

PRECISION AERIAL AG SERVICE INC.
PART 137 Operator

Petition for Grant of Exemption Under 49 U.S.C. 44807

In response to request for Information No.002
Docket FAA 2021-0039

Precision Aerial Ag Service Inc. Petition to Conduct Unmanned Aircraft Systems (UAS) Operations Allowed by Special Authority for certain unmanned aircraft systems. Title 49 USC § 44807, and 14 CFR § 11 to Authorize Commercial Agricultural-Related Services with UAS Weighing 55 pounds or more.

A. Preamble: and Summary

The Petitioner, Precision Aerial Ag Service Inc, an agricultural company and pursuant to Title 49 U.S.C. § 44807, Special Authority for Certain Unmanned Aircraft Systems and 14 C.F.R. § 11, requests expedited approval, and the necessary exemptions from the following listed Code of Federal Regulations (“CFR”) for the purpose of operating the TTA M8A PRO unmanned aircraft systems (“UAS”) weighing over 55 pounds but no more than 160 lbs. for vegetation and noxious weed control, vector control, row crop applications, forestry applications, controlled low-risk flight demonstration, sales and marketing, flight training, aerial 3D terrain mapping, survey, precision agricultural crop survey, precision agricultural crop spraying, and precision commercial agricultural, commercial agricultural of any type throughout the United States. Precision Aerial Ag Service Inc., an Ohio Corporation, is a Part 137 Operator of manned aircraft and of Small Unmanned Aircraft Systems (“sUAS”) who is equipped and certified to conduct full service Agricultural Operations seeks exemption from the following listed Code of Federal Regulations (CFR) to allow commercial agricultural operations involving the commercial use of TTA M8A Pro.

The proposed operations in this Petition for Exemption are similar in nature to those currently conducted by Integrated Ag Service, LLC, Exemption No 18320.

In this particular petition, as described more fully below is the requested exemption that would permit the operation of the TTA M8A Pro by petitioner, under controlled conditions in operator determined airspace this 1) Limited in Scope 2) Controlled as to access by mission essential personnel only. Grant of the requested exemption is based upon the concise direction expressed within Title 49 U.S.C. § 44807; the added authority granted by the act, as amended; an equivalent level of safety regarding flight operations as expressed herein, and significant cost savings achieved by transitioning from traditional manned aerial resources to unmanned aerial resources. The Petitioner respectfully requests that the FAA grant the requested exemption without delay. Petitioner will operate the TTA M8A Pro while keeping the documents required by the regulations at the ground control stations and immediately accessible to the Remote Pilot in Command (RPIC) and by modifications of the required markings (registration number) of the UAS to be displayed on the fuselage.

The relief requested in this Petition is considered a summary grant as the TTA M8A Pro aircraft has been recently approved by the FAA for commercial agricultural related services in numerous other exemptions. This request is also analogous that granted in Exemption No 18320.

More specifically, Precision Aerial Ag Service Inc. is requesting an amendment to include “TTA-M8A Pro” and a waiver of 14 C.F.R §§ 137.11 (Certificate Required), 137.33 (Carrying of Certificate), 137.42 (Fastening of Safety Belts and Shoulder Harnesses), 137.53 (b) (Operations over congested areas: Pilots and aircraft), and 137.55 (Business name: Commercial agricultural operator).

Point of Contact

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Regulations Being Requested to Be Waived:

14 CFR §§ 61.3(a)(1), 91.7(a), 91.119(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1), 91.417(a)(b), §107.3, specifically, weight greater than 55 lbs, §107.36, 14 C.F.R § 137.11 (Certificate Required), 137.33 (Carrying of Certificate), 137.42 (Fastening of Safety Belts and Shoulder Harnesses), and 137.53 (b) (Operations over congested areas: Pilots and aircraft).

B. Background of the Petitioner, the Manufacturer and the Aircraft “TTA M8A Pro

Precision Aerial Ag Service, Inc is an aerial application service provider of agricultural products, mapping and aerial support for a wide variety of Commercial clients and Government agencies throughout Ohio and the United States. Precision Aerial Ag Service, Inc is utilizing their vast experience in agriculture services and aviation services to expand into missions well suited for UAS/unmanned operations. This vast experience in both agriculture and aviation coupled with the integrated use of UAS, will provide a significant reduction in risk while also improving efficiencies. Precision Aerial Ag Service, Inc. plans to provide a wide range of services in agricultural markets where UAS fit the mission with greater precision, quieter operations, and a significant increase to safety over a manned aircraft.

The major benefits to the general public are 1) reduction in injury to ground based applicators in challenging terrain, 2) reduced exposure to chemicals for applicators, 3) reduction in chemical drift compared to manned aircraft application, 4) reduced risk to flight crew compared to manned aircraft, 5) reduced exposure of surrounding beneficial vegetation, 6) more environmentally friendly application with reduced noise, 7) selective use of chemicals for a safer more targeted application, and 8) better value for the customer.

The UAS for the purposes of this petition is the TTA M8A Pro. The TTA M8A Pro platform was chosen because it includes the most sophisticated features, is manufactured to be durable, and has the easiest to use systems on the market. Additionally, Precision Aerial Ag Service, Inc. strives for innovative power cell technology to improved power, performance,

longevity and superior weight standards for UAS. TTA UAS are designed for maximum flight time with minimum down time. Precision Aerial Ag Service Inc. helps customers maximize the value of their land in a safe, efficient, cost-competitive manner utilizing UAS to reduce reliance on manual labor, while minimizing environmental impact.

The UAS for the purposes of this petition is based upon the Beijing TT Aviation Technology Co., Ltd. ("TTA") M8A Pro. Due to a marketing change in 2018, HSE updated their product names for standardization from the HSE-UAV V8A+ v2 to the original M8A Pro. The aircraft themselves did not change. They have only standardized the model names for global marketing consistency efforts. TT Aviation Technology Co., Ltd. was established in 2008 in Beijing and commissioned by the government and enterprises and institutions engaged in unmanned product development, system integration and services of private enterprises.

