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Subject: How to find scanner frequencies (long treatise)

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HOW DO YOU FIND THESE SCANNER FREQUENCIES?

Part 1: Books, Magazines, Government Records, and Clubs

by Bob Parnass, AJ9S

I am often asked, "How do you find these frequencies?" Scanner enthusiasts can obtain frequency information from several sources, including books, government microfiche records, or other listeners.

Books

The most convenient source of fire and police frequencies is the Police Call Radio Guide, published each year in 9 regional volumes by Hollins Radio Data, and sold at Radio Shack and larger book stores for about \$7. Police Call is basically a computer printout of FCC license information in the fire, police, local government, and conservation services in two lists: by licensee name within state, and by frequency. Later editions have included a few pages of local airport and nonsensitive federal government frequencies.

I highly recommend Richard Prelinger's 1985 book, Monitor America, published by SMB Publishing, and available from Grove Enterprises for about \$15.(1) Although somewhat out of date, this single edition contains 582 pages of police, fire, local government, news media, sports, national park, and commercial broadcast frequencies for all 50 states. The information was compiled mainly from members of the world's largest scanning club, the Radio Communications Monitoring Association (RCMA). Monitor America contains detailed communications system profiles and precinct maps for major metropolitan areas. Police and fire radio codes and unit identifiers unique to local agencies are listed for several cities. This differs from Police Call, which gives a more sterile, but uniform treatment of licensees, listing even the smallest of towns.

The most readily available source of sensitive US government frequencies is still Tom Kneitel's 168 page Top

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Secret Registry of US Government Radio Frequencies. Published by CRB Research, the 6th edition is available from Grove Enterprises for about \$19. Kneitel's book contains frequency listings for NASA, military, FBI, Secret Service, DEA, IRS, Border Patrol, arsenals, ammunition plants, missile sites, and others in the 25 to 470 MHz range. Since the US government no longer offers frequency information for its own stations, and has never published sensitive frequencies, most of the information in Kneitel's book has been collected from listeners over the years. It is certainly not complete, nor 100% accurate, but is the best book in print for this difficult to obtain information.

A more accurate, but smaller and less comprehensive book is Midwest Federal Frequency Directory. It was published in 1986, and copies are getting scarce. Copies are available for \$10 from:

Scan America
430 Garner Drive
Suffield, OH 44260-1557

Magazines

Although national in circulation, local frequency information is sometimes available in Grove's Monitoring Times and Kneitel's sensationalistic Popular Communications.

Government Records

Every year, the US Government sells FCC license information, in the form of microfiche, floppy disk, and magnetic tape, to the public through the US Department of Commerce National Technical Information Service (NTIS).

These lists contain license information for the industrial (e.g. Illinois Armored Car, Pinkerton's Security, Joe's Towing, etc.), highway maintenance, commercial broadcast, aviation, common carrier, and maritime services, as well as for police and fire. Microfiche is not for the casual hobbyist, but rather for the ardent listener, who can easily spend a few hundred dollars for the fiche, not including the price of a microfiche

reader.

Back in "the good old days," Grove Enterprises sold copies of some FCC microfiche files, and this was much cheaper than buying directly from NTIS. The NTIS objects to people copying their tapes and microfiche verbatim and reselling them, and Grove no longer sells microfiche.

Companies have appeared which are "plugged into" the FCC licensing system and they sell computer time allowing on-line file access. They also sell paper copies of FCC information. Washington Radio Reports is one example. A monthly publication, it lists license applications made to the FCC. A few members of my scanner club subscribe and share the information with me.

Federal Radio Stations - Not Licensed by FCC

Since federal government radio stations are not licensed by the FCC, they are not listed in FCC microfiche. In 1981, a group of 60 radio hobbyists split a \$1300 fee, and obtained 80 microfiche cards of 'sanitized' information about federal government radio stations under the Freedom of Information Act (FOIA)(2). Only 12 of the 21 information fields for each station were furnished. Fields like "Remarks", which indicate the exact usage of a channel (e.g. "Sky Marshall's Net"), and "Bureau", indicating agency subdivision (e.g. TAC within the USAF), were withheld. These 80 pages of microfiche were sold by Grove Enterprises for \$25, but are no longer available from that source. Private entrepreneurs have been known to ask \$125 or more for a set! In a step backward, the US Government insists it will no longer release this type of information - it is now 'classified'(3).

For a reason unknown to this author, the government recently released a 1984 vintage set of frequencies allocated to the FAA. Perhaps this was a mistake, because the information is marked 'unclassified', but all fields are furnished, including some which indicate security related usage. Grove sold this set of 33 microfiche cards for about \$13.

Radio Clubs

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One of the best parts of the hobby is sharing it with other radio buffs. Trading information with other hobbyists about frequencies, communication systems, and receiving equipment is more valuable than a pile of magazines.

In 20 years of being an amateur radio operator, and belonging to amateur radio clubs, I never realized there were any scanner clubs! In 1983, I joined the world's largest scanner club, the Radio Communications Monitoring Association (RCMA).

