

Astraeus Aerial petition for exemption from 14 C.F.R. part 21, section 45.23(b), section 61.113(a)(b), and certain sections of Part 91.

Docket Number FAA-2014-0352

79 Fed.Reg. 36378 (June 26, 2014)

## Comments by Modovolate Aviation, LLC

Comments submitted electronically via Federal eRulemaking Portal,

<http://www.regulations.gov>

### **Introduction and summary**

This comment urges the FAA to approve the petition by Astraeus Aerial for exemptions from the Federal Aviation Regulations (“FARs”) to allow it to operate small unmanned aircraft systems (“sUAS” or “microdrones”) to facilitate moviemaking.

The comment begins by explaining the interests of the commenter. It argues that the specifics of the petition assure safe operation. Then it explains that dealing with petitions like this on a case-by-case basis is not a viable approach to integrating microdrones into the National Airspace System (“NAS”), and that the FAA instead should issue a Notice of Proposed Rulemaking (“NPRM”) to regulate microdrones as consumer products by requiring them to incorporate technological limitations on their flight profiles.

### **Interests of the commenter**

Modovolate Aviation, LLC, (the “LLC” or “Movo Aviation”) is an Illinois limited liability company organized for the purpose of conducting microdrone research, experimentation, demonstration, and education. Modovolate Aviation, LLC, also is known as “Movo Aviation.”

The opportunities available to Movo Aviation are extensive if it were allowed legally to engage in these activities in a commercial context. The LLC has the capability within its resources to contract with customers to operate commercial microdrones for demonstration purposes in a variety of practical mission environments. Because of legal uncertainty in the absence of regulations or an NPRM from the FAA, the LLC is at a

significant competitive disadvantage because of its knowledge of and commitment to comply with the Federal Aviation Rules.

Movo Aviation has applied for a Special Airworthiness Certificate under FAA Order 8130.34C. Even if the certificate is granted, however, the conditions imposed under such certificates will not allow Movo Aviation the flexibility to explore a wide range of potentially useful commercial applications of microdrones. Grant of an exemption such as that proposed by the petition, or promulgation of a general rule for microdrone operation would enhance Movo Aviation's opportunities to pursue its business strategy.

The LLC was formed and is jointly owned by Henry H. Perritt, Jr. and Eliot O. Sprague.

Henry H. Perritt, Jr., the Managing Member of Movo Aviation, is a law professor and former dean at Chicago-Kent College of Law, the law school of Illinois Institute of Technology. Holding a bachelor of science degree in aeronautics and astronautics from MIT, a master of science degree in management from MIT's Sloan School, and a juris doctor degree from Georgetown University Law Center, Mr. Perritt has written dozens of law review articles and several books on how the law should adapt to technological innovation. He also is an expert on the federal regulatory process, having written many articles on the subject, having served as an official in the federal wage and price control program, as a member of the White House Staff, and as Deputy Under Secretary of Labor. As a consultant to the Administrative Conference of the United States, he wrote reports on, among other things, the utility of negotiated rulemaking, in which affected interests and regulatory agencies collaborate in developing the content of new rules, and on the process for adjudicating civil penalties under the Federal Aviation Act. He is a private helicopter and airplane pilot.

Eliot O. Sprague is Director of Operations and Chief Pilot of Movo Aviation. He is a full-time news helicopter pilot, helicopter flight instructor, director of market development for a Chicago-area on-demand commercial helicopter operator, and a member of the board of directors of Midwest Helicopter Association. A graduate of Hillsboro flight school, he is intimately familiar with commercial aviation and familiar with the threats that unregulated microdrone flight present to the safety of himself, his coworkers, his passengers, and to persons and property on the ground. He holds

commercial helicopter and airplane, instrument helicopter, commercial flight instructor-rotary wing, and commercial flight instructor – instrument-rotary wing ratings.

## **The petition**

In the petition, Astraeus Aerial, developer and operator of small Unmanned Aircraft Systems (“sUASs”) equipped to conduct aerial photography for the motion picture and television industry for scripted closed set filming, applies for an exemption from specific Federal Aviation Regulations (“FARs”) to allow commercial operation of its sUASs, within and under the conditions outlined in the petition, and under such other limitations as may be established by the FAA as required by Section 333 of the FAA Modernization and Reform Act of 2012, Pub. Law 112-95, 126 Stat. 11 (2012) (the “2012 Act”).