These TTA UAS platforms have over four years of industry application experience in China and the Chinese Society of Agricultural Engineering plant protection and pesticide application technology, leading the company's main international multi-rotor UAV, fixed-wing UAV and manned aircraft, and other aviation rotorcraft research and development, sales, leasing and services. The company maintains ISO9001 Quality System and 14001 Environmental Management System certifications and is the key laboratory for Beijing University of Aeronautics and Astronautics. They are the first and largest AOPA 'CAAC' certified Training Facility in China as well as the largest AOPA Testing Facility in North China. Precision Aerial Ag Service, Inc. will be utilizing the same TTA M8A Pro with its proven technologies the FAA has already accepted and approved in numerous previous Exemptions. All of the appropriate documentation to accompany Precision Aerial Ag Service, Inc Petition is included. Additionally, the TTA M8A Pro has logged more than 10,000 hours of testing since its inception by the TT Aviation Technology Co., Ltd.

Additional testing has been performed by Beijing University of Aeronautics & Astronautics as well as the National Plant Protection, machinery quality supervision and inspection center. There are currently over 1,287 of the TTA M8A Pro sold globally on an annual basis with an estimated 2.2 million hours flown safely by customers worldwide.

The Aircraft will be used in Aerial Application of Agricultural Products, which means the operation of an aircraft for the purpose of (1) dispensing any economic poison, (2) dispensing any other substance intended for plant nourishment, soil treatment, propagation of plant life, or pest control, or (3) engaging in dispensing activities directly affecting agriculture, horticulture or dry seeding materials, fertilizer materials. See 14 C.F.R. § 137.3. The TTA-M8A Pro is capable of providing the disbursement of agricultural materials more accurately, evenly, and completely than traditional manned operations. Therefore, this request is submitted in the benefit of the public interest. See 49 U.S.C. §44807. Furthermore, enhanced safety will be achieved by using an unmanned aircraft (UA) rather than a manned aircraft.

The Aircraft employed is sold y Homeland Surveillance & Electronics "TTA- M8A Pro. It is equipped with a GPS Flight Control System, RTK GPS System, Terrain Following Radar, and an optional ADS-B in and an optional out extended squitter.

On board equipment will include a Smart Flow Rate Sensor, liquid Spray Tank, 12S Lipo Battery System and No spark Charing Plugs. The Ground Control Station will consist of a Smart Remote Controller with Bluetooth & All Day-Battery, and an Advanced (FCS) Flight Control System with Full Safety Suite Package. (See Exhibit A- Invoice from HSE).

C. SYSTEM BENEFITS AND PUBLIC INTEREST

1. Precision Aerial Ag Service, Inc.'s intent along with a complete range of agricultural management services, is to provide a wide array of services to the commercial agricultural markets with the TTA M8A PRO system optimized principally for liquid and dry material applications. Their processes protect crops from biological organisms, including weeds, pathogens, vector insects, and arthropods, that interferes with the production of crops affecting quality and/or yield, which can impact consumers through higher crop prices. Spraying herbicides benefits agricultural ecology and increases the efficiency of harvesting operations. Further the selective use of chemicals for a safer more targeted application for weed control reduces the negative impact of excess pesticide application and residual chemicals being left in the soil or running off into streams or the water table. Cover Crop seeding, which is one of many dry materials that will be used, greatly benefits not only local Ohio agricultural land users who are in the Lake Erie waster-shed but also national land users and government conservation programs.

2. Applications by manned helicopters for agriculture carries significant risks of fatality.¹ This was such a concern that in 2014 the National Transportation and Safety Board commissioned a report to understand root causes. The enhanced safety achieved using an unmanned aircraft with the specifications described in this petition, as opposed to the much larger, manned aircraft carrying fuel and crew or passengers, is safer and exposes workers and other people on the ground to significantly less risk. Additionally, Precision Aerial Ag Service, Inc UAS uses batteries which are not as flammable and explosive as 100LL or Jet A fuel. If there was an emergency where the UA crashed, there is a significantly lower chance of individuals being injured from an explosion or fire.

3. According to a USDA Economic Research Service Report, of the United States' 408 million acres of cropland, about 70% (286 million acres) is commercially treated with crop protection products. Out of that, the agricultural aviation industry treats 71 million acres of cropland aerially each year. By utilizing UAS, this vital portion of our nation's food supply can be treated in a more environmentally safe way, thus protecting our streams from excessive chemical run off, algae blooms, etc.

4. A large portion of the agricultural land is currently sprayed by crews on foot, carrying heavy loads on steep, dangerous terrain. Precision Aerial Ag Service, Inc. will replace

¹ See e.g., NTSB Special Investigative Report on the Safety of Agricultural Aircraft Operations, NTSB/SIR-14/01 (Adopted May 7, 2014): "78 accidents [and 10 fatalities] occurred during calendar year 2013 and involved some aspect of agricultural (ag) operations, pilot training, or other crop protection activities. The report identifies the following recurring safety issues: lack of ag operations-specific fatigue management guidance, lack of ag operations-specific risk management guidance, inadequate aircraft maintenance, and lack of guidance for pilot knowledge and skills tests."

this method using its aircraft. It is in the interest of safety to reduce worker exposure to this difficult and dangerous environment.

5. Manned aircraft availability and scheduling are becoming increasingly difficult and costly for Precision Aerial Ag Service, Inc. customers. On average, each manned aerial application business has a little over two (2) aircraft, ranging in price from \$100,000 to \$1,400,000 depending on hopper size, engine type and engine size. Pilot shortages, aircraft shortages, and driver shortages are increasing. Smaller owners and non-governmental organizations without several hundred thousand acres are finding it difficult to obtain economical services with these figures. Precision Aerial Ag Service, Inc. can increase service providers at a lower cost and alleviate pilot and service shortages for small landowners.

6. Manned airplanes and helicopters produce significant noise pollution that disrupt the public's ability to enjoy both private and public property. UAS are much quieter and will not disrupt the public as much as manned aircraft; thus, the benefit will be recognized as a reduction in noise pollution.

