P	460.4250	KNNM869	MR
MI	PONTIAC CITY OF		T	822.0125	KNNK714	MO	MS	VICKSBURG CITY OF		T	810.7125	KNNH519	MO
MI	PONTIAC CITY OF		T	822.5125	KNNK714	MO	MS	VICKSBURG CITY OF		T	811.7125	KNNH519	MO
MI	PONTIAC CITY OF		T	823.0125	KNNK714	MO	MS	VICKSBURG CITY OF		T	812.7125	KNNH519	MO
MI	PONTIAC CITY OF	PONTIAC	T	866.1000	KNNK714	MR	MS	VICKSBURG CITY OF		T	813.2625	KNNH519	MO

FREQUENCY UPDATES
by Police Call Plus

MS	VICKSBURG CITY OF		T	813.7125	KNNH519	MO	NC	HENDERSON COUNTY FIRE COMM	ETOWAH	F	154.4300	KAU720	BA
MS	VICKSBURG CITY OF		T	814.7125	KNNH519	MO	NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.4300	WFR324	BR
MS	VICKSBURG CITY OF		T	815.2625	KNNH519	MO	NC	HENDERSON COUNTY FIRE COMM	SALUDA	F	154.4300	KFV885	BA
MS	VICKSBURG CITY OF	VICKSBURG	T	855.7125	KNNH519	MR	NC	HENDERSON COUNTY FIRE COMM	FLETCHER	F	154.4300	WBE435	BA
MS	VICKSBURG CITY OF	VICKSBURG	T	856.7125	KNNH519	MR	NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.4300	KFV885	BA
MS	VICKSBURG CITY OF	VICKSBURG	T	857.7125	KNNH519	MR	NC	HENDERSON COUNTY FIRE COMM	SKYLAND	F	154.4300	WBE435	BA
MS	VICKSBURG CITY OF	VICKSBURG	T	858.2625	KNNH519	MR	NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.4300	WBE435	BA
MS	VICKSBURG CITY OF	VICKSBURG	T	858.7125	KNNH519	MR	NC	HENDERSON COUNTY FIRE COMM	E FLAT ROCK	F	154.4300	WBE435	BA
MS	VICKSBURG CITY OF	VICKSBURG	T	859.7125	KNNH519	MR	NC	HENDERSON COUNTY FIRE COMM	TUXEDO	F	154.4300	WBE435	BA
MS	VICKSBURG CITY OF	VICKSBURG	T	860.2625	KNNH519	MR	NC	HENDERSON COUNTY FIRE COMM	BAT CAVE	F	154.4300	KFV885	BA
MS	WINONA TOWN OF	WINONA	L	45.2800	KNNI870	BM	NC	HENDERSON COUNTY FIRE COMM	EDNEYVILLE	F	154.4300	WFR324	BA
MT	PABLO CITY OF	PABLO	L	153.8600	WPIX769	BM	NC	HENDERSON COUNTY FIRE COMM	CORBIN	F	154.4300	WFR324	BR
MT	TREASURE STATE TRANSIT INC	SOMERS	S	155.2650	KNNI740	BM	NC	HENDERSON COUNTY FIRE COMM	GERTON	F	154.4300	WFR324	BR
NC	ASHEBORO CITY OF		L	155.8050	KNJA803	MO	NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.4300	KAU720	BA
NC	BURLINGTON CITY OF		L	460.4250	KNNJ525	MO	NC	HENDERSON COUNTY FIRE COMM	ETOWAH	F	154.4300	WBE435	BA
NC	CAROLINA POWER & LIGHT CO	NEW HILL	S	47.6200	KNNH926	BA	NC	HENDERSON COUNTY FIRE COMM	MOUNTAIN HOME	F	154.4300	WFR324	BA
NC	DAVIDSON COUNTY FIREMENS ASSN		F	159.1950	WPEM858	MO	NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	452.4500	WFR324	OF
NC	FLETCHER TOWN OF	FLETCHER	L	153.7850	KNNH992	BM	NC	HENDERSON COUNTY FIRE COMM	CORBIN	F	457.4500	WFR324	OF
NC	FLETCHER TOWN OF	FLETCHER	L	158.9850	KNNH992	MR	NC	HENDERSON COUNTY FIRE COMM		F	460.5625	WYZ385	MO
NC	HENDERSON COUNTY FIRE COMM	SALUDA	F	154.1900	KFV885	BA	NC	HENDERSON COUNTY FIRE COMM		F	460.6125	WYZ385	MO
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.1900	KFV885	BA	NC	HENDERSON COUNTY FIRE COMM		F	465.5375	WYZ385	MO
NC	HENDERSON COUNTY FIRE COMM	ETOWAH	F	154.1900	KAU720	BA	NC	HOPKINS RURAL FIRE DEPT INC	ZEBULON	F	154.1450	KKC609	BM
NC	HENDERSON COUNTY FIRE COMM	E FLAT ROCK	F	154.1900	WBE435	BA	NC	LENOIR COUNTY OF	LA GRANGE	L	854.3625	WPFQ226	MR
NC	HENDERSON COUNTY FIRE COMM	FLETCHER	F	154.1900	WBE435	BA	NC	LENOIR COUNTY OF	DEEP RUN	L	855.2375	WPBE528	MR
NC	HENDERSON COUNTY FIRE COMM	GERTON	F	154.1900	KFV885	BA	NC	LENOIR COUNTY OF	DEEP RUN	L	855.9875	WPBE528	MR
NC	HENDERSON COUNTY FIRE COMM	TUXEDO	F	154.1900	WBE435	BA	NC	LENOIR COUNTY OF	LA GRANGE	L	858.9875	WPFQ226	MR
NC	HENDERSON COUNTY FIRE COMM	ETOWAH	F	154.1900	WBE435	BA	NC	LENOIR COUNTY OF	DEEP RUN	L	859.9875	WPBE528	MR
NC	HENDERSON COUNTY FIRE COMM	BAT CAVE	F	154.1900	KFV885	BA	NC	LENOIR COUNTY OF	KINSTON	T	856.4625	WPBE627	MR
NC	HENDERSON COUNTY FIRE COMM	SKYLAND	F	154.1900	WBE435	BA	NC	LENOIR COUNTY OF	KINSTON	T	856.9625	WPBE627	MR
NC	HENDERSON COUNTY FIRE COMM	DANA	F	154.1900	KFV885	BA	NC	LENOIR COUNTY OF	KINSTON	T	857.4625	WPBE627	MR
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.1900	KAU720	BA	NC	LENOIR COUNTY OF	KINSTON	T	857.9625	WPBE627	MR
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.1900	WFR324	BA	NC	LENOIR COUNTY OF	KINSTON	T	858.4625	WPBE627	MR
NC	HENDERSON COUNTY FIRE COMM	EDNEYVILLE	F	154.1900	WFR324	BA	NC	LENOIR COUNTY OF	KINSTON	T	858.9625	WPBE627	MR
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.1900	WBE435	BA	NC	LENOIR COUNTY OF	KINSTON	T	859.4625	WPBE627	MR
NC	HENDERSON COUNTY FIRE COMM	MOUNTAIN HOME	F	154.1900	WFR324	BA	NC	LENOIR COUNTY OF	KINSTON	T	859.9625	WPBE627	MR
NC	HENDERSON COUNTY FIRE COMM	SKYLAND	F	154.2500	WBE435	BA	NC	LENOIR COUNTY OF	KINSTON	T	860.4625	WPBE627	MR
NC	HENDERSON COUNTY FIRE COMM	FLETCHER	F	154.2500	WBE435	BA	NC	LENOIR COUNTY OF	KINSTON	T	860.9625	WPBE627	MR
NC	HENDERSON COUNTY FIRE COMM	E FLAT ROCK	F	154.2500	WBE435	BA	NC	NEW HANOVER COUNTY FIRE DIST 5		F	154.2350	KNNG316	MO
NC	HENDERSON COUNTY FIRE COMM	ETOWAH	F	154.2500	WBE435	BA	NC	NEW HANOVER COUNTY FIRE DIST 5	WILMINGTON	F	154.3250	KNNG316	BA
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.2500	KAU720	BA	NC	ROWAN COUNTY OF	SALISBURY	P	453.0500	KUL815	BA
NC	HENDERSON COUNTY FIRE COMM	BAT CAVE	F	154.2500	KFV885	BA	NC	TRIPLE COMMUNITY FIRE DISTRICT		F	154.3850	WNSV909	MO
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.2500	WBE435	BA	ND	CASSELTON CITY OF		L	158.9250	KNNL727	MO
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.2500	WFR324	BA	ND	HANNAH FIRE DEPT	HANNAH	F	154.3550	KNNI214	BM
NC	HENDERSON COUNTY FIRE COMM	EDNEYVILLE	F	154.2500	WFR324	BA	ND	RAY CITY OF		L	155.0400	WPIQ924	MO
NC	HENDERSON COUNTY FIRE COMM	ETOWAH	F	154.2500	KAU720	BA	NE	BEAVER CITY CITY OF	BEAVER CITY	P	460.0250	KNNN465	MR
NC	HENDERSON COUNTY FIRE COMM	SALUDA	F	154.2500	KFV885	BA	NE	BEAVER CITY CITY OF		P	465.0250	KNNN465	MO
NC	HENDERSON COUNTY FIRE COMM	DANA	F	154.2500	KFV885	BA	NE	BRYAN MEMORIAL HOSPITAL		S	150.7750	KB76697	MO
NC	HENDERSON COUNTY FIRE COMM	MOUNTAIN HOME	F	154.2500	WFR324	BA	NE	E NEBRASKA AMBULANCE SVC INC		S	150.7900	KB76698	MO
NC	HENDERSON COUNTY FIRE COMM	GERTON	F	154.2500	KFV885	BA	NE	HEART OF THE HILLS RURAL FPD	LAKESIDE	F	460.6250	KNNM534	MR
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.2500	KFV885	BA	NE	HEART OF THE HILLS RURAL FPD		F	465.6250	KNNM534	MO
NC	HENDERSON COUNTY FIRE COMM	TUXEDO	F	154.2500	WBE435	BA	NE	JEFFERSON COUNTY OF	FAIRBURY	L	155.0250	KNNG330	MR
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.2800	WBE435	BA	NE	JEFFERSON COUNTY OF		L	158.9400	KNNG330	MO
NC	HENDERSON COUNTY FIRE COMM	GERTON	F	154.2800	KFV885	BA	NE	KEARNEY CITY OF	KEARNEY	L	458.7750	KNNK376	OF
NC	HENDERSON COUNTY FIRE COMM	FLETCHER	F	154.2800	WBE435	BA	NE	KEARNEY CITY OF	KEARNEY	L	458.7750	KNNK375	OF
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.2800	KFV885	BA	NE	KEARNEY CITY OF	KEARNEY	L	458.7750	KNNK374	OF
NC	HENDERSON COUNTY FIRE COMM	E FLAT ROCK	F	154.2800	WBE435	BA	NE	REGIONAL W MEDICAL CENTER	SCOTTSBLUFF	S	462.9500	KNBD924	MR
NC	HENDERSON COUNTY FIRE COMM	SKYLAND	F	154.2800	WBE435	BA	NE	REGIONAL W MEDICAL CENTER	SCOTTSBLUFF	S	462.9750	KNBD924	MR
NC	HENDERSON COUNTY FIRE COMM	BAT CAVE	F	154.2800	KFV885	BA	NH	NEW LONDON SPRINGFIELD WTR SYS	SPRINGFIELD	L	72.4200	KNNN734	OF
NC	HENDERSON COUNTY FIRE COMM	TUXEDO	F	154.2800	WBE435	BA	NH	PEASE DEVELOPMENT AUTHORITY	PORTSMOUTH	L	154.9200	WPAR994	MR
NC	HENDERSON COUNTY FIRE COMM	SALUDA	F	154.2800	KFV885	BA	NJ	ALPHA BOROUGH OF	HARMONY	P	155.6550	WNCA969	MR
NC	HENDERSON COUNTY FIRE COMM	DANA	F	154.2800	KFV885	BA	NJ	CINNAMINSON TOWNSHIP OF	CINNAMINSON	P	508.9375	WIL992	BR
NC	HENDERSON COUNTY FIRE COMM	MOUNTAIN HOME	F	154.2800	WFR324	BA	NJ	CJK ENTERPRISE		M	155.2800	KNNL415	MO
NC	HENDERSON COUNTY FIRE COMM	EDNEYVILLE	F	154.2800	WFR324	BA	NJ	CJK ENTERPRISE		M	155.3400	KNNL415	MO
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.2800	KAU720	BA	NJ	EATONTOWN BOROUGH OF	EATONTOWN	F	153.9200	KNNJ657	MR
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.2800	WFR324	BA	NJ	FAMILY RESOURCES CENTER INC	RINGWOOD	S	45.9200	KNNM528	BM
NC	HENDERSON COUNTY FIRE COMM	ETOWAH	F	154.2800	WBE435	BA	NJ	FLEMINGTON BOROUGH OF	FLEMINGTON	L	155.1450	KNNG572	BM
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.3100	WBE435	BA	NJ	HANOVER TOWNSHIP OF	HANOVER TWP	L	501.3875	WIM555	MR
NC	HENDERSON COUNTY FIRE COMM	EDNEYVILLE	F	154.3700	WFR324	BA	NJ	HANOVER TOWNSHIP OF	HANOVER TWP	L	501.7125	WIM555	MR
NC	HENDERSON COUNTY FIRE COMM	FLETCHER	F	154.3700	WBE435	BA	NJ	HANOVER TOWNSHIP OF		L	504.3875	WIM555	MO
NC	HENDERSON COUNTY FIRE COMM	GERTON	F	154.3700	KFV885	BA	NJ	HANOVER TOWNSHIP OF		L	504.7125	WIM555	MO
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.3700	KAU720	BA	NJ	HUNTERDON COUNTY OF	FLEMINGTON	L	453.9000	WPIZ924	MR
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.3700	KFV885	BA	NJ	HUNTERDON COUNTY OF		L	463.9000	WPIZ924	MO
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.3700	WFR324	BA	NJ	HUNTERDON COUNTY OF		L	468.9000	WPIZ924	MO
NC	HENDERSON COUNTY FIRE COMM	MOUNTAIN HOME	F	154.3700	WFR324	BA	NJ	METUCHEN BOROUGH OF		P	158.9160	KNFB475	MO
NC	HENDERSON COUNTY FIRE COMM	BAT CAVE	F	154.3700	KFV885	BA	NJ	MONMOUTH OCEAN HOSPITAL	NEPTUNE	M	155.1750	WNBA474	BM
NC	HENDERSON COUNTY FIRE COMM	E FLAT ROCK	F	154.3700	WBE435	BA	NJ	MONMOUTH COUNTY OF	FREEHOLD	R	37.9400	KEH444	BA
NC	HENDERSON COUNTY FIRE COMM	HENDERSONVILLE	F	154.3700	WBE435	BA	NJ	NEWARK CITY OF	NEWARK	F	488.6125	KZM690	MR
NC	HENDERSON COUNTY FIRE COMM	SKYLAND	F	154.3700	WBE435	BA	NJ	NEWARK CITY OF		F	491.6125	KX2548	MO
NC	HENDERSON COUNTY FIRE COMM	TUXEDO	F	154.3700	WBE435	BA	NJ	ORANGE CITY OF	ORANGE	L	501.2625	WIL924	MR
NC	HENDERSON COUNTY FIRE COMM	ETOWAH	F	154.3700	KAU720	BA	NJ	ORANGE CITY OF		L	504.2625	WIL924	MO
NC	HENDERSON COUNTY FIRE COMM	DANA	F	154.3700	KFV885	BA	NJ	ROXBURY TOWNSHIP OF	SUCCASUNNA	L	45.6000	KNBD444	BA
NC	HENDERSON COUNTY FIRE COMM	SALUDA	F	154.3700	KFV885	BA	NJ	SALEM COUNTY OF		L	810.9625	KNNH563	MO
NC	HENDERSON COUNTY FIRE COMM	ETOWAH	F	154.3700	WBE435	BA	NJ	SALEM COUNTY OF	SALEM	L	855.9625	KNNH563	MR
NC	HENDERSON COUNTY FIRE COMM	BREVARD	F	154.4300	KAU720	BA	NJ	SOMERVILLE BOROUGH OF		P	154.6500	KEB547	MO
NC	HENDERSON COUNTY FIRE COMM	GERTON	F	154.4300	KFV885	BA	NJ	SUSSEX COUNTY OF	NEWTON	F	46.1000	WPGA474	BM
NC	HENDERSON COUNTY FIRE COMM	GERTON	F	154.4300	WFR324	BR	NJ	SUSSEX COUNTY OF		F	46.2800	WPGA474	MO
NC	HENDERSON COUNTY FIRE COMM	DANA	F	154.4300	KFV885	BA	NM	ANGEL FIRE CITY OF		L	154.0400	KNNG571	MO

