The Capitol Hill Monitor

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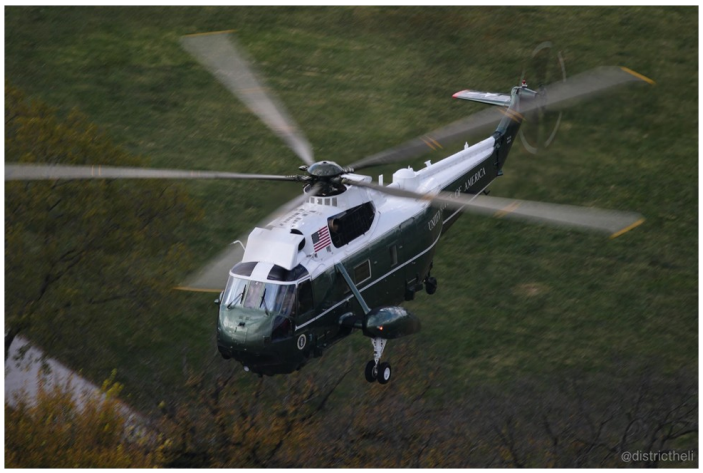
February 2022

THE SCIENCE OF HELICOPTER SPOTTING

by @districtheli



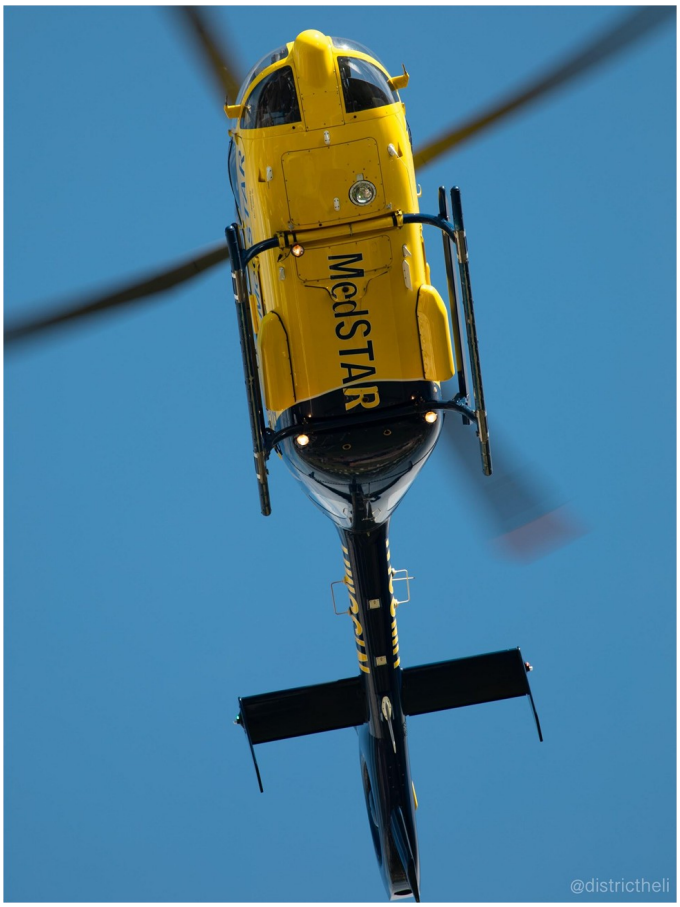
(VH-3D "Marine One" © DistrictHeli. 25/10/22)

The highly unique nature of helicopters operating in the Washington, D.C. area often means that the best method of spotting them requires an integrated approach that can be simplified and made more complex according to one's liking.

At its simplest form, watching the sky on any given day and noting the helicopter's shape and sound is enough for a successful "spot." Referencing a chart of D.C.'s helicopter routes raises the odds of success. And at the next level, reliance on tracking apps like Flightradar24, ADSB-Exchange and FlightAware adds to the precision of identifying helicopters. Yet these apps, charts, and use of sight and noise fall short on the effectiveness of radio communication for aircraft identification.

A tune to DCA's helicopter frequency of 134.350 brings a number of advantages. First, it provides a real-time picture of active helicopters within the 15-mile radius of DCA tower. Second, it offers a projection of where helicopters will be in the future, as pilots announce their desired routes on the frequency. This helps in pre-positioning to await the arrival of certain helicopters to spot as they fly nearby.

Third, radio chatter enables identification of active helicopters absent on flight-tracking apps mentioned above. For example, FBI helicopters and those flown by the HMX-1 Presidential Squadron almost never appear on these apps. Yet through their unique callsigns, "YETI" for FBI, "Nighthawk" and "Marine One" for HMX-1, these helicopters are identifiable as they talk to the tower.