7. Pesticides being sprayed from high elevations can be picked up by the wind and carried for miles. By flying at a lower altitude (.5-12 m), and by never leaving the customer's site, there is a significantly reduced chance of pesticides ("driftable fines") being accidentally sprayed in the wrong area. With manned aircraft and helicopters, this can happen in a number of ways: Pilot error or map misinterpretation en route to the site, pesticides being picked up by the wind and blown onto neighboring property affecting commercial cropland and residential areas, and equipment malfunction.

About HSE-UAV

Homeland Surveillance and Electronics (HSE) is a family and Veteran owned, American-based full-service dealer of industrial unmanned aircraft. As one of the original pioneers of the commercial drone industry (est. 2009), they take the future very seriously and are honored to provide exceptional service to our customers around the world. They focus on innovation; in some sense, the current technology is already 'old school', and they continually listen to customers for what the customer wants next. Inside of that commitment, their UAVs are unlike anything else in the sky. Unmatched abilities, quality, flight time and safety features, paired with a team of experts, ensure their customers achieve their goals. Speaking of their experts, their people love what they do, are empowered to 'do the right thing', and they are honored to serve our long list of industries including First Responders, Military, Utilities, Farmers / Agriculture, Universities, and more. As a premier and full-service provider, HSE provides everything needed for successful integration, including flight & safety training, consulting, financing, hired pilot services.

HSE-UAV History

HSE started in 2009, shortly after Terry Sanders retired from the Illinois State Police, when his best friend since 4th grade, Dave Sanders, called him with an idea about getting into

the emerging “drone” business. Dave shared an article stating that it would be a twenty-five (25) billion-dollar industry by 2020, and convinced Terry to go into business with him. Dave’s background is in software and technology, while Terry’s was in military and police—the side of the industry that they wanted to target. They agreed to start the business and began researching many different manufacturers to identify the best products for their purposes. Once they identified the manufacturer and were licensed and registered, they began training themselves on the products.

After a few months, Dave asked his brother to join the company with his background in sales and website integration. He developed the website and they started to get leads... a lot of leads. Shortly, they were overwhelmed with the work and that’s when we asked Dave’s children, Bryan and Joye Sanders, to join the team and bring their backgrounds in banking, finance and sales to the business.

Since that time, HSE-UAV has added dealerships, and developed a team of experts to become a premier full-service provider for the complete UAV solution. The HSE-UAV team is proud to be entering a new promising era for the company. The team’s commitment to providing a full-service experience remains stronger than ever. We are proud to provide our customers with the highest quality UAVs, parts and accessories, flight training and certifications, as well as a wealth of experience, knowledge and information.

D. DESCRIPTION OF THE TTA M8A PRO UAS

The aircraft is a multi-rotor UAS aircraft comprised of a VTOL UA and a transportable Ground Control Station (GCS). It provides a wide array of essential agricultural spraying services, including watering, fertilizers, pesticides, and herbicides. It can also be equipped with sensors and equipment to detect and monitor agricultural areas that require irrigation, fertilization, or other treatments. It does not carry any flammable propellant or fuel.

Numerous companies are currently operating The TTA M8A Pro throughout the United States by previously approved Section 333 exemptions by the FAA for aircraft over 55 lbs. The dimensions and physical characteristics of the UAS are as follows:

The TTA M8A Pro is a multi-rotor UA.

TTA M8A Pro

Flight Controller:

Autopilot Manufacturer:

Beijing TT Aviation Technology Co., Ltd. ("TTA").

Utilization: Essential agricultural spraying services, including watering, fertilizers, pesticides, herbicides, seeding and dry fertilizer application.

I. Standard Components and Safety Systems

E6 Autopilot - The TTA M8A Pro employs E6 Autopilot flight controller utilizing Bluetooth software technology. The E6 Autopilot flight controller is in widespread use amassing over 15 million flight hours in worldwide service. Functionality includes a Return to Land (RTL) feature to mitigate lost signal, low battery, lost Visual Line of Sight (VLOS) and loss of pilot control (flyaway). The software provides mitigation for loss of telemetry, allowing the pilot to either continue flight in pre-programmed mode, or manually fly under Remote Control (RC) mode. Additionally, the UAS listed in the petition is equipped with a second Global Positioning System (GPS) with geo-fencing capabilities as a failsafe.

Rotor Fail Protection - If one rotor fails, the flight controller will compensate for lost rotor and will notify operator via on-screen warnings; aircraft maintains stability allowing operator to safely land.

Open-source ground software system – The system uses Mission Planner and Ground Control, or a derivative of those. These are standard, mature software solutions, built on open-source platforms and developed in Partnership with 3D Robotics and the Ardupilot group.

Emergency brake and return-to-launch (RTL) - The operator has systems that they can use to instantly stop the UA and return it to the base point at a predetermined safe height, respectively.

Geofencing and Obstacle avoidance - The UA's flight controller is given 6 GPS coordinates of a boundary that it cannot leave, keeping the UA from leaving the predetermined and defined operations area. When enabled, the UA can "hit" the perimeter, but not fly past or through it. Manual or automatic inputs commanding the UA to break the geofence are ignored. In the case where there is a road along the property line, or a place where a neighbor's property is located, the operator can use the Ground Station Google Maps interface and draw a line around the field. This is a perimeter that the drone will not fly outside of. If the operator were to try to fly beyond that boundary, the aircraft would approach the line and stop and hover. Second, for an obstacle, other property, or people, and purposeful obstacle boundary can be established. This means that the aircraft will build its flight plan and avoid that obstacle. Further, the operator can specify how large of a buffer they would like to keep between the aircraft and that obstacle. As a reminder, if there was ever a time where a non-participant person or property entered the planned flight area, the operator could immediately halt the operation by activating the emergency "kill switch" to immediately stop the rotors or may press a switch to activate the emergency return to home feature.

