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

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

September 24, 2015

Exemption No. 12968
Regulatory Docket No. FAA–2015–0578

Mr. Philip Eisenhauer
3430 Toringdon Way, Suite 101
Charlotte, NC 28277

Dear Mr. Eisenhauer:

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 March 4, 2015, you petitioned the Federal Aviation Administration (FAA) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct aerial evaluations that will assist in determining value and condition of properties.

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 is a Tarot Ironman 650 Quad-copter Tethered Aerial Platform.

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, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, 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), 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), and 12645 to Allied Drones (*see* Docket No. FAA-2014-0804), 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, 11213, and 12645;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, 11213, and 12645 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, delegated to me by the Administrator, Mr. Philip Eisenhauer 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.

[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.

Conditions and Limitations

In this grant of exemption, Mr. Philip Eisenhauer 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 Tarot Ironman 650 Quad-copter Tethered Aerial Platform 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. For tethered UAS operations, the tether line must have colored pennants or streamers attached at not more than 50 foot intervals beginning at 150 feet above the surface of the earth and visible from at least one mile. This requirement for pennants or streamers is not applicable when operating exclusively below the top of and within 250 feet of any structure, so long as the UA operation does not obscure the lighting of the structure.

19. 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.

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

21. 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 5 minutes or with the reserve power recommended by the manufacturer if greater.

22. 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.

23. 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.

24. 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.

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

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

27. 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.

28. 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.

29. 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.

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

31. 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.

32. 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 September 30, 2017, unless sooner superseded or rescinded.

Sincerely,
/s/
John S. Duncan
Director, Flight Standards Service

Enclosures

March 4, 2015

To:
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West Building Ground Floor Room W12-140
Washington, DC 20590

From Petitioner:
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Re: Petition Of Philip Eisenhauer for an Exemption Request Pursuant To Section 333 of the FAA Reform Act of 2012.

To whom it may concern,

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (" Reform Act") and 14 C.F.R. Part 11, Philip Eisenhauer (PE) hereby applies for an exemption from the Federal Aviation Regulations ("FARs") identified below to allow commercial operations of small unmanned aerial vehicles (*i.e.*, "small unmanned aircraft") or Tethered Aerial Platform ("TAP").

This exemption is made based on the information outlined in this petition as well as the accompanying PE's Flight Operations and Procedures Manual ("Operations Manual"), PE's Pre-Flight Checklist, PE's Flight, PIC, VO, SO Logbooks, PE's TAP Maintenance Manual and Log, PE's / DJI Ground Station Manual and NAZA M V2 Manual. PE submits these materials as the material contains confidential commercial and proprietary information that PE has not and will not share with others. Additionally, these documents contain operating conditions and procedures that are not available to the public and are protected from release under the Freedom of Information Ac, 5 U.S.C. § 552 *et seq.,* and any other requirements established by the FAA pursuant to Section 333 of the Reform Act.

The conditions proposed by the applicant are drawn from order 8900.1 CHG 0

As described more fully below, the requested exemption would permit the operation of a small Tarot Ironman 650 Quad-copter Tethered Aerial Platform ("TAP") The relatively inexpensive Tarot Ironman 650 Quad-copter TAP under controlled conditions in airspace

that is 1) limited 2) predetermined 3) controlled as to access and 4) would provide safety enhancements through use of a tether. With these additions we intend to provide a level of safety high than the already safe operations within the industry, presently using conventional aircraft. Approval of this exemption would thereby enhance safety and fulfill the Secretary of Transportation's (the FAA Administrator's) responsibilities to "...establish requirements for the safe operation of such aircraft systems in the national airspace system."

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For your convenience, this Petition is organized as follows:

I. Description of Petitioner

As a Keller Williams Real Estate Agent and Sole Proprietor of Sell Moms Home, I, Philip Eisenhauer am writing regarding the FAA Modernization and Reform Act of 2012 (the "Reform Act" 112 P.L. 95) and the procedures contained in 14 C.F.R.11, to request that Philip Eisenhauer herein known as PE, an owner and operator of small unmanned aircraft, be exempted from the Federal Aviation Regulations ("FARs") listed below so that PE may operate its small unmanned aircraft / lightweight unmanned aircraft systems ("TAP") commercially in airspace regulated by the Federal Aviation Administration ("FAA").

