Hovercrops LLC

DEPARTMENT OF TRANSPORTATION
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DOCKET OPERATIONS

Petitioner's Contact Information:

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Petition for Exemption Summary

Fennig Farms is a fourth generation production agriculture operation in East Central Indiana, which has been owned and operated by Stephen Fennig and his brother Barry Fennig for the past 35 years. For over 40 years, Stephen has been the principal chemical applicator using ground driven equipment, which has significant limitations when the ground conditions are too wet or the crops are too tall. Also, large spray equipment can have detrimental impact due to crop injury and ground compaction. These limitations can be overcome by hiring chemical and seed applications via airplane, but this application method uses additional fuel resources and creates an unnecessary risk to the community as airplanes are required to fly so low to the ground and make turns over roads and homes, typically at significant distance from a safe place to land should an emergency occur.

Up to this time small UAV's have not been of sufficient size to make application in large row crop fields practical, but the DJI Agras T30 changes that. For these reasons, operation of the DJI Agras T30 unmanned aircraft system (UAS) with a maximum takeoff weight above fifty-five pounds is necessary.

Hovercrops LLC hereby applies for exemptions to operate under the Special Authority of Certain Unmanned Systems, 49 U.S.C. 44807. Hovercrops LLC seeks exemption from the following provisions of 14 C.F.R. Parts 61, 91, 107 and 137 and is similar to material to UASolutions Group, Inc (exemption number 18009) and Empire Drone Company, LLC (exemption 18831).

Requested exemptions;

14 C.F.R. 61.3(a)(1)(i)- Requirement for certificates, ratings, and authorizations.
14 C.F.R. 91.7(a)- Civil aircraft airworthiness.
14 C.F.R. 91.119(c)- Minimum safe altitudes: General.
14 C.F.R. 91.121- Altimeter settings.
14 C.F.R. 91.151(b)- Fuel requirements for flight in VFR conditions.
14 C.F.R. 91.405(a)- Maintenance required.
14 C.F.R. 91.407(a)(1)- Operation after maintenance, preventive maintenance, rebuilding, or alteration.

14 C.F.R. 91.409(a)(1)(2)- Inspections.
14 C.F.R. 91.417(a)(b)- Maintenance records.
14 C.F.R. 137.19(c), Certification Requirements, Commercial operator – pilots
14 C.F.R. 137.19(d), Certification Requirements- Aircraft
14 C.F.R. 137.19(e)(2)(ii), Certification Requirements; Knowledge and skill tests; skills; approaches to the working area
14 C.F.R. 137.19(e)(2)(iii), Certification Requirements; Knowledge and skill tests; skills; flare-outs
14 C.F.R. 137.19(e)(2)(v), Certification Requirements; Knowledge and skill tests; skills; pull-ups and turnarounds
14 C.F.R. 137.31(a), Aircraft Requirements; Certification Requirements
14 C.F.R. 137.31(b), Shoulder Harnesses
14 C.F.R. 137.33(a), Carrying of certificate; Certificate carried on the aircraft
14 C.F.R. 137.33(b), Registration and airworthiness certificates available
14 C.F.R. 137.41(c), Personnel; Pilot in command; demonstration of knowledge and skills
14 C.F.R. 137.41(c), Personnel; Pilot in command; commercial certificate
14 C.F.R. 137.42, Fastening of safety belts and shoulder harnesses

Concept of Operations

On our farm we have successfully used a AeroVironment Quantix drone to capture images of crop growth to make shape files for variable rate application. The Quantix drone is a completely autonomous vehicle and is controlled much like the Agras T30 so the operation is very familiar. With a maximum take-off weight of 77.9 kilogram (171.96 pounds), the practical rate of application of the Agras T30 is about 30 acres an hour so it would be a welcome addition to our equipment line. Operations with the DJI Agras T30 is generally safer as compared to operations of manned aircraft since the UAS will be carrying significantly less product, travel less distance in the airspace between operation site and refill/landing station, spend all of its time at very low altitudes, and won't have to fly over public spaces during and between operations.