NM	ANGEL FIRE CITY OF	ANGEL FIRE	L	155.0850	KNNG571	MR	NY	NEW YORK CITY OF	NEW YORK	L	483.3625	WIM204	MR
NM	CARLSBAD CITY OF	QUEENS	F	154.2350	WPGW272	MR	NY	NEW YORK CITY OF	NEW YORK	L	483.3625	WIL996	MR
NM	GRANTS CITY OF	GRANTS	L	155.8200	KNNF946	BM	NY	NEW YORK CITY OF	NEW YORK	L	483.4875	WIL996	MR
NM	MC KINLEY COUNTY OF	CROWNPOINT	F	154.4150	WNWE526	BA	NY	NEW YORK CITY OF	NEW YORK	L	483.4875	WIM200	MR
NM	RUIDOSO CITY OF	RUIDOSO	P	158.9100	KVF585	MR	NY	NEW YORK CITY OF	NEW YORK	L	483.4875	WIM204	MR
NM	SAPPILLO CREEK VF & RESCUE	SILVER CITY	F	154.3700	KNNL462	MR	NY	NEW YORK CITY OF	NEW YORK	L	483.6125	WIM204	MR
NV	BOULDER CITY CITY OF	BOULDER CITY	L	155.0400	KAY987	BA	NY	NEW YORK CITY OF	NEW YORK	L	483.6125	WIL996	MR
NV	LAS VEGAS CITY OF	LAS VEGAS	T	866.1000	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	483.6125	WIM200	MR
NV	LAS VEGAS CITY OF	LAUGHLIN	T	866.2875	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	483.7375	WIL996	MR
NV	LAS VEGAS CITY OF	LAS VEGAS	T	866.3750	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	483.7375	WIM204	MR
NV	LAS VEGAS CITY OF	LAS VEGAS	T	866.6250	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	483.7375	WIM200	MR
NV	LAS VEGAS CITY OF	LAUGHLIN	T	866.7500	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	483.9875	WIM200	MR
NV	LAS VEGAS CITY OF	LAS VEGAS	T	866.9250	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	483.9875	WIL996	MR
NV	LAS VEGAS CITY OF	LAUGHLIN	T	867.1000	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	483.9875	WIM204	MR
NV	LAS VEGAS CITY OF	LAS VEGAS	T	867.1500	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	484.2375	WIM200	MR
NV	LAS VEGAS CITY OF	LAS VEGAS	T	867.4500	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	484.2375	WIM204	MR
NV	LAS VEGAS CITY OF	LAS VEGAS	T	867.7750	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	484.2375	WIL996	MR
NV	LAS VEGAS CITY OF	LAS VEGAS	T	868.0500	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	484.4875	WIM200	MR
NV	LAS VEGAS CITY OF	LAS VEGAS	T	868.3000	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	484.4875	WIM204	MR
NV	LAS VEGAS CITY OF	LAUGHLIN	T	868.4375	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	484.4875	WIL996	MR
NV	LAS VEGAS CITY OF	LAUGHLIN	T	868.7000	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	484.7375	WIM200	MR
NV	LAS VEGAS CITY OF	LAS VEGAS	T	868.8250	KNNF703	BA	NY	NEW YORK CITY OF	NEW YORK	L	484.7375	WIM204	MR
NV	RENO CITY OF	RENO	L	453.8250	WNCD561	BR	NY	NEW YORK CITY OF	NEW YORK	L	484.7375	WIL996	MR
NY	ACADEMY BUS CO INC	YONKERS	S	46.0400	WPIY926	BM	NY	NEW YORK CITY OF		P	473.6375	WIF561	MO
NY	ACADEMY BUS CO INC		S	467.9875	WPIY926	MO	NY	NEW YORK CITY OF		P	473.7625	WIF563	MO
NY	ALL WAYS E TRANSPORT INC	YONKERS	S	33.0800	KNNH246	BM	NY	NEW YORK CITY OF		P	473.8875	WIF560	MO
NY	AMBERWOOD COACH CORPORATION	YONKERS	S	47.4600	WPIZ908	BM	NY	NEW YORK CITY OF		P	474.0125	WIF569	MO
NY	AUBURN CITY OF	AUBURN	L	866.0125	KNNH563	MR	NY	NEW YORK CITY OF		P	474.1375	WIF566	MO
NY	AUBURN CITY OF	AUBURN	L	866.5125	KNNH563	MR	NY	NIAGARA COUNTY OF	AKRON	F	46.0600	KNNJ580	BA
NY	AUBURN CITY OF	AUBURN	L	868.0125	KNNH563	MR	NY	ONONDAGA COUNTY OF	SYRACUSE	L	853.0375	WPIU846	MR
NY	AUBURN CITY OF	AUBURN	T	868.2125	KNNH572	MR	NY	PULTENEY TOWN OF		L	45.4800	WPIX521	MO
NY	AUBURN CITY OF	AUBURN	T	868.4375	KNNH572	MR	NY	RICHMOND COUNTY AMBULANCE		M	155.3400	KNNL923	MO
NY	AUBURN CITY OF	AUBURN	T	868.5750	KNNH572	MR	NY	SMITHTOWN FIRE DISTRICT	SMITHTOWN	F	46.4200	KEB629	BM
NY	AUBURN CITY OF	AUBURN	T	868.7500	KNNH572	MR	NY	SMITHTOWN FIRE DISTRICT		F	460.5125	KEB629	MO
NY	AUBURN CITY OF	AUBURN	T	868.8000	KNNH572	MR	NY	SMITHTOWN FIRE DISTRICT		F	460.5875	KEB629	MO
NY	AUBURN CITY OF		T	868.8625	KNNH572	MO	NY	SMITHTOWN FIRE DISTRICT		F	460.6375	KEB629	MO
NY	AUBURN CITY OF		T	868.8875	KNNH572	MO	NY	SMITHTOWN FIRE DISTRICT		F	465.5125	KEB629	MO
NY	AUBURN CITY OF		T	868.9125	KNNH572	MO	NY	SPRING LAKE FIRE DEPT	ULSTER PARK	F	154.1750	KNNF998	BM
NY	AUBURN CITY OF		T	868.9875	KNNH572	MO	NY	SYRACUSE CITY OF	SYRACUSE	L	453.7000	KNNJ681	BR
NY	BEEKMAN FIRE DISTRICT	BEEKMAN	F	453.0750	KNNI813	MR	NY	SYRACUSE CITY OF	SYRACUSE	L	851.4875	KNNH554	MR
NY	BEEKMAN FIRE DISTRICT		F	458.0750	KNNI813	MO	NY	THIELLS-ROSEVILLE DISTRICT	THIELLS	F	46.1800	KEW404	BM
NY	BINGHAMTON CITY OF		P	155.0100	KEB214	MO	NY	THIELLS-ROSEVILLE DISTRICT		F	46.3200	KEW404	MO
NY	BINGHAMTON CITY OF		P	155.5350	KEB214	MO	NY	THIELLS-ROSEVILLE DISTRICT	THIELLS	F	46.4800	KEW404	BM
NY	BLAUVELT VF CO		F	46.3000	KFI498	MO	NY	WANTAGH FIRE DISTRICT		F	453.3625	KNNK419	MO
NY	BLAUVELT VF CO		F	46.3600	KFI498	MO	NY	WANTAGH FIRE DISTRICT		F	458.3625	KNNK419	MO
NY	BLAUVELT VF CO	BLAUVELT	F	46.4800	KFI498	BM	NY	WARWICK VILLAGE OF		L	453.8625	KX0945	MO
NY	BREWSTER SE JOINT FIRE DIST		F	170.1500	KJD401	MO	NY	WARWICK VILLAGE OF		L	458.8625	KX0945	MO
NY	BRONCO BUS CORP	FARMINGDALE	S	47.5400	KNNJ540	BM	NY	WESTCHESTER COUNTY OF	N SALEM	F	33.9600	KED281	BA
NY	CHENANGO COUNTY OF	OTSELIC	P	155.2500	WQY607	BA	NY	WESTERN NY SEARCH DOGS INC	SCOTTSVILLE	S	155.1600	WPIQ932	BM
NY	CHENANGO COUNTY OF	OTSELIC	P	155.3700	WQY607	BA	NY	WESTERN NY SEARCH DOGS INC	SCOTTSVILLE	S	155.2650	WPIQ932	BM
NY	CRAWFORD TOWN OF		L	453.6375	KNNI873	MO	NY	YATES COUNTY OF	PENN YAN	M	155.1750	KNNI701	BM
NY	DUNKIRK CITY OF	DUNKIRK	L	155.8350	KEC643	BM	NY	YATES COUNTY OF	PENN YAN	M	155.3400	KNNI701	BM
NY	ERIE COUNTY OF	BOSTON	L	853.0125	KNNJ877	MR	NY	YATES COUNTY OF	PENN YAN	M	155.3550	KNNI701	BM
NY	FAYETTEVILLE VILLAGE OF		F	46.3400	KNNJ662	MO	OH	AKRON CITY OF	AKRON	T	866.0375	KNNG878	MR
NY	FAYETTEVILLE VILLAGE OF		F	460.6250	KNNJ662	MO	OH	AKRON CITY OF	AKRON	T	866.2875	KNNG878	MR
NY	FAYETTEVILLE VILLAGE OF		F	465.6250	KNNJ662	MO	OH	AKRON CITY OF	AKRON	T	866.5625	KNNG878	MR
NY	FISHKILL VILLAGE OF	FISHKILL	P	155.3700	KIG615	BM	OH	ALLEN TOWNSHIP OF	WILLISTON	L	154.1000	KNNG756	BA
NY	FISHKILL VILLAGE OF	UNIONVALE	P	156.2100	KIG615	MR	OH	ALLIANCE CITY OF	ALLIANCE	F	33.8200	KX0712	BA
NY	FISHKILL VILLAGE OF	E FISHKILL	P	156.2100	KIG615	MR	OH	ANTRIM COMMUNITY FD	ANTRIM	F	33.9000	KFR671	BM
NY	GREENE COUNTY OF		R	151.0250	KVL96	MO	OH	CAREY VILLAGE OF	CAREY	P	154.8300	KQE300	MR
NY	GUILFOYLE AMBULANCE SVC INC	BLACK RIVER	M	155.2650	KNGY668	BA	OH	CLEVELAND CITY OF		L	458.1125	WPIQ878	MO
NY	GUILFOYLE AMBULANCE SVC INC	WATERTOWN	M	155.4000	KNGY668	MR	OH	DEFIANCE COUNTY OF	SHERWOOD	P	154.8750	KNNI569	MR
NY	GUILFOYLE AMBULANCE SVC INC	BLACK RIVER	M	155.4000	KNGY668	MR	OH	DELAWARE COUNTY OF	SUNBURY	F	458.4500	WNSU703	OF
NY	HUNTINGTON FIRE DISTRICT		F	453.8875	KNNL334	MO	OH	GENOA TOWNSHIP OF	GALENA	P	155.3100	KF0837	MR
NY	HUNTINGTON FIRE DISTRICT		F	458.8875	KNNL334	MO	OH	GUERNSEY COUNTY OF		P	159.0300	KXX501	MO
NY	HYDE PARK FIRE & WATER DIST	HYDE PARK	L	460.2500	WPIX258	MR	OH	GUERNSEY COUNTY OF	CAMBRIDGE	P	453.5750	KXX501	OF
NY	LIVINGSTON COUNTY OF	DANSVILLE	F	45.8800	KED602	BA	OH	HUBER HEIGHTS CITY OF	TIPP CITY	L	154.1000	KNNF500	MR
NY	LIVINGSTON COUNTY OF	DANSVILLE	F	46.1600	KED602	BA	OH	HURON COUNTY OF	NORWALK	L	39.5800	WSL572	BM
NY	LIVINGSTON COUNTY OF	DANSVILLE	F	46.2000	KED602	BA	OH	HURON COUNTY OF	NORWALK	L	39.6600	WSL572	BM
NY	LIVINGSTON COUNTY OF	DANSVILLE	F	46.2200	KED602	BA	OH	JACKSON TOWNSHIP OF	CANTON	F	453.1750	KNNK413	MR
NY	LOCH SHELDRAKE FIRE DISTRICT	LOCH SHELDRAKE	F	46.1000	KNNL471	BA	OH	JACKSON TOWNSHIP OF		F	458.0750	KNNK413	MO
NY	LUZERNE-HADLEY CONSOLIDATED FD		F	154.2800	KNNI801	MO	OH	JACKSON TOWNSHIP OF		F	458.1750	KNNK413	MO
NY	MAMARONECK TOWN OF		L	423.2375	KNDS876	MO	OH	JEFFERSON TOWNSHIP OF		F	153.8300	KNNH240	MO
NY	MAMARONECK TOWN OF	MAMARONECK	L	45.5600	KNDS876	BM	OH	JEFFERSON TOWNSHIP OF	BOWERSVILLE	F	154.0700	KNNH240	MR
NY	MILFORD VILLAGE OF		L	453.8625	KNNN230	MO	OH	JEFFERSON TOWNSHIP OF		F	154.2800	KNNH240	MO
NY	MILFORD VILLAGE OF		L	458.8625	KNNN230	MO	OH	JEWISH HOSPITAL	CINCINNATI	M	453.0250	WRU824	BA
NY	N WHITE LAKE FIRE DISTRICT	KAUNEONGA	F	46.1000	KNNF504	BA	OH	JEWISH HOSPITAL	CINCINNATI	M	462.9500	WRU824	BA
NY	NEW YORK CITY OF	NEW YORK	L	482.9875	WIL996	MR	OH	JEWISH HOSPITAL	CINCINNATI	M	462.9750	WRU824	BA
NY	NEW YORK CITY OF	NEW YORK	L	482.9875	WIM204	MR	OH	JEWISH HOSPITAL	CINCINNATI	M	463.1750	WRU824	BA
NY	NEW YORK CITY OF	NEW YORK	L	482.9875	WIM200	MR	OH	MAHONING COUNTY OF		L	821.6000	WPHY518	MO
NY	NEW YORK CITY OF	NEW YORK	L	483.1125	WIM200	MR	OH	MAHONING COUNTY OF		L	822.5500	WPHY518	MO
NY	NEW YORK CITY OF	NEW YORK	L	483.1125	WIL996	MR	OH	MAHONING COUNTY OF	YOUNGSTOWN	L	866.6000	WPHY518	MR
NY	NEW YORK CITY OF	NEW YORK	L	483.1125	WIM204	MR	OH	MAHONING COUNTY OF	YOUNGSTOWN	L	867.5500	WPHY518	MR
NY	NEW YORK CITY OF	NEW YORK	L	483.2375	WIM204	MR	OH	MANSFIELD AMBULANCE SVC	BUCYRUS	S	155.2350	KNNI810	BA
NY	NEW YORK CITY OF	NEW YORK	L	483.2375	WIL996	MR	OH	MANSFIELD AMBULANCE SVC	MANSFIELD	S	155.2350	KNNI810	BM
NY	NEW YORK CITY OF	NEW YORK	L	483.2375	WIM200	MR	OH	MC ARTHUR CITY OF	MC ARTHUR	F	460.6000	KNNM526	MR
NY	NEW YORK CITY OF	NEW YORK	L	483.3625	WIM200	MR	OH	MIAMI TOWNSHIP OF		M	462.9500	KNNJ661	MO