PE is a North Carolina and South Carolina Licensed Realtor, Working from the Keller Williams Ballantyne Office, 3430 Toringdon Way, Suite 101 Charlotte, NC 28277, the office formed in 2006 and currently employees over 367 independent agents.
PE is currently testing and has developed operational procedures for small, unmanned aircraft and lightweight TAPs designed specifically to carry still photography and video cameras. PE plans on operating several sizes of TAPs. Each TAP offered will have a payload limit, thereby allowing PE to provide an aerial camera platform suitable to the weight requirement of the camera system being used. The maximum payload limit PE requires is 30lbs. The camera systems will range from the GoPro© with a weight of less than ¼ pound, to the various forms of DSLR and video cameras weighing 2-3 pounds not including the weight of the TAP. PE equips each of its small un-manned aircraft for aerial still photo and video, photography, primarily for use in the business of Residential and Commercial Real Estate.

I have founded four businesses since 1988. Those businesses include, MetalWear Fine Jewelry, LLC, manufacturer of gold jewelry under license of General Motors. Phil's Golf Car Rental, LLC, Supplying golf cars to various events throughout the US, including civilian and military Airshows. Video Call Services, LLC, Providing video communication services to Dementia and Alzheimer's patients.

Currently working exclusively for, Keller Williams Realty, operating Sell Moms Home as a sole proprietorship, is seeking exemptions for the purpose of producing and providing production services for a variety still and video projects. Clients will include the Residential and Commercial Realtors, Home Inspection Companies, Roofers, and Individuals wanting marketing assistance without the aid of a realtor, and a host of other venues and events fitting within PE safety requirements will also be considered.

Based in Charlotte, NC, PE requests permission to fly its TAPs commercially in both North and South Carolina, and Florida for the purpose of recording aerial cinematography which is to be combined with still and video photography taken indoors and outdoors using conventional methods such as camera and tripod.

PE's has a long history of recreational use of remote control vehicles and aircraft. Beginning in 1969 with control line airplanes and extending to the most recent technology change, the quad-copter. This knowledge and skill set gained and improved upon, over the last 50 years, can now be used for public's benefit.

PE's exemption request would permit its operation of lightweight, unmanned (piloted by remote control) and comparatively inexpensive TAPs in tightly controlled and limited airspace. PE operates only in predetermined specific locations, with written permission of landowners, with 95% all flights held to a maximum altitude 149 feet AGL and 50 feet above the highest obstacle within a 200 foot radius, easily within a visual line of sight.

II. Types of Operations

A. Request to use TAP's for R&D and training at properties owned and controlled by Philip Eisenhauer, and on properties owned and controlled by others with Written Permission.

Philip Eisenhauer seeks the following exemptions to conduct training, compliance flights, and research at properties and facilities owned. Test areas will not be open to the public and access will be restricted to PE's employees, or consultants engaged in flight tests, training maintenance, or testing related to workers skill level and compliance. The primary focus of PE's R&D efforts is to evaluate how to best incorporate the TAP into Real Estate sales, inspection and marketing.

B. Request to use TAP's for Survey, Inspection and Marketing of properties prior to any potential sale.

Philip Eisenhauer seeks exemption to perform evaluations that will assist in determining value and condition of properties. Inspections and evaluation of roof systems and other exterior portions of buildings inaccessible because of steep pitches and/or limited access. Currently structures are examined at great expense of time, resources and risk by sending a person onto the roof structure using ladders and in some cases ropes. Inspection by a TAP will be less time intensive, lowering costs and increasing safety.

III Relevant Statutory Authority

This Petition for Exemption is submitted pursuant to Section 333(a) through (c) of the FAA Modernization and Reform Act of 2012 ("Reform Act"). Congress has directed the FAA "to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system" Pursuant to Section 333 of the Reform Act, the FAA Administrator is to permit unmanned aircraft systems to operate in the National Air Space ("NAS") where it is safe to do so based on the following considerations;

- Unmanned Aerial Systems (TAP) size, weight, speed and operational capabilities.
- Operation of the TAP 5 miles or further from airports and populated areas
- Operation of the TAP within the Visual Line of Sight of the operator. [1]

Additionally, the FAA Administrator has the General authority to grant exemptions from the Agency's safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest. *See* 49 U.S.C. § 106(f) (defining the authority of the Administrator); 49 U.S.C. § 44701(f) permitting exemptions from §§ 44701 (a) (b) and §§ 44702-44716, *et seq*.) A party requesting an exemption must explain the reasons why the exemption: (1) Would benefit the public as a whole, and (2) Would not adversely affect safety (or how it would provide a level of safety at least equal to the existing rules). See 14 C.F.R. § 11.81. (petitions for exemption).