RTK GPS - The UAS has a telemetry link to a base station which makes GPS corrections, giving the UA an accurate location reading with under 3 feet of precision. (Typically, 50cm). This ensures that the UA is flying the missions it is given and applying herbicides in a pattern much more efficiently and consistently than agricultural helicopters. **2 Redundant GPS**- All UAS are equipped with redundant GPS units. Should the primary GPS unit experience a

failure, a second GPS unit will automatically takeover as a failsafe to ensure accurate positioning and navigation is maintained. Full dual redundancy (Gemini M & Gemini S -Full GPS, IMU, Compass and Controllers.) Automatic switching in real-time between compass, IMU, GPS or controller if one fails.

Telemetry - Should a telemetry link to the base station be lost, the UA has all mission parameters stored onboard, and can safely continue to execute a mission. If the RTK link is dropped, the positioning accuracy may drop to around 3m accuracy. Audio alerts on the RC remote and base station computer will alert the RPIC, who may opt to allow the UA to continue its mission if it is safe to do so or interrupt the mission and bring the UA back under RC control.

RC control - All missions occur with pre-programmed commands providing instructions to the UA. At all times, a RPIC has an RC remote with the ability to override the current mission. Should the RC connection be lost, the autopilot software will immediately end the mission and return the UA to the home launch location. In this case, the UA ascends to a height set by the RPIC in advance of the mission and determined to be safe given the surrounding terrain, normally 100-400 feet. The UA then returns in a straight line to the launch location. The RPIC may choose to resume, based on experience with these types of operations, TTA would recommend an RTK GPS be operating with a positional accuracy under 2m as a requirement for operations of this type or alter the mission if an RC link is established again while the UA returns home.

Emergency Kill Switch - An emergency "Kill Switch" allows the operator to instantly stop motors in the event of an emergency.

II. Additional Safety Functions

Additional supplemental safety information is provided below to strengthen the petitioner's position that the proposed UASs can be operated safely in the NAS in accordance with Title 49 U.S.C. § 44807. The TTA M8A Pro has an unprecedented safety rating with 0 reported injuries or fatalities during customer use and or testing.

Full Black Box / Flight Recording of all flights: Flight data shows a real-time video of all operator control input, GPS statuses, vibrate, shake and motor balance statuses along with battery voltage and all other critical telemetry data allowing operator to fully track entire history. All flights are automatically saved on the GCS. This further adds to safety for operator and VO training as operator-caused issues can be quickly identified. Further, it allows for remote diagnostics and has a financial benefit not requiring aircraft and components to be unnecessarily shipped.

Optional Parachute protection: Automatically deploys based on sudden descent or operator-activated switch.

Safety parameters: Max altitude, distance from home, horizontal speed and vertical speed: defaults are set by Precision Aerial Ag Service, Inc. based on location and operating restrictions. Optional High Visibility LED Aviation Lighting: Long-range visible, high intensity LED strobes may be selectively used by Precision Aerial Ag Service, Inc based on location and operating restrictions.

Intelligent Assisted Launch and Landing: Aircraft uses GPS and IMU data to determine when the craft is fully on the ground, meaning the craft will not shut rotors off until firmly on the ground. Aircraft also uses IMU data to safely and smoothly handle “In Ground Effect” caused by the rotor downwash, which lessens stress and accident likelihood for operator.

Flight Stall Prevention: Flight controller prevents accidental 'throttle zero' motor stall while in the air. In an emergency, operator can switch instantly to 'manual' mode to activate rotor kill, providing complete system override by the pilot during an in-flight emergency.

Semi-Automatic Navigation: Allows operator to manually override aircraft speed and altitude instantly during automatic Ground Station controlled flights.

10.5-second auto-lock rotors: Automatically locks rotor from accidental turning after initial power connected and again five seconds after rotors stop.

Change of Flight Parameters: Ability to change parameters in real-time (during flight).

Flight Controller Modifications: Ability to program, calibrate, debug, and modify flight controller information without power to rotors: allows safe physical interaction with UA while performing maintenance and servicing.

Return to Home Features: Ability to move or edit "Home" (return to home) location if original becomes obstructed (animals, people, or too far of a distance, etc.) after initial launch. If a failure occurs, UA will land at newly designated location.

III. Operational Analysis and Flight Testing

The TTA M8A Pro has onboard safety features to ensure the UAS can operate safely under both normal and contingency operating conditions. These features include automation to increase safety and reduce pilot workload. Some examples are the self-monitoring function (pre-takeoff diagnostics), an altitude control system, and redundant GPS flight control systems with geofencing. The lost-link safety default feature allows the TTA M8A Pro to automatically hover and land in response to a lost-link event. Safety features such as the GPS warning/indicator lights and speed indicator light provide critical system status information to the pilot. HSE has been tracking reliability of the TTA M8A Pro and similar models since 2009.

The TTA M8A Pro also has operated successfully in extreme weather conditions to include high winds and a variety of terrains. The aircraft only encountered two failures: 1. Barometer inaccuracy - caused aircraft to initiate slow descent, no injury or damage resulted. Solution - replaced barometer 2. Magnetic compass failure - redundant system activated, no injuries or

damage occurred. Solution - replaced defective Magnetic Compass Aircraft performed well in extreme altitudes and high winds, no loss of communications, no issues with stability, or control and handling. Performance of all safety features work as designed.

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

1. 49 U.S.C § 44807

The Special Authority for Certain Unmanned Systems (49 U.S.C. § 44807) grants the Secretary of Transportation the authority to use a risk-based approach to determine whether an airworthiness certificate is required for a drone to operate safely in the NAS. 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. The Special Authority for Certain Unmanned Systems (49 U.S.C. § 44807) grants UAS operators safe and legal entry into the NAS upon consideration of its size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight. The FAA further may find that the UAS does not require “airworthiness certification under section 44704 of title 49, United States Code.”

2. 49 U.S.C. § 44701

The FAA is further authorized to grant exemptions from its safety regulations and minimum standards under 49 U.S.C. § 44701 (“Section 44701”) “if the Administrator finds the exemption is in the public interest.” Section 44701(f) (authorizing the grant of exemptions from safety regulations and minimum standards under Section 44701(a) and (b) and Sections 44702- 44716). Under 49 U.S.C. § 44701(f), the “Administrator may grant an exemption from a requirement of a regulation prescribed under subsection (a) or (b) of this section or any of sections 44702-44716 of [Title 49] if the Administrator finds the exemption is in the public 9 interest.” For the reasons addressed herein, this Petition qualifies for expedited approval of Petitioner’s request for exemption under both 49 U.S.C § 44807 and 49 U.S.C § 44701.

