

HUSCH BLACKWELL

October 1, 2021

U.S. Department of Transportation, Docket Operations
West Building Ground Floor, Room W12-140
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Bayer CropScience LP (“Petitioner”) Petition for Exemption Pursuant to Section 44807 of Title 49 of the United States Code (“Section 44807”) and Part 11 of Title 14 of the Code of Federal Regulations (“Part 11”) to Authorize Commercial Agricultural Spraying Operations Utilizing Unmanned Aircraft Systems (“UAS”) Weighing Less Than 55 Pounds

To Whom it May Concern:

Pursuant to Section 44807 and Part 11, Petitioner, by and through its undersigned counsel, hereby applies for a Grant of Exemption (the “Petition”) from the sections of Title 14 of the Code of Federal Regulations (“FARs”) identified below to allow Petitioner to simultaneously operate as many as five UAS weighing less than 55 pounds, for aerial agricultural spraying operations.

The proposed operations in this Petition are similar to numerous other exemptions approved by the Federal Aviation Administration (“FAA”), including those conducted by DroneSeed Co. pursuant to the authority granted in Exemption No. 17261, as amended (“DroneSeed Exemption”). The primary differences between the exemption granted to DroneSeed and those proposed by Petitioner is that: (I) the proposed operations will involve the use of the DJI Agras MG-1P; and (II) though the proposed operations will be conducted primarily over farmland in rural areas, some operations may be conducted over farmland located in exurban areas.

In support of this Petition, Petitioner submits the following associated UAS operating documents (the “Operating Documents”):

- Petitioner Operations Manual
- Petitioner Operational Risk Assessment
- DJI Agras MG-1P Manufacturer Manual
- DJI Agras MG-1P Manufacturer Brochure

As the Operating Documents contain confidential commercial and proprietary information that Petitioner has not and will not share with others, each will, pursuant to FAR § 11.35(b), be submitted on a confidential basis under separate cover. The information contained in this material is not generally available to the public and is protected from release under the Freedom of Information Act, 5 U.S.C. § 552 *et seq.*

I. BACKGROUND OF PETITIONER

Petitioner is a member of the Bayer Group of companies and is a world leading agriculture enterprise. Petitioner works diligently to provide farmers with the most efficient and effective tools and solutions to achieve better harvests using less water, land, energy, and Materials (defined below). To further these goals, Petitioner has developed research capabilities in biotechnology, crop protection, and data

science. As part of these efforts, Petitioner employees routinely apply Materials, consistent with good agricultural practice and responsible product stewardship, throughout the agricultural seed production process and in developing new crop protection products and formulations.

As part of these efforts, Petitioner seeks to understand: (i) the benefits of UAS technology (if any); and (ii) best practices with respect to using the UAS technology. In fact, beginning in 2017, Petitioner and its affiliates based in the United States began conducting commercial UAS operations in compliance with Part 107 to gather crop-related data and imagery (Peticioner uses this data and imagery to inform and improve its product development and production practices). Between April and October 2019, Petitioner’s Part 107 certificated pilots have performed roughly 7500 flights without any “aircraft accident” or “serious incident” as defined in 49 CFR § 830.4.

As required by FAR §11.81(a), the contact information for Petitioner is as follows:

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II. DESCRIPTION OF UAS

Peticioner intends to operate the DJI Agras MG-1P, an eight-rotor, electric-powered, propeller driven UAS. With eight rotors, the DJI Agras MG-1P employs advanced propulsion and control algorithms to ensure flight safety even if one arm or motor breaks during flight. The motor drive system features a redundant communication mechanism that allows the system to reroute control signals during operation if necessary. The total weight of the aircraft is 22 pounds and the maximum gross takeoff weight is just under 55 pounds. The aircraft dimensions are approximately 68 inches wide, 68 inches long, and 23 inches high. Maximum operating speed is approximately 16 miles per hour.

