U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

June 9, 2015

Exemption No. 11783
Regulatory Docket No. FAA–2015-0280

Mr. Bret McComb, PE
President, CEO
Precision Design & Drafting, Inc.
11768 Atwood Rd
Aurburn, CA 95603

Dear Mr. McComb:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

By letter dated January 24, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Precision Design & Drafting, Inc. (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct inspections, monitoring, mapping and photographing attached equipment and engineering studies involving communication towers, wind turbine tower facilities and power transmission tower operations

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

Airworthiness Certification

The UAS proposed by the petitioner are the DJI Phantom Vision 2+, DJI Phantom Vision 3, and DJI Inspire 1.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21 and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

You have requested to use a UAS for aerial data collection[1]. The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grants of Exemption Nos. 11062 to Astraeus Aerial (*see* Docket No. FAA−2014−0352), 11109 to Clayco, Inc. (*see* Docket No. FAA−2014−0507), 11112 to VDOS Global, LLC (*see* Docket No. FAA−2014−0382), and 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), the FAA found that the enhanced safety achieved using an unmanned aircraft (UA) with the specifications described by the petitioner and carrying no passengers or crew, rather than a manned aircraft of significantly greater proportions, carrying crew in addition to flammable fuel, gives the FAA good cause to find that the UAS operation enabled by this exemption is in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They are similar in all material respects to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, and 11213 also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701,

[1] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

delegated to me by the Administrator, Precision Design & Drafting, Inc.is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Precision Design & Drafting, Inc.is hereafter referred to as the operator.

Failure to comply with any of the conditions and limitations of this grant of exemption will be grounds for the immediate suspension or rescission of this exemption.

1. Operations authorized by this grant of exemption are limited to the DJI Phantom Vision 2+, DJI Phantom Vision 3, and DJI Inspire 1 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

2. Operations for the purpose of closed-set motion picture and television filming are not permitted.

3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.

5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the

duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g., replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.

10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g., inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.

11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.

16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.

17. The UA may 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 from the PIC.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.

19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the

intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N−Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

25. The UAS may not be operated by the PIC from any moving device or vehicle.

26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
    b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

    The PIC, VO, operator trainees or essential persons are not considered nonparticipating persons under this exemption.

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

If this exemption permits operations for the purpose of closed-set motion picture and television filming and production, the following additional conditions and limitations apply.

29. The operator must have a motion picture and television operations manual (MPTOM) as documented in this grant of exemption.

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
    a. Dates and times for all flights;
    b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
    c. Name and phone number of the person responsible for the on-scene operation of the UAS;
    d. Make, model, and serial or N−Number of UAS to be used;
    e. Name and certificate number of UAS PICs involved in the aerial filming;
    f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
    g. Signature of exemption holder or representative; and
    h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

Unless otherwise specified in this grant of exemption, the UAS, the UAS PIC, and the UAS operations must comply with all applicable parts of 14 CFR including, but not limited to, parts 45, 47, 61, and 91.

This exemption terminates on June 30, 2017, unless sooner superseded or rescinded.

Sincerely,

John S. Duncan
Director, Flight Standards Service

Enclosures

PRECISION DESIGN
& Drafting, INC.
11768 Atwood Rd, Suite 20
Auburn, CA 95603
Tel: (530) 823-6546

January 24, 2015

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

Re: Exemption Request Under Section 333 of the FAA Reform Act and Part 11 of the Federal Aviation Regulations

Dear Sir or Madam:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the Reform Act) and 14 CFR Part 11, Precision Design & Drafting, Inc. ("PDND") a professional civil engineering firm hereby applies for an exemption from the listed Federal Aviation Regulations ("FARs") to allow commercial operation of its UASs, so long as such operations are conducted within and under the conditions outlined herein or as may be established by the FAA as required by Section 333.

