

February 17, 2022
US Department of Transportation
Docket Operations
1200 New Jersey Avenue, SE
Room W12-140
Washington, DC 20590

In accordance with 14 CFR §11.15 and §11.81, Aviation Specialties Unlimited, Inc. (ASU), Air Carrier Certificate UABA273K, (A051, Airplane Night Vision Goggle Operations) and Air Agency Certificate UABS273K (NVG Flight Training Provider) petitions for an exemption for relief from §91.205(h)(7) and §91.1(a) to conduct flight operations under Parts 91 and 135.

Extent of requested relief and reason for requesting relief:

The relief sought is to allow for Airplane Night Vision Goggle (ANVG) operations with radar (radio) altimeters that are unreliable or not normally functioning due to radio frequency interference caused by the Federal Communications Commission's (FCC) allocation of a portion of the 3.7–3.98 GHz frequency band available for flexible use including 5G cellular applications.

The relief sought would allow ASU to operate with inoperative or unreliable radar (radio) altimeters beyond the constraints 91.205 (h) (7) and /or aircraft flight supplement limitations (§91.9(a)).

We support our request with the following information:

The Radio Technical Commission for Aeronautics (RTCA) authored "Assessment of C-Band Mobile Telecommunications Interference Impact on Low Range Radio Altimeter Operations" (RTCA Paper No. 274-20/PMC-2073) that reported "a major risk that 5G telecommunications systems in the 3.7–3.98 GHz band will cause harmful interference to radar altimeters on all types of civil aircraft - including commercial transport airplanes; business, regional, and general aviation airplanes; and both transport and general aviation helicopters." The report further indicated "that this risk is widespread and has the potential for broad impacts to aviation operations in the United States, including the possibility of catastrophic failures leading to multiple fatalities, in the absence of appropriate mitigations. Further, the impacts are not only limited to the intentional emissions from 5G systems in the 3.7–3.98 GHz band, but also the spurious emissions from such systems within the protected 4.2–4.4 GHz radar altimeter band directly." Currently, areas affected by 5G C-Band emissions are identified by NOTAM.

In accordance with §91.205(h)(7) and limitations set forth in rotorcraft flight manual supplements for operations using NVGs, a radar altimeter "must be installed in the aircraft, functioning in a normal manner, and approved for use by the FAA." Night Vision Goggles (NVGs) are presently used by the HAA industry, public safety, search and rescue organizations, and a litany of other operators to increase the level of safety while conducting vital life-saving and public safety operations. With effective mitigations, ASU believes safe NVG training operations can be conducted at night, including takeoffs and landings at off-airport and unimproved landing sites with a radar altimeter that may not function normally due to 5G C-Band cellular interference.

Although we are asking for an exemption pertaining to airplane operations, Helicopter Association International (HAI) petitioned for and was granted a similar exemption for helicopter operators, Exemption No. 18973, Regulatory Docket No. FAA-2021-1028.



The reasons why a grant of exemption would be in the public interest and benefit the public as a whole:

ASU believes a grant of exemption is reasonable and in the public interest for the following reasons:

1. ASU provides ANVG flight training to the following entities and organizations:
 - Part 135 operators throughout the US. §135.324 allows one Part 135 operator, in this case, ASU, to provide training to another similarly certificated Part 135 operator, typically an operator supporting US Federal government / military contracts overseas.
 - Part 141 NVG training to Part 91 operators, law enforcement and public safety/public use operators who conduct critical night law enforcement, search and rescue (SAR) and wildland firefighting operations.
 - FAA Safety Inspectors for NVG Event-Based Currency (EBC) flights.
 - Approved international students and organizations including federal, military and law enforcement organizations, who provide critical NVG flight and regulatory services in their home countries.
 - Agricultural, public use, and contract operators, including those providing pest control flight operations that can only be performed at night with the enhanced safety of NVGs.
 - These entities operate with increased safety due to NVG training provided by ASU.
2. ASU Part 135 NVG flight operations can support State and Federal agencies with safe NVG flight operations to remote areas at night for time critical deliveries.
3. ASU uses NVGs to enhance safe flight operations and training at night. ASU uses the latest generation of NVGs which allow for the use of exterior lighting and in fact has been a very strong early proponent of exterior light use for more than 20 years. Many organizations in the US and globally have modeled their training and use of NVGs coupled with exterior lights on the ASU program curriculum. As such, ASU always conducts NVG operations using exterior lights for takeoff and landing operations.
4. ASU believes it is safer to fly at night with NVGs without an operable/normally functioning radar altimeter than it is to flight at night with a fully functioning radar altimeter without the aid of NVGs.
5. Organizations and individuals that attend ASU NVG training receive the most current training and information regarding NVG operations. ASU has already included AD 2021-23-13 in our training curriculum to help ensure wide compliance. Without an exemption, these operators will not be able to receive NVG flight training, currency, and evaluations from ASU. FAA Safety Inspectors will be challenged in maintaining NVG currency, via EBC flights, which will limit their ability to conduct FAA NVG proficiency checks for Part 135 operators that have been granted an exemption as well as other NVG operators under their purview. Federal, state, and local agencies will not be able to maintain currency or a level of proficiency that ASU provides.
6. In conjunction with FAA personnel and manufacturers, ASU conducts flight testing and evaluations on various types of night vision equipment and systems to ensure the equipment's safety, effectiveness, and compatibility meet specifications. Without this exemption, testing on systems and equipment may critically impact the ability to determine the equipment's viability for current and future night vision flight operations.

7. ASU must conduct internal annual and recurrent ANVG pilot training to meet federal requirements and the requirements as outlined in ASU Company Operations Manual. Without this exemption, ASU cannot conduct the required training resulting in loss of pilot and organizational NVG proficiency and currency.
8. Per A051 limitations and provisions, ASU is authorized to conduct enroute ANVG operations in accordance with 14 CFR Part 135. A051 additionally authorizes takeoffs and landings under NVG and single pilot operations. An exemption will allow ASU to continue operations under the conditions and limitations of A051.

The reasons why a grant of exemption would not adversely affect public safety or how the exemption would provide a level of safety at least equal to that provided by the rule(s) from which the exemption is sought:

ASU has safely trained over 6,000 pilots and crewmembers in NVG operations, supported law enforcement and public safety operations, and conducted approved flight testing of numerous night vision systems. While the Radar altimeter is a useful instrument during NVG flight, ASU crews employ a systematically thorough crosscheck of all instruments while primarily using visual cues to validate and ensure safety of the flight regime.

The ASU airplanes are equipped with an approved Night Vision Imaging System, maintained according to D094. The aircraft landing and wing lights provides the pilot with great area illumination, detail, contrast, and obstacle identification and avoidance capabilities. The diligent use of this system provides key visual cues to determine height above the ground and assist in determining rates of closure, particularly when landing at General Aviation Airports that may have limited lighting capabilities. Although Exemption No. 18973 pertains to helicopter NVG operations (HNVGs), the following is applicable to airplane NVG operations: "This determination ensures the pilot operates at a requisite level of safety with decision-making concerning landing."

ASU crews regularly assess the safety and usability of the training areas and conduct thorough high and low area reconnaissance in those areas during every training flight.

ASU can achieve an equivalent level of safety in NVG operations by incorporating the following methods of alternate compliance:

- Conducting pilot training both utilizing the radar altimeter operating normally and also simulating that the radar altimeter is unreliable, much like partial panel IFR training.
- Employing the installed and approved Night Vision Imaging System.
- Executing a systematic crosscheck of all instruments and outside visual cues.
- Conduct thorough high and low area reconnaissance of General Aviation Airports.

Utilizing these mitigation measures, ASU can continue to conduct NVG flight and training operations to the highest level of safety, including takeoffs and landings at General Aviation Airports that may have limited lighting capabilities with a radar altimeter that may not be functioning normally due to 5G C-Band cellular interference. ASU will seek the best routes around 5G interference areas whenever possible, but as 5G becomes more prominent, the mitigating procedures afforded by this exemption will enhance safety and permit continued safe operations in support of training, public safety operations, contract and customer requirements.