FREQUENCY UPDATES
by Police Call Plus

OH	MIAMI TOWNSHIP OF		M	463.1750	KNNJ661	MO	PA	CARLISLE BOROUGH OF	CARLISLE	T	860.2375	KNNK871	MR
OH	MIAMI TOWNSHIP OF		M	467.9500	KNNJ661	MO	PA	CARLISLE BOROUGH OF	CARLISLE	T	860.4875	KNNK871	MR
OH	MIAMI TOWNSHIP OF		M	468.1750	KNNJ661	MO	PA	CHARLEROI BOROUGH OF	CHARLEROI	L	155.0400	KNNM959	BM
OH	MONROE MUNICIPALITY OF	MONROE	P	154.8450	KNNL946	MR	PA	CHESTER COUNTY OF		T	811.9875	KNNM504	MO
OH	MUSKINGUM COUNTY OF	ZANESVILLE	F	154.3850	WZC522	MR	PA	CHESTER COUNTY OF		T	812.9875	KNNM504	MO
OH	NATIONAL TRAIL FIRE DEPT	NEWARK	F	33.8600	KTB304	BM	PA	CHESTER COUNTY OF		T	813.9875	KNNM504	MO
OH	NATIONAL TRAIL FIRE DEPT	NEWARK	F	33.9800	KTB304	BM	PA	CHESTER COUNTY OF		T	814.9875	KNNM504	MO
OH	NEWTON TOWNSHIP OF	WHITE COTTAGE	L	154.0550	KNNK333	MR	PA	CHESTER COUNTY OF		T	815.9875	KNNM504	MO
OH	PARMA HEIGHTS CITY OF	PARMA HEIGHTS	P	155.4750	KNNK260	BM	PA	CHESTER COUNTY OF	OXFORD	T	856.9875	KNNM504	MR
OH	PAULDING COUNTY OF		P	156.0900	KVU472	MO	PA	CHESTER COUNTY OF	OXFORD	T	857.9875	KNNM504	MR
OH	RICHLAND COUNTY OF		P	155.5500	KNNJ654	MO	PA	CHESTER COUNTY OF	OXFORD	T	858.9875	KNNM504	MR
OH	SMITHFIELD VILLAGE OF		R	159.0750	KNNL942	MO	PA	CHESTER COUNTY OF	OXFORD	T	859.9875	KNNM504	MR
OH	ST ELIZABETHS MEDICAL CENTER	DAYTON	S	155.2800	KNNM957	BA	PA	CHESTER COUNTY OF	OXFORD	T	860.9875	KNNM504	MR
OH	ST ELIZABETHS MEDICAL CENTER	DAYTON	S	155.3400	KNNM957	BA	PA	CLEARFIELD COUNTY OF	BOGGS TWP	P	154.8900	KDB648	BA
OH	SUMMIT COUNTY OF	AKRON	L	453.8750	KNNF458	MR	PA	CLEARFIELD COUNTY OF	CLOVER RUN	P	154.8900	KDB648	BA
OH	SUMMIT COUNTY OF		L	458.8750	KNNF458	MO	PA	COALDALE VF CO NO 1		F	46.5000	KR5719	MO
OH	W LIBERTY VILLAGE OF		L	453.0375	WPIW737	MO	PA	COLUMBIA COUNTY OF	BLOOMSBURG	L	155.7750	KNNK266	BM
OH	W LIBERTY VILLAGE OF		L	458.0375	WPIW737	MO	PA	ELK COUNTY OF	PENFIELD	F	46.1000	KGG231	BA
OH	WOODMERE VILLAGE OF	WOODMERE	L	46.5800	KNNI514	BM	PA	ELK COUNTY OF	PENFIELD	F	46.1400	KGG231	BA
OK	CHEROKEE NATION EMS	(TAHLEQUAH)	L	159.0150	WPIZ909	MO	PA	ELK COUNTY OF	ST MARYS	M	462.9500	KNBQ206	MR
OK	EDMOND CITY OF		L	159.2250	KLL643	MO	PA	ELK COUNTY OF	ST MARYS	M	462.9750	KNBQ206	MR
OK	EDMOND CITY OF		L	159.3600	KLL643	MO	PA	ELK COUNTY OF	ST MARYS	M	463.1750	KNBQ206	MR
OK	GRANT COUNTY OF	MEDFORD	P	155.0100	KKI571	MR	PA	ELK COUNTY OF	RIDGWAY	P	159.1500	KGG374	MR
OK	GRANT COUNTY OF	MEDFORD	P	155.6850	KKI571	BM	PA	EPHRATA AREA RESCUE SVC INC		S	33.0400	KNNH637	MO
OK	OKLAHOMA CITY CITY OF	OKLAHOMA CITY	L	452.4000	WNFK893	OF	PA	FARMINGTON TOWNSHIP OF	LEEPER	L	155.6100	KNNG525	BM
OK	OKLAHOMA CITY CITY OF	OKLAHOMA CITY	L	452.4000	WNFK894	OF	PA	FARRELL CITY OF	FARRELL	F	33.8200	KNNH241	BM
OK	OKLAHOMA CITY CITY OF	OKLAHOMA CITY	L	452.4000	WNFK892	OF	PA	FARRELL CITY OF	FARRELL	F	453.1250	KNNH241	MR
OK	OKLAHOMA DEPT OF TRANSPT COM	TULSA	R	156.0600	WPIX466	BA	PA	FARRELL CITY OF		F	458.4000	KNNH241	MO
OK	OKLAHOMA DEPT OF TRANSPT COM	SHATTUCK	R	156.0600	WPIX466	BA	PA	FARRELL CITY OF		F	458.5500	KNNH241	MO
OK	OKLAHOMA DEPT OF TRANSPT COM	ARDMORE	R	156.0600	WPIX466	BA	PA	FARRELL CITY OF		F	458.8000	KNNH241	MO
OK	OKLAHOMA TURNPIKE AUTHORITY	DAISY	R	156.1050	WPIW322	MR	PA	GREENE COUNTY OF	ALEPPO	S	155.2950	WNJN328	BA
OK	OKLAHOMA TURNPIKE AUTHORITY	MC ALESTER	R	156.1050	WPIW322	MR	PA	HAHNEMANN HOSPITAL	WARMINSTER	M	453.1750	KNNM844	BA
OK	OKLAHOMA DEPT OF TRANSPT COM	TULSA	R	156.1200	WPIX466	BA	PA	HAHNEMANN HOSPITAL	ELKINS PARK	M	453.1750	KNNM844	BA
OK	OKLAHOMA DEPT OF TRANSPT COM	SHATTUCK	R	156.1200	WPIX466	BA	PA	HAHNEMANN HOSPITAL	PHILADELPHIA	M	453.1750	KNNM844	BA
OK	OKLAHOMA DEPT OF TRANSPT COM	TALIHINA	R	156.1200	WPIX466	BA	PA	HAHNEMANN HOSPITAL	PITTSBURGH	M	453.1750	KNNM844	BA
OK	OKLAHOMA DEPT OF TRANSPT COM	TULSA	R	156.1350	WPIX466	BA	PA	INDIANA COUNTY OF	INDIANA	L	154.0250	WPIZ910	BM
OK	OKLAHOMA DEPT OF TRANSPT COM	SHATTUCK	R	156.1350	WPIX466	BA	PA	JEFFERSON BOROUGH OF	CLARION	L	453.7750	KNNM958	MR
OK	OKLAHOMA DEPT OF TRANSPT COM	TALIHINA	R	156.1350	WPIX466	BA	PA	KENNEDY TOWNSHIP OF	CORAOPOLIS	P	460.1750	KNNG714	MR
OK	OKLAHOMA TURNPIKE AUTHORITY	ROFF	R	156.1800	WPIW322	MR	PA	KENNEDY TOWNSHIP OF		P	465.1750	KNNG714	MO
OK	OKLAHOMA TURNPIKE AUTHORITY	VINITA	R	156.1800	WPIW322	MR	PA	LACKAWANNA COUNTY OF	CARBONDALE	F	154.3100	KAG652	BA
OK	OKLAHOMA TURNPIKE AUTHORITY	TULLAHASSEE	R	159.0000	WPIW322	BM	PA	LACKAWANNA COUNTY OF	MOSCOW	F	154.3100	KAG652	BA
OK	OKLAHOMA TURNPIKE AUTHORITY	VINITA	R	159.1200	WPIW322	BM	PA	LACKAWANNA COUNTY OF	MOSCOW	F	460.5750	KAG652	MR
OK	OKLAHOMA DEPT OF TRANSPT COM	ARDMORE	R	159.1950	WPIX466	BA	PA	LEHMAN TOWNSHIP OF	BUSHKILL	L	453.2250	KNNM849	MR
OK	OKLAHOMA DEPT OF TRANSPT COM	ANADARKO	R	159.1950	WPIX466	BA	PA	LOWER ALSACE AMBULANCE ASSN	READING	M	155.3850	KNNH620	BM
OK	OKLAHOMA DEPT OF TRANSPT COM	TULSA	R	159.1950	WPIX466	BA	PA	MANCHESTER TOWNSHIP OF	EQUINUNK	L	154.0850	WPIX458	BM
OK	OKLAHOMA DEPT OF TRANSPT COM	SHATTUCK	R	159.1950	WPIX466	BA	PA	MEADVILLE CITY OF		L	153.7550	KNNN202	MO
OK	OKLAHOMA DEPT OF TRANSPT COM	TALIHINA	R	159.1950	WPIX466	BA	PA	MIDDLECREEK TOWNSHIP OF	ROCKWOOD	L	39.1600	KNNH324	BM
OK	STILWELL TOWN OF	STILWELL	F	159.0600	KNNI385	BM	PA	MONROE COUNTY OF	STROUD TWP	F	453.0750	WPGV974	MR
OK	TULSA CITY OF		L	809.9625	WPIZ622	MO	PA	MONROE COUNTY OF	LONG POND	F	453.0750	WPGV974	MR
OK	TULSA CITY OF		L	809.9875	WPIZ621	MO	PA	MONROE COUNTY OF	JACKSON TWP	F	453.0750	WPGV974	MR
OK	TULSA CITY OF		L	810.2125	WPIZ621	MO	PA	MONROE COUNTY OF	ROSS TWP	F	453.0750	WPGV974	MR
OK	TULSA CITY OF		L	810.2375	WPIZ621	MO	PA	MONTGOMERY COUNTY OF	ABINGTON	T	854.9625	KNNM628	MR
OK	TULSA CITY OF		L	810.4625	WPIZ621	MO	PA	MT LEBANON MUNICIPALITY OF	MT LEBANON	L	471.6875	WIM474	MR
OK	TULSA CITY OF		L	810.4875	WPIZ621	MO	PA	MT LEBANON MUNICIPALITY OF		L	474.6875	WIM474	MO
OK	TULSA CITY OF		L	810.7125	WPIZ621	MO	PA	MUNHALL BOROUGH OF		P	154.4450	KGB408	MO
OK	TULSA CITY OF		L	810.9625	WPIZ621	MO	PA	N CENTER TOWNSHIP OF	BERWICK	L	154.8150	KNNF914	BM
OK	TULSA CITY OF		L	854.9625	WPIZ622	MO	PA	NEW HOLLAND BOROUGH OF	E EARL	L	45.2800	KYD814	BA
OK	TULSA CITY OF	TULSA	L	854.9875	WPIZ621	MR	PA	NEW HOLLAND BOROUGH OF	E EARL	L	45.5200	KYD814	BA
OK	TULSA CITY OF	TULSA	L	855.2125	WPIZ621	MR	PA	NORTHUMBERLAND COUNTY OF	MONTANDON	F	46.1400	KAW752	BA
OK	TULSA CITY OF	TULSA	L	855.2375	WPIZ621	MR	PA	NORTHUMBERLAND COUNTY OF	MONTANDON	F	46.3600	KAW752	BA
OK	TULSA CITY OF	TULSA	L	855.4625	WPIZ621	MR	PA	NORTHUMBERLAND COUNTY OF	MONTANDON	F	46.4400	KAW752	BA
OK	TULSA CITY OF	TULSA	L	855.4875	WPIZ621	MR	PA	NORTHUMBERLAND COUNTY OF	SHAMOKIN	F	46.4800	KAW752	BA
OK	TULSA CITY OF	TULSA	L	855.7125	WPIZ621	MR	PA	NORTHUMBERLAND COUNTY OF	MONTANDON	F	46.5000	KAW752	BA
OK	TULSA CITY OF	TULSA	L	855.9625	WPIZ621	MR	PA	NORTHUMBERLAND COUNTY OF	MONTANDON	P	154.6500	KNNK577	BA
OR	CLACKAMAS COUNTY OF	BRIGHTWOOD	F	153.8900	KNNL367	BA	PA	NORTHUMBERLAND COUNTY OF	HERNDON	P	154.6500	KNNK577	BA
OR	CLACKAMAS COUNTY OF	BRIGHTWOOD	F	154.1900	KNNL367	BA	PA	NORTHUMBERLAND COUNTY OF	HERNDON	P	155.4150	KNNK577	BA
OR	CLACKAMAS COUNTY OF	BRIGHTWOOD	F	154.2200	KNNL367	BA	PA	NORTHUMBERLAND BOROUGH OF	NORTHUMBERLAND	P	155.4150	KNNM861	BM
OR	CLACKAMAS COUNTY OF	BRIGHTWOOD	F	154.2800	KNNL367	BA	PA	NORTHUMBERLAND COUNTY OF	MONTANDON	P	155.4150	KNNK577	BA
OR	CLACKAMAS COUNTY OF	BRIGHTWOOD	F	154.3250	KNNL367	BA	PA	NORTHUMBERLAND COUNTY OF	HERNDON	P	155.4750	KNNK577	BA
OR	CONSOLIDATED DIKING IMPR DIST	LONGVIEW	L	453.7250	WQP454	BA	PA	NORTHUMBERLAND COUNTY OF	MONTANDON	P	155.4750	KNNK577	BA
OR	DESCHUTES VALLEY WATER DIST		L	857.9875	KNNJ874	MO	PA	NORTHUMBERLAND COUNTY OF	HERNDON	P	155.4900	KNNK577	BA
OR	PORTLAND MOUNTAIN RESCUE		S	155.2050	KB64418	MO	PA	NORTHUMBERLAND COUNTY OF	MONTANDON	P	155.4900	KNNK577	BA
OR	S SUBURBAN SANITARY DISTRICT	KLAMATH FALLS	L	158.7450	KNBA760	BM	PA	PARADISE TOWNSHIP OF	ABBOTTSTOWN	L	154.0550	KNNM853	BM
OR	UNIFIED SEWERAGE AGENCY	TIGARD	L	851.5875	WNSR611	MR	PA	PITTSBURGH PUBLIC PARKING AUTH		L	458.2250	KNNM867	MO
OR	UNIFIED SEWERAGE AGENCY	HILLSBORO	L	851.5875	WNSR611	MR	PA	RIDLEY TOWNSHIP OF	FOLSOM	L	508.4625	WIM612	MR
PA	BUSHKILL TOWNSHIP OF	NAZARETH	L	155.5200	KNNM249	BM	PA	RIDLEY TOWNSHIP OF		L	511.4625	WIM612	MO
PA	BUTLER TOWNSHIP OF		F	458.4625	KNNH706	MO	PA	ROME TOWNSHIP OF		L	153.8150	WPIX282	MO
PA	BUTLER TOWNSHIP OF		F	458.8125	KNNH706	MO	PA	ROME TOWNSHIP OF	ROME	L	158.8050	WPIX282	MR
PA	BUTLER TOWNSHIP OF		F	458.9375	KNNH706	MO	PA	SAYRE BOROUGH OF	SAYRE	L	155.8950	KNNK335	BM
PA	CARLISLE BOROUGH OF		T	811.2375	KNNK871	MO	PA	SLIPPERY ROCK TOWNSHIP OF		L	151.2050	KNNH702	MO
PA	CARLISLE BOROUGH OF		T	813.2375	KNNK871	MO	PA	UNION COUNTY OF	LEWIS TWP	F	45.2600	KGF423	BA
PA	CARLISLE BOROUGH OF		T	814.2375	KNNK871	MO	PA	UNION COUNTY OF	LEWISBURG	F	45.2600	KGF423	BA
PA	CARLISLE BOROUGH OF		T	815.2375	KNNK871	MO	PA	UNION COUNTY OF	ARMSTRONG TWP	F	45.3800	KGF423	BA
PA	CARLISLE BOROUGH OF		T	815.4875	KNNK871	MO	PA	UNION COUNTY OF	HAINES TWP	F	45.3800	KGF423	BA
PA	CARLISLE BOROUGH OF	CARLISLE	T	856.2375	KNNK871	MR	PA	UNION COUNTY OF	HAINES TWP	F	45.3800	KGF423	BA
PA	CARLISLE BOROUGH OF	CARLISLE	T	858.2375	KNNK871	MR	PA	UNION COUNTY OF	ARMSTRONG TWP	F	46.0600	KGF423	BA
PA	CARLISLE BOROUGH OF	CARLISLE	T	859.2375	KNNK871	MR	PA	UNION COUNTY OF	HAINES TWP	F	46.0600	KGF423	BA