The requested exemption would "permit the operation of small, unmanned and relatively inexpensive sUAS under controlled conditions in airspace that is (1) limited, (2) predetermined, (3) controlled as to access, and (4) would provide safety enhancements to the already safe operations in the film and television industry presently using conventional aircraft."

Astraeus Aerial’s sUASs are rotorcraft, with a maximum gross weight of 55 pounds. They operate at speeds 50 knots or less and can hover. Under the proposed exemption, they will operate only within the line of sight of the operator and only within a "sterile area" described in Exhibit 1 to the petition.

The petition explains that the proposed limitations are based on FAA Order 8900.1 CHG 0, Volume 3, Chapter 8-Issue a Certificate of Waiver for Motion Picture and Television Filming.

This is the first of a series of similar petitions filed by entities that seek to use sUAS in support of television and movie photography. See Aerial MOB, LLC, FAA-2014-0353; HeliVideo Productions LLC, FAA-2014-0354; Flying-Cam Inc., FAA-2014-0355; RC Pro Consulting LLC dba Vortex Aerial, FAA-2014-0356; Pictorvision Inc., FAA-2014-0357; Snaproll Media LLC, FAA-2014-0358.

Movo Aviation is submitted similar comments in these parallel proceedings.

## Comments on the petition

Movo Aviation agrees with the petitioner that granting the petition would enhance safety and fulfill the Secretary of Transportation's statutory obligation to establish requirements for the safe operation of sUAS in the National Airspace System, under section 333 of the 2012 Act.

The proposed operations will ensure that the sUAS will not create a hazard to users of the national airspace system or the public.

Given the small size of the sUASs involved and the restricted sterile environment within which they will operate, the operations proposed by the petition fall well within the scope of the safety zone where the Congress obligated that the FAA to allow commercial operations of UASs to commence immediately. Because of the size of the UASs and the restricted areas in which they will operate, approval of the application presents no national security issue. Given the clear direction in Section 333 of the 2012 Act, the authority contained in the Federal Aviation Act, the strong equivalent level of safety surrounding the proposed operations, and the significant public benefit, including enhanced safety, reduction in environmental impacts, including reduced emissions associated with allowing UASs for movie and television operations, the grant of the requested exemptions is in the public interest.

The petition persuasively explains how each specific exemption requested provides for safe operation, given the particular characteristics of the sUAS to be flown and the proposed limitations on its operation. The vehicle characteristics and the limitations reflect a growing consensus about how sUAS can safely be integrated into the NAS.

The vehicle type, the obvious utility of their use of their proposed use, the proposed limitations, and the experience of the operators all strike the right balance of keeping safety paramount, while also providing flexibility for new kinds of air commerce. Prompt approval of the petition also will send a desirable signal that the FAA is beginning to move on its statutory obligation to integrate sUAS operations into the National Airspace System.

The FAA should grant the requested exemption without delay.

But even if the FAA approves this petition and the similar ones filed, the burden on the applicants and on the FAA of dealing with case-by-case applications is too great to be sustained. It does not represent a viable long-term approach to sUAS integration.

Fulfilling its mandate to integrate small Unmanned Aircraft Systems into the National Airspace System confronts the FAA with two clashing realities. First, unregulated operation of these vehicles poses serious hazards to flight of other aircraft and a persons and property on the ground. But second, these flight vehicles are consumer products priced at levels that almost anyone can afford. They are obviously useful and have already been purchased in great numbers on the open market, through e-commerce and more traditional channels, and are being flown widely.

While the FAA has consistently reiterated its position that such microdrone operation is illegal until the FAA establishes a regulatory framework, and has levied a few civil penalties and sent a number of cease-and-desist letters, the FAA's position has had little discernible effect. Vendors continue to sell them and ordinary people lacking airmen certificates continue to fly them.

### **Enforcement of traditional FAA rules is infeasible**

The regulatory approach traditionally pursued by the FAA to regulate manned aircraft is unsuitable for regulating consumer products like microdrones. Manned aircraft are expensive capital goods. The size of the necessary investment by operators and the essentiality of valid pilot certificates for the careers of professional pilots provide strong incentives to comply with FAA regulations. These incentives are entirely lacking in the microdrone environment.

Given the relatively small size of these flight vehicles compared to manned aircraft, the small geographic scope of their operational capabilities, and their proliferation, it is unrealistic to think that the FAA ever could marshal enough enforcement resources to detect every violation of its current prohibition.