IV PE's Proposed TAP Operations Meet the Requirements of Section 333 of The Reform Act.

PE's proposed TAP Operations in this petition for Exemption qualify for expedited approval pursuant to Section 333 of the Reform Act as each of the statutory criteria, relevant requirements and safety factors are satisfied.

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1 *Id* at 333(b)(1)

A. Approval is warranted, based on the TAP's Size, Weight, Speed and Operational Capability.

PE will employ Tarot Ironman 650 quad-copter frames for TAP operations. All TAPs will employ the most up to date Navigational and Safety Protocol. Using the same technology as the DJI Phantom 2 Vision Plus, updatable software or equivalent. These TAP will have a maximum take off weight of less than 7.5 pounds, a flight speed of less than 35 miles per hour and will not be flown in controlled airspace, at an altitude that will not exceed 149 feet AGL or 50 feet higher than the tallest object within a radius of 200 feet. All flights will be flown in such a way that they can be safely terminated with a reserve battery power of 25% of the battery's maximum charge. A Ground based tether capability of retrieving holding and retrieving the TAP under a full throttle condition.

No TAPs utilized will carry any flammable propellant or fuel. All TAPs have an integrated GPS system that calculates the TAP's position and height, and relays that information via a secure connection to the operator. Additionally all TAPs will contain a FAILSAFE Mode if its connection to the remote control is lost. This system permits the return to a predetermined location and land independently of operator input without injury or damage.

B. Approval is Warranted Based on the Operational Restrictions set forth in the Operations Manual.

PE Operation Manual and the DJI maintenance and flight manuals contain all of the procedures and limitations necessary to successfully perform the operations specified in the Petition of Exemption. To assist the FSA in making a safety assessment of PE's operations, below is a summary of operational limitations and conditions, which will ensure the equivalent or higher level of safety for operations conducted under current regulatory guidelines.

1. All TAPs weights to be 7.5 pounds or less.

2. Restrict all flights to daylight hours.

3. Restrict all flights to "visual line of site" only maintaining the highest level of safety available to the pilot and observer.

4. Maximum flight time for each operational flight will be limited to the amount of time the TAP can be flown and still maintain a reserve battery power of no less than 25%

5. Flights will be flown at an altitude of no more than obstruction level (*ie.* treetop height, building height), or 149 feet AGL or 50 feet above the tallest object within a radius of 200 feet whichever is less and will not be conducted within navigable airspace.

6. Flights will be operated at a lateral distance of at least 150 feet from any person and will notify all inhabited structures, vehicles or vessels that are not involved in the inspection or production.

7. Flights will be limited to a speed of 35 mph. and vertical ascent will be limited to 15 m.p.h.

8. Minimum crew for each operation will consist of the TAP pilot, a Visual Observers (as necessary to safely conduct the mission). A Sensor/ Camera Operator may be used if the system involved requires human direction or control.

9. The visual observer designated for any operation will be in voice contact with the Pilot at all times.

10. All TAPs only operate for 5-20 minutes per flight;

11. All TAPs will be operated in accordance with the requirements of its flight and maintenance manuals.

12. Prior to Operation a Mission Plan will be created setting forth the limitations for the flight as well as the contact and hazard information.

13. A NOTAM will be issued not more than 72 hours in advance of the flight, but not less than 48 hours before flight, if deemed necessary by the FAA.

14. A certificate of authorization will be obtained prior to flight.

15. All required permissions and permitting will be obtained form state, county or city jurisdictions, including local law enforcement, fire or other appropriate governmental agencies.

16. The operator will coordinate all flights with the appropriate Flight Standards District Office.

17. If a TAPs loses communication with the pilot, it will have the capability to return to pre-determined location within the operational area and land.

18. Contingency plans will be in place to safely terminate a flight if there is loss of communication between pilot and the observer.

19. All TAPs will have the capability to abort the flight in case of unpredicted obstacles or emergencies.

20. PIC will have a Class III Medical Certificate.

V. Regulations from which Exemption is requested

The Federal Aviation Act expressly grants the FAA the authority to Issue Exemptions. This statutory authority, by its terms, includes exempting Civil Aircraft, as the term is defined under § 40101 of the Act, including TAPs from its safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest.