Precision Aerial Ag Service Inc., seeks exemption from the following interrelated provisions of 14 C.F.R. Parts 61, 91, and 137:

FAR	Description
§ 61.3 (a)(1)(i)	Requirement for certificates, ratings and authorizations
§ 91.7(a)	Civil aircraft airworthiness.
§ 91.119(c)	Minimum safe altitudes:
§ 91.121	Altimeter Settings
§ 91.151(b)	Fuel Requirements for flight in VFR Conditions
§ 91.405(a)	Maintenance required.
§ 91.407(a)(1)	Operation after maintenance, preventive maintenance, rebuilding, and inspections.

§ 91.409(a)(1) and (2) Inspections.	Inspections.
§ 91.417(a) and (b)	Maintenance records.
§ 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) § 137.42 Fastening Harnesses. of safety belts and shoulder	Personnel, Pilot in command. § 137.42 Fastening Harnesses. of safety belts and shoulder
§ 137.42 Fastening Harnesses. of safety belts and shoulder	Fastening Harnesses. of safety belts and shoulder

Listed below are the specific Code of Federal Regulation (“CFR”) sections from which an exemption is sought, the rationale for why an exemption is needed, and a brief summary of the operating procedures and safeguards, which are described more fully in the operating documents being submitted under separate cover, 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 four main categories: (1) FARs pertaining to the UAS; (2) FARs pertaining to UAS Operating Parameters, and; (3) FARs pertaining to Part 137 Operating Parameters.

I. FARs Pertaining to the Unmanned Aircraft System §

- §91.405(a) Maintenance required
- §91.407(a)(1) Operation after maintenance, preventive maintenance, rebuilding or alteration
- § 91.409(a)(1) and (2) Inspections
- § 91.417(a) and (b) Maintenance records

Precision Aerial Ag Service, Inc. seeks an exemption from the following maintenance and inspection related FARs: §§ 91.405(a) Maintenance required, 91.407(a)(1) Operation after maintenance, preventive maintenance, rebuilding, or alteration, 91.409(a)(1) and (2) Inspections, and 91.417(a) and (b) Maintenance records. These regulations specify maintenance, inspection, and records standards in reference to FAR § 43.6. An exemption from these regulations is needed because Part 43 and these sections only apply to aircraft with an airworthiness certificate, which the UAS to be operated under this exemption will not have, and because compliance with these regulatory provisions in the context of UAS operations is not feasible.

An equivalent level of safety will be achieved because maintenance, inspections, and records handling will be performed in accordance with the manufacturer’s manual, any required manufacturer safety or service bulletins. Moreover, the PIC will conduct a pre-flight inspection of the UAS and all associated equipment to account for all discrepancies and/or inoperable components. Maintenance will be performed and verified to address any conditions potentially affecting the safe operation of the UAS, and no flights will occur unless and until all flight critical components of the UAS have been found to be airworthy and in a condition for safe operation. A functional test flight will also be conducted in a controlled environment following

the replacement of any flight critical components, and, as required by the operating documents, the PIC who conducts the functional test flight will make an entry in the UAS aircraft records of the flight. Functional flight tests will not involve the carriage of hazardous materials. In addition, the operator will be required to follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the UAS and its components. Along with the preflight checklists, Precision Aerial Ag Service, Inc. Pilot Training Program, and a routine maintenance program, Precision Aerial Ag Service Inc. believes an equivalent level of safety is met, and that equipment at risk of failure can be safely identified before flights occur.

In the Integrated Ag Services Exemption, the FAA determined that the proposed UAS operations required exemption from FAR §§ 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), and that the achievement of an adequate level of safety required certain conditions and limitations., Precision Aerial Ag Service, Inc. has proposed in this Petition a number of Limitations related to maintenance, inspections, and records which it believes provide a level of safety at least equivalent to that provided by FAR §§ 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b). For this reason, and consistent with the exemption granted from these sections in the Integrated Ag Services Exemption, Inc., requests an exemption from these sections subject to the Integrated Ag Services limitations, without having to perform the inspections and maintenance items required by FAR §§ 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b).

II. FARs Pertaining to Unmanned Aircraft System Operating Parameters § 91.7(a) Civil aircraft airworthiness

Inasmuch as there will be no airworthiness certificate issued for the UAS, Precision Aerial Ag Service, Inc. seeks an exemption from FAR § 91.7(a) Civil aircraft airworthiness, which requires that a civil aircraft be in an airworthy condition to be operated. While the UAS operated by Precision Aerial Ag Service, Inc. will not have an airworthiness certificate, consistent with the FAA's determination in the Integrated Ag Services Exemption, the pilot may determine the UA is in an airworthy condition 11 prior to flight. As described more fully in the operating documents, this is achieved through adherence to Precision Aerial Ag Service, Inc routine pre-flight checklist, regularly scheduled maintenance, and the enhanced pilot training requirements of the Precision Aerial Ag Service, Inc. Pilot Training Program.

