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11/08/2021

U.S. Department of Transportation
Docket Management System
1200 New Jersey Ave., SE
Washington, DC 20590

RE: Petition seeking relief under Section 44807 of the FAA Reauthorization Act of 2018

Dear Sir or Madam:

HTS Ag (THE COMPANY) petitions for an exemption from the listed FAR's to conduct agricultural aircraft operations as per 14 C.F.R. § 137.3. The authority for the FAA to grant this petition is from 14 C.F.R. Part 11.

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I. Summary

THE COMPANY is requesting exemptions under 49 U.S.C. §44807 of the FAA Reauthorization Act of 2018 (P.L. 115-254) to Conduct Commercial Agricultural Services.

Scope of relief includes:

- Under 55lb Takeoff Weight
- Carriage and Release of Hazardous Cargo
- Inspection, Personnel, and other Aircraft Certification Requirements

The aircraft will be the Hylio AG-110. Manuals containing proprietary information for maintenance and operation of this aircraft will be included in support of this petition. The language in this petition is written to allow THE COMPANY flexibility to operate other Hylio aircraft models with a takeoff weight under 55 pounds.

II. Petitioner Information

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Contact Information

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About HTS Ag

HTS Ag provides High Tech Solutions for Agriculture.

We offer technology solutions from Autel Robotics, DJI, DroneDeploy, AirData and more. Since 1995 we've been serving customers in Iowa and surrounding states.
We got our official start in UAS in 2016, when we partnered with DJI and DroneDeploy to offer aerial mapping solutions to our customers, selling the aircraft, software, and training. Adam Gittins has served on the CompTIA Drone Advisory Council since January of 2018, and we continue to seek out innovative technology solutions for our customers.

Our expertise in Unmanned Aerial Systems over the past several years has also led us into adjacent industries like Public Safety, Construction, Real Estate and others.

III. Regulations Petitioner Requests Relief

14 CFR § 137.19(c)	Certification Requirements, Commercial Operator-pilots
14 CFR § 137.19(d)	Certification Requirements, Aircraft
14 CFR § 137.19(e)(2)(ii), (iii) & (v)	Certification Requirements, Knowledge and skill tests, skills, Approaches to the working area, Flare-outs, & Pullups and turnarounds
14 CFR § 137.31(a)&(b)	Aircraft Requirements, Certification Requirements, Shoulder Harness
14 CFR § 137.33(a)&(b)	Carrying of certificate, Certificate carried on the aircraft, Registration and airworthiness certificates available
14 CFR § 137.41(c)	Personnel, Pilot in command, demonstration of knowledge and skills
14 CFR § 137.42	Fastening of safety belts and shoulder harnesses
14 CFR § 107.36	Carriage of hazardous material

IV. Extent of Relief

The Petitioner proposes these restrictions and believes that these limitations provide an equivalent level of safety, if not greater, as the FAR's presently impose upon the Petitioner. Each of the regulations above will be talked about in greater detail in another section in this petition.

These limitations and conditions are equal to Exemption # 17261 except as noted below. The list of limitations and conditions include the following:

1. Operations authorized by this grant of exemption are limited to any model small UAS as long as the UAS being flown has a take-off weight of less than 55 pounds, even though maximum take-off weight capability may be higher.

> **NOTE:** Exemption 17261 granted to Drone Seed, Co. had for restriction 1 "Operations authorized by this grant of exemption are limited to any model small UAS with a maximum take-off weight of less than 55 pounds." We changed this to the above to clarify that the drone being flown must weigh below 55 lbs. at the time of takeoff. This is important because some unmanned aircraft have the capability to fly over 55 pounds (they have higher maximum take-off weights). Our rephrased restriction is in line with 107.3 which says, "Small unmanned aircraft means an unmanned aircraft weighing less than 55 pounds on takeoff, including everything that is on board or otherwise attached to the aircraft." (Emphasis my own). See also Section 331 of the FAA Modernization and Reform Act of 2012.2 Additionally, this allows the petitioner greater flexibility in choosing aircraft without having to come back and amend the exemption; thus, saving FAA resources. The rest of the restrictions in this exemption are identical to 17261.

2. When adding any small UAS or new small UAS models that will be operated under this exemption, the operator must notify the Flight Standards District Office (FSDO) which holds their operating certificate. Additionally, operations authorized by this exemption are limited to the small UAS listed on the operator's part 137 Letter of Authorization (LOA).

