House Subcommittee on Aviation
of the
House Committee on Transportation and Infrastructure
U.S. House of Representatives

Finding the Right Frequency: 5G Deployment & Aviation Safety

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Testimony of Helicopter Association International

Presented by
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Chairman Larsen, Ranking Member Graves, and Members of the Subcommittee, I want to thank you for holding this hearing on the urgent issue of 5G interference with safety-critical aviation equipment. Thank you for your leadership in defending aviation safety. I also want to express my sincere appreciation for the opportunity to provide testimony today.

I have been involved in aviation for more than 35 years and have flown more than 70 types of aircraft, both helicopter and fixed-wing, military and civilian. I began my aviation career in the US Army, with the majority of my flying done as a special operations helicopter pilot. I later joined the Federal Aviation Administration (FAA), where I most recently served as director of General Aviation Safety Assurance.

I now serve as president and CEO of Helicopter Association International (HAI). As the professional trade association for the international helicopter industry, HAI represents more than 1,100 companies and over 16,000 industry professionals in more than 65 countries. Each year, HAI members safely operate more than 3,700 helicopters and remotely piloted aircraft

approximately 2.9 million hours. HAI is dedicated to the promotion of the helicopter as a safe, effective method of commerce and to the advancement of the international helicopter community.

Throughout my career, I have been dedicated to safety and the continued development and refinement of safe aviation operations.

Serving the Public Good

The unique capabilities of vertical flight—the ability to land and take off from practically anywhere, the maneuverability, and the ability to hover or fly at very low speeds—means we can accomplish missions that no other aircraft can. Another way we differ from fixed-wing aircraft is that our operations are conducted at lower altitudes and at slower speeds.

Every day, vertical flight serves the public good. Our members do everything from air medical, law enforcement, firefighting, heavy construction, utility patrol and maintenance, urban air mobility, and more. And our industry is expanding, bringing onto the flight deck exciting technology such as advanced air mobility and electric vertical takeoff and landing (eVTOL) aircraft.

All over the country, from densely populated cities to oil rigs 200 miles offshore, helicopters are used to save lives, serve and protect American citizens, and support critical industries in demanding environments—and many of those missions are conducted from start to finish without the use of airports.

As just one example of how vertical flight serves the public good, consider air medicine. Helicopter air ambulance (HAA) operators transport roughly 1,000 injured or critically ill patients every day. Up to 50,000 of the more than 300,000 people transported by HAA operators during 2021 were transported from off-airport or unimproved areas—meaning the 5G mitigations proposed to maintain an equivalent level of safety at airports will have no effect on those operations. The loss of a single life because of misguided 5G-related policies would be reprehensible.

5G Flight Restrictions

In carrying out its mission to maintain safety in the US National Airspace System, the FAA has put into place restrictions on helicopter flight operations to mitigate the risk of 5G interference with aircraft radio altimeters. The FAA has communicated these restrictions via two channels: a series of Notices to Air Missions (NOTAMs) and Airworthiness Directive (AD) 2021-23-13.

The FAA uses NOTAMs to define the geographic locations where 5G interference occurs. As of Jan. 27, 2022, the agency has issued 5G-related NOTAMs for 1,904 locations around the country.

AD 2021-23-13 states that when operating in US airspace, the following operations requiring radio altimeters are prohibited in areas defined by the presence of 5G C band wireless broadband interference as identified by NOTAM:

- Performing approaches that require radio altimeter minimums for rotorcraft offshore operations. Barometric minimums must be used for these operations instead.

- Engaging hover autopilot modes that require radio altimeter data.
- Engaging search and rescue (SAR) autopilot modes that require radio altimeter data.
- Performing takeoffs and landings in accordance with any procedure (Category A, Category B, or by Performance Class in the Rotorcraft Flight Manual or Operations Specification) that requires the use of radio altimeter data.

For each mission, an operator must review their Rotorcraft Flight Manual and Operations Specification to determine if the use of radio altimeter data is required by provisions of Title 14 of the Code of Federal Regulations. If a radio altimeter is required and if the mission's flight path would overlap a geographic location identified by a 5G-related NOTAM, then the restrictions listed in the AD apply to that flight.

The first and third bullets impact specific segments of our industry. However, the fourth bullet, which prohibits takeoffs and landings in areas identified by 5G-related NOTAMs, has significant, far-reaching consequences for the rotorcraft industry's ability to conduct missions and provide public services, especially when you consider that prohibition applies to nearly 2,000 US locations.

The issue is not limited to radio altimeter performance alone. According to the FAA Safety Alert for Operators 21007 of Dec. 23, 2021, "a wide range of other automated safety systems rely on radio altimeter data." The agency goes on to note that 5G interference and the ensuing anomalous radio altimeter inputs could cause flight controls, including autopilots, to operate in an unexpected way, which pilots may not detect in time "to maintain continued safe flight and landing."

Alternative Methods of Compliance

To reduce these impacts of 5G interference, the FAA has implemented an Alternative Method of Compliance (AMOC) process. This process evaluates the installed radio altimeter aboard an aircraft and its ability to withstand spectrum interference.

To date, the focus has been on Part 121 carriers, and the FAA has done an outstanding job of streamlining the process to issue as many approvals as they have. We support these efforts for the airlines. The AMOC process is vital to ensure a healthy, viable US aviation industry. Currently the rotorcraft AMOC procedures have not been formally released by the FAA; the process is still being worked on and fine-tuned. We believe it is critical that FAA continue the same level of urgency and commitment, as they have had for commercial aviation, to mitigate operational impacts upon helicopter operations and the rest of general aviation, and the essential services they provide to save lives, protect communities, and support jobs.