PE seeks an exemption from several interrelated provisions of 14 C.F.R. Parts 21, 45, 61, and 91 for purposes of conducting the requested operations using TAPs. Listed below:

1. The specific sections of 14 C.F.R. for which the exemption is sought
2. The operating procedures, and safeguards that the Petitioner has established which will ensure a level of safety better than or equal to the rules the exemption is sought.

A. 14 C.F.R. Part 21, Subpart H – Airworthiness Certificate and 14 C.F.R. § 91.203(a)(1)

The FAA has stated no exemption is necessary from this section if a finding is made under the Reform Act that UAVs provide an equivalent level of safety when compared to aircraft normally used for the same application. These criteria are met, and therefore no exemption is needed. *See* Grant of Exemption to Astraeus Aerial, Docket No. FAA2014-0352 at 13-14, 22. Using UAVs as TAPs and one more level of safety. If however the FAA determines that there are some characteristics of the TAP that fail to meet the requirements of the Reform Act, an exemption is requested.

Equivalent Level of Safety

The TAPs operated by PE are safe when taking into account their size, weight, speed, and operational capability. As set forth in section II Supra the TAP weighs less than 7.5 pounds and will be flown at less than 35 mph, completely outside controlled airspace. TAP under the control of PE will not carry Pilots or Passengers, will not carry explosive materials or flammable liquid fuels and operate exclusively within the parameters stated in the Operations Manual.

Operations under this exemption will be closely controlled and monitored by the PIC and Visual Observer and will be conducted in compliance with local public safety requirements, to provide security for the area of operation. PE will also provide the FAA with advance notice of all operations via NOTAMS and coordination with the local FSDO. In all cases the TAP operated under the proposed conditions will be at least as safe as, or safer than the conventional Rotorcraft operating with an airworthiness certificate without the restrictions and conditions of the proposed TAP operations.

The TAP does not need a means to communicate with other aircraft or ATC. because those capabilities will be possessed by the Pilot and Visual Observer, whom are not onboard, See Grant of exemption Docket FAA-2014-0352 at13. In addition no sense and avoid technology is necessary on the TAP because it will be operated at all times within line of sight.

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See 14 C.F.R. § 11.81(e), which requires a petition for exemption to include:

The reasons why granting the exemption would not adversely affect safety, or how the exemption would provide a level of safety at least equal to that by the rule from which you seek exemption.

B. 14 C.F.R. part 27 Airworthiness Standards: Normal Category Rotorcraft

14 C.F.R. Part 27 Sets forth the procedural requirements for airworthiness certification of normal category rotorcraft. To the extent the Petitioners TAP would otherwise require under Part 27, Petitioner seeks an exemption from part 27's airworthiness standards for the same reasons identified in the request for exemption from 14 C.F.R. Part 21, subpart H. *supra.*

C. 14 C.F.R. § 91.9(c), 45.23(b) and 45.27(a): Aircraft Marking and Identification Requirements

Philip Eisenhauer seeks an exemption from the aircraft marking and identification requirements contained in 14 C.F.R. §91.9(c) 45.23(b) and 45.27(a)

a. 14 C.F.R. § 91.9(c), Civil Aircraft Flight Manual, Marking and Placard requirements provide that:

> No person may operate a US registered civil aircraft unless that aircraft is identified in accordance with Part 45 of this chapter.

b. 14 C.F.R. § 45.23(b), Markings of the Aircraft, states:

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 certified aircraft the operator must also display on that aircraft at each entrance to the cabin, cockpit or pilot station, in letters not less than 2 inches or more than 6 inches, the words "limited", "restricted", "light sport", "experimental", or "provisional" as applicable.

c. 14 C.F.R. § 45.27(a) states:

> Each operator of a rotorcraft must display on that rotorcraft horizontally on both surfaces of the cabin, fuselage, boom, or tail the marks required by § 45.23.

In a previous Grant of Exemption the FAA determined that the exemption from these requirements was warranted provided that the aircraft "have identification (N Number) markings in accordance with 14 C.F.R. Part 45, subpart C if the markings are as large as "practicable" FAA Docket No. FAA-2014-0352

Equivalent Level of Safety

PE will mark all aircraft with their N Number in a prominent spot on the fuselage with markings that are as large as practicable.

D. 14 C.F.R. §91.9(b)(2): Civil Aircraft Flight Manual in the aircraft and 14 C.F.R. §91.203(a) and (b): Carrying Civil Aircraft Certification and Registration

Pursuant to 14 C.F.R. § 91.9(b)(2)

(b) No person may operate a US- registered civil aircraft…

(2) For which an Airplane or Rotorcraft Flight Manual is required by §12.5 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.