Operations Manual

Attached to this document include the Safety Guidelines and Disclaimer, User Manual, Intelligent Flight Battery User Guide, and Intelligent Battery Station User Guide. These manuals and guides outline the operational and maintenance procedures for safe operations of the DJI Agras T30.

Emergency Procedures

The DJI Agras T30 has many built in safety features that help prevent unanticipated accidents. The autonomy of the UAS removes much of the human error that could pose significant risk when unexpected situations arise. For loss of link between the remote and aircraft or other technological issues that can occur during flight, the return to home function initiates the aircraft to return to a prerecorded site at a safe altitude set by the pilot in command. In the scenario where battery is insufficient to return to the prerecorded location, the aircraft will automatically land where it is in the application area. Since applications will never be made over a public sensitive area, landing anywhere in the application region will avoid any harm to nearby observers or public structures. Visual line of sight and the use of visual observers strategically placed near the application site avoids potential issues if manual intervention is required.

Checklists

Attached to this document includes a checklist that will be completed prior to each flight to ensure the UAS is in condition to safely complete the mission.

Maintenance Document

Attached to this petition is the maintenance log document for the DJI Agras T30. Maintenance will be performed as outlined in the 'Disclaimer and Safety Guidelines' booklet under the 'Maintenance' section.

Pilot Certification

Prior to operation of the DJI Agras T30, pilots will be tested on their ability to safely and effectively use the UAS. Pilots will be trained and tested on emergency procedures, safety guidelines, and proper care and operations of the DJI Agras T30 system. Pilots will demonstrate sufficient knowledge of aircraft capabilities and limitations in manual and autonomous mode, and demonstrate their ability to handle the system if communication is lost between the remote and aircraft.

Reason and Extent of Relief

61.3(a)(1)(i)
Requirement for certificates, ratings, and authorizations.
Hovercrops LLC seeks exemption from the certificates, ratings, and authorizations requirements stated in 14 C.F.R. 61.3(a)(1)(i). Hovercrops LLC believes the specific training for UAS will be more pertinent for the operations that will be conducted with the DJI Agras T30. Pilots will have to be certified through UAS training and testing that will challenge their ability to operate the Agras T30 safely and demonstrate their knowledge about the rules and regulations that are associated with spreading and spraying operations. Pilots will already be certified under part 107 through the FAA, testing their knowledge of small UAS. Hovercrops LLC believes that the training and testing pilots undergo will maintain a level of safety consistent with the rules outlined in 14 CFR 61.3(a)(1)(i).
91.7(a)

Civil aircraft airworthiness.

Hovercrops LLC seeks exemption from the civil aircraft airworthiness rule since the DJI Agras T30 will not have an airworthiness certificate. The Agras T30 will only be operated after aircraft preflight checks verify the aircraft is functionally sound. The preflight checklists will ensure that the aircraft is inspected regularly for any issues that could adversely affect the flight of the aircraft, and action to correct any issue will be completed before flight is attempted and recorded on the maintenance documents.

91.119(c) Minimum safe altitudes.

Hovercrops LLC seeks exemption from the minimum safe altitudes rule since the DJI Agras T30 will never be operated above 400 feet which is the limit for other sUAS under part 107. During operations, the height of the aircraft will typically apply product about ten to twenty feet above the height of the target crop, ground, or foliage with most operations being conducted below fifty feet

above ground level. When returning to the landing site or traveling to the field for operation, the aircraft will likely fly higher than the operational heights but only to avoid obstacles near the ground but always below 400 feet to avoid manned aircraft in the area. The lower operational height of the Agras T30 is a safety benefit to other manned aircraft in nearby airspace and to the public since operation at a lower height will be safer if manual intervention of the controls is required with increased visibility of the aircraft and any nearby obstacles.

91.121 Altimeter settings
Hovercrops LLC seeks exemption from the required altimeter settings required by manned aircraft since the DJI Agras T30 will control altitude based on global positioning system (GPS) or radar. GPS and radar are highly accurate when reporting altitude of the aircraft and the preflight checklist will help ensure the systems are in good working conditions to report accurate altitude positions that will maintain an equivalent level of safety to the altimeter settings required by 14 C.F.R. 91.121.