The effects of 5G deployment are not limited to the nation's busiest airports, and mitigations by wireless carriers should not be limited to those locations either. As we start evaluating AMOCs for rotorcraft, we must recognize that the airlines' operational environment is vastly different than the one for rotorcraft. An airliner is only in the zone where it could potentially be impacted by 5G interference for a short duration, generally during the critical period of takeoffs and landings. The vast majority of its flight is conducted at high altitudes, out of the range of 5G interference.

Conversely, helicopter operations, which generally take place at much lower altitudes than airline flights, could very well conduct their entire flight within the zones of interference. In addition, while airplanes must take off and land from airports, rotorcraft can utilize a much wider variety of sites, including heliports and unimproved locations such as streets, parking lots, or fields. The voluntary measures proposed by the wireless carriers would provide modest 5G limitations at the surface of public-use heliports, of which there are only 55 in the country. That number is dwarfed by the estimated 6,533 to 8,533 HAA landing sites in the United States, with more than 4,000 being private-use heliports co-located at hospitals.

HAI has partnered with the FAA to maximize the efficiency the AMOC process. Knowing that the FAA would be under immense pressure to approve a large amount of AMOCs, HAI took steps to ensure that critical helicopter operations could be prioritized. In cooperation with the FAA, HAI developed a 5G AMOC Portal, where operators can report how their operations are being impacted by 5G interference. These reports are shared with the FAA, providing the agency with additional intelligence on 5G impacts.

Exemptions

The other avenue to reduce the operational impact of 5G interference is the exemption process. HAI is pleased that the FAA partially approved a petition for exemption that HAI had submitted in anticipation of 5G C band deployment, seeking relief from regulations that require a normally functioning radio altimeter for certain operations.

This exemption allows Part 119 certificate holders authorized to conduct HAA operations under Part 135, subpart L, to continue Part 135 helicopter operations while employing radar altimeters that may not function normally due to 5G interference. The relief will also allow the use of night-vision goggles (NVGs) in HAA operations.

These exemptions are contingent on certain conditions and limitations. All pilots conducting operations under the exemption are required to receive and maintain a record of proper training. Additional conditions for NVG operations include the installation of a movable searchlight and a requirement for pilots or crew members to establish radio contact with ground personnel at a landing site so they can receive and confirm a description of the landing site.

To date, 40 HAA operators have submitted Letters of Intent to use the HAI Exemption. This accounts for 1,206 helicopters in operation, or 97% of the approximately 1,250 helicopters used in HAA operations.

This exemption provides a significant path for moving forward, not only for HAA operators but for the countless communities and hospital networks that would otherwise have been deprived of the critical life-saving support that can only be offered by helicopter operations. This exemption will allow HAA operators to continue to do what they do best—save lives.

The Path Forward

I want to be very clear: HAI and our members are not against 5G. However, due to our mission profiles and operational parameters, 5G interference is of particular concern to the vertical

flight sector. We want to ensure that 5G is deployed in such a way that it can safely coexist with US aviation operations.

Under the exemption and with the proper mitigations in place, HAA missions can move forward. However, other rotorcraft industry sectors do not have similar exemptions that enable them to continue operations. Critical public-service missions, including firefighting, utility work, and law enforcement, and economically important ones, such as transportation and flight training, are severely constrained if operating in areas for which a 5G-related NOTAM has been issued. Additionally, emerging technologies such as advanced air mobility operations that are projected to begin operations in dense urban areas—the exact areas of 5G deployment—could face severe restrictions.

The development of new radar altimeters with filters that can withstand 5G interference is critical to the vertical flight industry's ability to continue flying and serving the public good. However, developing and certifying new radar altimeters will take time. Additionally, the cost for operators to purchase and install these new altimeters is of significant concern to the industry. My members ask why they should be financially responsible for installing new equipment to mitigate the safety risk imposed by another corporation's decision to deploy 5G wireless systems.

In the short term, HAI is focused on working with the FAA and the AMOC process to determine which radio altimeters and aircraft models can withstand 5G interference. Additionally, HAI will continue to explore for FAA approval exemptions and accompanying operational mitigations that will help operators to continue to provide aviation services to their communities.

In the long term, we urge Congress to enact the necessary reforms to provide better transparency, efficiency, and coordination on spectrum issues by the FCC and other government agencies. Various parties, including the Department of Commerce and its Federal Advisory Committee, have studied the issue of equitable access to spectrum in the U.S. and identified several recommendations. It seems clear that misaligned domestic spectrum policy, to the disadvantage of aerospace and aviation users, is what brings us here today. We do need to find a solution to address how a currently failed system can be fixed so that we are not in the same situation again. The deployment of 5G will not be the last spectrum issue to resolve. Let's begin to work now to ensure that the problems we faced with the 5G rollout will not occur in the future.

Ensuring the safety of those who fly—whether pilots, crews, or passengers—is always HAI's top priority. As such, we will continue to advocate for reasonable limitations on 5G deployment so that safety-critical equipment on helicopters is not compromised by harmful interference. HAI will also continue to work with regulators to develop solutions that maintain safety and preserve the helicopter community's ability to operate in a 5G environment.

I thank the Committee again for the opportunity to provide the perspective of the vertical flight industry and look forward to continuing our work together on these important issues. I welcome any questions.