Pursuant to 14 C.F.R. § 91.203 (a) and (b)

(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 special flight authorization issued under §91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

PE does not request an exemption from this section but instead notifies the FAA that, in accordance with the FAA Office of chief Counsel's Opinion dated August 8, 2014 the TAP flight manual, registration certificate and other documentation will be kept at the control station with the PIC during flight. The Chief Counsel's Office has held that for all TAP operations this alternate method constitutes full compliance with the regulations.

E. 14 C.F.R. § 91.7(a): Civil Aircraft Airworthiness

PE seeks an Exemption from 14 C.F.R. § 91.7(a) that requires a civil aircraft be in airworthy condition to be operated. The FAA has stated that no exemption is required to the extent that the requirements of Part 21 are waived or found inapplicable.
Accordingly, PE requests that the requirements for section 91.7 be treated in accordance with Section V(A), *supra.*

F. 14 C.F.R. § 91.103 Preflight Action

PE seeks an exemption from 14 C.F.R. § 91.103, that requires a PIC to become familiar with specific information before each flight, including information contained in the FAA–approved flight manual on board the aircraft. While the PIC will be familiar with all the information necessary to safely conduct the flight, an exemption is requested to the extent of an FAA-approved flight manual is required.

Equivalent Level of Safety

An equivalent level of safety will be achieved by following: the Aircraft Operations Manual and Flight Manual. The PIC will take all required preflight actions – including performing all required checklists and reviewing weather, flight requirements, battery charge, landing and takeoff distance, aircraft performance data, and contingency landing areas, before the initiation of flight. The Operations Manual and appropriate Flight Manual will be kept at the ground station with the operator at all times.

G. 14 C.F.R. § 91.109(a): Flight Instructions

PE seeks an Exemption from 14 C.F.R. § 91.109(a), which provides that "no person may operate a civil aircraft (except a manned free balloon) that is being used for flight instructions unless that aircraft has fully functioning dual controls" TAPs and remotely piloted aircraft by their design, do not have dual controls. Instead, flight control is accomplished through the use of a device that communicates with the aircraft via radio communications.

Equivalent Level of Safety

Given the size and speed of the TAPs employed by PE, an equivalent level of safe training, can still be performed with out dual controls because no pilot or passengers are aboard the TAP, and all persons will be in a safe distance away in the event the TAP experiences any difficulties during flight instruction. In addition, Petitioner will conduct computer simulation training, performed prior to any real world flights. Petitioner's employees will need to satisfactory complete 10 hours computer simulation training, prior to performing any real world flight training at its research and development sites. Conducted in a many to assure safety and otherwise comply with all provisions in PE's Operations Manual for flights at the R&D facility. Accordingly PE's proposed method of operation provides superior levels of safety.

H. 14 C.F.R. § 91.119: Minimum Safe Altitudes

PE' requests an exemption from the minimum safe altitude requirements of 14 C.F.R. § 91.119. Section 91.119 prescribes the minimum safe altitudes under which aircraft may not operate, including 500 feet above the surface and away from any person, vessel, vehicle, or structure in non-congested areas. S*ee* 14 C.F.R. § 91.119(c). Section 91.119(d) allows for a helicopter to operate in less than those minimum altitudes when it can be operated "without hazard to persons or property on the surface," provided that "each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA."

Equivalent Level of Safety

The FAA has stated that an equivalent level of safety can be achieved if the TAP will be operated at 149' AGL or below within visual line of sight in addition to GPS based altitude information relayed in real time to the operator. See Grant of Exemption to Astraeus Aerial Docket No. FAA-2014-0352. As the attached Operations Manual indicates, all TAP flown by PE meets these requirements, and a zero altitude initiation point will be obtained prior to flight.

J. 14 C.F.R. § 91.151(a): Fuel Requirements for Flight in VFR Conditions

PE requests an exemption from 14 C.F.R. 91.151(a)'s fuel requirements for flight in VFR conditions. Section 91.151 states:

> (a) No person shall begin a flight in an airplane under VFR conditions unless (considering wind and 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.

Here the technological limitations on TAP battery power means that no meaningful operations can be conducted while still maintaining a 30 minute reserve, PE proposes that all flights comply with this requirement by mandating that the aircraft be safely landed with no less than 25% of battery life remaining.

Equivalent Level of Safety

The FAA has stated that an equivalent level of safety is provided if the TAP flight is terminated with at least 25% reserve battery power still available. See Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352. The Operations Manual conforms to list limit providing an equivalent level of safety.