91.151(b) Fuel requirements for flight in VFR conditions
Hovercrops LLC seeks exemption from the fuel requirement when flying in VFR conditions that would require a twenty-minute fuel reserve to be maintained. Flight operation of the DJI Agras T30 will be conducted with the automatic return-to-home function that directs the aircraft to return to the landing site when it has either disposed all of the product or when the battery level is low. The low battery return-to-home action is available in the 'Route' and 'AB Route' operation modes. If the pilot is operating in the 'manual' or 'manual plus' operation mode, the pilot will select the return-to-home button to enable the return-to-home function or the pilot will manually fly the aircraft to the landing site when the low battery warning is indicated on the remote controller. The low battery threshold will be set to allow ample time for the aircraft to safely return to the landing site while considering weather conditions and distance from the operational area to the landing site.

91.405(a), 91.407(a)(1), 91.409(a)(1)(2), 91.417(a)(b) Maintenance, inspections, and record handling.
Hovercrops LLC seeks exemption from the maintenance, inspections, and record handling explained in 14 C.F.R. 91.405(a), 91.407(a)(1), 91.409(a)(1)(2), 91.417(a)(b) since many of these rules are pertinent only for manned aircraft with an airworthiness certificate and an equivalent level of safety can be maintained by following maintenance, inspection, and record handling more specific for UAS. Maintenance will be conducted as outlined in the DJI Agras T30 Safety Guidelines and Disclaimer. Inspections will be conducted in accordance with the preflight checklist and maintenance inspections. Maintenance and inspection records will be documented on the appropriate forms and accessible and retained until the work is repeated or superseded by other work or for one year after the work is completed.

14 C.F.R. 137.19(c) -

The petitioner requests to be exempt from this provision since the UAS pilot will hold a Remote Pilot Certification. The Remote Pilot Certification process tests the pilot's knowledge of FAA regulation and rules specific for UAS usage. Public safety will not be adversely affected with this exemption because the Remote Pilot Certification tests the knowledge of the UAS pilot on material specific to UAS use which will be more applicable to UAS usage when making an application. Additionally, the pilot will undergo skill and knowledge testing by the chief supervisor to ensure practical application of knowledge and skill.

14 C.F.R. 137.19(d)
The petitioner requests to be exempt from this provision since the UAS is not certified as is with a manned aircraft. Prior to operation, the UAS will be inspected for any damage or issues that may cause concern during flight. Additionally, the pilot is required to

follow a regular maintenance schedule to ensure the components of the aircraft are functioning properly. Any UAS deemed unfit to fly will be out of commission until proper maintenance returns the aircraft to a condition acceptable for flight according to the preflight checklist and maintenance log.

14 C.F.R. 137.19(e)(2)(ii), 14 C.F.R. 137.19(e)(2)(iii), 14 C.F.R. 137.19(e)(2)(v)
The petitioner requests to be exempt from these provisions since the knowledge and skills testing is not relevant to the UAS operator. Many of the knowledge topics and required skills are specific to manned aircraft, but not practical to UAS operators. An equivalent level of safety will be achieved by testing the operator's skill and knowledge during certification of the pilot. The pilot will demonstrate competency through examination of UAS operation skills and knowledge.

14 C.F.R. 137.31(a),
The petitioner requests to be exempt from this provision since the UAS is not certified as is with a manned aircraft. Prior to operation, the UAS will be inspected for any damage or issues that may cause concern during flight. Any UAS deemed unfit to fly will be out of commission until proper maintenance returns the aircraft to a condition acceptable for flight.

14 C.F.R. 137.31(b),
The petitioner requests to be exempt from this provision since the shoulder harness is impractical for UAS pilots. The rule is intended for manned aircraft; therefore, the exemption would pose no undue risk to the public.

14 C.F.R. 137.33(a)(b),
The petitioner requests to be exempt from this provision and instead carry all necessary paperwork with the Pilot in Command. The rules are more pertinent to manned aircraft and impractical for UAS operations. Public safety will not be adversely affected because all required paperwork will be with the Pilot in Command during operation.