The FAA must recognize microdrones for what they are: inexpensive consumer products that put strikingly useful technologies within the reach of almost everyone. The FAA must recognize that it is regulating something that is available off-the-shelf at very low prices. In other words, the economic barriers to entry are quite low. People purchasing microdrones are likely to be individuals and small businesses not now in

the aviation industry. If they are confronted with a regulatory process designed for type certification of the 787 or the Diamond Twin Star or licensing requirements for instrument-rated medevac helicopter pilots, they are more likely to take the outlaw route. Even the somewhat streamlined processes such as that exemplified by this petition or those for obtaining a Special Airworthiness Certificate under FAA Order 8130.34C are too burdensome for the typical microdrone purchaser. The regulatory process must be much simpler.

A fundamentally different approach to regulation, new to the FAA, but proven in the context of other federal consumer product safety regulation, would enhance the degree of compliance with reasonable requirements and ease the burden on FAA rulemaking and enforcement resources.

The agency should take advantage of the capabilities of microdrone technology to enforce certain limits on flight profiles autonomously. Such an approach would focus FAA energy on defining what limits should be built into drones commercially marketed, relieving it of detailed regulation of airmen and detailed flight rules to be enforced in the conventional way.

Aviation regulation traditionally has stood on three pillars: certification of aircraft, certification of airmen, and rules for flight operations. Aircraft certification imposes detailed requirements on vehicle design and manufacture. Airmen certification allows for requiring defined skills and knowledge of personnel who operate and maintain aircraft. Flight rules specify how certificated airmen can fly certificated aircraft.

Requirements in the three areas are interrelated. For example, more demanding airmen requirements can compensate for more relaxed vehicle requirements; a highly skilled pilot can fly a poorly behaved aircraft safely, while only well-behaved aircraft should be flown by pilots with ordinary skills. And more restrictive flight rules can compensate for simpler airmen or vehicle requirements. For example, section 61.101 of the FARs prohibits recreational pilots from carrying more than one passenger and from flying more than 50 miles from the airport of origin, unless the pilot has received additional instruction. FAR section 91.319 imposes flight restrictions such as VFR-day only on experimental aircraft unless they meet additional certification requirements.

The capability of microdrones to restrict their flights opens up additional possibilities for this kind of trade-off. Most microdrones already on the market have some capability

to hover autonomously. Many can also take off, land, orbit a GPS waypoint, return to home autonomously, and be programmed to stay within an envelope defined by maximum height AGL, maximum radius, and maximum speed.

The FAA should embrace this self-enforcement capability rather than engaging in the line-by-line adaptation of existing rules. It should think of microdrones as the consumer products that they are.

If a microdrone is designed and manufactured so that it will not operate outside of flight parameters specified by FAA rules for approval, detailed regulation of operators is unnecessary; they simply cannot fly their vehicles in violation of the rules; the vehicle will not comply with an illegal command.

Likewise, if commercially marketed microdrones are incapable of operating outside the rules, the number of rule excursions by vehicles needed to be detected by the FAA enforcement arm will be greatly reduced.

Implementation of this rule would not require the development of new technology; the technology already is available, and is offered in many of the products now on sale: autonomous hover, range and height limitations, exclusions from controlled airspace, and autonomous return to home. The latest version of the popular DJI Phantom 2 Vision Plus, for example, advertises a built-in range-limitation feature: "Exceeding the control range of the remote control will trigger 'Return-to-Home'. The Phantom 2 Vision+ will automatically fly back to its takeoff point and land safely." <http://www.dji.com/product/phantom-2-vision-plus/feature>.

There may be concerns that the FAA lacks the statutory authority to prohibit the sale or lease of aircraft. The FAA's traditional approach to regulation has always addressed the use of aircraft *after* they have been sold.

Three approaches can mitigate this concern about statutory authority. The first is to craft an appropriate interpretation of the FAA's current statutory authority. The second would involve an agency request to the Congress that it be given unambiguous authority to adopt the suggested rule. The second approach, not as dependent on congressional priorities, would involve a joint effort by the FAA and the Consumer Product Safety Commission to implement the proposal. The Consumer Product Safety Commission would use its undeniable authority to regulate the sale of consumer

products to prohibit sale or lease of sUAS or model aircraft that do not meet FAA-promulgated standards for safe operation.

The FAA must move expeditiously on a general rule for sUAS operation by publishing an NPRM as soon as possible to focus the public dialogue about the best regulatory approach to crystallize. The NPRM should reflect approaches suited to the characteristics of microdrones, such as the one proposed in this comment. Microdrones are relatively inexpensive consumer products, entirely unlike the manned airplanes and helicopters that the FAA traditionally regulates under the FARs. They should be regulated as such.

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