As described more fully below, the requested exemption would support an application for a commercial Certificate of Authorization and permit the operation of small, unmanned and relatively inexpensive UAS under controlled conditions in airspace including:

1. **Tower structural inspections to existing tower structures** – These operations would take place with express written permission from the owner of the property for the purpose of obtaining detailed structural information. These operations would be conducted in airspace previously reviewed by the FAA for the initial construction of the tower and therefore the airspace of the controlled area would create no additional hazard to the NAS.
2. **Precision Photogrammetry and Mapping** – These operations would take place with express written permission from the owner of the property for the purpose of obtaining detailed terrain and topographic imagery of land features. These operations would be conducted in airspace no more than 400' AGL and the UAS will remain within Visual Line of Sight of the Pilot in Command at all times.
3. **Aerial Imagery of Commercial and Residential Properties** – These operations would take place with express written permission from the owner of the property for the purpose of obtaining quality aerial photos of real estate. These operations would be conducted in airspace no more than 400' AGL and the UAS will remain within Visual Line of Sight of the Pilot in Command at all times.

We can insure that the combination of the UASs lightweight, historically demonstrated flight performance, on board GPS system, fully qualified flight personnel, and strict operation under the guidelines established, the FAA can have confidence that PDND's operation will have an equivalent or greater level of safety of manned aircraft performing the same missions.

Also, given the small size of the UAS's involved and the restricted controlled environment within which they will operate, the applicant fits within that zone of safety (an equivalent level of safety) in which Congress envisioned that the FAA must, by exemption, allow commercial operations of UASs to commence immediately. Also due to the size of the UASs and the controlled areas in which the relevant UASs will operate, approval of the application presents no national security issue. Given the following, the grant of the requested exemptions is clearly in the public interest:

PDND proposes that the exemption requested herein apply to civil aircraft that have the characteristics and that operate with the limitations listed herein. These limitations provide for an exceptional level of safety to operations. These limitations and conditions to which PDND agrees to be bound when conducting commercial operations under an FAA issued exemption including:

1. The UAS will weigh less than 55 lbs.
2. Flights will be operated within line of sight of operator.
3. Maximum total flight time for each operational flight will be 30 minutes.
4. Flights will be terminated at 15% battery power reserve.
4. Flights will be operated at an altitude of no more than 400 feet AGL
5. UAS operator will be trained and certified in the proper safety and operations of the UAS.
6. The UAS will only operate within a controlled area as defined in the Procedures.
7. The operator will post advisor notice around the controlled area.
8. The operator will have been trained in operation of UAS generally and received up-to-date information on the particular UAS to be operated as required.
9. If the UAS loses communications or loses its GPS signal, the UAS will have capability to return to a pre-determined location within the Security Perimeter and land.
10. The UAS will have the capability to abort a flight in case of unpredicted obstacles or emergencies.

The name and contact information of the applicant are:

Precision Design & Drafting, Inc.
11768 Atwood Rd, Suite 20
Auburn, CA 95603
Bret McComb, PE
530-823-6546
bret@pdnd.com

Regulations from which the exemption is requested are as follows:

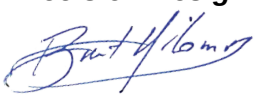
14 CFR Part 21
14 CFR 45.23(b)
14 CFR 91.7(a)
14 CFR 91.9(b)(2)
14 CFR 91.103(b)(2)
14 CFR 91.109
14 CFR 91.119
14 CFR 91.121
14 CFR 91.151(a)
14 CFR 91.203(a) & (b)
14 CFR 91.405(a)
14 CFR 407(a) (1)

14 CFR 409(a) (2)
14 CFR 417(a) & (b)

Accordingly, the applicant respectfully requests that the FAA grant the requested exemption and are prepared to modify or amend any part of this request to satisfy the need for an equivalent level of safety. We look forward to working with your office. Please contact us at any time if additional information or clarifications are needed.

Sincerely,

Precision Design & Drafting, Inc.



Bret McComb, PE
President, CEO

Appendices:

A. Exemption Request and Equivalent Level of Safety
B. Permission Form

Appendix A

EXEMPTION REQUESTS AND EQUIVALENT LEVEL OF SAFETY

Precision Design & Drafting, Inc. requests an exemption from the following regulations as well as any additional regulations that may technically apply to the operation of its UAS's.

14 CFR Part 21, Subpart H: Airworthiness Certificates
Subpart H, entitled Airworthiness Certificates, establishes the procedural requirements for the issuance of airworthiness certificates as required by FAR §91.203(a) (1).
Given the size and limited operating area associated with the aircraft to be utilized by the Applicant, an exemption from Part 21 Subpart H meets the requirements of an equivalent level of safety under Part 11 and Section 333 of the Reform Act. The Federal Aviation Act (49 U.S.C. §44701(f)) and Section 333 of the Reform Act both authorize the FAA to exempt aircraft from the requirement for an airworthiness certificate, upon consideration of the size, weight, speed, operational capability, and proximity to airports and populated areas of the particular UAS. In all cases, an analysis of these criteria demonstrates that the UAS operated without an airworthiness certificate, in the restricted environment and under the conditions proposed will be at least as safe, or safer, than a conventional aircraft (fixed wing or rotorcraft) operating with an airworthiness certificate without the restrictions and conditions proposed.