14 C.F.R. 137.41(c),
The petitioner requests to be exempt from this provision for similar reasons as stated for 14 C.F.R. 137.19(c) for knowledge and skill tests. Public safety will not be adversely affected with this exemption because the Remote Pilot Certification tests the knowledge of the UAS pilot on material specific to UAS use which will be more applicable to UAS usage when making an application. Additionally, the pilot will undergo skill and knowledge testing by the chief supervisor to ensure practical application of knowledge and skill.

14 C.F.R. 137.42,
The petitioner requests to be exempt from this provision for similar reasons as stated for 14 C.F.R. 137.31(b). The safety belt and shoulder harnesses are impractical for UAS operation. The rule is intended for manned aircraft; therefore, the exemption would pose no undue risk to the public

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Aircrew Training Manual

Pilot certification is contingent on maintaining a current 14 CFR part 107 certification and Office of Indiana State Chemist category 11 certification. In addition to the certification requirements of continuing education for part 107 and category 11, and annual training hosted by the chief supervisor shall be attended to ensure current knowledge of rules, regulations, and operating procedures.

The pilot should be proficient in the topics listed below. Materials to help study the topics include FAA parts 107 and 137 rules and regulations, part 107 study guide, Office of Indiana State Chemist category 11 study guide, and specifications and flight manual of the unmanned aerial system the pilot is being certified with.

The following are topics in which the pilot's knowledge will be tested through written examination.

- Density Altitude
  - Effects of pressure on Density.
  - Effects of Temperature on Density.
  - Effects of Humidity on Density.
- Performance
  - Primary Factors: Takeoff and landing distance, rate of climb, ceiling, payload, range, speed, maneuverability, stability, and fuel economy.
  - Climb performance: Change in aircraft's weight produces twofold effect on climb performance.
- Measurement of Atmosphere pressure
  - Units of measurement.
  - Effects on weather of rising pressure and decreasing pressure.
- Effect of obstructions on wind
  - Ground topography and obstructions that affect flow of wind.
  - Intensity of turbulence and the effect of the aircraft performance.
- Low-Level Wind Shear
  - Microbursts effect of flight and detection.
  - Wind shear can affect flight at any altitude and can be undetected and a silent danger.
- Atmospheric stability
  - The factors that contribute to the stability of the atmosphere and impacts of instable/stable atmosphere
  - Inversion- Conditions and timing when when inversions are most likely to occur and the effects of an inversion on an aircraft.
- Temperature/Dew point Relationship
  - Methods by which air reaches the saturation point.
  - Dew and Frost- Weather conditions that cause dew and frost and potential effects on an aircraft.
- Clouds
  - Unstable/Stable Air and the associated clouds that form under each condition.
- Fronts
  - Weather conditions can rapidly change as the zone between the air masses move

through a region.

- Ceiling
  - Lowest layer of clouds reported as being broken or overcast or vertical visibility into an obscuration like fog or haze.
  - Reports that provide routine observations of ceiling information (METAR).
- Visibility
  - Greatest horizontal distance at which prominent objects can be viewed with the naked eye.
  - Reports that provide routine observations of ceiling information (METAR).
- Weight
  - Center of Gravity
  - Weight and lift relationship
  - Performance effects on an aircraft when center of gravity and weight changes.
- Stability
  - Maneuverability- Governed by the aircraft's weight, inertia, size and location of flight controls, structural strength, and powerpl
- Clouds
  - Unstable/Stable Air and the associated clouds that form under each condition.
- Fronts
  - Weather conditions can rapidly change as the zone between the air masses move through a region.
- Ceiling
  - Lowest layer of clouds reported as being broken or overcast or vertical visibility into an obscuration like fog or haze.
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  - Reports that provide routine observations of ceiling information (METAR).
- Weight
  - Center of Gravity
  - Weight and lift relationship
  - Performance effects on an aircraft when center of gravity and weight changes.
- Stability
  - Maneuverability- Governed by the aircraft's weight, inertia, size and location of flight controls, structural strength, and powerplant.
  - Controllability- capability of an aircraft to respond to the pilot's control.
- Load Factors
  - It is possible for a pilot to impose a dangerous overload on the aircraft structures.
  - An increased load factor increases the stalling speed and makes stalls possible at seemingly safe flight speeds.
  - Understand how load factors are affected in steep turns.
  - Understand how load factors are affected causing stalling speeds.
- Weight Balance
  - Effects of Weight- Lower maximum altitude, shorter range, reduced maneuverability, etc.
- Steps to taken before starting operations
  - Survey of the area to be work.
  - Potential takeoff and landing sites.
  - Risk mitigation techniques.
- Safe handling of economic poisons and proper disposal of used containers for those poisons.