III. PROPOSED UAS OPERATIONS

Peticioner seeks to better understand the fit and role of UAS in the overall farm management system and is seeking to better understand how UAS technology can complement or replace current agronomic practices. Specifically, Peticioner seeks to conduct field trials under Part 137 of Title 14 of the Code of Federal Regulations (“Part 137”) using UAS to (collectively, the “Proposed Operation”): (A) compare UAS-based application of Materials with traditional ground-based and manned aerial applications; (B) develop and test Material product formulations specifically designed for UAS-based application; (C) develop and test software to identify and map weeds, areas of disease or insect pressure, and nutrient

deficiencies in an agricultural field using UAS-collected imagery and allow targeted UAS-based application of Materials to identified weeds and affected areas; and (D) refine UAS attachments for the application of Materials.

The Proposed Operations will be conducted in the airspace immediately above agricultural farmland that is either owned, leased, or otherwise under contract for use by Petitioner or an affiliate. The majority of the agricultural farmland will be located in rural areas, but the Proposed Operations may also be conducted in exurban locations. Where the UAS are operated in exurban locations, the UAS will remain over bare ground or agricultural fields, at least 500 feet from buildings or other structures and no people will be present (other than the remote pilot, visual observer, or other flight crew members). The Proposed Operations will be conducted in Class G airspace. In each instance, Petitioner will operate UAS within the visual line of sight of the pilot or an observer and not more than 25 feet above the applicable crop canopy. Petitioner seeks authority to operate up to 5 UAS simultaneously.

IV. PUBLIC INTEREST

As set forth in more detail below, granting the relief requested by Petitioner herein would be in the public interest for the following reasons:

A. Petitioner intends to study the application by UAS of herbicides, fungicides, insecticides, fertilizers, biologicals, and other materials for plant propagation (e.g., pollen) (collectively, “Materials”) as well as the planting of cover crops by UAS. The application of Materials provides two benefits that ultimately result in higher crop yields and lower prices to consumers. On the one hand, Materials can protect crops from biological organisms, pathogens, and weeds that inhibit the growth of healthy crops, and reduce quality and/or yield, and on the other hand, Materials can also facilitate crop growth.

B. Balanced against any benefits, Materials can also damage the environment if used too extensively. Specifically, Materials can leach into the soil or run off into streams with potentially negative consequences. UAS can apply Materials more precisely than piloted aircraft and as a result reduce the quantity of Materials used to achieve the same benefits. Where UAS are used to more efficiently apply Materials, the quantity of Materials applied is reduced, resulting in both lower costs, and minimizing the negative environmental side effects.

C. Similarly, Materials distributed by piloted aircraft can be dispersed over an area that is larger than intended. UAS can apply Materials at lower altitudes, reduce the amount of drift, and thus reduce the quantity of Materials needed to effectively target a specific area. By reducing drift, application of Materials by UAS as compared to piloted aircraft is more efficient, effective and less harmful to the environment.

D. The application of Materials requires the use of back-sprayers or other hand-held spray devices. The use of pesticides using UAS will limit exposure to the Materials and enhance health and safety.

E. Application of Materials by piloted aircraft carries significant risk to the pilots of those aircraft as well as persons and property on the ground. The National Transportation Safety Board was so concerned about this issue that it commissioned a study in 2014 to chronicle recurring safety

issues.¹ As compared to piloted aircraft, the use of UAS to apply Materials will be much safer to both persons and property for a number of reasons – UAS do not use combustible jet fuel, do not have pilots and or crew on board, and are much smaller. For these reasons, UAS as compared to piloted aircraft pose less risk to people and property both in the aircraft and on the ground.

F. Piloted aircraft produce significant noise pollution that disrupts the public’s ability to enjoy both private and public property. In comparison, UAS are much quieter than piloted aircraft. Using UAS to apply Materials as compared to piloted aircraft reduces the noise pollution experienced by the general public.

V. REGULATORY BASIS FOR PETITION AND REGULATIONS FROM WHICH EXEMPTION IS SOUGHT

Section 44807 grants the Secretary of the United States Department of Transportation (the “Secretary”) the authority to use a risk-based approach to determine whether a proposed UAS operation can operate safely in the national airspace system. Under this authority, the Secretary may grant exemptions to the applicable operating rules, aircraft requirements, and pilot requirements for a specific operation on a case-by-case basis.

Petitioner seeks exemption from the following interrelated provisions of 14 C.F.R. Parts 107 and 137:

FAR	Description
§ 107.36 ²	Carriage of Hazardous Material
§ 137.19 (c), (d) and (e)(2)(ii)(iii) and (v)	Certification requirements.
§ 137.31	Aircraft requirements.
§ 137.33	Carrying of certificate.
§ 137.41(c)	Personnel, Pilot in command.
§ 137.42	Fastening of safety belts and shoulder harnesses.