PA	UNION COUNTY OF	LEWIS TWP	F	46.0600	KGF423	BA	TN	HICKMAN COUNTY OF	LYLES	M	155.2050	KIB338	BA
PA	UNION COUNTY OF	LEWIS TWP	F	46.1600	KGF423	BA	TN	HICKMAN COUNTY OF	CENTERVILLE	M	155.2050	KIB338	BM
PA	UNION COUNTY OF	HAINES TWP	F	46.4000	KGF423	BA	TN	HICKMAN COUNTY OF		M	155.3400	KIB338	MO
PA	UNION COUNTY OF	ARMSTRONG TWP	F	46.4000	KGF423	BA	TN	LOUDON COUNTY OF	LENOIR CITY	L	154.9650	WPIX254	BM
PA	UNION COUNTY OF	LEWIS TWP	M	155.3850	WXB964	BA	TN	N VALLEY MEDICAL PLAZA	DUNLAP	M	155.2050	KNNI367	BM
PA	UNION COUNTY OF	LIMESTONE TWP	M	460.5250	WXB964	MR	TN	N VALLEY MEDICAL PLAZA	DUNLAP	M	155.3400	KNNI367	BM
PA	UNION COUNTY OF	LEWIS TWP	M	460.5250	WXB964	MR	TN	NEWPORT TOWN OF	NEWPORT	P	460.4000	KNAG293	MR
PA	UNION COUNTY OF	ARMSTRONG TWP	M	460.5250	WXB964	MR	TN	OAK RIDGE CITY OF		L	810.7375	KNNL581	MO
PA	UNION COUNTY OF	MILTON	M	460.5250	WXB964	MR	TN	OAK RIDGE CITY OF	OAK RIDGE	L	855.7375	KNNL581	MR
PA	UNION COUNTY OF	MILTON	M	462.9500	WXB964	MR	TN	QUALITY CARE INC		M	462.9750	WNWB886	MO
PA	UNION COUNTY OF	ARMSTRONG TWP	M	462.9500	WXB964	MR	TN	QUALITY CARE INC		M	467.9750	WNWB886	MO
PA	UNION COUNTY OF	LIMESTONE TWP	M	462.9500	WXB964	MR	TN	RHEA COUNTY OF	EVENSVILLE	P	154.7550	WZC764	MR
PA	UNION COUNTY OF	HAINES TWP	M	462.9500	WXB964	MR	TN	RHEA COUNTY OF	EVENSVILLE	P	155.3700	WZC764	BA
PA	UNION COUNTY OF	LEWIS TWP	M	462.9500	WXB964	MR	TN	RHEA COUNTY OF	GRANDVIEW	P	155.6400	WZC764	MR
PA	UNION COUNTY OF	MILTON	M	462.9750	WXB964	MR	TN	RHEA COUNTY OF	EVENSVILLE	P	155.6400	WZC764	BR
PA	UNION COUNTY OF	ARMSTRONG TWP	M	462.9750	WXB964	MR	TN	RHEA COUNTY OF	SPRING CITY	P	155.6400	WZC764	BA
PA	UNION COUNTY OF	LEWIS TWP	M	462.9750	WXB964	MR	TN	RHEA COUNTY OF	EVENSVILLE	P	158.7900	WZC764	BA
PA	UNION COUNTY OF	HAINES TWP	M	462.9750	WXB964	MR	TN	RUTHERFORD COUNTY OF		P	465.4000	WFS750	MO
PA	UNION COUNTY OF	LIMESTONE TWP	M	462.9750	WXB964	MR	TN	TENNESSEE UNIVERSITY OF	MARTIN	L	155.7600	WPGD937	MR
PA	UNION COUNTY OF	MILTON	M	463.1750	WXB964	MR	TN	TIPTON COUNTY OF	COVINGTON	P	460.3750	KIL722	MR
PA	UNION COUNTY OF	LEWIS TWP	M	463.1750	WXB964	MR	TN	WARREN COUNTY OF		L	153.9950	KNNL461	MO
PA	UNION COUNTY OF	HAINES TWP	M	463.1750	WXB964	MR	TN	WARREN COUNTY OF	MC MINNVILLE	L	155.1000	KNNL461	MR
PA	UNION COUNTY OF	ARMSTRONG TWP	M	463.1750	WXB964	MR	TN	WILLIAMSON COUNTY OF	FRANKLIN	L	155.9250	KNNF425	MR
PA	UNION COUNTY OF	LIMESTONE TWP	M	463.1750	WXB964	MR	TX	ADDISON CITY OF	ADDISON	L	155.1000	KNNM877	BM
PA	UNION COUNTY OF	LIMESTONE TWP	S	45.9200	KNNJ587	BM	TX	BASTROP COUNTY OF	BASTROP	P	151.1000	KNNN708	BM
PA	UNION COUNTY OF	HAINES TWP	S	45.9200	KNNJ587	BA	TX	BEAUMONT PORT OF	BEAUMONT	L	453.0500	WNUR766	BM
PA	UNION COUNTY OF	LEWIS TWP	S	45.9200	KNNJ587	BA	TX	BEAUMONT PORT OF		L	458.0500	WNUR766	MO
PA	UNION COUNTY OF		S	45.9600	KNNJ587	MO	TX	BEVERLY HILLS CITY OF	WACO	P	155.5350	WPCI841	MR
PA	UPPER ST CLAIR TOWNSHIP VFD	PITTSBURGH	F	460.6250	WYK602	MR	TX	BOWIE COUNTY OF		L	815.4875	WPIZ629	MO
PA	VENANGO COUNTY OF	OIL CITY	P	155.5200	KNNJ986	BA	TX	BOWIE COUNTY OF	TEXARKANA	L	860.4875	WPIZ629	MR
PA	VENANGO COUNTY OF	KENNERDELL	P	155.8050	KNNJ986	MR	TX	CANADIAN RIVER MUN WATER AUTH	HAPPY	L	155.6550	KNNI805	MR
PA	VENANGO COUNTY OF	OIL CITY	P	155.8050	KNNJ986	MR	TX	CARTHAGE CITY OF	CARTHAGE	P	154.7550	KNNL374	MR
PA	W PENNSBORO TOWNSHIP OF	CARLISLE	L	453.2000	KNNH988	BR	TX	CARTHAGE CITY OF		P	158.9850	KNNL374	MO
PA	W MIFFLIN BOROUGH OF	W MIFFLIN	L	453.9250	KNNF822	MR	TX	COLLIN COUNTY OF	MC KINNEY	L	866.2250	WPIZ618	MR
PA	W PENNSBORO TOWNSHIP OF		L	458.2000	KNNH988	MO	TX	FIRST RESPONSE SEARCH & RESCUE	(HURST)	S	155.1600	KNNG217	MO
PA	W MEAD TOWNSHIP OF		P	153.9800	KNNJ800	MO	TX	FRISCO CITY OF	FRISCO	L	37.1800	WPIX242	BM
PA	W HOMESTEAD BOROUGH OF	MUNHALL	P	156.2100	WNRM370	MR	TX	GADDYS EMS		M	150.7900	KNNM953	MO
PA	W WHITELAND TOWNSHIP OF	EXTON	P	158.9700	KNNL722	BM	TX	GADDYS EMS	CENTER	M	159.1800	KNNM953	MR
PA	WARREN TOWNSHIP OF	WARREN CENTER	R	151.1000	KNNI943	BM	TX	HARRIS METHODIST HOSPITAL		M	462.9625	KD35833	MO
PA	WOLF TOWNSHIP OF	HUGHESVILLE	L	158.7900	KNNI874	BM	TX	HARRIS METHODIST HOSPITAL		M	467.9625	KD35833	MO
PA	WORTH TOWNSHIP OF		L	156.0750	WPIZ923	MO	TX	HEMPSTEAD CITY OF		P	154.9500	KNJC855	MO
PA	WYOMING COUNTY OF	TUNKHANNOCK	L	155.1900	KNNL679	BM	TX	JACINTO CITY CITY OF	JACINTO CITY	L	453.8000	KWF845	MR
PA	WYOMING COUNTY OF	TUNKHANNOCK	L	155.7300	KNNL679	BM	TX	JASPER FIRE DISTRICT #3	NEWTON	F	155.7450	KNNL470	MR
PR	DE JUANA DIAS MUNICIPALITY OF	JUANA DIAS	L	159.2100	WPIZ739	MR	TX	KAUFMAN COUNTY OF		P	154.9500	KZH947	MO
PR	PONCE CITY OF	PONCE	L	155.2500	KNNG520	MR	TX	KAUFMAN COUNTY OF	KAUFMAN	P	155.6400	KZH947	BA
RI	COVENTRY TOWN OF	COVENTRY	P	159.5850	KNNG569	BM	TX	MC ALLEN HEART HOSPITAL	MC ALLEN	M	155.3400	KNNL414	BM
SC	ALLENDALE TOWN OF		F	154.2650	KNBL827	MO	TX	MC ALLEN CITY OF	MC ALLEN	T	856.0500	WPIX203	MR
SC	CAMDEN CITY OF		F	154.3250	KNNF502	MO	TX	MC ALLEN CITY OF	MC ALLEN	T	857.0500	WPIX203	MR
SC	GEORGETOWN COUNTY OF	GEORGETOWN	P	155.6250	WQS200	MR	TX	MC ALLEN CITY OF	MC ALLEN	T	858.0500	WPIX203	MR
SC	GEORGETOWN COUNTY OF	GEORGETOWN	P	158.7900	WQS200	MR	TX	MC ALLEN CITY OF	MC ALLEN	T	859.0500	WPIX203	MR
SC	NEW ELLENTON CITY OF	NEW ELLENTON	L	155.6700	KNNK381	BM	TX	MC ALLEN CITY OF	MC ALLEN	T	860.0500	WPIX203	MR
SD	ALCESTER CITY OF	ALCESTER	P	39.1000	KNNI407	BM	TX	MC ALLEN CITY OF	MC ALLEN	T	861.0500	WPIX203	MR
SD	ALCESTER CITY OF	ALCESTER	P	39.3200	KNNI407	BM	TX	MC ALLEN CITY OF	MC ALLEN	T	862.0500	WPIX203	MR
SD	KINGSBURY COUNTY OF	ARLINGTON	L	155.5650	WPIW677	MR	TX	MC ALLEN CITY OF	MC ALLEN	T	863.0500	WPIX203	MR
SD	KINGSBURY COUNTY OF	DE SMET	L	155.5650	WPIW677	MR	TX	MC ALLEN CITY OF	MC ALLEN	T	864.0500	WPIX203	MR
SD	PARKSTON CITY OF		P	154.7100	KRI735	MO	TX	MC ALLEN CITY OF	MC ALLEN	T	865.0500	WPIX203	MR
SD	WATERTOWN MUNICIPAL LANDFILL		L	154.9800	KNNG759	MO	TX	MISSOURI CITY CITY OF	RICHMOND	L	856.9625	KNNX695	MR
SD	YANKTON CITY OF	YANKTON	F	453.7000	KNNM840	OF	TX	MISSOURI CITY CITY OF	MISSOURI CITY	T	866.0875	KNNH590	MR
SD	YANKTON CITY OF	CENTERPOINT	L	155.0850	KNNM840	MR	TX	MISSOURI CITY CITY OF	MISSOURI CITY	T	866.7375	KNNH590	MR
SD	YANKTON CITY OF	CENTERPOINT	L	453.7000	KNNM840	OF	TX	MONTANA VISTA FIRE DISTRICT		F	150.7900	KNNL361	MO
TN	AMBUCARE OF TENNESSEE	ERIN	M	155.2050	KNNI806	BM	TX	MONTANA VISTA FIRE DISTRICT	EL PASO	F	154.4300	KNNL361	MR
TN	AMBUCARE OF TENNESSEE		M	155.3400	KNNI806	MO	TX	N HOOD COUNTY VFD	GRANBURY	F	154.3850	WPIX789	BM
TN	BON DE CROFT FD	SPARTA	F	154.1600	KNNL409	BM	TX	SOCORRO CITY OF		F	150.7750	KNNL362	MO
TN	BRADLEY COUNTY OF	BENTON	L	155.7750	KNNK249	MR	TX	SOCORRO CITY OF	EL PASO	F	154.3700	KNNL362	MR
TN	BRADLEY COUNTY OF	OOLTEWAH	L	155.7750	KNNK249	MR	TX	STARR COUNTY OF		P	155.6850	WSB92	MO
TN	BRENTWOOD CITY OF		L	458.1875	KNNM885	MO	TX	STARR COUNTY OF	RIO GRANDE CITY	P	158.9250	WSB92	MR
TN	CLARKSVILLE CITY OF	CLARKSVILLE	L	451.5250	KNNJ983	OF	TX	TAYLOR CITY OF		P	158.8200	KVN689	MO
TN	CLARKSVILLE CITY OF	CLARKSVILLE	L	451.5250	KNNJ560	OF	TX	TEXARKANA CITY OF	TEXARKANA	L	155.8200	KRW415	MR
TN	CLARKSVILLE CITY OF	CLARKSVILLE	L	452.9000	KNNI710	OF	TX	TEXAS NATURAL RES CONSERV COM	AUSTIN	L	453.4750	KNNK339	MR
TN	CLARKSVILLE CITY OF	CLARKSVILLE	L	456.5250	KNNJ983	OF	TX	TEXAS NATURAL RES CONSERV COM		L	458.4750	KNNK339	MO
TN	CLAXTON VFD	CLAXTON	F	154.3400	WNLA789	MR	TX	TEXAS TECH UNIVERSITY	LUBBOCK	L	857.2125	KNNJ875	MR
TN	COCKE COUNTY OF	NEWPORT	M	155.2050	KNFM520	BM	TX	TEXAS TECH UNIVERSITY	LUBBOCK	T	856.9625	KNNJ876	MR
TN	COCKE COUNTY OF		M	155.3400	KNFM520	MO	TX	TEXAS TECH UNIVERSITY	LUBBOCK	T	857.9625	KNNJ876	MR
TN	COCKE COUNTY OF	NEWPORT	M	462.9500	KNFM520	MR	TX	TEXAS TECH UNIVERSITY	LUBBOCK	T	858.9625	KNNJ876	MR
TN	COCKE COUNTY OF	NEWPORT	M	462.9750	KNFM520	MR	TX	TEXAS TECH UNIVERSITY	LUBBOCK	T	859.9625	KNNJ876	MR
TN	COCKE COUNTY OF	NEWPORT	M	463.1750	KNFM520	MR	TX	TEXAS TECH UNIVERSITY	LUBBOCK	T	860.9625	KNNJ876	MR
TN	COLUMBIA CITY OF	COLUMBIA	L	855.9875	KNNH515	MR	TX	WAKE VILLAGE CITY OF	WAKE VILLAGE	F	154.3100	KNNI574	MR
TN	CROSS PLAINS CITY OF		L	153.8000	KNNJ505	MO	TX	WEATHERFORD CITY OF	WEATHERFORD	P	154.8750	KNAZ337	MR
TN	CROSS PLAINS CITY OF	CROSS PLAINS	L	155.6550	KNNJ505	MR	TX	WHITE DEER CITY OF	WHITE DEER	L	155.0850	KNNG277	BM
TN	CROSS PLAINS CITY OF	CROSS PLAINS	L	45.1200	KNNJ505	BM	TX	WOODROW VFD INC	TENAHA	F	154.4300	KNNH619	MR
TN	DECATUR COUNTY OF	SUGAR TREE	P	453.8000	KNNM889	MR	TX	WOODS VFD		F	154.0100	KNNH619	MO
TN	DECATUR COUNTY OF	BATH SPRINGS	P	453.8000	KNNM889	MR	TX	WOODS VFD	TENAHA	F	154.4300	KNNH619	MR
TN	DECATUR COUNTY OF		P	458.8000	KNNM889	MO	UT	BOUNTIFUL CITY OF		S	155.2950	KNNI384	MO
TN	FAYETTE COUNTY OF	SOMERVILLE	L	158.7450	KRP761	BM	UT	LAYTON CITY OF		L	811.9375	KNNK883	MO
TN	HENDERSON TOWN OF	HENDERSON	L	453.6000	KNNF854	MR	UT	LAYTON CITY OF	LAYTON	L	856.9375	KNNK883	MR
TN	HENDERSON TOWN OF		L	458.6000	KNNF854	MO	UT	OGDEN CITY OF	OGDEN	T	857.7375	WPFA366	MR
TN	HICKMAN COUNTY OF		M	150.7900	KIB338	MO	UT	OGDEN CITY OF	OGDEN	T	859.9375	WPFA366	MR
TN	HICKMAN COUNTY OF	CENTERVILLE	M	154.1150	KIB338	MR	UT	SALT LAKE CITY CITY OF		L	810.2125	KNNG863	MO