- Restricted-entry interval (REI).
- Personal Protective Equipment (PPE).
- Triple rinse procedures.
- Location of pesticide information such as active ingredients, usages rates, ect.

• General effects of economic poisons and agricultural chemicals on plants, animals, and person, with emphasis on those normally used in the areas of intended operations.
  - Target pest of pesticide groups such as fungicides, insecticides, and herbicides.
  - General toxicity level of fungicides, insecticides, and herbicides to humans, animals, and plants compared to target pest

• Symptoms of poisoning of persons from economic poisons, the appropriate emergency measures to be taken.
  - Acute and Chronic pesticide exposure signs and symptoms.
  - Location of emergency information for spills and exposures.

• Performance capabilities and limitations of the aircraft being tested.
  - Maximum payload weight.
  - Maximum speed.
  - Maximum tolerable wind speed.

The following are topics in which the pilot's knowledge and skill will be tested orally and in practice.

Preflight preparation/procedures-

• The pilot will need to demonstrate the ability to conduct preflight procedures to prepare for the operation including team meetings, aircraft inspection, and request of necessary authorizations.
• The pilot will need to demonstrate the ability to survey the area of application and identify potential hazards and risk mitigation techniques.

Crew Resource management

• The pilot will need to demonstrate the ability to use crew resource management to effectively communicate the roles and expectations for the team members.

Takeoffs and landings

• The pilot will need to demonstrate the ability to safely and smoothly take-off and land using both manual and autonomous flight modes. Takeoffs and landings should be demonstrated with and without a payload.

Hovering maneuvers

• The pilot will need to demonstrate the ability to turn the front of the aircraft (rotor) to the left and to the right while maintaining position over a reference point while maintaining a constant altitude and rate of turn.

Performance maneuvers

• The pilot will need to demonstrate the ability to change altitude, speed, and direction while flying in both manual and autonomous modes. Performance maneuvers will need to be demonstrated with and without a payload.

Navigation

• The pilot will need to demonstrate the ability to identify where the aircraft is at all times during an operation and the ability to return the aircraft to the landing site while avoiding any obstacles that may be in the operational area.

Emergency operations

• The pilot will need to demonstrate the aircraft response when a loss of signal from the remote to the aircraft occurs.
• The pilot will need to demonstrate the ability to safely land the aircraft during an operation if an

emergency occurs during flight.
• The pilot also needs to describe the appropriate response to a pesticide or chemical exposure that could occur during an operation.
Postflight procedures
• The pilot will need to demonstrate the ability to complete the necessary post-flight procedures such as daily maintenance and record keeping.
• Pilot should complete the necessary inspection and maintenance in accordance to the T30 Maintenance lo
Maintenance log.
• Pilot should fill out the required documents that record application information required by state and local laws

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Flight operations and procedures manual

The PIC should go through each bullet when considering an operation.

Cautions

- Pesticides can pose serious risk to safety and should be handled carefully.
- Residue on the equipment caused by splashes or spills when pouring and mixing can cause exposure to skin. Ensure proper Personal Protective Equipment (PPE) is correctly worn and regular cleaning of equipment is performed.
- Do not fly in locations where obstacles are difficult to avoid or where hazards conditions may exist.