§ 91.119(c) Minimum safe altitudes

Precision Aerial Ag Service, Inc. also seeks an exemption from FAR § 91.119(c) Minimum safe altitudes, to the extent necessary to allow UAS operations over other than congested areas at altitudes lower than those permitted by rule. The ability to operate at those altitudes is one of the key benefits of using UAS for the proposed agricultural activities. An equivalent or greater level of safety will be achieved given the size, relatively light weight, and slow speed of the UAS, as well as the controlled location where the operations will occur. Precision Aerial Ag Service, Inc. generally will try to maintain an operating altitude of between 1- 25 feet AGL during its spraying operations. That altitude is only increased when exercising caution and issuing a return-to-launch command to the UAS, which causes the UAS to ascend to an altitude of 100 feet AGL before returning home. In the extremely remote and secure

environment where Precision Aerial Ag Service, Inc. operations will occur, flying at a low altitude increases the aircraft's efficiency, without posing any increased risk to people or property. Even at these low altitudes, Precision Aerial Ag Service, Inc. UAS operations will be conducted at a level of safety equal to or greater than that achieved by a larger manned aircraft performing similar activities at the altitudes required by FAR § 91.119. Moreover, an equivalent or even higher level of safety can be provided instead by, as provided herein, operating so as to de-conflict with manned vehicles operating above 500 feet AGL, within the VLOS of the RPIC with the assistance of multiple VOs in communication with RPIC so as to ensure the safety of and de-conflict with any persons or property in the air and on the ground, including Participating and non-Participating personnel as well as the other UAS.

§ 91.121 Altimeter settings

Precision Aerial Ag Service, Inc. also requests an exemption from FAR § 91.121 Altimeter settings, which requires a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. In the Integrated Ag Service Exemption, the FAA stated that an equivalent level of safety to the requirements of FAR § 91.121 can be achieved in circumstances where the PIC uses an alternative means for measuring and reporting UA altitude, such as global positioning system (GPS). The UAS that Precision Aerial Ag Service, Inc. intends to use for performing the proposed operations will be equipped with GPS or other equipment for measuring and reporting UAS altitude, and the RPIC will check the UA altitude reading prior to each takeoff, effectively zeroing the UA's altitude at that point. Consistent with previously granted exemptions, these requirements ensure that an equivalent level of safety will be achieved, and an exemption from the requirements of FAR § 91.121 is therefore appropriate.

§ 91.151(b), Fuel requirements for flight in VFR conditions

Finally, Precision Aerial Ag Service, Inc. seeks an exemption from FAR § 91.151(b) Fuel requirements for flight in VFR conditions, which would otherwise require a 20-minute fuel reserve to be maintained. The FAA has previously determined that a requirement prohibiting the PIC from beginning a UAS flight unless (considering wind and forecast weather conditions) there was enough available power for UAS to operate for the intended operational time and to operate after that with the reserve power recommended by the manufacturer which would ensure an equivalent level of safety to the fuel requirements of FAR § 91.151. Precision Aerial Ag Service, Inc. will adhere to the same reserve power requirement and an exemption from FAR § 91.151's fuel requirements for flight in VFR conditions is therefore appropriate.

IV. FARs Pertaining to Part 137 Certification Requirements

Precision Aerial Ag Service, Inc. seeks an exemption from the following FARs in Part 137: §§ 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, and 137.42 Fastening of safety belts and shoulder harnesses. An exemption from these FARs is necessary because the provisions are either not compatible with or are unnecessary in the context of the proposed UAS operations.

§ 137.19(c) Certification requirements

In the previous exemption granted to Integrated Ag Services, the FAA determined that relief from § 137.19(c) was necessary to permit persons holding a remote PIC certificate with small UAS rating to act as PIC for commercial agricultural aircraft operations when utilizing a small UAS to conduct the operations. The FAA found that a commercial or airline transport certificate that § 137.19(c) requires was not a reasonable requirement for the UAS agricultural operations proposed by Integrated Ag Services. The basis for the relief was that Integrated Ag Services remote PICs would comply not only with the requirements of Part 107, subPart C, but also with the additional knowledge and applicable skill requirements in FAR § 137.19(e)(1) and (2)(i), (iv) and (vi). The relief was also based, in Part, on Integrated Ag Services's compliance with the training requirements in its operating documents.

The proposed operations are identical to that previously approved by the FAA in Exemption No.18320. Consistent with the FAA's prior analysis, compliance with the requirements of Part 107, subpart C, the additional knowledge and applicable skill requirements in FAR § 137.19(e)(1) and (2)(i), (iv) and (vi), and compliance with the training requirements in Precision Aerial Ag Services, Inc. operating documents, will ensure that an equivalent level of safety will be achieved.

§ 137.19(d) Certification requirements

§ 137.31 Aircraft requirements

In Exemption No. 18320, the FAA granted Integrated Ag Services an exemption to §§ 137.19(d), Certification requirements, and 137.31(a), Aircraft requirements. Consistent with the FAA's prior analysis in Exemption No. 18320, while Precision Aerial Ag Service, Inc. UAS will not have an airworthiness certificate, Precision Aerial Ag Service, Inc will be capable of ensuring that the UAS are 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 under the requirements of this exemption will not adversely impact safety.

§ 137.19(e)(2)(ii), (iii), and (v) Certification requirements

Precision Aerial Ag Service, Inc. seeks an exemption from the knowledge and skill test requirements in § 137.19(e)(2)(ii), (iii), and (v) Certification requirements, because those requirements are not compatible or applicable to Precision Aerial Ag Service, Inc. proposed UAS operations. Consistent with the FAA's prior analysis in Exemption No. 18320, Precision Aerial Ag Service, Inc. training and certification program described in the operating documents provides the remote PIC with the necessary skills to safely operate the UAS. For this reason, granting relief from a demonstration of the skills 13 described in § 137.19(e)(2)(ii), (iii), and (v) will not adversely impact safety, and therefore relief is warranted. Precision Aerial Ag Service, Inc. pilots operating UAS under the exemption will still be required to demonstrate the skills listed at § 137.19(e)(2) as applicable, in accordance with the provisions of § 137.19(e), which requires such demonstration in order to obtain the agricultural aircraft operator certificate, unless otherwise exempted. Also, consistent with the FAA's finding in Exemption No. 18320, that

relief from the associated knowledge and skill test requirements of § 137.41(c) is also warranted because of the relief provided to § 137.19(e)(2)(ii), (iii), and (v), Precision Aerial Ag Service, Inc. seeks an exemption from the interrelated knowledge and skill test requirements of § 137.41(c).