With respect to each section of the FARs from which Petitioner is seeking an exemption, described below is the rationale for why such exemption is needed, and a brief summary of the operating procedures and safeguards Petitioner intends to follow (and as described more fully in the Operating Documents), which will ensure that the Proposed Operations can be conducted at a level of safety that is at least equal to that provided by the rule from which exemption is sought. For ease of review, this section divides the FARs from which exemption is sought into two main categories: (1) FARs pertaining to Part 107 Unmanned Aircraft Systems Operations; and (2) FARs pertaining to Part 137 Operating Parameters.

¹ See e.g., NTSB Special Investigative Report on the Safety of Agricultural Aircraft Operations, NTSB/SIR-14/01 (Adopted May 7, 2014), finding that seventy-eight accidents involving agricultural operations occurred during calendar year 2013.

² Note to Draft: multiple small UAS operations are prohibited by 14 CFR § 107.35 respectively, and require a waiver issued under §107.200. Part 107 waivers are not granted through the exemption process, but must be applied for separately: https://www.faa.gov/uas/commercial_operators/part_107_waivers/.

To expedite the FAA’s safety assessment of the proposed UAS operations, except where explicitly noted, Petitioner agrees to conduct the proposed operations in accordance with the same applicable conditions and limitations included in the Droneseed Exemption (the “Limitations”).

A. FARs Pertaining to Part 107 Unmanned Aircraft Systems Operations

§107.36 *Carriage of hazardous materials*

Petitioner seeks an exemption from FAR §107.36 *Carriage of hazardous materials* which prohibits the carriage of hazardous material by a UAS weighing less than 55 pounds. Petitioner is seeking an exemption from § 107.36 because §107.205 *List of regulations subject to waiver* does not permit a waiver from § 107.36.

Petitioner will maintain an equivalent level of safety by obtaining a FAA agricultural aircraft operator certificate under Part 137 prior to commencing operations, using pilots who hold a remote pilot certificate, flying UAS weighing less than 55 pounds (if necessary, limiting the amount of hazardous material being carried), and following any and all restrictions placed on the agricultural aircraft operator certificate by the FAA.

B. FARs Pertaining to Part 137 Certification Requirements

Petitioner seeks an exemption from the following FARs related to Part 137 Operating Parameters: §§ 137.19(c), (d), and (e)(2)(ii-iii, v), *Certification requirements*, 137.31 *Aircraft requirements*, 137.33 *Carrying of certificate*, 137.41(c) *Personnel*, and 137.42 *Fastening of safety belts and shoulder harnesses*. An exemption from these FARs is necessary because they are either not compatible with or are unnecessary in the context of the proposed UAS operations.

§ 137.19(c) *Certification requirements*

Petitioner requests an exemption from FAR § 137.19(c) *Certification requirements* to the extent necessary to permit persons holding a remote pilot certificate with a small UAS rating to act as PIC for the Proposed Operations. Consistent with prior exemptions issued by the FAA, an equivalent level of safety will be maintained by requiring pilots to comply with the additional knowledge and skill requirements in Part 137, as well as the Petitioner’s UAS-specific pilot training requirements in the Operating Documents.

§ 137.19(d) *Certification requirements*

§ 137.31 *Aircraft requirements*

Petitioner seeks an exemption from the certification and aircraft requirements in FAR § 137.19(c) *Certification requirements* and FAR § 137.31 *Aircraft requirements* because the UAS will not have an airworthiness certificate.

In the Droneseed Exemption, the FAA granted an exemption to §§ 137.19(d), *Certification requirements*, and 137.31(a), *Aircraft requirements*. Consistent with the FAA’s prior analysis, while the

UAS used in the Proposed Operations will not have an airworthiness certificate, Petitioner will be capable of ensuring that each UAS is in a condition for safe operation based upon a thorough pre-flight inspection and compliance with the Operating Documents. The UAS components have a proven operational history and contain design safety features such that operations conducted pursuant to the Operating Documents and the Limitations will not adversely impact safety.