3. This exemption and all documents needed to operate the small UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the Conditions and Limitations in this exemption, any applicable FAA issued waivers /authorizations, and the procedures outlined in the operating documents, the most restrictive conditions, limitations, provisions, or procedures apply and must be followed. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The General Aviation and Commercial Division, (AFS-800) may be contacted if questions arise regarding updates or revisions to the operating documents.

4. Any small UAS used by the operator that has undergone maintenance or alterations that affect the small UAS operation or flight characteristics, e.g. replacement of a flight critical

component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a remote PIC with a Visual Observer (VO) and other personnel necessary to conduct the functional flight test (such as a mechanic or technician). The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

5. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

6. PIC qualifications: The remote PIC must demonstrate the ability to safely operate the small UAS in a manner consistent with how it will be operated under this exemption, including the applicable knowledge and skills requirements for agricultural aircraft operations outlined in 14 CFR part 137, evasive and emergency maneuvers, and maintaining appropriate distances from persons, vessels, vehicles and structures before operating non-training, proficiency, or experience-building flights under this exemption.

7. For small UAS operations where Global Positioning System (GPS) signal is necessary to safely operate the small UA, the remote PIC must immediately recover/land the small UA upon loss of GPS signal.

8. If the remote PIC loses command or control link with the small UA, the small UA must follow a pre-determined route to either reestablish link or immediately recover or land.

9. The remote PIC must abort the flight operation if unpredicted circumstances or emergencies that could potentially degrade the safety of persons or property arise. The remote PIC must terminate flight operations without causing undue hazard to persons or property in the air or on the ground. Documents the operator must retain under §§ 107.13, 137.33, and in accordance with this exemption (including but not limited to: operator's exemption, any waiver held, a facsimile of the agricultural aircraft operator certificate, training manual, operations manual, and registration certificate) must be available to the remote PIC at the Ground Control Station of the small UAS at all times the aircraft are operating. These documents must be made available to the Administrator or any law enforcement official upon request. Airworthiness certificates applicable to the small UAS to which this exemption applies are not required for compliance with this condition.

10. The relief granted from § 107.36 is limited to the use of any economic poison as defined in § 137.3.

11. This exemption will not be valid for operations outside of the United States.

V. Relief Purpose and Safety Rationale

A. 14 CFR 137.19(c)

Regulation
(c) Commercial operator—pilots. The applicant must have available the services of at least one person who holds a current U.S. commercial or airline transport pilot certificate and who is properly rated for the aircraft to be used. The applicant himself may be the person available.
Why Petitioner is Seeking Relief
This regulation is extremely burdensome and unnecessary.
Equivalent Level of Safety
As found in the previously granted exemption 17261, an equivalent level of safety of the regulations can be achieved by requiring a remote pilot certificate, operations to be done in accord with Parts 107 & 137, an agricultural aircraft operations certification be obtained prior to operations, and the proposed restrictions in this exemption.

B. 14 CFR 137.19(d)

Regulation
(d) Aircraft. The applicant must have at least one certificated and airworthy aircraft, equipped for agricultural operation.
Why Petitioner is Seeking Relief
This regulation is extremely burdensome and unnecessary.
Equivalent Level of Safety
Small unmanned aircraft operated under Part 107 do not have any aircraft certification requirements. Under Part 107, the remote pilot in command is responsible for determining if the aircraft is airworthy. The requirements contained in the manufacturer's manuals, the requirement in Part 107 for the remote pilot to conduct pre-flight inspections of the aircraft, and the requirement of the agricultural aircraft operator certificate be obtained prior to flight will be in total sufficient for determining the airworthiness of the aircraft which provides an equivalent level of safety as the regulations for agricultural aircraft operations. Furthermore, because these small UA are very limited in size and will carry a small chemical payload and operate only in restricted areas for limited periods of time, the risk to the public is lower. Moreover, the Petitioner is the one best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety as the regulations.