FREQUENCY UPDATES
by Police Call Plus

UT	SALT LAKE CITY CITY OF		L	810.7125	KNNG863	MO	WA	BENTON CITY TOWN OF		P	158.7300	WFR451	MO
UT	SALT LAKE CITY CITY OF		L	810.9625	KNNG863	MO	WA	CHELAN COUNTY OF		L	458.1000	KNNF444	MO
UT	SALT LAKE CITY CITY OF	SALT LAKE CITY	L	855.2125	KNNG863	BA	WA	CLALLAM COUNTY OF	SEQUIM	M	462.9750	KNNF779	MR
UT	SALT LAKE CITY CITY OF	SALT LAKE CITY	L	855.7125	KNNG863	BA	WA	CLALLAM COUNTY OF	JOYCE	M	462.9750	KNNF779	MR
UT	SALT LAKE CITY CITY OF	SALT LAKE CITY	L	855.9625	KNNG863	BA	WA	CLALLAM COUNTY OF	PT ANGELES	M	462.9750	KNNF779	MR
UT	SALT LAKE COUNTY OF	BRIGHTON	P	460.2750	KNNG310	MR	WA	CLALLAM COUNTY OF	BLYN	M	462.9750	KNNF779	MR
UT	TOOELE COUNTY OF		L	806.0875	KNNK632	MO	WA	CLALLAM COUNTY HOSP DIST #1	FORKS	M	463.1000	KNNG586	MR
UT	TOOELE COUNTY OF		L	806.2625	KNNK632	MO	WA	CLALLAM COUNTY OF	PT ANGELES	M	463.1750	KNNF779	MR
UT	TOOELE COUNTY OF		L	806.3125	KNNK632	MO	WA	CLALLAM COUNTY OF	JOYCE	M	463.1750	KNNF779	MR
UT	TOOELE COUNTY OF	MAGNA	L	851.0875	KNNK632	MR	WA	CLALLAM COUNTY OF	SEQUIM	M	463.1750	KNNF779	MR
UT	TOOELE COUNTY OF	MAGNA	L	851.2625	KNNK632	MR	WA	CLALLAM COUNTY OF	BLYN	M	463.1750	KNNF779	MR
UT	TOOELE COUNTY OF	MAGNA	L	851.3125	KNNK632	MR	WA	COWLITZ COUNTY OF	WOODLAND	L	158.7450	WPIW861	BM
UT	UTAH COUNTY SEARCH & RESCUE		S	150.7900	WNFL357	MO	WA	COWLITZ COUNTY OF	RYDERWOOD	L	72.7200	WPIW861	FX
VA	ACCOMAC COUNTY OF	MAPPSVILLE	L	155.0550	KNNI704	MR	WA	COWLITZ COUNTY OF	KELSO	L	75.9600	WPIW861	FX
VA	ACCOMACK COUNTY OF	MAPPSVILLE	L	155.0550	KNNI704	MR	WA	EVERETT CITY OF	ROBE	L	852.5125	WNDV862	MR
VA	ALLEGHANY COUNTY OF	COVINGTON	T	858.7375	WNPS267	MR	WA	GRANT COUNTY OF		T	809.8125	KNNJ860	MO
VA	ALLEGHANY COUNTY OF	CARLOOVER	T	859.7375	WNPS267	MR	WA	GRANT COUNTY OF		T	810.8125	KNNJ860	MO
VA	ALLEGHANY COUNTY OF	CARLOOVER	T	860.7375	WNPS267	MR	WA	GRANT COUNTY OF		T	811.2375	KNNJ860	MO
VA	ARLINGTON COUNTY OF		L	158.9700	KLU644	MO	WA	GRANT COUNTY OF		T	811.2625	KNNJ860	MO
VA	BEDFORD COUNTY OF		P	460.0500	KNNI803	MO	WA	GRANT COUNTY OF		T	811.4375	KNNJ860	MO
VA	CARROLLTON VFD		F	154.1600	KNNL941	MO	WA	GRANT COUNTY OF		T	812.2375	KNNJ860	MO
VA	CARROLLTON VFD		F	154.2050	KNNL941	MO	WA	GRANT COUNTY OF		T	812.2625	KNNJ860	MO
VA	CHARLES CITY VFD INC		M	155.2050	WPIX800	MO	WA	GRANT COUNTY OF		T	812.4375	KNNJ860	MO
VA	CHARLES CITY VFD INC		M	155.3400	WPIX800	MO	WA	GRANT COUNTY OF		T	813.2375	KNNJ860	MO
VA	CLARKSVILLE TOWN OF	CLARKSVILLE	P	453.8750	WPIY896	MR	WA	GRANT COUNTY OF		T	813.2625	KNNJ860	MO
VA	CLARKSVILLE TOWN OF		P	458.8750	WPIY896	MO	WA	GRANT COUNTY OF		T	813.4375	KNNJ860	MO
VA	COMMUNITY MEMORIAL HOSPITAL	S HILL	M	155.2800	WNBM831	BA	WA	GRANT COUNTY OF		T	814.2375	KNNJ860	MO
VA	FAIRFAX COUNTY OF	ALEXANDRIA	L	854.2875	WNAJ365	MR	WA	GRANT COUNTY OF		T	814.2625	KNNJ860	MO
VA	LEE COUNTY OF	THOMAS WALKER	M	155.1600	KNCU972	BA	WA	GRANT COUNTY OF		T	814.4375	KNNJ860	MO
VA	LEE COUNTY OF	JONESVILLE	M	155.2950	KNCU972	BA	WA	GRANT COUNTY OF		T	815.2375	KNNJ860	MO
VA	LOUDOUN COUNTY OF	LEESBURG	L	151.0850	KNNG246	MR	WA	GRANT COUNTY OF		T	815.2625	KNNJ860	MO
VA	LUNENBURG COUNTY OF	LUNENBURG	P	453.9250	KNNK332	MR	WA	GRANT COUNTY OF		T	815.4375	KNNJ860	MO
VA	ORANGE COUNTY OF	ORANGE	L	154.0550	WXT819	MR	WA	GRANT COUNTY OF	ELECTRIC CITY	T	854.8125	KNNJ861	MR
VA	PETERSBURG CITY OF	PETERSBURG	L	460.5750	KNNJ596	OF	WA	GRANT COUNTY OF		T	854.8125	KNNJ860	MO
VA	PETERSBURG CITY OF	PETERSBURG	L	460.5750	KNNJ521	OF	WA	GRANT COUNTY OF		T	855.8125	KNNJ860	MO
VA	PETERSBURG CITY OF	PETERSBURG	L	460.5750	KNNJ568	OF	WA	GRANT COUNTY OF	ELECTRIC CITY	T	855.8125	KNNJ861	MR
VA	PETERSBURG CITY OF	PETERSBURG	L	460.5750	KNNJ564	OF	WA	GRANT COUNTY OF	EPHRATA	T	856.2375	KNNJ862	MR
VA	PLAZA VOL RESCUE SQUAD	VIRGINIA BEACH	M	155.1750	KNNI868	BM	WA	GRANT COUNTY OF	MATTAWA	T	856.2375	KNNJ863	MR
VA	PLAZA VOL RESCUE SQUAD	VIRGINIA BEACH	M	155.2050	KNNI868	BM	WA	GRANT COUNTY OF		T	856.2375	KNNJ860	MO
VA	PLAZA VOL RESCUE SQUAD	VIRGINIA BEACH	M	155.2950	KNNI868	BM	WA	GRANT COUNTY OF	COULEE CITY	T	856.2625	KNNJ866	MR
VA	PLAZA VOL RESCUE SQUAD		M	155.3400	KNNI868	MO	WA	GRANT COUNTY OF	BEVERLY	T	856.2625	KNNJ865	MR
VA	PLAZA VOL RESCUE SQUAD		M	156.4000	KNNI868	MO	WA	GRANT COUNTY OF		T	856.2625	KNNJ860	MO
VA	PULASKI COUNTY OF	SHILOH	L	45.2800	KKL999	BA	WA	GRANT COUNTY OF	BEVERLY	T	856.4375	KNNJ867	MR
VA	RICHMOND COMMUNITY HOSPITAL	RICHMOND	M	155.2800	KNNM532	BA	WA	GRANT COUNTY OF		T	856.4375	KNNJ860	MO
VA	RICHMOND COMMUNITY HOSPITAL	RICHMOND	M	155.3400	KNNM532	BA	WA	GRANT COUNTY OF	MOSES LAKE	T	856.4625	KNNJ864	MR
VA	RIVERSIDE REGIONAL JAIL AUTH	HOPEWELL	P	155.4750	KNNI804	BM	WA	GRANT COUNTY OF		T	857.2375	KNNJ860	MO
VA	RIVERSIDE REGIONAL JAIL AUTH		T	813.7375	WPIW977	MO	WA	GRANT COUNTY OF	EPHRATA	T	857.2375	KNNJ862	MR
VA	RIVERSIDE REGIONAL JAIL AUTH		T	814.7375	WPIW977	MO	WA	GRANT COUNTY OF	MATTAWA	T	857.2375	KNNJ863	MR
VA	RIVERSIDE REGIONAL JAIL AUTH		T	815.7375	WPIW977	MO	WA	GRANT COUNTY OF		T	857.2625	KNNJ860	MO
VA	RIVERSIDE REGIONAL JAIL AUTH	HOPEWELL	T	857.7375	WPIW977	MR	WA	GRANT COUNTY OF	BEVERLY	T	857.2625	KNNJ865	MR
VA	RIVERSIDE REGIONAL JAIL AUTH	HOPEWELL	T	858.7375	WPIW977	MR	WA	GRANT COUNTY OF	COULEE CITY	T	857.2625	KNNJ866	MR
VA	RIVERSIDE REGIONAL JAIL AUTH	HOPEWELL	T	859.7375	WPIW977	MR	WA	GRANT COUNTY OF		T	857.4375	KNNJ860	MO
VA	RIVERSIDE REGIONAL JAIL AUTH	HOPEWELL	T	860.7375	WPIW977	MR	WA	GRANT COUNTY OF	BEVERLY	T	857.4375	KNNJ867	MR
VA	ROANOKE COUNTY OF		T	807.4375	WNJU627	MO	WA	GRANT COUNTY OF	MOSES LAKE	T	857.4625	KNNJ864	MR
VA	ROANOKE COUNTY OF		T	808.4375	WNJU627	MO	WA	GRANT COUNTY OF	MATTAWA	T	858.2375	KNNJ863	MR
VA	ROANOKE COUNTY OF		T	812.7625	WNJU627	MO	WA	GRANT COUNTY OF		T	858.2375	KNNJ860	MO
VA	ROANOKE COUNTY OF		T	813.4625	WNJU627	MO	WA	GRANT COUNTY OF	EPHRATA	T	858.2375	KNNJ862	MR
VA	ROANOKE COUNTY OF		T	814.4375	WNJU627	MO	WA	GRANT COUNTY OF	BEVERLY	T	858.2625	KNNJ865	MR
VA	ROANOKE COUNTY OF	(* 852.4375)	T	853.4375	WNJU627	MR	WA	GRANT COUNTY OF	COULEE CITY	T	858.2625	KNNJ866	MR
VA	ROANOKE COUNTY OF	(* 852.4375)	T	856.9625	WNJU627	MR	WA	GRANT COUNTY OF		T	858.2625	KNNJ860	MO
VA	ROANOKE COUNTY OF	(* 852.4375)	T	857.7625	WNJU627	MR	WA	GRANT COUNTY OF	BEVERLY	T	858.4375	KNNJ867	MR
VA	ROANOKE COUNTY OF	(* 852.4375)	T	858.4625	WNJU627	MR	WA	GRANT COUNTY OF		T	858.4375	KNNJ860	MO
VA	ROANOKE COUNTY OF	(* 852.4375)	T	859.4375	WNJU627	MR	WA	GRANT COUNTY OF	EPHRATA	T	859.2375	KNNJ862	MR
VA	ROANOKE COUNTY OF	(* 852.4375)	T	860.4375	WNJU627	MR	WA	GRANT COUNTY OF		T	859.2375	KNNJ860	MO
VA	ROCKY GAP VFD INC	NARROWS	F	154.2650	KNNM952	BM	WA	GRANT COUNTY OF	COULEE CITY	T	859.2625	KNNJ866	MR
VA	SURRY COUNTY OF	FANCY GAP	P	154.0250	KNNF905	MR	WA	GRANT COUNTY OF		T	859.2625	KNNJ860	MO
VA	WAGSTAFF CIRCLE VFD	RICHMOND	F	154.2650	KNNK418	MR	WA	GRANT COUNTY OF	BEVERLY	T	859.4375	KNNJ867	MR
VA	WAGSTAFF CIRCLE VFD	RICHMOND	F	154.3700	KNNK418	MR	WA	GRANT COUNTY OF		T	859.4375	KNNJ860	MO
VA	WAGSTAFF CIRCLE VFD		F	156.0450	KNNK418	MO	WA	GRANT COUNTY OF	EPHRATA	T	860.2375	KNNJ862	MR
VA	WINCHESTER CITY OF	MIDDLETOWN	R	159.0600	WYU871	BA	WA	GRANT COUNTY OF		T	860.2375	KNNJ860	MO
VT	AMERICAN RED CROSS	BURLINGTON	M	155.2350	KIK527	BM	WA	GRANT COUNTY OF	COULEE CITY	T	860.2625	KNNJ866	MR
VT	AMERICAN RED CROSS	BURLINGTON	M	155.2800	KIK527	BM	WA	GRANT COUNTY OF		T	860.2625	KNNJ860	MO
VT	AMERICAN RED CROSS	BURLINGTON	M	155.3400	KIK527	BM	WA	GRANT COUNTY OF		T	860.4375	KNNJ860	MO
VT	BRADFORD VILLAGE OF	W NEWBURY	F	453.7000	WPIQ925	OF	WA	GRANT COUNTY OF	BEVERLY	T	860.4375	KNNJ867	MR
VT	BRADFORD VILLAGE OF	HANOVER	F	453.7000	WPIQ925	OF	WA	JEFFERSON COUNTY OF	QUILCENE	L	153.8600	KOM784	MR
VT	RANDOLPH VILLAGE OF		L	153.9950	KNNG757	MO	WA	KIRKLAND CITY OF		L	453.6625	KNNJ683	MO
VT	RANDOLPH VILLAGE OF	RANDOLPH	L	158.8050	KNNG757	BR	WA	KIRKLAND CITY OF		L	458.6625	KNNJ683	MO
VT	RUTLAND COUNTY MUTUAL FIRE AID	W RUTLAND	F	154.2500	KNNK416	BA	WA	KITSAP COUNTY OF	POULSBO	F	154.3700	WPIQ929	BA
VT	RUTLAND COUNTY MUTUAL FIRE AID	RUTLAND	F	154.2500	KNNK416	BA	WA	KITSAP TRANSIT AUTHORITY		L	458.9875	WPGV878	MO
VT	RUTLAND HOUSING AUTHORITY	RUTLAND	L	158.7450	WPIX446	BM	WA	OKANOGAN COUNTY OF	COULEE DAM	P	155.6400	KNNI942	MR
VT	SWANTON VILLAGE OF	ST ALBANS	F	453.5000	KNNN456	OF	WA	PANGBORN MEMORIAL AIRPORT DIST	E WENATCHEE	F	154.2500	KNNM848	BM
VT	SWANTON VILLAGE OF	SWANTON	F	458.5000	KNNN456	OF	WA	PANGBORN MEMORIAL AIRPORT DIST	E WENATCHEE	F	154.3100	KNNM848	BM
WA	ADAMS COUNTY OF		P	153.9950	KNNJ285	MO	WA	PANGBORN MEMORIAL AIRPORT DIST	E WENATCHEE	F	154.4300	KNNM848	BM
WA	ADAMS COUNTY OF	OTHELLO	P	155.5950	KNNJ285	MR	WA	PANGBORN MEMORIAL AIRPORT DIST	E WENATCHEE	L	154.0250	WPIW739	BM
WA	BELLINGHAM CITY OF		L	806.8125	WPIZ620	MO	WA	PANGBORN MEMORIAL AIRPORT DIST	E WENATCHEE	P	155.4150	WPIW740	BM
WA	BELLINGHAM CITY OF	BELLINGHAM	L	852.7625	WPIZ620	MR	WA	PROSSER TOWN OF	PROSSER	L	453.2000	WPIX269	BM
WA	BELLINGHAM CITY OF	BELLINGHAM	L	852.8125	WPIZ620	MR	WA	PROSSER TOWN OF	PROSSER	L	453.3500	WPIX269	BM

WA	PROSSER TOWN OF		L	458.7875	WPW735	MO	WI	JEVCO TRANSIT LLC	MAUSTON	S	155.1600	KUR299	BM
WA	PROVIDENCE CENTRALIA HOSPITAL	CENTRALIA	M	155.3400	KNNH707	BM	WI	KEWASKUM VILLAGE OF	KEWASKUM	F	45.8800	WQJ956	BM
WA	QUINAULT INDIAN NATION	TAHOLAH	L	156.0150	WAU776	MR	WI	KEWASKUM VILLAGE OF	KEWASKUM	F	46.0600	WQJ956	BM
WA	RENTON CITY OF		L	453.4625	KNNN384	MO	WI	LA CROSSE COUNTY OF	LA CROSSE	L	155.1450	WSB717	MR
WA	SPOKANE COUNTY OF	NINE MILE FALLS	F	153.8750	WNGR551	BA	WI	MAYO FOUNDATION	EAU CLAIRE	S	155.2800	KNNI812	BM
WA	SPOKANE COUNTY FPD #9		F	453.6000	KNNK540	MO	WI	OSCEOLA TOWN OF	OSCEOLA	L	155.8200	KNNM965	MR
WA	SPOKANE COUNTY FPD #9		F	458.6000	KNNK540	MO	WI	PRICE COUNTY OF	KENNAN	F	154.3250	WNQF727	MR
WA	WHATCOM COUNTY OF	CONCRETE	L	453.3250	KNNF443	MR	WI	RHINELANDER TOWN OF	RHINELANDER	P	155.1300	KSF352	BM
WA	WHITMAN COUNTY FIRE DIST #8	LA CROSSE	F	154.1900	KOL608	BM	WI	RHINELANDER TOWN OF		P	155.2500	KSF352	MO
WI	BELOIT MEMORIAL HOSPITAL	BELOIT	M	155.2800	KNNI360	BM	WI	SHEBOYGAN COUNTY OF	SHEBOYGAN	L	154.1150	KNNI863	BM
WI	BELOIT MEMORIAL HOSPITAL	BELOIT	M	155.3400	KNNI360	BM	WI	VILAS COUNTY OF	SAYNER	P	155.5500	KSA312	MR
WI	BROCKWAY TOWN OF		L	453.0625	KNNI797	MO	WI	VILAS COUNTY OF	SAYNER	P	155.6400	KSA312	MR
WI	CHIPPEWA INDIANS BAD RIVER BND	(ASHLAND)	P	155.6550	KNNI399	MO	WI	WISCONSIN DELLS CITY OF	WISCONSIN DELLS	F	154.2050	KCZ523	MR
WI	COLUMBIA COUNTY OF	CAMBRIA	F	154.1450	WNHP963	MR	WV	BELINGTON CITY OF	PHILIPPI	L	452.4500	WNGL498	FX
WI	COLUMBIA COUNTY OF	LODI	F	154.1450	WNHP963	MR	WV	FAIRMONT CITY OF		P	155.9850	KQB574	MO
WI	DEERFIELD TOWN OF	DEERFIELD	L	155.0550	KNNJ416	BM	WV	HUNTINGTON CITY OF		L	458.9125	KNNN231	MO
WI	EAGLE POINT TOWN OF	CHIPPEWA FALLS	L	154.0400	KNNM961	BM	WV	SALEM CITY OF		L	453.3875	KNNG522	MO
WI	FENNIMORE RESCUE SQUAD		M	150.7900	KNNK411	MO	WV	TAYLOR COUNTY OF	GRAFTON	L	158.8200	KNNG523	MR
WI	FENNIMORE RESCUE SQUAD	FENNIMORE	M	155.3850	KNNK411	MR	WV	TRI STATE TRANSIT AUTHORITY	HUNTINGTON	L	854.9875	KNNH521	MR
WI	GREEN LAKE CITY OF		P	159.0900	KNNL728	MO	WY	BIG HORN COUNTY OF	SHELL	P	155.6250	KNNG679	MR