§ 137.19(e)(2)(ii), (iii), and (v) *Certification requirements*
§ 137.41(c) *Personnel*

Petitioner seeks an exemption from the knowledge and skill test requirements in FAR § 137.19(e)(2)(ii), (iii), and (v) *Certification* requirements, because those requirements are not compatible or applicable to the Proposed Operations. Consistent with the FAA's prior analysis, demonstration of the skill described in these paragraphs is not necessary because they are not compatible with the operation of the UAS during the Proposed Operations. Petitioner's pilot training requirements contained in the Operating Documents will provide pilots with the necessary skills to operate the UAS safely in the Proposed Operations. For this reason, and because the operations of the UAS would not include any exercise of those maneuvers, granting relief from a demonstration of the skills described in FAR § 137.19(e)(2)(ii), (iii), and (v) does not adversely impact safety. Additionally, Petitioner's pilots will need to comply with the skill requirements in FAR § 137.19(e)(2)(iv) from which an exemption is not being sought, as required for certification as an agricultural aircraft operator under Part 137.

For the same reasons referenced above, Petitioner also seeks an exemption from the pilot certificate requirements of FAR § 137.41(c), *Personnel*, as § 137.41(c) prohibits any person from acting as PIC of an aircraft unless that person holds a pilot certificate and rating prescribed by § 137.19(b) or (c), as appropriate for the type of operation conducted. Section 137.41(c) further requires the pilot in command to fulfill the knowledge and skill requirements of § 137.19(e). Petitioner seeks relief from § 137.41(c) to the extent necessary to require a remote pilot in command certificate for the Proposed Operations.

§ 137.31(b) *Aircraft requirements*
§ 137.42 *Fastening of safety belts and shoulder harnesses*

Petitioner seeks an exemption from § 137.31(b) *Aircraft requirements*, and § 137.42 *Fastening of safety belts and shoulder harnesses*, which relate to the installation and use of a shoulder harness and safety belt on an aircraft. An exemption from these requirements is warranted because the UAS do not have an onboard pilot and these regulations are intended to ensure the safety of the onboard pilot during piloted agricultural aircraft operations. For this reason, granting the requested relief from §§ 137.31(b) and 137.42 will not adversely impact safety.

§ 137.33(a) and (b) *Carrying of certificate*

Petitioner requests relief from § 137.33(a) *Carrying of certificate*, which requires that a facsimile of the agricultural aircraft operator certificate be carried on the aircraft. Consistent with the FAA's prior analysis, an exemption is warranted here provided that a facsimile of the agricultural aircraft operator certificate and all certificates of registration are kept in a location accessible to the remote PIC.

Finally, given that Petitioner's UAS will not have an airworthiness certificate, relief from § 137.33(b) *Carrying of certificate*, which requires the airworthiness certificate (if not carried in the aircraft) be kept available for inspection at the base of dispensing operation is conducted, is necessary. Petitioner will keep registration certificates available for inspection.

Petitioner has attempted to identify the appropriate FARs from which an exemption is needed in order to conduct the Proposed Operations. Nevertheless, to the extent that the FAA determines that Petitioner requires an exemption from other FARs which are not addressed or explicitly named herein in order to conduct the Proposed Operations, Petitioner also seeks an exemption from those FARs for the reasons outlined above.

VI. FEDERAL REGISTER SUMMARY

Pursuant to Part 11, the following summary is provided for publication in the FEDERAL REGISTER, should it be determined that publication is needed:

Petitioner seeks an exemption from the following rules in Title 14 of the Code of Federal Regulations:

107.36, 137.19 (c), (d) and (e)(2)(ii)(iii) and (v), 137.31, 137.33, 137.41(c), 137.42.

Petitioner requests an exemption for the purpose of operating Unmanned Aircraft Systems (UAS) weighing less than 55 pounds, to provide commercial agricultural-related services in the United States. The relief requested is similar to that granted in Exemption No. 17936.

VII. CONCLUSION

For the foregoing reasons, Petitioner respectfully requests that the FAA grant this Summary Grant Petition for Exemption. Should you have any questions, or if you need additional information to support Petitioner's Petition, please do not hesitate to contact the undersigned.

Respectfully,



Chris Sundberg

Husch Blackwell LLP