The UAS to be operated hereunder is less than 55 lbs fully loaded, carries neither a pilot nor passenger, carries no explosive materials or flammable liquid fuels, and operates exclusively within a controlled area as set out in the Procedures. Unlike other civil aircraft, operations under this exemption will be tightly controlled and monitored by the operator, pursuant to the Procedures requirements. Lastly, application of these same criteria demonstrates that there is no credible threat to national security posed by the UAS, due to its size, speed of operation, location of operation, lack of explosive materials or flammable liquid fuels, and inability to carry a substantial external load.

14 CFR § 45.23 (b). Marking of the Aircraft
The regulation requires:
When marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light-sport," "experimental," or "provisional," as applicable. Even though the UAS will have no airworthiness certificate, an exemption may be needed as the UAS will have no entrance to the cabin, cockpit or pilot station on which the word "Experimental" can be placed. Given the size of the UAS, two-inch lettering will be impossible. The word "Experimental" will be placed on the fuselage in compliance with §45.29(f). The equivalent level of safety will be provided by having the UAS marked on its fuselage as required by §45.29(f) where the operator working with the UAS will see the identification of the UAS as "Experimental." The FAA has issued the following exemptions to this regulation to Exemptions Nos. 10700, 8738, 10167 and 10167 A

14 CFR §91.7(a): Civil aircraft airworthiness.
The regulation requires that no person may operate a civil aircraft unless it is in airworthy condition. As there will be no airworthiness certificate issued for the aircraft, should this exemption be granted, no FAA regulatory standard will exist for determining airworthiness.

Given the size of the aircraft and the requirements contained in the Procedures for maintenance and use of safety check lists prior to each flight, an equivalent level of safety will be provided.

14 CFR § 91.9(b) (2): Civil Aircraft Flight Manual in the Aircraft.
Section 91.9(b) (2) provides:
No person may operate a U.S.-registered civil aircraft ... (2) for which an Airplane or Rotorcraft Flight Manual is not required by §21.5 of this chapter, unless there is available in the aircraft a current approved airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof. The UAS, given its size and configuration has no ability or place to carry such a flight manual on the aircraft, not only because there is no pilot on board, but because there is no room or capacity to carry such an item on the aircraft. The equivalent level of safety will be maintained by keeping the flight manual at the ground control point where the operator flying the UAS will have immediate access to it. The FAA has issued the following exemptions to this regulation: Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 95658, 10167, 10167A, 10602, 32827, and 10700.

14 CFR § 91.103(b): Preflight action
This regulation requires that each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include — (b) for any flight, runway lengths at airports of intended use, and the following takeoff and landing distance information… As FAA approved rotorcraft flight manuals will not be provided for the aircraft and because runways are not needed for takeoff and landing operations, an exemption will be needed. An equivalent level of safety will be provided as set forth in Procedures. The operator will take all actions including reviewing weather, flight battery requirements, landing and takeoff locations and aircraft performance data before initiation of flight.

14 CFR §91.109: Flight instruction:
Section 91.103 provides that no person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls. UASs and remotely piloted aircraft, by their design do not have fully functional dual controls. Flight control is accomplished through the use of a control box that communicates with the aircraft via radio communications. The FAA has approved exemptions for flight training without fully functional dual controls for a number of aircraft and for flight instruction in experimental aircraft. See Exemption Nos.5778K & 9862A. The equivalent level of safety provided by the fact that neither a pilot nor passengers will be carried in the aircraft and by the size and speed of the aircraft.