§ 137.31(b) Aircraft requirements

§ 137.42 Fastening of safety belts and shoulder harnesses

Precision Aerial Ag Service, Inc. 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 Precision Aerial Ag Service, Inc. UAS do not have an onboard pilot and these regulations are intended to ensure the safety of the onboard pilot during manned 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

Precision Aerial Ag Service, Inc. 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. The FAA has previously determined that relief from §§ 91.9(b)(2) and 91.203(a) and (b) for the carriage of the aircraft flight manual and aircraft registration onboard the aircraft is not necessary. 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 Precision Aerial Ag Service, Inc. 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. Precision Aerial Ag Service, Inc. will keep registration certificates available for inspection.

Precision Aerial Ag Service, Inc. has attempted to identify the appropriate C.F.R.s from which an exemption is needed in order to conduct the proposed operations in this Petition for Exemption. To the extent that the FAA determines that Precision Aerial Ag Service, Inc. needs an exemption from other C.F.R.s which are not addressed or explicitly named in order to conduct the proposed operations, Precision Aerial Ag Service, Inc. also seeks an exemption from those FARs for the reasons outlined above.

F. PILOT CERTIFICATION

§ 61.3 (a)(1)(i) Requirement for certificates, ratings, and authorizations.

No person may serve as a required pilot flight crew member of a civil aircraft of the United States unless that person:

- (1) has in the person's physical possession or readily accessible in the aircraft when exercising the privileges of that pilot certificate or authorization –
- (i) a pilot certificate issued under this part.

The petitioner will conduct the proposed operations under 14 CFR part 91, rather than under part 107. In general, part 91 is predicated on the presumption that the pilot in command conducting an operation under part 91 holds an airman certificate under part 61. As a result, the FAA has determined granting exemption from the requirement of § 61.3(a)(1)(i) to require a person holding a remote pilot in command certificate (with the appropriate training and demonstration of knowledge and skills required by this exemption) to conduct the operations to which this exemption applies will ensure clarity.

The statutory obligation for an airman certificate is codified at 49 U.S.C. § 44711(a)(2). Pilots who conduct operations under this exemption with a remote pilot in command certificate would comply with § 44711(a)(2), as the FAA described in the Operation and Certification of Small Unmanned Aircraft Systems final rule (81 FR 42064, 42088-89 (June 28, 2016)). The general requirements for all airmen include: eligibility, aeronautical knowledge and Transportation Security Administration (TSA) vetting. Given that the operation would occur only after airmen who hold a current Remote Pilot in Command certificate have received specific training, have visited the area of operation and are fully capable of using the tools available to prepare for the operation, conduct comprehensive preflight actions, and conduct the operation only in a limited geographical area, the FAA has previously determined that a remote pilot certificate issued under 14 CFR part 107 provides the FAA sufficient assurance of the pilots' qualifications and abilities to perform the duties related to the operations authorized under this exemption.

The remote pilot in command certificate confirms the petitioner's eligibility, secures TSA vetting, and ensures the PIC has the requisite aeronautical knowledge for operating the UAS within the NAS. Remote pilots conducting operations under part 107 must complete a detailed aeronautical knowledge test, unless they already hold a certificate under 14 CFR part 61 and meet the flight review requirements specified in § 61.56.9 As a result, all such pilots will have the requisite aeronautical knowledge that is a key component of safe completion of all operations that will occur under this exemption. In this regard, the FAA addressed the applicable parts of § 61.125, Aeronautical knowledge, in the remote pilot in command certificate requirements. For the reasons discussed below, this same rationale espoused by the FAA in previous approved exemptions, combined with Precision Aerial Ag Service, Inc. proposed safety mitigations, also supports a finding that the proposed operations under the requested exemptions can be conducted without adversely affecting safety.

While it is true that operations involving UAS weighing 55 pounds or more could raise additional safety concerns than operations involving small UAS, the unique nature of the proposed operations, including the low-risk rural environments in which the operations will occur, will ensure that safety is not jeopardized. While Part 107 will not apply to the proposed operations, wherever possible, Precision Aerial Ag Service, Inc. intends to conduct the proposed operations in accordance with Part 107. Moreover, all UAS operations that meet the definition of

an “agricultural aircraft operation” will be conducted in accordance with those portions of Part 137 from which Precision Aerial Ag Service, Inc. is not exempted. In addition to compliance with Part 107 and the applicable sections of Part 137, Precision Aerial Ag Service, Inc. proposed operations include the following mitigations, however, a full SRM regarding certain elements of the operation is also included:

- Prior to any flight operation, Precision Aerial Ag Service, Inc. will examine the area of planned operation and inspect the terrain and vantage points. Precision Aerial Ag Service, Inc. utilizes a number of tools available to capture this environmental data, using state of the art photographic inspection, handheld survey tools and careful physical inspections. The result is a specific geographical model, with GPS points accurately marking the boundaries of the geofenced flight operating area.
- Following that, all state and local paperwork associated with the operation will be filed before and after operations. Precision Aerial Ag Service, Inc. will comply with all state laws regarding the application of pesticides. These include state and local agency notification, mapping, and specified safety procedures.
- The PIC will hold a Part 107 remote pilot airman certificate and be at least 18 years of age.
- Prior to beginning operations, the PIC will take all preflight actions as set forth in its flight manual, which includes a comprehensive preflight checklist.
- One visual observer (VO) may be utilized as determined by RPIC for each aircraft during all operations. Both the RPIC and VO will maintain a safe distance from the UAS when it is operating as set forth in its flight manual.
- Flights will be limited to a maximum altitude of no more than 200 feet above ground level (AGL) with the exception that in certain instances we may have to go over an obstacle but no more than 400’ above the obstacle E.g.: (High Voltage Lines), and will normally be flown at average altitudes of 2 to 30 feet AGL or less over private fields and other agricultural areas.
- The areas to be flown are remote agricultural sites or other uninhabited agricultural sites which makes for excellent VLOS conditions.
- All operations will occur in a closed-access environment meaning that only the RPIC, the VO is utilized and other Precision Aerial Ag Service, Inc. crew members will be involved.
- All personnel at the site will be controlled by Precision Aerial Ag Service, Inc. at the time of flying. The TTA M8A PRO shall operate from on-site takeoff/landing locations directly next to the PIC and/or co-located VO. The PIC and the VO will be able to verbally communicate during all operations or will utilize hand-held radios on site. In addition, signage announcing future spraying operations will be posted at the site entrance warning any customer employees or non-Participants that an aerial spraying operation is occurring. This is an industry standard process.