(EC-135 © DistrictHeli. 05/08/2021)

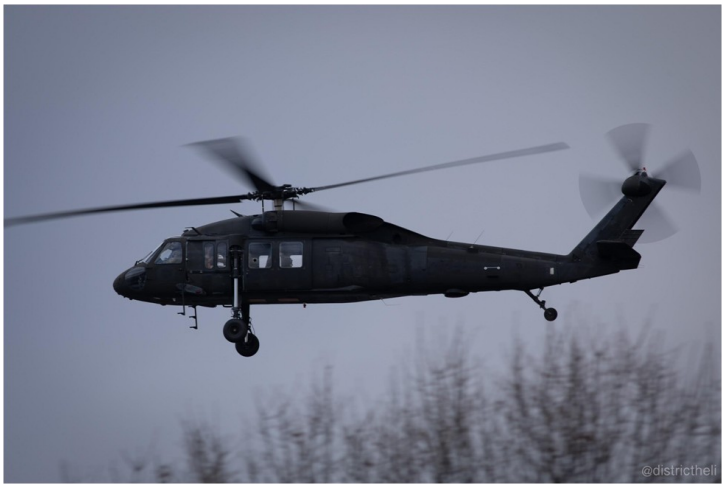
My most preferred method is a combination of radio comms and flight-tracking apps. Handheld VHF aviation radios such as Sporty's PJ2 are very reliable within 10-15 miles of DCA, and work even better when transmitting aircraft are within line of sight.

A useful feature of apps like FlightAware is the creation of alerts for specific aircraft and the ability to track the helicopters which are anticipated to contact the tower before entering DCA's airspace.

D.C. helicopter routes mostly overfly the Anacostia and Potomac rivers, the Capital Beltway and near major hospitals. A phenomenal place to spot is Route 1

(helicopter Route 1, not U.S. Route 1!) between Hains Point and Key Bridge. It's here where helicopters fly at altitudes below 200 feet. No special equipment is needed for a decent “spot” along this section of Route 1. A smartphone in video mode is fine.

Telephoto lenses ranging from 200-600 mm are often a favorite for spotters preferring to remain in their homes, as they can easily point their cameras at far-flying helos.



(YEH-60B/H-60A Ⓒ DistrictHeli. 01/18/22)

Rarity is a main interest. Most proud “spots” include an extremely rare and odd looking Blackhawk used to test sensory equipment that flew over the Tidal Basin just last month.

Big changes are also anticipated in the government V.I.P. helicopter scene that will boost the rarity value of two D.C. area helicopters soon to be retired. The majestic VH-3D, most associated with "Marine One," will be replaced by the newer and more powerful VH-92, after 60 years of incident-free presidential airlift.

The obnoxiously loud (even by helicopter standards) blue-and-white-top Air Force Hueys are to be replaced by a militarized version of the “AW-139” flown by Maryland State Police.

These two helicopters will receive increased attention over the next year or two.

Final tip, keep an eye out for public announcements on government exercises involving unusual helicopter activity. They are often great opportunities to observe helicopters outside their usual routes and can be quite the show to watch. Here are some useful links:

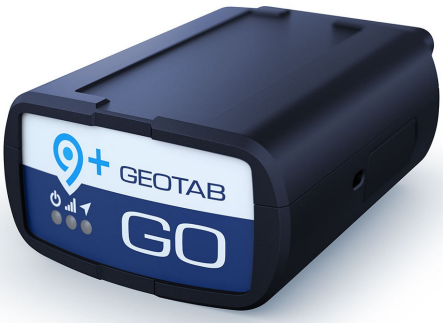
- CopterSpotter2021 Report, by HelicoptersofDC
- PJ2 Handheld COM Radio
- DC Area Helicopter Route Chart
- ADSBExchange