14 CFR §91.119: Minimum safe altitudes
Section 91.119 establishes safe altitudes for operation of civil aircraft. Section 91.119 (d) allows helicopters to be operated at less than the minimums prescribed, provided the person operating the helicopter complies with any route or altitudes prescribed for helicopters by the FAA. As this exemption is for a UAS that is a helicopter and the exemption requests authority to operate at altitudes up to 400 AGL, an exemption may be needed to allow such operations. As set forth herein, except for the limited conditions stated in the Procedures, the UAS will never operate at higher than 400 AGL. The equivalent level of safety will be achieved given the size, weight, speed of the UAS as well as the location where it is operated. In addition, the low-altitude operations of the UAS will ensure separation between these small-UAS operations and the operations of conventional aircraft that must comply with Section 91.119.

14 CFR §91.121: Altimeter Settings
This regulation requires each person operating an aircraft to maintain cruising altitude by reference to an altimeter that is set "... to the elevation of the departure airport or an appropriate altimeter setting available before departure." As the UAS may not have a barometric altimeter, but instead a GPS altitude read out, an exemption may be needed. An equivalent level of safety will be achieved by the operator, pursuant to the Procedures and Safety Check list, confirming the altitude of the launch site shown on the GPS altitude indicator before flight.

14 CFR § 91.151(a): Fuel Requirements for Flight in VFR Conditions
Section 91.151(a) prohibits an individual from beginning "a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing, and, assuming normal cruising speed - (1) During the day, to fly after that for at least 30 minutes; or (2) At night, to fly after that for at least 45 minutes." The battery powering the UAS provides approximately 40 minutes of powered flight. To meet the 30 minute reserve requirement in 14 CFR §91.151, UAS flights would be limited to approximately 10 minutes in length. Given the limitations on the UAS's proposed flight area and the location of its proposed operations within a predetermined area, a longer time frame for flight in daylight or night VFR conditions is reasonable. Applicant believes that an exemption from 14 CFR §91.151(a) falls within the scope of prior exemptions. See Exemption 10673 (allowing Lockheed Martin Corporation to operate without compliance with FAR 91.151(a)). Operating the small UAS, in a tightly controlled area, with less than 30 minutes of reserve fuel, does not engender the type of risks that Section 91.151(a) was intended to alleviate given the size and speed of the small UAS. Additionally, limiting UAS flights to 10 minutes would greatly reduce the utility for which the exemption will be granted. Applicant believes that an equivalent level of safety can be achieved by limiting flights to 30 minutes or 15% of battery power whichever happens first. This restriction would be more than adequate to return the UAS to its planned landing zone from anywhere in its limited operating area. Similar exemptions have been granted to other operations, including Exemptions 2689F, 5745, 10673, and 10808.

14 CFR §91.203(a) and (b): Carrying Civil Aircraft Certification and Registration
The regulation provides in pertinent part:
(a) Except as provided in § 91 .715, no person may operate a civil aircraft unless it has within it the following: (1) an appropriate and current airworthiness certificate ... (b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under §91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew. The UAS fully loaded weighs no more than 55 lbs and is operated without an on board pilot. As such, there is no ability or place to carry certification and registration documents or to display them on the UAS. An equivalent level of safety will be achieved by keeping these documents at the ground control point where the operator flying the UAS will have immediate access to them, to the extent they are applicable to the UAS. The FAA has issued numerous exemptions to this regulation. A representative sample of other exceptions includes Exemption Nos. 9565, 9665, 9789, 9789A, 9797, 9797A, 9816A, and 10700.

14 CFR §91.405(a); 407(a) (1); 409(a) (2); 417(a) & (b): Maintenance Inspections
These regulations require that an aircraft operator or owner "shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter... ," and others shall inspect or maintain the aircraft in compliance with Part 43. Given that these section and Part 43 apply only to aircraft with an airworthiness certificate, these sections will not apply to the applicant. Maintenance will be accomplished by the operator

pursuant to the flight manual and operating handbook as referenced in the Procedures. An equivalent level of safety will be achieved because these small UASs are very limited in size and will carry a small payload and operate only in controlled areas for limited periods of time. If mechanical issues arise the UAS can land immediately and will be operating from no higher than 400 feet AGL. As provided in the Procedures, the operator will ensure that the UAS is in working order prior to initiating flight, perform required maintenance, and keep a log of any maintenance performed. Moreover, the operator is the person most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety. Pursuant to 14 CFR Part 11, the following summary is provided for publication in the Federal Register, should it be determined that publication is needed:

Applicant seeks an exemption from the following rules: 14 CFR §21, subpart H; 14 CFR 45.23(b); 14 CFR §§ 61.113(a) & (b); 91.7(a); 91.9(b) (2); 91.103(b); 91.109; 91.119; 91.121; 91.151(a); 91.203(a) & (b); 91.405(a); 91.407(a) (1); 91.409(a) (2); 91.409(a) (2) & 91.417(a) & (b) to operate commercially a small unmanned vehicle (55lbs or less) for the purpose of inspection, monitoring, mapping and photographing attached equipment and engineering studies involving communication towers, wind turbine tower facilities and power transmission tower operations.