Founded in 1975, the RCMA is the "first national and international organization of monitor radio listeners." There are several regional chapters which hold regular meetings. Club dues are \$18.50 per year, which includes a monthly newsletter of about 95 pages. Although the focus is on VHF and UHF ranges, there is coverage of HF utility stations below 30 MHz. Club policy precludes printing certain sensitive federal law enforcement frequencies, e.g., Secret Service, FBI, Customs, and DEA.

[Note: This Policy has been changed in August of 1990]
[to publish most such frequencies - Skip Sanders]

Inquiries about RCMA membership should be sent to:

RCMA General Manager
P.O. Box 542
Silverado, CA 92676
USA

One club which does print sensitive federal frequencies is the All Ohio Scanner Club. I enjoy its bimonthly publication, The American Scannergram, which is about 60 pages long. Although concentrating on Ohio, there is frequency information from other states, and plenty of product reviews and scanning tips.

Annual dues are \$15 and more information is available from:

All Ohio Scanner Club
50 Villa Road
Springfield, OH 45503

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The Scanner Association of North American (SCAN) is a scanner organization with a post office box near Chicago. Having no elected officers or meetings, SCAN is not a club in the traditional sense, rather it was started and operated by an advertising agency contracted by the manufacturer of Bearcat scanners. The membership fee includes a subscription to the magazine Popular Communications.

Membership information is available from:

Scanner Association
of North America
P. O. Box 414
Western Springs, Illinois 60558

Do Your Own Sleuthing

The real challenge is deriving new spectrum usage information. Sometimes it requires several days of listening, taping, and compiling fragments of information. Other times, the frequency information is there for the taking - without hassle.

More about sleuthing will be discussed in Part II of this article.

HOW DO YOU FIND THESE SCANNER FREQUENCIES? Part 2: Sleuthing

by Bob Parnass, AJ9S

Part I of this series discussed how scanner enthusiasts can obtain frequency information from books, government microfiche records, or other listeners. This installment discusses digging up new frequencies on your own.

Do Your Own Sleuthing

There is a challenge in deriving new spectrum usage information on your own. Sometimes it requires several days of listening, taping, and compiling fragments of

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information. Other times, the frequency information is there for the taking - without hassle.

You can approach from two directions:

1. Listen first: Monitor a frequency or frequencies, and determine who's transmitting and what purpose the channel serves. Once you identify the user, log the information.
2. Compile first: Take advantage of opportunities, such as examining the frequency label on a guard's radio, or reading the FCC license hanging on the "radio room" wall(4), to compile frequency lists, then monitor the listed frequencies to confirm that they are really in use.

Most listeners use a combination of both approaches.

What Makes Station Identification Difficult?

In most instances, FCC rules require radio users to identify their operations with FCC assigned call letters. Police and fire departments, especially those with trained radio dispatchers, seem particularly conscientious about station identification. Like commercial broadcasters, many of these stations identify on the hour and the half hour.

Some repeater stations have Morse code identification circuits which transmit call letters on a periodic basis, insuring compliance with FCC rules.

On the other hand, over 75% the industrial radio stations monitored within the last year ignore the FCC regulation, making it difficult for a listener to identify a station. Some stations may operate for years using the nondescriptive "base to mobile 2" or "Joe to base" protocol. One rung up the hierarchy are stations that identify using something like "Acme base to 107", giving the listener a clue for his log. If call letters are given, they are often rendered unintelligible by operators who fail to enunciate. The failure to identify is more likely due to sloppiness, rather than any attempt to hide station identity.

While not regulated by the FCC, federal government radio

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stations vary in the extent to which they identify their transmissions. Some federal stations do not have call letters. A nearby paging transmitter periodically transmits a voice recording announcing, "This is the Army Joliet Ammunition Plant." What more could a listener ask for?

Aside from a scanner and antenna, the most useful piece of equipment for sleuthing is a voice actuated (VOX) cassette tape recorder. You don't need a high fidelity model or anything fancy. I use two modified Radio Shack CTR-75 recorders, a recently discontinued model.

VOX recorders allow one to compress a whole day's worth of monitoring onto a single tape. I often leave a recorder "armed" and connected to a scanner at home while I am at the office or doing something else. When call letters are mumbled, I can play and replay the tape until I hear and understand them.

The following examples illustrate techniques I've used to derive new frequency information.

Examine the FCC License on Premise

I have found the actual FCC radio license, complete with frequency assignments, hanging on the walls of places like the Bell Labs security office and the guard shack at Waste Management's Greene Valley Landfill in Naperville.

Examine the Labels on Radio Equipment

Frequency information is engraved on labels on the back of many walkie-talkies, or inside the battery compartment, like in the Motorola HT220 model. Most pagers have labels on the bottom or inside. Like passwords taped onto terminals, it's not uncommon to find Dymo tape labels embossed with frequencies or call letters glued to the front of base stations.

You can make your own opportunities for eyeing the equipment or take advantage of "open house" events. If information is displayed publicly, then a reasonable person could assume it's not government secret.

- At the annual Glenview Naval Air Station open house,

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I examined a military manpack radio being used by dispensary paramedics. The radio's tuning dial was set at 34.15 MHz.