Pre-Mission

- Petitioner will file NOTAM for each flight not more than 72 hours in advance, but not less than 24 hours prior to the operation.
- All necessary permissions by state and local requirements for the operational areas must be granted prior to operations and in accordance with permission time frame.
- Pre-mission briefing by the pilot in command (PIC) should inform team members of their roles in the mission, special safety rules or notes, and mission details.
- Plan the operation flight using one of the DJI Agras app flight planning functions (Route, A-B Route, Manual, or Manual Plus).
- UA system shall be programmed so the aircraft returns to takeoff site if loss of communication occurs.
- Ensure remote controller and aircraft batteries are fully charged.
- Ensure all parts are in good condition before flight.
- Check that landing gear and spray tank are firmly in place.
- Propellers and frame arms are unfolded and arm locks are firmly tightened and that nothing is obstructing the motors or propellers.
- Check that the spraying system is not blocked and works properly.
- Ensure Compass is calibrated after being prompted to do so in the DJI app on the remote controller.
- Complete Pre-flight checklist to ensure the operating system is in good working order prior to flight.
- Stay clear of rotating propellers and motors.
- Takeoff and landing locations will be very near the PIC and VO.

During Mission

- Make sure to fly within the maximum takeoff weight of the Agras T30.
- The DJI Agras app will intelligently recommend the payload weight limit for the tank according to the current status and surroundings of the aircraft. Do not exceed the recommended payload weight limit when adding material to the tank.
- Do not use the Combination Stick Command (CSC) or other methods to stop the motors when the aircraft is airborne unless in an emergency situation.
- Avoid unnecessary distractions such as phone calls, text messages, or personal conversations during operations.
- Pause the operation and land the aircraft if low battery warning is initiated.
- If the radar module is unable to work properly in the operating environment, the aircraft will be unable to avoid obstacles during Return to Home (RTH) function while the PIC will need to adjust flight speed and altitude manually.
- Must keep aircraft below 400 feet above ground level, while generally flying much lower (less than 50 feet) except to avoid obstacles.
- Operate aircraft within visual line of site (VLOS) of the PIC and visual observers (VO).
- Operated only during daylight hours between morning civil twilight and evening civil twilight.
- PIC should be current with all required certifications and licenses with the FAA, Office of Indiana State Chemist (OISC), and any other local or regional certification and licenses including but not limited to: FAA Part 107, FAA Part 137, OISC Category 11.
- All flights will remain clear of manned operations, and mission will be terminated or suspended if manned aircraft is identified in the vicinity.
- Flight will not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles for the PIC
- All pertinent documents, records, and certifications will be accessible to the PIC during operations and will be retained for at least 2 years unless specific documentation is required for longer than 2 years.
- Aircraft will not be operated directly over any person except authorized or are consenting personnel required for operations.
- Flight will be aborted if unanticipated obstacles or emergencies occur during operations.

Post-Mission

- Ensure aircraft is turned off prior to turning off remote, or aircraft may initiate return to home function.
- Record information required for documentation.
- Clean equipment of any product residues to reduce the chance of exposure from the applied product after application.
- Recharge batteries to a level where they can be stored and maintained.
- Follow maintenance protocol as outlined in the maintenance log.
- Store aircraft equipment in cool, dry environment.

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Operation risk and safety manual

The PIC should go through each bullet when considering an operation, and use the operational risk management process to determine if application can be completed safely.

Operational Risk Management Principles

1. Accept no Unnecessary Risk
    a. Do not begin an operation if an identified risk can be reasonably managed prior to mission.
2. Make Risk Decision at the Appropriate Level
    a. Although the Pilot in Command (PIC) is required to make the most comprehensive review of the risks associated with an operation, all team members should identify potential risks and bring them to the attention of the PIC.
3. Accept Risk When Benefits Outweigh the Cost
    a. The only risks that should be accepted are those that the benefits of the application outweigh the cost of the potential risk.
4. Integrate operational risk management into planning at all levels
    a. Begin to identify risks early in the planning stages to avoid possible last-minute changes that can complicate operations, but do not hesitate to make changes for the benefit of safety at any time.

Consider the following during operation planning:

- Location of the site and the size and shape of the area to be treated
- Types of crops adjacent to the application site
- Proximity of the site to adjacent fields and other areas where field workers may be present
- Local weather conditions
- Proximity of the site to sensitive areas such as parks, schools, roadways, and other areas
- Proximity of the site to environmentally sensitive areas such as riparian areas, wildlife

habitats, and sensitive plants and animals.

- Safety hazards such as powerlines, guy wires, antennas, towers, trees, and other obstacles.
- Possible limitations to the operational areas such as access and landing/takeoff area.