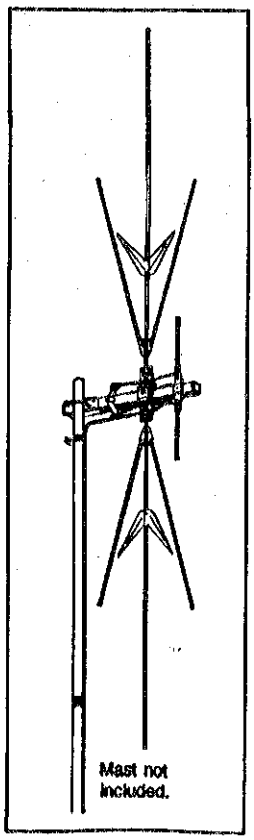
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"The Scantenna -- Five Stars"

★★★★★



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--Pete Edwards, Lake Geneva, Wisconsin

"I CAN HEAR THINGS WITH MY SCANTENNA THAT I NEVER KNEW EXISTED BEFORE!"
--Ken Peters, Los Angeles, California

"I'VE THROWN AWAY THAT LITTLE WHIP ANTENNA THAT CAME WITH MY SCANNER."
--Carroll Ethridge, Berkey City, Tennessee

"WOW! WHAT A DIFFERENCE! THE SCANTENNA IS THE BEST!"
--Travis Lantz, Iowa City, Iowa

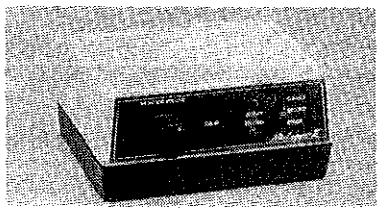
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The Scantenna is available from DX Radio Supply for $39.95 plus $7.00 UPS. Optional Motorola to BNC connector $3.95. Send check or money order to P.O. Box 360, Wagontown, PA 19376. Or use your Mastercard, Visa or Discover and call 9am to 9pm, Mon. thru Sat.

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A great buy for just $69.95 plus $5 UPS.

New Frequencies

and How They Affect the Scanner User

REGULATION & TECHNOLOGY

FUTURE SCAN

By Dick Holbert

This month, I am focusing on the regulatory changes taking place due to recent FCC action in "refarming" the 150-174 and 421 - 512 MHz bands. Refarming is the effort to improve "spectrum efficiency" through subdividing existing channels and encouraging use of equipment which operates in narrower bandwidths.

New channels will be made available every 7.5 kHz between existing channels in the 150-174 MHz band and every 6.25 kHz between existing channels in the 421-430 450-470 and 470-512 MHz bands. Present 12.5 kHz low power "offset" channels in 450-470 MHz will be available for high power use.

Type acceptance of new equipment beginning in August 1996 will require that it is capable of operating in an appropriate bandwidth for the new channels. The FCC is also imposing requirements that transmitter power be limited to what is necessary to cover the actual service area of the station.

The important point to remember is that at this time EXISTING SYSTEMS MAY CONTINUE TO OPERATE INDEFINITELY under current standards and PRESENTLY TYPE ACCEPTED EQUIPMENT MAY STILL BE MANUFACTURED AND USED. Availability of the new frequencies which were to be available in August is currently questionable as frequency coordination details are being resolved.

New Type Acceptance Standards

The FCC requires that manufacturers certify their equipment complies with FCC Rule standards through a process called Type Acceptance. The plan is to permit and encourage use of new technology through standards that define "spectral efficiency" goals.

All equipment Type Accepted after August 1, 1996 must be capable of operating on the new 12.5 or 15 kHz channels. Type Acceptance is based on meeting an "Emission Mask" for a bandwidth of 11.25 kHz in which the FCC Rules prescribe how the transmitted signal must not exceed certain limits as viewed on a spectrum analyzer. In the year 2005, new Type Accepted equipment must be capable of operating on 6.25 kHz channels by meeting requirements for a 6 kHz bandwidth.

This compares with today's conventional FM communications equipment which has a 16 kHz bandwidth. A conventional FM transmitter could be made to work in the 11.25 kHz bandwidth by reducing frequency deviation from 5 to 2.5 kHz. The effect of the reduced deviation would be some degradation of signal to noise ratio and capture effect but it can probably be lived with. Meeting the 6 kHz standard for 2005 with conventional FM technology won't work as the 3 kHz audio bandwidth required takes up the entire 6 kHz available with no room for the frequency deviation component.

Since AM and SSB technology has not proven acceptable for Land Mobile VHF/UHF it is new digital signal processing and modulation methods that holds the most promise. The use of digital is also reinforced by an increasing demand for transmission of digital data. Advances in digital signal processing make it possible to take a voice signal and digitally encode and process it to minimize the amount of information transmitted. This can be combined with digital modulation techniques in the radio that increase the number of data bits that can be sent per Hertz of bandwidth.

The FCC is requiring that, within the specified bandwidth, the radio must carry at least one voice channel or data at a rate of at least 0.768 bits per second per Hertz. This means that at 12.5 kHz radio has to support at least 9600 bps and a 6.25 kHz radio 4800 bps. Even after 2005 when the 6.25 kHz standard takes effect a new radio could be type accepted which required 12.5 kHz bandwidth if it supported two simultaneous voice signals or 9600 bps data. Use of 25 kHz bandwidth with four voice channels or data channels totalling 19,200 bps would also be allowed. This opens up Land Mobile to the possibility of TDMA (Time Division Multiple Access) or CDMA (Code Division Multiple Access) technology as is pending for digital cellular. The technology to do this is probably available by 2005 but the main question for the users is cost and reliability. Unless something new is better and cheaper there is little incentive to replace existing technology.

Power Limits and Channel Assignments

The FCC is now requiring future license applications in the 150-174 and 450-512 MHz bands to justify a service area requirement and limit transmitter power to what is

needed to serve this area. A general maximum service area radius of 40 km for 150-174 and 32 km for 450-470 MHz along with a 500 W ERP (Effective Radiated Power) limit is specified but frequency coordinators are allowed to approve exceptions based on engineering studies by the applicant that signal strengths at the edge of the proposed service area will not be excessive.

The FCC had originally proposed to consolidate the many existing Land Mobile radio services into three or four broad categories. This would have eliminated specific frequencies for users such as railroads, taxis, manufacturers, etc. This was not adopted but the FCC has asked Land Mobile users to come up with their own consolidation and sharing plan or it will impose one.

Regulatory Issues

The FCC has continued action to explore "exclusivity" whereby current licensees could enter into contracts with existing co-channel licensees and agree to an area of exclusive assignments along with a commitment to convert to narrow band technology within five years. These groups of licensees would then be protected from any new co-channel users being licensed within this area without the group's mutual consent and also be allowed to lease out excess capacity on their channels that may result from narrow band conversion.

The FCC also continues to explore imposition of "user fees" based on how efficiently licensees use the spectrum. This would supposedly provide additional economic incentive towards use of narrow band technology.

Finally, the possibility of auctioning spectrum in the refarming bands is still under review, subject to Congressional authority to the FCC to do so. The idea is that the FCC would auction off channels in particular geographic areas to "overlay licensees" who would essential "own" or control this spectrum subject to providing co-channel and adjacent channel protection to existing licensees. The "overlay" licensee could control the number of users on its channel within the area and negotiate "voluntary" mergers, buyouts, frequency changes etc. with the existing licensees.

Frequency Coordination

Responsibility for implementation of the new channels and power restrictions falls on the various Frequency Coordinators. The FCC, having adopted new frequencies and standards, left it up to the coordinators to figure out how to make it work. The LMCC (Land Mobile Communications Council) which represents various user groups submitted a petition to the FCC asking that assignment of the new frequencies be "stayed" because there simply is not enough known about this complex new technical and regulatory environment to do effective frequency coordination. This, along with concern raised by Hewlett-Packard Co about impact on hospital intensive care telemetry systems operating on the 450-470 MHz low power "offset" frequencies, has led to the current FCC "freeze" on assignments on the new frequencies. It is not known if this will be resolved by the proposed 8/16/96 date for availability of these frequencies.

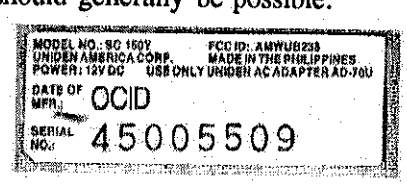
So, What Does It All Mean?

As of today, no existing system is required to make any change to their existing operation and presently type accepted equipment can still be manufactured and used. It remains to be seen if the FCC will attempt to accelerate change through user fees or if vendors will attempt to force purchase of new equipment by withdrawing existing product lines. At this point, digital technology is prohibitively expensive. I have heard a cost for a basic 25 W, 8 channel High Band digital capable mobile radio of about $3,500 vs less than $500 for a conventional analog unit.

The availability of the new frequencies is problematical, especially in the areas where they are needed the most. If every 15 kHz channel on High Band is already occupied by several licensees in an area there is no way to squeeze any narrow band users in unless all existing users also go narrow band. In areas near the Canadian border, Canada already vetoes new frequency requests to protect their adjacent channel licensees with present channel spacing. On the UHF band they tend to use the 12.5 kHz US offsets as their primary frequencies to avoid interference and I see no change in their policy so that they would coordinate requests for the new channels if they are adjacent to Canadian users.

Conclusion

In the last issue I suggested exploring the existing 12.5 kHz UHF offsets and parts of the 150 MHz band where 15 kHz adjacent channel operation is common. If the FCC does release the new frequencies it will be a challenge for the scanner listener to begin to search between existing channels to discover new systems as they appear. Some will be FM with narrower deviation which is still receivable on your scanner. If digital signals are detected there will be the challenge of figuring out who the user is. As digital standards emerge, receiving converters may become available if the encoding scheme is not considered to be proprietary or encrypted. Most scanners will do 5 and 12.5 kHz frequency steps so reception of the new frequencies should generally be possible.



Heeeeeer's Chester, The Man With an Attitude

A*S*K the EXPERTS

With Chester Blabbson

This month we introduce our new *Ask the Experts* columnist, Chester (The Man With An Attitude) Blabbson. Chester has written several lesser known books such as *Modifications for the Extremely Stupid and Uncoordinated, Scanning With the Morons* and *Chester Blabbsons Book of Absolutely Useless Scanner Facts.* We were able to entice Chester out of retirement with the promise of a 12 pack of beer and monthly trips to Denny's for the "Moon Over My Hammy" breakfast. Without further adieu, heeeeeere's Chester.

Q. Brent Goodwin of El Paso, Texas asks, "Can my Bearcat BC560XLT or Radio Shack PRO2023 be modified and if so what types of mods are available?"

A. Jeesh, the first question I handle and I've got to make phone calls to find out the answer. Yes, there are some generic mods that can be made to these two radios such as adding a tape relay and an S meter. If you're looking to add cellular (I already KNOW listening to cellular is illegal so save the 32 cents) you have to do it by plugging in a 800 MHz receive module. You might want to check out some back issues of *National Scanning* for other mods or check out some of Bill Cheek's books for the how-tos and what parts you'll need.

Q. Michael Mannchen of Madison, Wisconsin writes and says, "In my area, there is an unknown source of interference present in all scanners and ham radios in the 400 MHz range. It is a chirping sound that appears to pulsate on the second. It is strongest on 453.200 but seems to stop when that user activates the repeater. As soon as they are done talking the noise comes back again after a short pause. The noise is not noticeable late at night or on Sundays. Is it possible that the user of 453.200 is generating this sound and shouldn't it be illegal?"

A. Now all of a sudden I'm a two-way radio expert? If I have to make one more phone call I'm asking for a #%*&#* raise. Michael, you're darn right it should be illegal. I think you should take a pin, stick it in their co.....no wait a minute, that's what we used to do to fellow CBers who bled over onto our channel. I suggest you ask the city where you live this question since they are licensed on 453.200 and may be the source of the interference. If they don't want to cooperate, contact the nearest FCC office and explain the problem to them. Judging from your description of the noise, it could be one of several things. It's hard to evaluate interference problems through the mail. Carnac, I ain't.

Q. Don Peters of Tulsa, Oklahoma asks, "I am new to scanning and wonder what might be out there to listen to besides police, fire and ambulance calls."

A. Finally, a question I can answer. First, Don, why not spend some of that money that has been in your wallet since the Carter Administration, buy some frequency guides and find out for yourself? Oh, ok, I have to earn my buck and a quarter somehow. Don, there is a whole host of services and businesses to listen to. For starters check out the 161.640--161.760 MHz and 450-451 MHz frequency ranges for the media, 108--136 MHz for aircraft, 160.215--161.565 for railroads, 156.275--157.425MHz for marine and 138.075--144, 163-173, and 406-420 MHz for federal government. There, that ought to keep you busy and out of my hair for the next 10-20 years. Oh, and Don, GET A JOB and quit hanging out in your room all day listening to your scanner.

Q. Jack Randle from Intercourse, Pennsylvania asks, "I am trying to pull in some distant signals. Should I consider using a preamp? I already have a discone and a beam on my roof."

A. You live in a place called Intercourse and you think your problem is pulling in distant signals? This isn't the Penthouse Forum for Pete's sake. Just remember Jack, a preamp will amplify (that's why they call it a preamp) signals that you can already hear but may be weak. It will not allow you to hear signals which are not present already. The drawback to a preamp is that it may make strong signals distorted or your scanner subject to intermod. Forget the preamp, Jack and move your family to a town with a normal name.

That's it for this month's column since our editor took up a half page with his inane introduction. See you in two.

Send Your Questions to: Ask the Experts, Box 360, Wagontown, PA 19376

Federal Monitoring

Immigration and Naturalization Service
Door-Busting Action

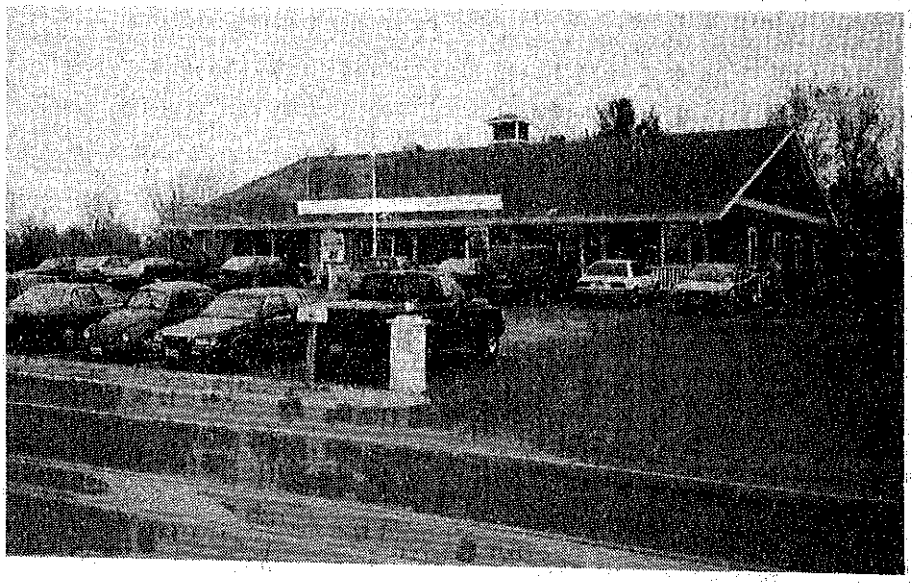
BY PETE ALTON

It's 10' o'clock in the morning, just another day at the El Tecate* Restaurant. (Not its real name.) Without warning, the back door of the restaurant literally explodes, its space suddenly filled with a tumble of armed, blue-jacketed men from the Immigration and Naturalzation Service. Several employees scramble to escape the kitchen but none succeed. They are immediately pinned to the wall. One man, of Hispanic origin, has attracted particular attention. Agents have a gun pointed at the side of his head. He is handcuffed and taken to a waiting vehicle. They say he is a murder suspect in Mexico. In another part of the country, INS agents, along with local authorities, raid an apartment building. Several illegal aliens from Mexico are seized here. Later, on their way back to the office, the INS agents spot a van whose occupants are acting suspicious. Upon pulling the van over, they find several more illegal aliens inside. Sounds like another day in Los Angeles, Houston or New York City, doesn't it? Actually all these events took place in small towns and villages all across the country. Small places, places with populations under three thousand. What used to be considered a big city problem has spread to every town in America and nearly everyone can monitor the doings of the INS.