Conditions and Limitations

If this exemption is approved, in a manner similar in all respects (as they pertain to airplanes vs helicopters) to Exemption No. 18973, ASU will maintain an equivalent level of safety by previously stated alternative methods of compliance and adhering to the following conditions and limitations:

1. ASU will request authorization from the assigned POI in operations specification A005.
2. Airplanes may be operated under Part 135 and Part 91 when conducting Part 141 NVG training with an inoperative or unreliable Radar altimeter provided:
 - a. The aircraft is equipped with at least one landing light which the pilot must use to assist in obstacle detection and rates of closure.
 - b. The aircraft is equipped with an operable radar altimeter which the pilot uses when it is performing normally.
 - c. Prior to landing, the pilot or other crewmember must contact personnel on the ground at the landing site to receive and confirm obstacle and runway information for the airport when they are available. If radio communication cannot be established with personnel on the ground, the pilot must perform a high reconnaissance to assess the landing location.
 - d. For VFR flight at night, flight crew must evaluate terrain and obstacles along the route and fly at such an altitude so as to ensure all terrain and obstacles along the route of flight are cleared vertically by no less than 800 feet.
 - e. VFR flight at night is not conducted without adequate visual surface light reference.
 - f. The aircraft is equipped with an approved Night Vision Imaging System, maintained according to D094, installed via FAA approved installation method.
3. ASU does not perform IFR flight. In the event an ASU pilot must conduct an actual IFR recovery from inadvertent IMC, ASU pilots will be trained to be aware of potential degraded autopilot performance on ILS, glideslope, or LPV.
4. Overwater operations conducted beyond the gliding distance from shoreline as defined in §135.168, shall not be conducted with a flight visibility of less than 2 statute miles during the day and 3 statute miles at night.
5. Overwater operations conducted beyond the gliding distance from shoreline as defined in §135.168, shall maintain an altitude of at least 500 feet using a barometric altimeter from a source not farther than 100 nautical miles.
6. ASU operations in Class G airspace will be conducted with weather minimums no lower than those specified in 14 CFR 135.609

Note: Inoperative Radar altimeters will be logged accordance with the certificate holder's approved maintenance procedures.

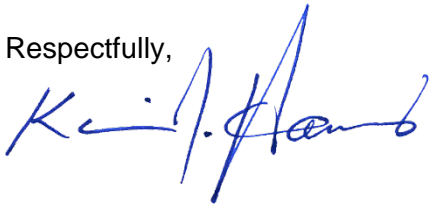
7. All pilots must receive training on the applicability and use of this exemption prior to serving in an operation under this exemption. Certificate holders must maintain a record of such training and provide it to the FAA upon request. Training must include:
- The provisions of this Exemption.
 - The possibility that radar altimeter indications may be unreliable.
 - The radar altimeter could fail due to 5G C-Band radar frequency interference.
 - That pilots must be alert for, and be able to recognize, erroneous indications from the radar altimeter.

Currently the Boise, Idaho area has not yet been identified via NOTAM with respect to 5G interference. We anticipate that the Boise area will soon fall under such a NOTAM and request this exemption to minimize disruptions should a 5G NOTAM be issued. As the Federal Communications Commission (FCC) has allowed new 5G C-Band services to operate in the 3.7-3.98 GHz C-Band range to already be in effect, ASU respectfully requests the petition be given the highest priority and be processed in a most expeditious manner to avert an interruption to Aviation Specialties Unlimited, Inc. operations, the ability to maintain pilot and instructor currency and proficiency, support FAA currency and proficiency, and support operator training to ensure they meet the highest standards of night vision goggle operational safety.

Summary

Aviation Specialties Unlimited, Inc. petitions for an exemption for relief from 14 CFR Parts 91.205(h)(7) and 91.9(a) to allow for operations to be conducted under 14 CFR Parts 61, 91, 135, and 141, including operations with night vision goggles and night landings and takeoffs from General Aviation Airports, with an unreliable or not normally functioning radar (radio) altimeter.

Respectfully,



Kimberley J. Harris
Director of Operations
Aviation Specialties Unlimited