If the PIC identifies risks, consider if the risks can be minimized by changing the time or buffer area of the operation or if further preparation at the planned area should be completed prior to operation.

Consider the following during the operation:

- The amount of product being used compared to the planned amount
- Changing weather conditions
- Amount of battery being used compared to the amount the PIC anticipated.
- Length of time the operation is consuming compared to what the PIC anticipated.
- Location and safety of crew members that may be moving during operation.
- Any people, animals, or objects that may enter the application area during an operation.

If the PIC identifies risks, consider if the risks outweigh the cost of the risk and if the operation should be terminated or suspended to avoid unnecessary risks.

Consider the following post operation:

- Was the application confined to the planned area?
- Are there potential product residues on application equipment that should be cleaned before handling?
- Does the amount of product used during the operation reasonably match the amount planned?
- Were there any potential product exposures to team members working during the operation?
- Is there reason to believe product exposure to people may be of concern after the operation?
- Was communication fluid and open during operation?
- Are all of the required documents completed and retained?

If PIC identifies any risks or hazards, consider if any post application actions should be completed to reduce the chance of product exposure and document any changes that can be implement for the next operation to improve the effectiveness and safety of the mission.

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Agras T30 Maintenance Log

Person performing maintenance_____

Signature:_____

Date_____

DO NOT ATTEMPT TO REPAIR AIRCRAFT OTHER THAN THE STATED ACTIONS BELOW. AN AUTHORIZED DJI DEALER MUST BE CONTACTED IF ANY PARTS ARE DAMAGED.

Reason for maintenance (circle one): Daily 100 flights 20 flight hours

Daily:

- ☐ Clean all parts of the aircraft at the end of each day of spraying after the aircraft returns to a normal temperature. (Do not clean the aircraft immediately after operations are completed).
- ☐ Completely fill the spray tank with clean water and spray the water through the nozzle until the tank is empty then repeat two more times.
- ☐ Detach the spray and spray tank connector to clean them. Remove the spray tank strainer, nozzle strainers, and nozzles to clean them and clear any blockage. Afterwards, immerse them in clean water for 12 hours.
- ☐ Make sure that the aircraft structure is completely connected so that it can be washed directly with water. Use spray washer filled with water to clean the aircraft body and wipe with a soft brush or wet cloth before removing water residue with a dry cloth.
- ☐ If there is dust or pesticide residue on the motors, propellers, or heat sinks, wipe them with a wet cloth before cleaning the remaining water residue with a dry cloth.
- ☐ Store the cleaned aircraft in a dry environment.
- ☐ Wipe the surface and screen of the remote controller with a clean wet cloth that has been wrung out with water

100 flights/20 flight hours

- ☐ Check for and replace worn propellers.
- ☐ Check for lose propellers. Replace propellers and propeller washers if needed.
- ☐ Check for aging plastic or rubber parts.
- ☐ Check for bad atomization of the nozzles. Clean nozzles thoroughly or replace them.
- ☐ Replace nozzle strainers and the spray tank strainer
- ☐ Other: _____

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Agras T30

Flight Log Mission Number: _____

Pre-flight Checklist:

- Required PPE is provided and all persons are using PPE properly
- Product to be applied is in a proper storage container and ready to be loaded to the aircraft
- Remote controller and aircraft batteries are fully charge
- Landing gear and spray tank are firmly in place
- All screws are firmly tightened
- All parts are mounted securely, and cables are connected correctly and firmly
- Propellers and frame arms are unfolded, and arm sleeves are firmly tightened
- Propellers are in good condition and firmly tightened
- There is nothing obstructing the motors or propellers
- Spraying system is without any blockage and works properly
- Compass is calibrated at flight location
- Aircraft firmware and DJI MG app have latest firmware
- Remote is in correct flight mode for mission
- Flight area is outside any GEO Zones and conditions are suitable for flying
- Check for nearby sensitive areas and develop plan to mitigate risk of such areas
- All team members are present, PIC explains responsibilities and mission details to all team
- PIC explains post flight procedures and responsibilities

Post Mission Notes:

_____

_____

_____

_____

_____

Team Members Present: _____

_____

Pilot in Command (PIC): _____

PIC Signature: _____ Date: _____