Approval of exemptions allowing commercial operations of UASs will create a level of safety by reducing risk. Conventional tower structure inspections and associated tasks involve extreme risks to personnel physically climbing such structures and/or utilizing high rise equipment both of which create numerous and extreme risk to such personnel. In contrast, a UAS weighing fewer than 55 lbs and powered by batteries eliminates virtually all of that risk. The UAS will carry no passengers or crew and, therefore, will not expose personnel to any of the risks described above.

The operation of small UASs, weighing less than 55 lbs, conducted in the strict conditions outlined above, will provide a level of safety supporting the grant of the exemptions requested herein, including exempting the applicant from the requirements of Part 21 and allowing commercial operations. These lightweight aircraft operate at slow speeds, close to the ground, and in a controlled environment.

Privacy

All flights will occur over private or controlled access property with the property owner's prior consent and knowledge. The granting of this exemption request will provide innovative safety operations. Satisfaction of the criteria provided in Section 333 of the Reform Act of 2012 - size, weight, speed, operating capabilities, proximity to airports and populated areas and operation within visual line of sight and national security - provide more than adequate justification for the grant of the requested exemptions allowing commercial operation of applicant's UAS in and pursuant to the Procedures appended hereto.

Appendix B

PERMISSION TO COLLECT AERIAL IMAGERY OVER PROPERTY

By signing this permission, the signer consents to aerial image collection by Precision Design & Drafting, Inc. (PDND) of the project site or facility which is being farmed and, to the extent necessary, areas adjacent to the site or facility. This permission allows PDND staff to enter upon and around such property in order to collect aerial imagery over the project site or facility, without prior notice, between the hours of 7:00a.m. & 6:00p.m. Monday through Sunday. If PDND staff should wish to collect imagery at any other times, PDND staff will so notify the applicant and will obtain a separate consent for such a collection.

Imagery collection may take place regardless of whether the signer or an agent is present. In the event that the project site or facility is posted with any form of "posted" Or "keep out" notices, or fenced in with an unlocked gate, this permission authorizes PDND staff to disregard such notices or unlocked gates at the time of the collection. The signer further agrees that during imagery collection, PDND staff may capture physical characteristics of the site including, but not limited to, taking measurements of the project site or facility. The following rules apply during the execution of all imagery collection done by PDND staff under this permission:

1. Flight Operations: A Pilot in Command (PIC) will be in control of all aerial imaging assets. All flights will occur within line of sight and include a trained Visual Observer (VO). All aerial imaging assets flown will be less than 55 lbs.
2. Rights to data/imagery being collected: Data/imagery, and other information conceived, developed, or produced in the course of this permission shall remain the property of PDND. The signer and agent maintain unlimited rights to modify and disseminate all data/imagery and information.
3. Compliance with Laws: In the course of performance hereunder, the Parties shall comply with all applicable local, state, and federal laws and regulations.
4. Costs/Liability Limitation: Except in the event of a Party's gross negligence or willful misconduct; the aggregate liability of a Party to the other Party for claims, damages, costs, actions, or liabilities arising from or related to this Agreement, regardless of the legal theory of recovery, shall in no event exceed the actual out-of-pocket costs of the injured Party incurred in the performance of this Agreement.

Permission is granted for aerial imagery collection of property located at the following address(es):

_____

_____

_____

_____

By signing this form, I affirm under penalty of perjury that I am authorized to give consent to entry by PDND staff* as *described above.*

Print Name and Title	Signature	Date

*The signer of this form must be an individual or authorized representative of a legal entity that:

- owns fee title and is in possession of the property identified above;
- maintains possessory interest in the property through a lease, rental agreement or other legally binding document; or
- is provided permission to act on behalf of an individual or legal entity possessing fee title or other possessory interest in the property for the purpose of consenting to imagery collection of such property