C. 14 CFR 137.19(e)(2)(ii), (iii) & (v)

Regulation
(2) The test of skill consists of the following maneuvers that must be shown in any of the aircraft specified in paragraph (d) of this section, and at that aircraft's maximum certificated take-off weight, or the maximum weight established for the special purpose load, whichever is greater: (ii) Approaches to the working area. (iii) Flare-outs. (iv) Swath runs. (v) Pullups and turnarounds.
Why Petitioner is Seeking Relief
Section 137.19 paragraphs (e)(2)(ii)-(v) are unnecessary and not applicable for small unmanned aircraft. As the FAA stated in Exemption 17261, "the FAA has determined that demonstration of the skills described in these paragraphs is not necessary because they are not compatible or applicable to" agricultural aircraft operations with multi-rotor unmanned aircraft. Therefore, relief should be granted to agricultural aircraft operations which utilize only small UAS.
Equivalent Level of Safety
An equivalent level of safety can be obtained by requiring the remote pilot to have a valid remote pilot certificate, requiring the Petitioner to obtain prior to operations an agricultural aircraft operations certificate, and requiring that operations must be done under the proposed restrictions of this petition.

D. 14 CFR 137.31(a)&(b)

Regulation
No person may operate an aircraft unless that aircraft— (a) Meets the requirements of §137.19(d); and (b) Is equipped with a suitable and properly installed shoulder harness for use by each pilot.
Why Petitioner is Seeking Relief
This regulation is designed to protect people on board the aircraft.
Equivalent Level of Safety
Since there are no people on board, whether we follow it or not, the impact on safety is the same. However, because the law requires it, we require an exemption from this regulation. Therefore, an equivalent level of safety can be achieved by flying under the proposed restrictions herein.

E. 14 CFR 137.33(a)&(b)

Regulation
(a) No person may operate an aircraft unless a facsimile of the agricultural aircraft operator certificate, under which the operation is conducted, is carried on that aircraft. The facsimile shall be presented for inspection upon the request of the Administrator or any Federal, State, or local law enforcement officer. (b) Notwithstanding part 91 of this chapter, the registration and airworthiness certificates issued for the aircraft need not be carried in the aircraft. However, when those certificates are not carried in the aircraft they shall be kept available for inspection at the base from which the dispensing operation is conducted.
Why Petitioner is Seeking Relief
There is no benefit to keep certificates on the aircraft, when they will be much more available to any inspector if located at the ground station. Further, airworthiness certificates are not required under part 107.
Equivalent Level of Safety
A similar situation was addressed in the FAA legal opinion letter of Mark Bury to John Duncan on August 8, 2014 where the FAA general counsel's office answered whether registration and airworthiness documents must be carried aboard an unmanned aircraft. Mr. Bury said, "we find that the intent of these regulations is met if the pilot of the unmanned aircraft has access to these documents at the control station from which he or she is operating the aircraft." Likewise, the Petitioner here proposes to keep the agricultural aircraft operator certificate and registration all at the ground station. These documents can be available for inspection by the FAA or law enforcement. This all provides an equivalent level of safety as the regulations. Additionally, the Petitioner needs relief from paragraph (b) because operations under Part 107 do not require an airworthiness certificate and it would be extremely burdensome to acquire an airworthiness certificate in order to comply with this paragraph of the regulation. An equivalent level of safety can be reached by requiring the remote pilot to obtain an agricultural aircraft operators' certificate prior to operations and conducting pre-flight inspections.

F. 14 CFR 137.41(c)

Regulation
(c) Pilot in command. No person may act as pilot in command of an aircraft unless he holds a pilot certificate and rating prescribed by §137.19 (b) or (c), as appropriate to the type of operation conducted. In addition, he must demonstrate to the holder of the Agricultural Aircraft Operator Certificate conducting the operation that he has met the knowledge and skill requirements of §137.19(e). If the holder of that certificate has designated a person under §137.19(e) to supervise his agricultural aircraft operations the demonstration must be made to the person so designated. However, a demonstration of the knowledge and skill requirement is not necessary for any pilot in command who— (1) Is, at the time of the filing of an application by an agricultural aircraft operator, working as a pilot in command for that operator; and (2) Has a record of operation under that applicant that does not disclose any question regarding the safety of his flight operations or his competence in dispensing agricultural materials or chemicals.
Why Petitioner is Seeking Relief
This regulation is extremely burdensome and unnecessary.
Equivalent Level of Safety
As found in the previously granted exemption 17261, an equivalent level of safety of the regulations can be achieved by requiring a remote pilot certificate, operations to be done in accord with Parts 107 & 137, an agricultural aircraft operations certification be obtained prior to operations, and the proposed restrictions in this exemption.