The US Immigration and Naturalization Service, formed in 1891, is part of the Department of Justice. Its Commissioner reports directly to US Attorney General, Janet Reno. The INS's primary responsibilities are 1) to facilitate the entry of persons legally admissible as visitors or immigrants to the US, 2) to provide assistance to those seeking permanent resident status or naturalization, 3) to prevent unlawful entry, employment, or receipt of benefits by those who are not entitled to them, and 4) to apprehend or remove those aliens who enter or remain illegally in the US and/or whose stay is not in the public interest. It is those last two responsibilities that keep INS agents hopping and in the news.

Many of the INSs arrests and apprehensions take place as a result of routine checks of employers or tips from concerned citizens. Of course that concerned citizen may be someone who was turned down for a job, a disgruntled or fired employee, or just a customer who received substandard service. Local law enforcement agencies also work with the INS and report those businesses who they feel may be employing illegal aliens. Computer checks which uncover phony documents such as duplicate Social Security numbers also aid the agency in identifying possible targets for investigation.

As with most other federal agencies, monitoring the INS can be difficult due to digital scrambling. However, it is not impossible. For various reasons, they do not scramble their transmissions one hundred percent of the



time. My own experience has been that when working in some of the more rural areas, their tendency is not to scramble. Also keep in mind that the INS will often work with other federal agencies such as the Drug Enforcement Agency, the Bureau of Alcohol, Tobacco & Firearms, Federal Bureau of Investigation and even the Central Intelligence Agency, when the suspect is involved in such illegal activities as drug dealing, gun running, terrorism and other crimes. Two years ago, the INS and the FBI became involved when immigrants from Asia were kidnapped from a restaurant and transported to New York City, then held for ransom. Fortunately, the perpetrators were caught and their captives rescued.

The most popular frequencies for the INS seem to be 163.650, 163.750, and 163.625, all repeater outputs. As with any federal agency, the frequencies and PL Tones in use change with location of individual offices. Unit designators are as follows:

A -- Anti-Smuggling Unit,
B -- Border Patrol,
D -- Detention
I -- Investigation.

See the accompanying box for additional frequencies which may be used by the INS. Don't forget to check out the US Border Patrol frequencies, some of which are shared, for even more action.

If you are looking for more information about INS frequencies or government frequencies in general, check out *The Top Secret Registry of U.S. Government Radio Frequencies - 8th Edition* by Tom Kneitel ($22.95 plus 5.00 shipping from CRB Research, P.O. Box 56, Commack, NY 11725. Or call 516-543-9169.

INS Frequencies
162.850, 162.950, 162.900
163.700, 163.370, 163.050
163.9625, 162.850

US Border Patrol Frequencies
163.625, 163.675, 163.725
163.775, 163.650, 163.750
168.8625, 165.925, 162.875
162.975

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For the advanced or intermediate hobbyist, this remarkable book covers every aspect of modifying a host of scanners on the new and used market, with detailed drawings and excellent step-by-step procedures. It goes much further, into the mysterious world of antennas, and provides both practical and theoretical explanations of cost-effective ways to improve system performance. This is a superb guide for every serious scannist!

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New Products Preview

By Larry Miller

Mr. Scanner's CD ROM

Mr. Scanner's FCC Frequency Database on CD ROM provides some interesting twists in CDROM databases. All frequencies below 25 MHz and above 1300 MHz have been deleted, making room on the CD for other stuff. The entire *Betty Bearcat National Police Directory* is included, and more importantly a very extensive listing of police, fire and EMS codes and signal lists. But the best thing about this CD is that it runs FAST. The CD has several pre-defined searches, and allows export to ASCII text files. The pre-defined searches include state, city, county, service code, call sign, frequency, frequency range within a city, county or state and others. All searches can go to the screen for browsing or to a printer. Exports for .dbf will be added and will be available by the time you read this, and they are working on an export for the 'Probe' program from Datafile that controls the Optoscan equipped Radio Shack scanners. By the time you read this, the new fall data will be available from the FCC. The CD runs on a fairly simple program written in 'C++' that is much faster than the Grove CD and does not have the GPF's and other problems that the Percon Spectrum Light Spring 1995 CD had (both of which are written in Foxpro for either DOS or Windows). It runs fine even under Windows 95. Mr. Scanner's FCC Frequency Database on CD ROM is available for $35.00 plus shipping from Mr. Scanner at 1-800-423-1331.

– Reviewed by Dave Marshall. Mr. Marshall's review previously appeared in the AOSC bulletin and is reprinted here by permission.

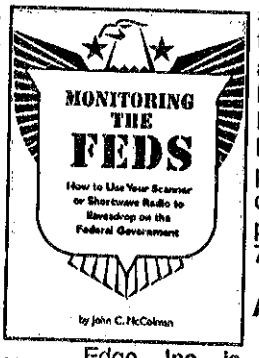
Editor's note: Mr. Scanner's CD ROM covers all licensees listed by the FCC with the exception of federal (which are not covered by FCC records) and amateur radio operators (which do not have assigned frequencies). Uniden is also releasing their entire Betty Bearcat series of frequency directories on CD ROM. These directories cover the USA and Canada plus some information for Europe, Grenada, Bamahas, Bermuda, Aruba and other Caribbean locations. If you do not have a CD ROM reader on your computer, you can still get the Betty Bearcat version on a 3 1/2" diskette for $25.00 per state. For more information, contact Mr. Scanner at 800-423- 1331.



One Mr. Scanner CD ROM contains over 28 reams of paper worth of information

Monitoring the Feds

If you've ever wanted to eavedrop on the feds but didn't know how to get started, we've now got the answer – Monitoring the Feds by John McColman. McColman provides not only specific frequencies and frequency ranges but tips on how to find federal frequency usage on your own. He relates a number of monitoring tricks and techniques he has developed in his 15 years of specializing in monitoring the communications of the US government. Departments covered include Agriculture, Commerce, Defense, Energy, Interior, Justice, State, Transportation, Treasury and Veterans Affairs. Agencies discussed include Central Intelligence Agency, Federal Communications Commission, Federal Emergency Management Agency, Federal Reserve System, General Services Administration, National Aeronautics and Space Administration, and US Postal Service. Monitoring the Feds provides a fascinating look at government radio communications and provides the reader with endless monitoring possibilities. Monitoring the Feds is 105 pages and available through National Scanning, Box 360, Wagontown, PA 19376 for $17.95 plus 4.50 UPS. You can also order by phone at 610-273-7823.

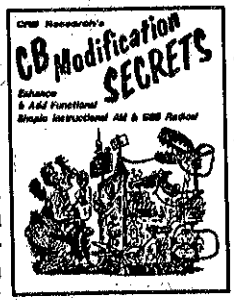


More Power

A firm called Cutting Edge, Inc. is offering AC and DC power supplies that could be of interest to the radio hobbyist. Power Port is a combination 12V 7 amp hour gel cell battery combined with an on-board inverter. The result is a unit that produces both 12 volt DC and 115 volt AC. It can be charged with a supplied AC wall-adapter or from your car or truck. Power Port will reportedly produce 50 watts (75 watts peak surge power). It is available for $89.50 plus $6.50 shipping. Power Port Jr. hangs on your belt, comes with a free AC adapter/charger and offers roughly 12 volts of 2 amp hour power. The price is $59.95. Add $6.50 shipping when ordering. Contact Cutting Edge Enterprises at 1803 Mission Street, #546, Santa Cruz, CA 95060 or call 800-206-0115.

CB Mods

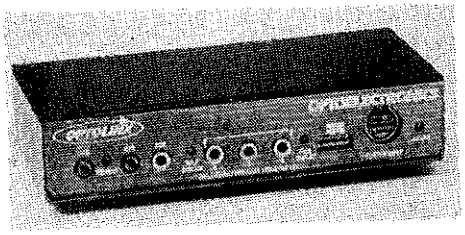
Kevin Ross's new book, *CB Modification Secrets*, shows you how



to expand, enhance and add to your CB. This brand new 206 page book includes instructions on frequency expansion, SSB clarifier and voice lock mods, adding VOX, a VFO, anti-theft transmitter disabler, I.F. gain control, mic sensitivity control, switch to change "instand channel 9" to "instant channel 19," add Roger Beep, a receive pre-amp, channel display auto dimmer and shut off, and much more. Some mods are designated for specific radios but others are generic enough to apply to more than 200 radios from Cobra, Courier, G.E., Midland, Radio Shack/Realistic, SBE, Uniden/President and Wards. Get your copy from CRB Research. The price is $21.95 plus 4.00 shipping. Use your credit card and call 516-543-0560 or write CRB Research at Box 56, Commack, NY 11725. Be sure to say "hi" to CB Judy when you order!

CX12AR Universal Interface

Optoelectronics has released the new Optolinx PC-Radio universal interface. It replaces the CX12AR. The Optolinx adapts to a wide variety of radios, scanners, decoders, frequency counters, frequency recorders, GPS receivers, and other devices with an RS-232C personal computer serial port. The Optolinx incorporates special provisions for connecting the AR2700 and AR8000 to a PC for full-featured computer controlled scanning, even allowing the user to control multiple radios at one time. Interface the AR3000A receiver with the DC440 decoder and the Optolinx will even allow for decoding DCS and CTCSS tones and DTMF characters. For more information on this must-have product, contact Opto at 954-771-2050. The retail price is $129.95.



Optolinx Interface

Mac Attack for the AR8000

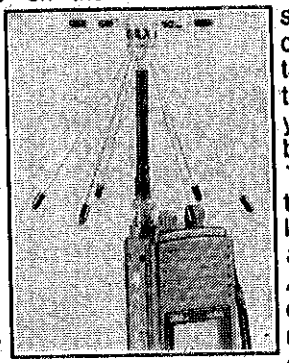
A firm called Eddyworks has announced the unveiling of their AR8000 software for the Macintosh called AR8000 ToolKit. According to information received the new program "provides users with an easy way to enter, edit and organize the 1,000 memory banks" of the AR8000. In addition to editing frequency banks, it also allows users to edit the search banks and scanner settings as well as date not accessible through the keypad, like the auto-mode bandplan table and restricted frequencies. The AR800 ToolKit is available on the World Wide Web at http://www.mich.com/~eddy/ works. It can also be obtained by sending a check or money order for $35.00 to Eddy J. Gurney, 18712 Westbrook Way, Livonia, MI 48152.

Sky-High Frequencies

Voice and data communications above 800 MHz are growing explosively and for people with the new generation of scanners with plus-900 MHz coverage, there's a whole new world to explore. The problem with these new scanners is the same one that old scanners had, only multiplied. What kind of antenna could possibly do a good job on every frequency from 30 MHz to 3 GHz? The answer is brutally short: none. This is especially so when you consider that the average whip or rubber duck resonates around 150 MHz. Max System Antennas has come out with a new discone antenna specially designed for use on signals 800 MHz to 3 GHz. Looking something like the Max System 800 antenna, it fits directly on your handheld scanner or can, with a little ingenuity and a handful of parts from Radio Shack, can be roof mounted as well. The Max System Discone is available from National Scanning at 610-273-7823 or by writing to Box 360, Wagontown, PA 19376. The price is $49.95 plus 5.00 UPS.

More Scanner Mods

Early in this decade, scanner mods were all the rage. Led by the now famous "clip-one-diode-and-restore-cellular-coverage" mod for the PRO-2004 series of scanners, the hobby soon discovered that almost anyone could soup up their scanner. Out in front of this movement was one-time CB mod man Bill Cheek. So successful was Cheek that if there was a scanning *New York Times* best seller list, his first two books, *Scanner Mods 1 and 2* would probably have been on it. He even put out a modification newsletter. Over the years, however, modification fever has cooled somewhat. The problem is that there are few mods available for the current generation of scanners and those that do exist are often so complicated as to rule out all but the most spectacularly experienced technician. Now comes yet another scanner mod book from the publisher of *The Ultimate Scanner*, this time from a relative unknown, Jerry Pickard. *Scanner Modifications and Antennas*, says the ad copy for the book, "[is a] remarkable book [that] covers every aspect of modifying a host of scanners... go[ing] much further into the mysterious world of antennas..." The antenna portion of the book is not, quite frankly, all that bad. The real question, however, is whether there's anything more to be said about scanner modifications. Listed at 164 pages, *Scanner Modifications and Antennas* is priced at $19.95 plus shipping. To order, call Index at 800-546-6707 or write 3368 Governor Drive, Suite 273, San Diego, CA 92122. Tell them that NatScan sent you.



Members' Classified

FOR SALE: New Max 46-49 MHz dipole antenna $45. Call Mrs. Berle Sandefur 501-251-1509.

Seeking someone to build a Ramsey kit for me. Call Mr. Phalen 305-231-2617 or write 600 N. Congress Ave., Delray Beach, FL 33445.

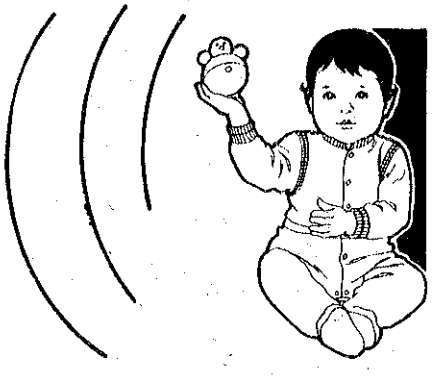
Classifieds are free to Bearcat Radio Club members. No businesses.

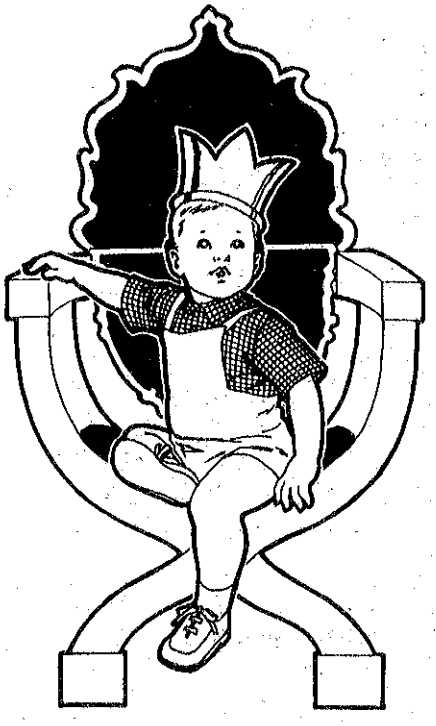
Personal Communications

Tuning in Mommy's Little Bundle of Joy

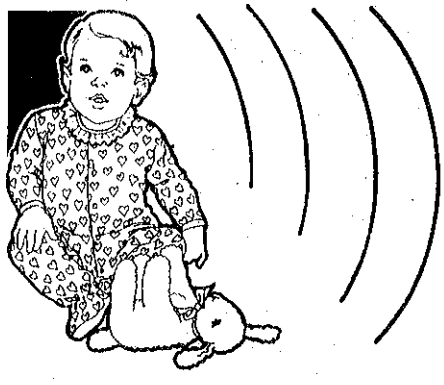
By Omar Smith

Monitoring cordless phones, though illegal, remains one of scanning's most popular targets. These phones, which operate on 49 MHz, are really nothing more than radios. And anything that's on radio is fair game for a scanner. Cordless phones, however, are not the only thing on 49 MHz. In fact, the space between 49.600 and 50.00 MHz is crowded to overflowing with low-power personal communications devices. These range from little headset/microphone combinations that are marketed to hikers to walkie-talkies for the kids. Probably the most amazing -- and revealing -- device on 49 MHz is the baby monitor.





Baby monitors are used by doting parents who want to be able to keep an ear on baby while they go about other things in other parts of the house. One part of the set, a transmitter with a microphone, is plugged into the wall outlet and left in baby's room. It picks up every sound that junior makes and transmits it to the receiver, which stays with mom and dad. Remember that baby monitors, while having to stay within the FCC's rules for low-power devices, must also get the job done. That job is to pick up everything. No mother or father would want to miss the sound of a child choking and no manufacturer wants to face the lawsuit stemming from the failure of its baby monitor to adequately pick up sounds or transmit them. And so, not only do most baby monitors push the limit for allowable power but most are also fitted with very sensitive microphones that acts as little sound vacuum cleaners. A snort here, a belch there. Baby turns over and goes to sleep. It's all in a day's work for the baby monitor that never sleeps



-- or often, is never turned off, either. It's always there, dutifully sucking up sounds. Like the sound of the TV going in the living room. Or when mommy and daddy get into an argument about daddy's drinking. And then when mommy and daddy kiss (and kiss and kiss and kiss) and make up after they're done arguing about daddy's drinking. Each and every word and sound is picked up and transmitted to the baby monitor receiver --- and every scanner within a couple of miles.

As far as frequency allocations go, baby monitors do not seem to be required to be on the same channels as cordless phones although that's a good place to start looking. If you have every spun through the first ten frequencies for cordless phone handsets (49.670, 49.770, 49.830, 49.845, 4.860, 49.875, 49.890, 49.930, 49.970, 49.990) -- accidentally, to be sure -- you may have already stumbled onto a baby monitor and not known it. If your scanner stopped on a frequency but there was no sound, it could be a baby monitor. Instead of moving on, stick with it a few minutes. If at any time you suspect that you are listening to a cordless phone, however, turn off your scanner immediately. Monitoring cordless phones is a violation federal, state and some local laws.