- The maximum flight time for each UAS flight will be a maximum of 90% battery time available with most agricultural flights lasting approximately 75% of total battery time available.

I. Precision Aerial Ag Service, Inc.’s Enhanced Pilot Training and Experience Standards

Through its robust training program, which requires aeronautical knowledge, experience, and flight proficiency beyond that required by Part 107, Precision Aerial Ag Service, Inc. will be able to achieve a level of safety equivalent to what would be obtained using a PIC holding a manned pilot certificate under Part 61. Precision Aerial Ag Service, Inc. has integrated safety elements into the operation of its UAS, including comprehensive pilot and VO training and certification requirements that establish an equivalent level of safety to operations conducted with a PIC that holds a manned pilot certificate.

These requirements include: a comprehensive UAS training course, which includes theory and practical components, a pilot theory exam, supervised flight training, including agricultural spraying, completion of Precision Aerial Ag Service, Inc. training and examination program requirements, minimum flight time requirements, demonstrated practical flying ability for the relevant tasks, and continued periodic training after certification.

Aeronautical Knowledge

The following chart addresses each aeronautical knowledge requirement of § 61.125 and explains whether it is relevant to, different from, or addressed by Part 107 operations or Precision Aerial Ag Service, Inc. internal procedures.

§ 61.125 Aeronautical Knowledge	Precision Aerial Ag Service Operations under Part 107
(1) Applicable Federal Aviation Regulations of this chapter that relate to commercial pilot privileges, limitations and flight operations	Addressed by Part 107
(2) Accident Reporting	Addressed by Part 107
(3) Basic aerodynamics and the principles of flight	Topics applicable to unmanned aircraft are included in Part 107
(4) Meteorology	Applicable meteorology principles are covered by Part 107
(5) Safe and Efficient Operation of Aircraft	Covered by Part 107 and included in Precision Aerial Ag Service training. Topics applicable to unmanned aircraft are included in Part 107.
(6) Weight and Balance	“Loading and Performance” is addressed by Part 107. Precision AerialAg Service Inc.

	Will comply with the weight limitations of this Petition and will ensure that external loads do not negatively impact flight characteristics, as required by Part 107.
(7) Performance Charts	Not directly applicable
(8) Effects of exceeding aircraft performance limitations	“Loading and Performance” is addressed by Part 107. Precision Aerial Ag Service, Inc. Will comply with the weight limitations of this Petition and will ensure that external loads do not negatively impact flight characteristics, as required by Part 107, the Manufacturer’s Recommendation in the Operating Manual.
(9) Pilotage and dead reckoning	Not applicable
(10) Use of air navigation facilities	Topics applicable to unmanned aircraft are included in Part 107
(11) Decision making and judgment	Covered by Part 107
(12) Principles and functions aircraft systems	Covered by Part 107 and by Precision Aerial Ag Service internal procedures and use of operations manuals
(13) Emergency operations	Covered by Part 107
(14) Night and high altitude	Not applicable
(15) Operating within the National Airspace System	Covered by Part 107
(16) Lighter than air ratings	Not applicable

Flight Proficiency

FAR § 61.127 contains flight proficiency requirements for specified aircraft categories. Part 17 107 contains no flight proficiency requirements, however, to ensure adequate flight proficiency, Precision Aerial Ag Service, Inc. will require demonstrated multi-rotor proficiency in:

- Preflight preparation;
- Preflight procedures;
- Airport and heliport operations;
- Hovering maneuvers;
- Takeoffs, landings, and go-arounds;
- Performance maneuvers;
- Navigation;
- Emergency operations;
- Special operations; and
- Postflight procedures.

Aeronautical Experience

FAR § 61.129 contains requirements for aeronautical experience that are not required for operations conducted under Part 107. To ensure an adequate level of aeronautical experience, Precision Aerial Ag Service, Inc. will require its pilots to obtain an appropriate level of aeronautical experience, using § 61.129 as a guide, where applicable and reasonable. Many of the requirements § 61.129, however, are either inapplicable or excessive for Precision Aerial Ag Service, Inc. proposed operations. Commercial helicopter ratings require at least 150 hours of flight time. Much of this, however, need not be in a helicopter or as the PIC. Other flight time requirements in Part 61 are cross-country time or instrument time. There is no need for Part 107 remote pilots to obtain time spent in cross-country flight or instrument flight. Precision Aerial Ag Service, Inc. pilots will spend all of their time flying the make and model of multi-rotor aircraft that will be used in their operations. These aircraft are far less complicated than manned aircraft. The pilots can, therefore, achieve a comparable level of experience and safety by requiring 10 hours of total flight time of a multi-rotor system as the PIC with at least 10 take-off and landings. This will be required by the operations manual and training program.

G. FEDERAL REGISTER SUMMARY

Pursuant to Title 49 U.S.C. § 44807, Special authority for certain unmanned aircraft systems and 14 C.F.R. Part 11, 49 U.S.C. § 44701(f), and 14 C.F.R. 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:

61.3 (a)(1)(i), 91.7(a), 91.119(c), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), 91.417(a) and (b), 137.19 (c), (d) and (e)(2)(ii)(iii) and (v), 137.31, 137.33, 137.41(c), 137.42.

Precision Aerial Ag Service Inc. requests an exemption for the purpose of operating Unmanned Aircraft Systems (UAS) weighing 55 pounds or more, but no more than and 106 pounds, to provide commercial agricultural-related services in the United States. The relief requested is similar to that granted in Exemption No. 18320, Integrated Ag Services.

H. CONCLUSION

For the foregoing reasons, Precision Aerial Ag Service Inc. 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 Precision Aerial Ag Service Inc. Petition, please do not hesitate to contact the undersigned.

Respectfully Submitted,

Jason T. Lorenzon