TRACKING SNOWPLOWS

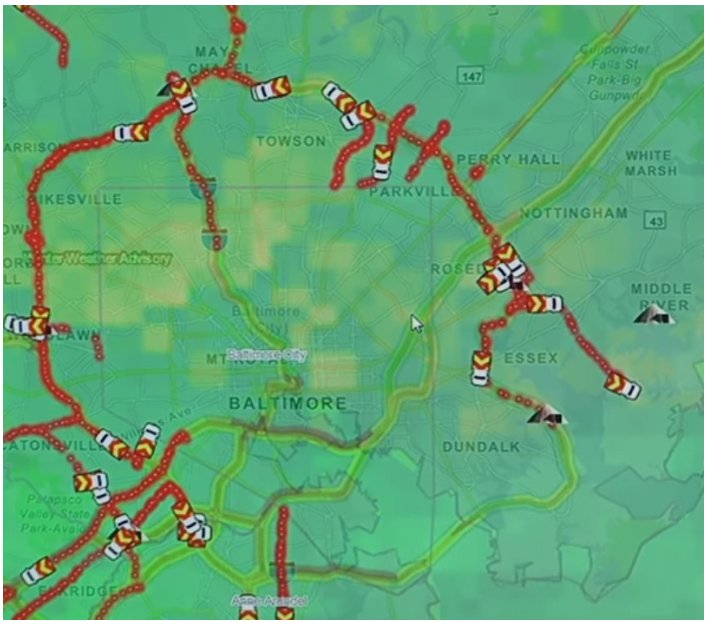
by Alan Henney

Highway departments in D.C., Maryland and Virginia all host websites that allow the public to track the location of snowplows using similar technology. Most of the devices attach to the vehicle's OBD II diagnostic port. In addition to location, they can provide speed, idle time and other details.

Shanteé Felix from Maryland’s State Highway Administration says the Maryland trucks use Geotab GO9 modems.



These devices have been installed in the agency’s winter operations vehicles. The modems report location data back to SHA using 5G cellular and then the data is displayed on an ESRI Arc GIS dashboard application, Felix said.

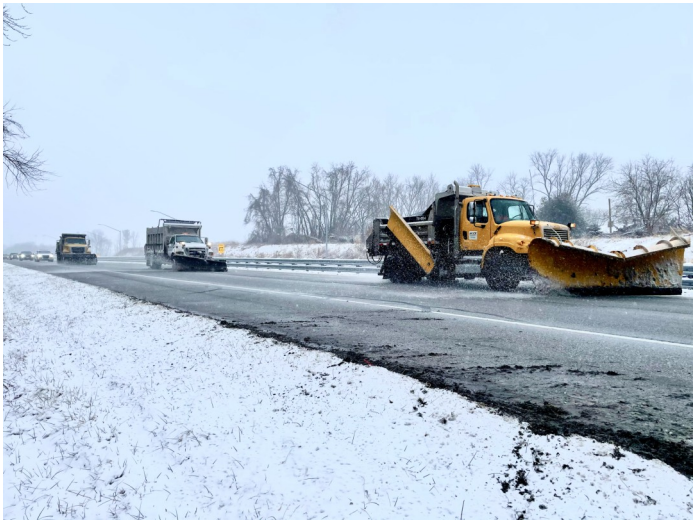


This is how it appears on the snowplow tracking website. Here is a SHA YouTube video explaining how it works.

The D.C. Dept. of Public Works uses Geotab as well, says Nancee Lyons, DPW spokesperson. But in Virginia, Connor Templeton, VDOT spokeswoman, says the agency contracts with CalAmp, the same company that owns Lojack.

Here are the snowplow trackers in our region. These maps frequently show highway trucks even if they are not engaged in snow removal.

- District of Columbia
- Maryland
- Virginia



(photo: Maryland SHA)

Snowplow two-way radio systems

As far as monitoring the snowplow two-way radios, in most of Maryland, SHA crews use the FiRST network. But in the D.C. suburbs, where FiRST is not fully implemented, they use the Montgomery Co. and Prince George's Co. systems. In Southern Maryland they still use the old low-band radios (47.02, 47.1, 47.12, 47.14, 47.2, 47.26, 47.32 and 47.4).

D.C. DPW crews primarily rely on mobile phones for communication. Lyons says they also use Microsoft Teams to engage staff during snow events.

VDOT still has its VHF low-band radio system used internally in addition to a group of incident response vehicles that have STARS radios which allows communication with Virginia State Police. The VHF channels are: 45.02, 45.1, 45.3, 45.76, 47.04, 47.08, 47.12, 47.2, 47.22, 47.24, 47.28, 47.3 and 47.34.

CHANGES FOR PGFD DISPATCHING!

Earlier this month, Prince George's County Fire/EMS announced plans to start using *Locution*, an automated synthesized voice for dispatching similar to what is used by other area jurisdictions.

With the transition to the new system, the county is swapping the first and second talkgroups in the primary fire/EMS zones. This assures a human monitors the first and last (16th) talkgroup in the zone for any emergencies. *Locution* will operate without human interaction on the second talkgroup in the zone.

There still will be only one countywide main dispatch as there is today, says Wayne McBride, Public Safety Communications deputy director. "It will be in position 2 instead of 1 but won't matter if you are on C2 or A2 or D2 as it is today on 1," he points out.