G. 14 CFR 137.42

Regulation
No person may operate an aircraft in operations required to be conducted under part 137 without a safety belt and shoulder harness properly secured about that person except that the shoulder harness need not be fastened if that person would be unable to perform required duties with the shoulder harness fastened.
Why Petitioner is Seeking Relief
This regulation is designed to protect people on board the aircraft.
Equivalent Level of Safety
Since there are no people on board, whether we follow it or not, the impact on safety is the same. However, because the law requires it, we require an exemption from this regulation. Therefore, an equivalent level of safety can be achieved by flying under the proposed restrictions herein.

H. 14 CFR § 107.36

Regulation
A small unmanned aircraft may not carry hazardous material. For purposes of this section, the term hazardous material is defined in 49 CFR 171.8
Why Petitioner is Seeking Relief
Some of the chemicals that need to be dispensed during the agricultural aircraft operations may be classified as hazardous material. Because this regulation is not waivable under 107.205, we are requesting an exemption from it
Equivalent Level of Safety
An equivalent level of safety can be achieved by requiring the Petitioner to obtain a FAA agricultural aircraft operator certificate prior to operations, use pilots who have a remote pilot certificate, fly aircraft weighing less than 55 pounds (limiting the amount of hazmat being carried), follow any and all restrictions placed on the agricultural aircraft operator certificate, and limit the hazardous material being carried to only economic poisons.

VI. Benefit to Public Interest

THE COMPANY will be utilizing technology developed and manufactured in the USA, helping to advance the local UAS industry.

UAS may be used in the event that there is no other way to safely spray a certain land area. This will reduce the chance of manned aircraft attempting to spray certain dangerous areas. The result will be reduced risk for pilots and the public.

UAS are significantly smaller and lighter than manned aircraft. In the event of a crash, the UAS poses a greatly reduced threat to the public. UAS also have much smaller propellers, reducing the risk of injury to the public in the event of a crash.

UAS are much quieter than manned airplanes. UAS will create much less noise pollution than manned aircraft. This is especially important for near-urban aerial applications.

UAS use batteries for power, which is not as flammable and explosive as the fuel used for the majority of manned aircraft. In the event of a crash, there is a significant risk of explosion. There will also be a reduction in air pollution.

UAS operate at much lower altitude than manned aircraft. This vertical separation greatly reduces the chance of a mid-air collision and the following catastrophic damage to the aircraft involved, and the public.

UAS allow for methods of precision spraying that are not possible with manned aircraft. Precision spraying has the potential to increase the efficiency of US agriculture as a whole. These precision applications will greatly benefit the US farmer while operating with equivalent or greater levels of safety compared to manned aircraft.

VII. Aircraft Information

Aircraft: Hylio AG-110

Specs:

Total Weight (without batteries)	24.5 lb
Max Takeoff Weight	54.9 lb
Max Operating Speed	22 mph
Configuration	Quadcopter
Operating Voltage	12s
Battery	16000 mAh 12s LiPo
Wheelbase	51 in
Dimensions	23x23x20 in (arms folded)
Standard Liquid Payload	21lb, 2.5 gallon
Operating Frequencies	902 – 928 MHz, 2.4 GHz
Ground Station Control Software	Hylio AgroSol
Max Transmission Range	~1 mile (5+ unobstructed)

VIII. Supporting Documents

In support of this petition, we will submit the following associated documents containing confidential information. The UAS will operate only within the limitations listed in this petition and the supporting documents.

- Operation and Safety Manual
- Training Manual
- AG-110 Maintenance Manual

These additional confidential documents are not regularly available or being shared with others because they contain specific proprietary information. For these reasons we request they be handled as such under 14 CFR § 11.35(b) and protect them from release under FOIA 5 USC § 552 et seq.

IX. Authority to Grant Petition

The Federal Aviation Act gives the FAA the authority to grant exemptions. "The Administrator may grant an exemption from a requirement of a regulation prescribed under subsection (a) or (b) of this section or any sections 44702-44716 of this title if the Administrator finds the exemption in the public interest." (49 U.S.C. § 44701(f); accord 49 U.S.C. § 44711(b).)

X. Conclusion

THE COMPANY feels it has presented a thorough and compelling case to grant the relief requested in this petition. UAS operations conducted by THE COMPANY in the manner as outlined above will provide an equivalent level of safety as the current regulations. In order to improve the safety of aerial applications and efficiency of US farmers, THE COMPANY believes it is in the public interest to grant this waiver request without delay.

Sincerely,

Adam Gittins
General Manager and Chief Pilot