Remember that baby monitors are not always pulsing with



voices. Sometimes the signal that they're transamitting is a subtle as just the air in the room; breathing, rustling, footsteps, or muffled voices. Stay with it. Things may get clearer. It's quite possible that, if you listen long enough, things will also get hotter.

One person correctly called the idea of using a baby monitor the privacy equivalent of shooting yourself in the foot. It is indeed, incredible, that a person would put something that acts very much like a surveillance bug in their home, transmitting their private world to the neighbors for very public consumption. It shouldn't be shocking though. There's been plenty of media publicity about the "dangers" of talking about private matters on cordless and cellular phones. But it doesn't seem to have had any effect on the people in my neighborhood.

Cell Phones On The Air

It used to be that you needed a scanner capable of picking up 800 MHz in order to monitor cellular phone calls. Now all you need is a shortwave radio. Someone -- no one knows who -- is tape recording cellular phone conversations and broadcasting the juiciest ones around the world on 6955 kHz. The station, which uses the call letters, CELL, says it's the cure for scanners with blocked cellular coverage: "We're the automatic 800 MHz scanner modification."

The station does not operate on a regular schedule (it is an unlicensed pirate station) but has most often been heard around 11 PM eastern time. Watch what you say on your cell phone. Not only could some geek with a scanner be listening. There's a good chance that the whole world is tuned in!

That's it for this edition of Personal Communications. Remember that monitoring the things mentioned in this column may be in violation of federal, state and some local laws. We encourage you to read and enjoy this column but not to actually monitor the frequencies/devices described in this column. See you next issue.

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Mobile Data Terminals Scanner Friend or Foe?

by Professor Gene Hughes

SCANNER SCHOOL

As a Specialist Reserve Officer with the Los Angeles Police Department, I often find myself being a passenger in a police car. On these occasions, I try to arrange to sit in the back seat. When I sit up front, I invariably wind up with at least one new bruise from all of the electronic equipment crammed in up there: Radio control head, Converta-Com, vehicle locator, light and siren controls, and public address system.



However, the most prominent piece of gear is the mobile data terminal (MDT). These systems are an integral part of modern computerized dispatching. The various manufacturers supply this unit in different configurations, but basically it's a computer keyboard and screen, operating on a wireless network. Some newer models have touch-screens. Contrary to what many believe, the primary purpose is not to foil scanner users: it is a more efficient and accurate way to handle messages.

I'll use LAPD as an example. Years ago, the Department printed a "hot sheet" twice a day. This was a list of license plate numbers of all outstanding stolen vehicles. The hot sheets were distributed as quickly as possible to all units. Two problems. Where once the list was a single page, over the years and as crime increased, the list ran several pages and was unwieldly to use. If a car was stolen between printings, it could easily escape the attention of an officer.

If an officer stopped a suspicious person on the street, he/she would radio in a description. The dispatcher would phone the records department, where a clerk would comb through paper files looking for information. If the subject was from outside of the area, a couple of phone calls might have to be made. At the same time, the dispatcher would telephone Sacramento to check on the vehicle license number. These procedures might require thirty minutes or more before the officer in the field was advised that the subject either had no record, or was wanted. Many criminals slipped through the net because officers were reluctant to spend so much time checking out every suspicious person they saw.

You probably know how the MDT has changed all of that. The officer types in the description of the subject and the license number. The central computer checks all possible sources of information nationwide and advises the officer--in just seconds--of the subject's status.

Another benefit is accuracy. For example, in Los Angeles officers always had a problem with "Hope St." and "Holt St." They sound the same. Frequently, officers would get the address of a radio call mixed up.

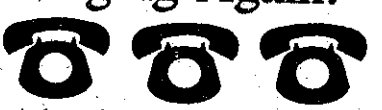
One question we get all the time: "How can I receive MDT messages?" Unless you have a properly programmed MDT, you can't. Each manufacturer uses proprietary software. In addition, each message is coded with a specific address. In a large system, you would never be able to read every message, as they come in too quickly. If your receiver (MDT) had an address, you would miss all the other messages.

Most law enforcement systems use a separate radio channel for the MDT. However, the Ericsson (formerly GE-Ericsson) trunked system is transparent to MDT transmissions: The regular trunked channels are used and a separate radio is not required. The officers do not hear the MDT data.

Once limited to law enforcement, MDTs are now used in many businesses.

That's it for this issue, students, but remember you can E-mail me on Prodigy (ccrg84d@prodigy.com) or America On Line (scangene@aol.com).

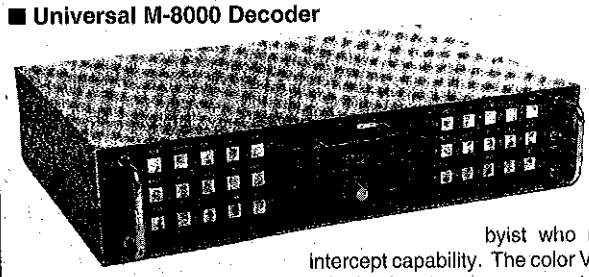
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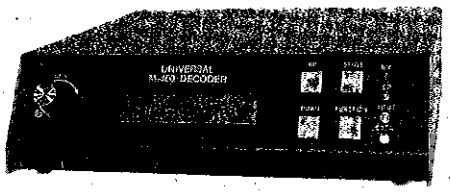
SOPHISTICATED MONITORING EQUIPMENT FROM UNIVERSAL

■ Universal M-8000 Decoder



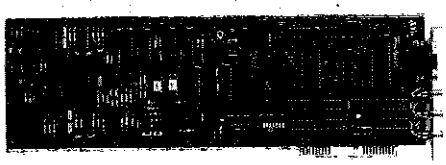
The professional-grade M-8000 was designed primarily for the military, commercial and diplomatic user, but can be used by the hobbyist who requires maximum intercept capability. The color VGA output includes a spectral display and simulated tuning scope plus five tuning bars. Modes currently include: **CW, Baudot, SITOR A & B, ARQ-M2 & M4, ARQ-E & E3, ARQ6-90, ARQ-S, SWED-ARQ, FEC-A, FEC-S, ASCII, Packet, Pactor, Piccolo, VFT, ACARS, POCSAG** and **GOLAY**. Plus display modes for: Russian Cyrillic, Literal and Databit analysis mode. Breathtaking **FAX** images to VGA monitor or printer. 115/230 AC 50/60 Hz. Please contact Universal for full specifications on this military grade device. Monitor optional. *#0085* **$1349.00** (+shipping)

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Forget the limitations you have come to expect from most "readers". The self-contained Universal M-400 is a sophisticated decoder *and* tone reader offering exceptional capabilities. The shortwave listener can decode: **Baudot, SITOR A&B, FEC-A, ASCII** and **SWED-ARQ**. Weather FAX can also be decoded to the printer port. The VHF-UHF listener will be able to copy the **ACARS** VHF aviation teletype mode plus **GOLAY, POCSAG** and **Super POCSAG** digital pager modes. Off-the-air decoding of **DTMF, CTCSS** and **DCS** is also supported. Big two-line, 20 character LCD. The M-400 can even be programmed to pass only the audio you want to hear based on CTCSS, DCS or DTMF codes of your choosing. The M-400 runs from 12 VDC or with the supplied AC adapter. No computer or monitor is required. The American-made Universal M-400 is *the* affordable accessory for every shortwave or scanner enthusiast. *#0400* **$399.95** (+shipping)

■ Universal M-1200 Decoder Card



Turn your IBM computer (or compatible) into a powerful intercept device! The Universal M-1200 Decoder Card requires just one full-size slot in your PC. Reception modes include: **Morse, Baudot RTTY, SITOR A/B, FEC-A, ARQ-M2, ARQ-E** and **ARQ-E3** plus **ASCII and Packet**. VHF enthusiasts can copy **ACARS** aviation mode, **POCSAG** and **GOLAY**. Advanced RTTY DXer's will appreciate the *Databit* and *Literal* modes, helpful in protocol identification and decryption. The video quality of your FAX intercepts will amaze you. Advanced FAX imaging includes false-color and zoom features. FAX images as well as text traffic can be saved to disk. Operation is easy through on-screen menus, status indicators and help windows. A *datascope* feature operates in both RTTY and FAX modes. The M-1200 comes with an informative manual and software on a 3"" 720K disk. Requires *PC* computer with VGA monitor. *#1200* **$399.95** (+shipping)

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Simple Scanning Projects

By Ben Millburn
NV2 DEC

Hearing your base model all over the house

If you've got a base model scanner, you know that it's got one main drawback. It's not portable. That means that you have to turn the volume up to ear-splitting levels so that you can hear it in other rooms of the house. This is not always appreciated by other family members who may or may not have a deep, abiding, desire to hear about a 4-car pile-up out on the interstate.

The two easiest solutions are almost always immediately rejected by scanner listeners. 1) Stop scanning altogether and get a real hobby like sewing felt bunnies on children's clothing. 2) Divorce the spouse who doesn't like scanning. A person who doesn't like scanning is someone with a serious personality disorder. For the sake of the kids, end the relationship now.

You could go out and buy a handheld. After all, they're not all that expensive -- and the features! If you decide to go this route, there's no need to read further. Go directly to one of the advertisements in this edition of *National Scanning* and get yourself the best. Just don't tell the spouse. Be a man. You wanna end up spending the rest of your life sewing felt bunnies on children's clothing?

There is yet another solution. The hard way is to go the Mark "The Ultimate Scanner" Swarbrick route. Mark wired speakers into every room of his house and connected the entire rat's nest to his state-of-the-art radio room. It's a little time consuming but it does work. Good luck selling a house with 142 speakers, though.

The best idea -- in our opinion -- is the use of an FM transmitter.

There are a couple of ways to go here. Radio Shack sells an inexpensive FM wireless mic (catalog #33-1076) that goes for $19.95. The mic picks up whatever you put it near and broadcasts it to any FM radio in the area. The unit is fully assembled and all you do is turn it on and place it near the scanner's speaker. The range is about 200 feet. The next step up in quality (and range) requires the use of a soldering iron (or knowing a friend who can use a soldering iron). Get one of Ramsey's stereo FM transmitter kits. The basic unit, the FM10A, goes for $34.95 plus 5.00 shipping (National Scanning 610-273-7823). It takes about an hour or so to put together. Once completed, you plug the scanner into it and, like the FM wireless mic, it transmits your scanner's audio to any FM radio. It gets out a healthy 1/4 mile. Whichever you use, you could also pick up one of Radio Shack's AM/FM headsets (catalog number 12-921) for $24.95 and listen while you're out and about in the yard or shop.

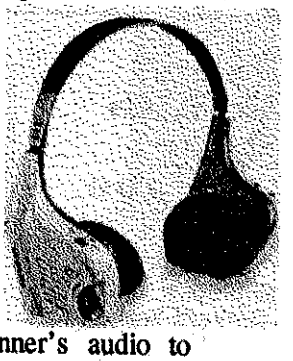
Wireless mic



I also have friends who have used Radio Shack 49 MHz units. You get a pair of TRC-506 Voice-Activated One-Channel FM Hands-Free Headsets for $69.95. Since it's voice activated, all you do is put is near your scanner's speaker. Whenever your scanner breaks squelch, it transmits the audio to the other TRC-506, which you wear on your head. The drawback here, if it is one, is that the scanner audio can only be picked up by another 49 MHz receiver on the same frequency.

You can scan and not be tied to one room of the house, even if you've only got a single base model scanner.

Budget AM/FM headset



National Scanning pays readers $25 if we print their project in the magazine. Send your project ideas to Projects Editor, National Scanning, Box 360, Wagontown, PA 19376 or e-mail natscan1@aol.com



The Final Word

Scanning Works

Joe Nooney

As I was writing this column, a 4 year old girl walked away from her home in rural upstate New York. Since the temperature was in the low 40s with a brisk wind, time became an enemy. Within minutes, police, rescue squads, forest rangers, search teams and scores of firefighters were dispatched. What I heard next demonstrates the power of two-way radio. A school bus dispatcher notified all buses in the area of the missing child and gave her description. At least one company (and probably more) with workers in the area also broadcast the alert. Fortunately, this story has a happy ending as the girl was found 2 1/2 hours later. An 80 year old man spotted the girl near his home and took her in. When he saw searchers on his property he let them know the girl was inside and child and parents were soon reunited.

Many companies around the US participate in "Radio Watch" type programs. Using their two-way radio systems, employees in the field report accidents, fires, medical emergencies and other problems to company dispatchers who in turn notify the authorities. Employees are trained as to what details are needed so that the proper help can be dispatched to those in need. Some companies have gone so far as to designate their vehicles as safe havens for children who are lost or being followed or harassed by strangers. Children who see the decals on the side of one of these vehicles can approach the driver and help will soon be on the way.

"Every law abiding scanner owner is another potential set of eyes and ears for the police."

If you take this community spirit attitude to the next level, think about how many scanner owners there are in the US. Every law abiding scanner owner is another potential set of eyes and ears for the police. At least a few hundred scanner owners knew this little girl was missing and had any of them been driving through the area, we would have been looking out for her. Yes, I know every scanner owner is not pure of heart like we are and scanners are used in the commission of crimes. I'm the first one to say that communications used for surveillance, anti-drug operations, etc. should not be accessible to Joe Scanner Owner. I've even chastised some of my fellow writers for publishing such frequencies. But I strongly feel that every day routine communications should be kept unscrambled and available for hobbyists to enjoy. Let's hope that government agencies will consider the benefit of allowing public safety transmissions to be heard before they rush out and buy the latest scrambling or digital equipment in the interest of privacy.

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R8A	New Desktop	$1069
R8	Trade-Ins wanted, Upgrade now!	

GRUNDIG

YB305	New digital, Special	$129
YB400	All Mode, SWL, Special	$179.95

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R1-15	Blocked 800-900MHz! *No Biz Calls*	$429.95
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R7100A-12	Blocked 800-900MHz! *No Biz Call*	$1515
R9000	FCC qualified users only CALL	$6250

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HF150	Compact 30kHz-30MHz	$519
HF225B	Table-top Europa HF	$1099
HF250	New Tabletop HF	$1199
HF250RS	Remote/Synchro Def.	$1349

REALISTIC/RADIO SHACK

DX394	NEW HF, 15-30MHz, All mode	$369
PRO26	NEW 200ch. WX 25-1300MHz!	$349.95
PRO2037	200ch. V/UHF-800 triple conv!	$204.95
PRO2039	NEW, 200ch. V/UHF-800 with conv.	$229.95
PRO2042	NEW, 100ch. 25-520/760-1300MHz	$399

SANGEAN

ATS202	Mini digital 15SW, AM/FM	$89.95
ATS606P	w/ Rec ANT AC adapt. 45 memo.	$169.95
ATS803	NEW! Digital 20 memories	$89.95
ATS818	NEW low Price, 1-30MHz	$140

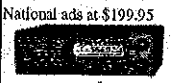
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ICFSW55	125 memo. AM/FM/SW SSB	$349.95
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ICFSW7600G	Our Biggest Seller, all band/SSB	$179
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No Block available to FCC qualified users.
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BearTracker with alert, pre-programmed, select your state, hear the action!!! National ads at $199.95



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Hi-Quality, all mode SWL, AM/FM, cassette, Auto Reverse, Clock Timer, Tape Turn On. FREE KX-2 Headset



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Scanner, .1-1300MHz, AM, FM, FMW, 500 memories, RS232, Opt. Digital 20 sec. Record, Scout compatible, NEW low Price! Reg. $399.95



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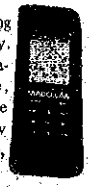
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Lowest Price in U.S.



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Includes: Scout 40, Scanner, Scanner Mode, Interconnect Cable, 1-year extended warranty

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PRO2042

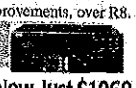
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Trade-Ins
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Demos

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Temp Outside	*	*	*	*
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Humidity Outside	*	*	*	Opt
Rain Fall	*	Opt	Opt	Opt
Time/Date	*	*	*	*
Wind Speed	*	*	*	*
Direction	*	*	*	*
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—Covers 800 MHz, public service, "Ham" radio, aircraft and federal and military land mobile frequencies.



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—Toggle through specified bands for locating new active frequencies.

Highway Patrol
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Full Frequency LCD
—Shows the frequencies being scanned as well as what type of service you are monitoring.

NO OTHER SYSTEM TUNES YOU INTO THE INTERSTATES LIKE THE UNIDEN BCT-7.

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D.O.T., NEWS, FIRE & EMS
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The BearTracker is a multi-channel scanner too—covering low, high, UHF and UHF "T" public service. It's also pre-programmed with a complete frequency list of highway patrol, local police, D.O.T. (Dept. of Transportation) and weather channels. Literally thousands of frequencies are stored in a state-by-state matrix. In addition, the BCT-7 scans U.S. and Canadian weather channels.

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