EMS Ops has always been split by design, he explains, but staffing keeps EMS Ops 1 and 2 (1135 and 1137) patched most of the time. But that will change with Locution as this frees up a dispatcher, potentially allowing for separate EMS dispatchers for north and south while the Locution runs automatically on dispatch.

The VHF (155.685) simulcast will stay patched as it has been used with no changes, McBride adds.

Two new PGFD talkgroups were activated this month: 1151, which is patched with 1137, and 1153, which is patched with 1133.

THE MONTGOMERY AMATEUR RADIO CLUB

by Louis Wilen (W3VVV)

One of the largest amateur radio clubs in the DC area is the Montgomery Amateur Radio Club, or MARC for short. MARC operates a variety of analog and digital repeaters on the 6 meter, 2 meter and 70 cm bands. The MARC repeaters are available for use by any licensed amateur radio operator.

On the 2-meter band, MARC operates a sophisticated "voting" repeater system with multiple receivers and a central transmitter. By operating multiple receivers, reliable communications is provided throughout Montgomery County, Northern Virginia and Washington, D.C.

Amateurs with high antennas and more powerful transmitters can even access the MARC repeater system from far outside Montgomery County, sometimes as far as 60 miles away. The MARC 2-meter repeater can be heard on 146.955 MHz (narrowband FM).

Amateur radio, as codified in Title 47 CFR Part 97.1, has a federal mission of emergency communications. Accordingly, MARC members are fully embedded with federal, state and local agencies and first responders within the community, providing critical voice and data information as needed.

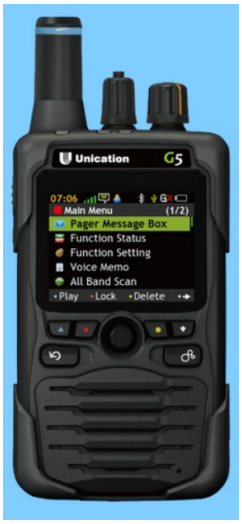
MARC members also volunteer to provide communications support as a public service to large crowd events such as the Marine Corps Marathon. To train the next generation of amateur radio operators, MARC runs free amateur radio classes and operates a free FCC-authorized licensing test service.

MARC holds meetings twice each month in Rockville. The meetings are open to all amateur radio operators and to anyone who is interested in becoming an amateur radio operator. (Currently, the meetings are held via Zoom due to COVID-19.) The meeting schedule and access information can be found on the MARC website.

USING A UNICATION PAGER AS A SCANNER RADIO

by Kenneth Fowler (N4VKF)

Unication is a company headquartered in Taiwan. It was founded in 1991 and specializes in the development and manufacturing of advanced communications products to include voice pagers and two-way radio communications systems. The US branch office/ distributor is in Arlington, Texas.



The Unication G4/G5 pager is a software-defined radio. The Unication receivers were built for public safety primarily for conventional and P25 incident paging. They have been adapted for use by scanner radio enthusiasts because they are great at solving the problems encountered with P25 trunking simulcast systems.

Most digital scanners today have difficulty decoding digital simulcast systems because signals from multiple transmitters arrive at the scanner at different times. This is known as simulcast distortion or bit error. The scanner cannot put those signals back together sufficiently to allow the digital-to-analog converters in the scanner to decode properly.

When used as a scanning receiver, one programs the Unication with the desired talkgroups used on the system along with site info including control frequencies and a few other necessary technical parameters.

In operation the radio works much like regular system radios. It finds the active control channel and locks in. If there is traffic on any of the programmed talkgroups the radio will hear it. Like system radios it will display the radio ID as well as the name programmed in for that channel. When scanning, the radio will display the site ID between radio calls. It will also scan any conventional P25 channels for talkgroups that are used on that system.

Unication makes many different models. This article's focus is on the Unication G4 and G5 models. These are the most popular with scanner radio enthusiasts. Unication does make other variants of this unit labeled G2 and G3. These are VHF and UHF models only.

What modes can the G4/G5 receive/decode?

- Analog FM, NFM
- Digital voice over analog
- DMR
- P25 trunking
- P25 conventional

The G4 is a single band (700/800) receiver only. But the G5 is a dual-band receiver designed specifically for the most popular bands used across North America. It is offered in two different dual-band configurations (700/800 with either VHF or UHF). The UHF comes in four different ranges. Here are the options.

Can you really use a G4/G5 pager as a scanner?

This is a widely discussed topic! The G4/G5 pagers are not scanners in the traditional definition of a scanner. These devices will scan talkgroups and/or receive conventional frequencies that are programmed into a channel zone. You can set up zones on the pager any way you wish but can't mix both trunk systems and conventional systems on the same channel knob.