- The Illinois Army National Guard displayed two armored personnel carriers at the local county fair, each equipped with VHF-FM and HF-SSB transceivers.

In addition to a tuning control (VFO), the VHF-FM radio had a set of channel select pushbuttons, much like those in a car radio. I asked a guardsman a few questions about the radio, and he demonstrated the channel preset feature. A panel above the channel pushbuttons was labeled with the frequencies: 32.055, 34.45, 35.35, 40.55, and 40.60 MHz.

- An Army National Guard UH1 helicopter was displayed at the Marseilles armory "open house". The public was permitted to climb aboard, and observe the instrumentation and radio gear. A channel plate on the instrument cluster listed the following frequencies: 226.3, 229.4, 233.2, 242.4, 252.9, 255.4, 257.8, 269.2, 284.6, 291.0, 307.0, 335.6, 337.4, 348.6, 357.4, 360.6, 388.0, 388.9, 392.1, and 395.8 MHz.

Hobbyists are urged to exercise a modicum of restraint and good judgement. In New Jersey, a radio technician/hobbyist called to service a transmitter in a county building, noticed a new unattended repeater installation in the same room. Being curious about what frequency this repeater was on, he opened the access door to copy the frequencies from the radio's crystals. It turns out that this radio belonged to the US Secret Service, and opening the access door could have activated a "tamper alarm"!

The tech was skating on thin ice. He had nobody's permission to tamper with that equipment.

Equipment to Determine Frequency Usage

If you don't know the exact frequency, but have a general idea of the range (e.g. 150 - 152 MHz), use your scanner's "search" mode. Most programmable scanners afford the ability to search between two frequency limits set by the user. Three models, the ICOM R7000, Bearcat

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250, and Regency K500, have the ability to automatically store active frequencies found during an unattended search operation.

To find the frequency of a hotel communications system, one fellow installed his Bearcat 250 in his car and parked in the hotel lot, leaving the scanner in the "search and store" mode. He left the antenna disconnected so the scanner would only respond to a transmitter in the immediate vicinity.

Test equipment can aid in the quest for new frequency information. I've used a spectrum analyzer connected to an outside antenna, and a frequency counter for close-in work.

How Can I Determine To Whom I'm Listening? - An Example

While scanning the industrial frequencies in the 150 MHz range, a van driver was overheard communicating with "base" while driving around my town. The stations involved never used FCC call signs -- this would have made life a lot easier for me, and legal for them!(5)

Transmissions were short and infrequent, so it was decided to tape record all transmissions on this frequency for several days to determine the station's identity.

During daylight hours, a modified Regency K500 scanner was left tuned to the target frequency, connected to a cheap tape recorder through a home built interface. Using a carrier operated relay, the tape interface supplied power to the recorder only during radio transmissions, so a day's worth of traffic could be compressed into a 45 minute tape.

Each day, the tape was played back and notes on names, locations, and activities mentioned during the day's transmissions were taken. The van driver appeared to be making daily stops at a local bank and two shopping malls. A Walgreen's store seemed to be the only stop at one mall. A few times, "base" ordered the van "back to the Training Center." There were frequent references to "guests checking out", "dropping a guest off", and "instructor[s] missing a class". At times, "base" spoke

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with "security", who must have been using a walkie-talkie as his signals weren't strong enough to hear.

Was this a hotel? Calls to the three local hotels revealed that none provides shuttle bus service to the shopping malls. A call to the Walgreen's, inquiring about bus service to the store, drew another blank. During my shopping trips, I began to pay closer attention to vans with antennas driving through the parking lots.

I was leaving the mall one day, when a week's effort paid off. A maroon and white van, equipped with a VHF-Hi antenna, was dropping shoppers off at Walgreen's. A sign on the van's door read:

XYZ Central Training Center(6)
Lisle, Illinois

I watched the driver pick up a microphone, and listened to him on my portable scanner checking back with his "base".

All the pieces fit: the "guests", the "classes", the "instructors". Mystery solved; I had been monitoring the customer training center for a large computer manufacturer. The training center has hotel rooms and dining facilities to accommodate students from out of state. As a convenience, shuttle van service is provided to local shopping malls.

Summary

Through books, government records, and radio clubs, scanner listeners can make use of frequency information compiled by others. Two-way radio users often fail to identify their transmissions properly, making it more difficult for listeners to know who they are monitoring. By examining radio equipment labeling, and monitoring and taping transmissions, scanner enthusiasts can unearth new information.

Notes:

1. Grove Enterprises, PO Box 98, 140 Dog Branch Road,

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Brasstown, NC 28902. tel (704)837-9200

2. See "The Government Giveth, the Government Taketh Away", by Richard Prelinger, in Monitoring Times, July 1982.
3. See "AFIO and the FOIA", by Bob Grove, in Monitoring Times, September 1982.
4. Readers are urged to abide by the rules of good taste and local laws in the quest for frequency information. Don't trespass, wait for an invitation.
5. One may use FCC license microfiche, described in Part I of this article, to identify stations using call letters.
6. XYZ is a pseudonym for the actual licensee name.

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