You can also set up the pager in monitor mode to receive all traffic through that trunk system. Each channel knob can be programmed to receive a priority talkgroup of your choice. If the trunk system already has system priority channels you can set up the pager to mimic those settings.

What are the advantages?

- Unication pagers are built to higher standards than scanners and are more durable and water tight.
- Unication pagers do not affiliate with the radio system and do not require system keys!
- Excellent at mitigating the problems with digital simulcast trunking systems.
- Easily replaceable Li-on battery
- Firmware updateable via download.
- Compact size!

What are the disadvantages?

- Can only be programmed with windows-based software
- Pagers are more difficult to program then normal scanning receivers
- They don't scan talkgroups and channels like regular scanners
- While earlier firmware had no "hold" function, it became available with firmware 1.31. A temporary "skip" feature was also included with this update.

How easy is it to program?

These devices can be difficult to program. If you are not familiar with programming a codeplug for an amateur radio, DMR or other commercial radio then there will be a definite learning curve. Programming is not impossible, but you may need assistance.

Users do and will share programming files. There are Facebook and Radio Reference communities devoted to this endeavor. There is also a new function that will allow you to download from Radio Reference the data files needed to program these pagers.

Review: Check out Session 51 of the Scanner School Podcast for a review of the G5 pager.

More info: www.UnicationUSA.com

FUTURE CHM GET-TOGETHERS; NEWSLETTER ARTICLES WANTED!

We normally would have an in-person winter lunch about now but have decided to schedule another virtual program for this Sunday. We have a joint Zoom meeting scheduled with Montgomery Amateur Radio Club and featured guest speaker is Ryan Keenley from the FAA (see below).

We are anxious to resume in-person get-togethers and are looking for convenient locations around the Beltway where we can hold our meet-ups for about 25 persons at a reasonable cost. Please help with suggestions and contact Ken or Alan with recommendations.

Would you like to write an article for CHM? Most any radio-related topic would work. Short articles are perfect! We would like to get the newsletter out more often, perhaps quarterly, but need articles. Please send along your ideas.

Anybody who has connections for any tours, please let us know.

FAA GUEST SPEAKER THIS SUNDAY, FEB. 27!

The Montgomery Amateur Radio Club has joined with the Capitol Hill Monitors to host Ryan Keenley, manager of the Federal Aviation Administration's National Capital Region Coordination Center (NCRCC), for a joint Zoom session on Sunday, February 27, beginning at 2 p.m.

Keenley, who is responsible for airspace security surrounding the Nation's Capital, will speak to us about air traffic and communications in the Washington area. Here is his impressive bio!

If you have questions you would like him to address, or topics of special interest, please email Alan. There will also be an opportunity to ask questions after the online presentation.

This will be a Zoom session. Link and additional information to join is as follows:

Topic: Ryan Keenley FAA NCRCC
Time: Feb 27, 2022 02:00 PM ET (US and Canada)

Join Zoom Meeting:
https://us02web.zoom.us/j/87472027851?pwd=b3ZWTHBMSGZ1dEVZQmZTZ0k5VEVtdz09

Meeting ID: 874 7202 7851
Passcode: 458294

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Find your local number:
https://us02web.zoom.us/u/krghSzgjw

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This is the 2022 CHM Winter Edition!

CHM ZOOM CHAT SCHEDULED THIS SUNDAY, Feb.27, 2022.

Inside this issue:

Please address all correspondence to Alan. We encourage readers to submit material and write articles that relate to the hobby. All submissions are subject to editing for style and content. When submitting material please make certain we can contact you should we have any questions. We welcome frequency and visitor requests, but please include a reply envelope.

Contact: Alan Henney (alan@henney.com)
6912 Prince George's Avenue
Takoma Park, MD 20912-5414
301-270-2531 (voice) / 425-699-7195 (fax)

The *Capitol Hill Monitor* is the non-profit newsletter of the Capitol Hill Monitors. The newsletter keeps scanner enthusiasts abreast of local meetings, frequency profiles and other topics of interest. Dues are $10 and include 12 issues (back issues cost $1 each). Kindly make checks payable to Alan Henney. Membership will be prorated accordingly in the event of a postage increase.

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http://zello.com/scandc

CHM HAS GONE PAPERLESS!

The *Capitol Hill Monitor* newsletter is converting to electronic distribution. "Snail mail" distribution will continue for the time being at the current cost of $10 for 12 issues (**please do not send more than $10**!). Since the newsletter is provided at cost, the online version is available for free. To receive the online version, please send an e-mail to alan@henney.com. When the next issue is available, you will receive an e-mail with a link and list of topics for that issue. We welcome your input, suggestions and article submissions.