K. 14 C.F.R. 91.405(a), 91.407(a)(1), 91.409(a)(2), 91.417(a) and (b) Maintenance Inspections

PE seeks an exemption from the from the maintenance inspection requirements contained in 14 C.F.R. 91.405(a), 91.407(a)(1), 91.409(a)(2), 91.417(a) and (b). These regulations specify maintenance and inspection standards in reference to 14 C.F.R. Part 43. *See, eg.,* 14 C.F.R. §91.405(a) (stating that each owner and operator of an aircraft [s] shall have the aircraft inspected as prescribed in subpart E

of this part and shall between required inspections …have discrepancies repaired and prescribed in Part 43 of this chapter"). An exemption from these regulations is needed because Part 43 and these sections only apply to aircraft with an airworthiness certificate, which the TAPs will not have.

Equivalent Level of Safety

An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with the TAP Manufacturers Manual, as referenced in the PE Operations Manual. As provided in the PE Operations Manual, flights will not be conducted unless a flight operations checklist is performed that includes all the aircraft components. The Operations manual also sets requirements for: pre-flight and post flight checklists, flight operation log books, maintenance record keeping, as well as routine pre and post-flight maintenance. The Manufacturers Operations manual sets requirements for appropriate maintenance intervals. If no Manufacturer's Operation manual is printed for a specific TAP, PE will use it own Operations Manual setting requirements for maintenance intervals to achieve an Equivalent Level of Safety.

L. 14 C.F.R. Part 61, 14 C.F.R. 61.3, 14 C.F.R. §61.113: Private Pilot Privileges and Limitations

PE seeks exemption from 14 C.F.R. Part 61, including 14 C.F.R. §61.3 to the extent that these regulations require the TAP operator to have a private pilots certificate. The purpose of part 61 is to ensure the skill and competency of any PIC matches the airspace in which the PIC will be operating, All Flights stay completely out of regulated airspace, with a maximum Altitude of 149 feet AGL (leaving a larger safety margin of an additional 251') Petitioner has concerns that the training and education of the persons obtaining a private or commercial pilots license is not an adequate match for small TAP operation in low altitude, tightly controlled and limited airspace environments, particularly given the vast differences in the control and flight profiles between conventional aircraft and TAP. Accordingly, Petitioner believes that a requirement for a private pilots license is unnecessary, Petitioner also believes a full knowledge all types of Airspace, of FSDO operations, COA 's and NOTAM issuance, is necessary to maintain an Equivalent Level of Safety. Petitioner believes this can be achieved thru satisfactory completion of a Certified Ground School, instruction given by a FAA Certificated Flight Instructor, that covers all FAA-mandated subject material for the Private Pilot.

Petitioner understands that FAA has the ability to impose fines, along with cease and desist orders that are a sufficient deterrent to unsafe and reckless operations.

The March 2014 NTSB decision to overturn NTSB Administrative Law Judge in Huerta *vs* Pirker now gives the FAA the authority to fine operators of TAPs for flying recklessly, carelessly, or flying outside the boundaries of any exemption granted or sought within this document.

In addition PE seeks exemption from 14 C.F.R. § 61.113 which restricts private pilot certificate holders from flying aircraft for compensation or hire, and which would also require a class II medical certificate. The purpose of this section is to ensure the skill and competency of any PIC where the aircraft is carrying passengers or cargo for hire. In this case of this Petitioner, while the TAP will be operated as part of a commercial operation, it carries neither, passengers or cargo. In the Grant of Exemption in: FAA Docket No. FAA-2014-0352 the FAA determined that the unique characteristics of TAP operation outside of controlled airspace did not warrant the additional cost and restrictions attendant with requiring the PIC to have a commercial Pilot certificate and class II medical certificate.

Equivalent Level of Safety

PE seeks to ensure the safe operation by ensuring that any PIC is thoroughly versed in airspace and communication issues pertaining to all aircraft operators but also in the unique aspects of TAP flight. Accordingly as set forth in the PE Operations Manual PE will require all PIC to have completed FAA ground School instruction and also have logged a minimum of 100 takeoff/landing cycles, 20 hours of total time as a TAP rotorcraft pilot and at least 5 hours logged as a TAP PIC with similar TAP type (quad-rotor). Petitioner further states that the PIC must have accumulated a minimum of 5 hours as TAP pilot operating the make and model of TAP to be utilized for operations under this exemption and 3 take - off and landings in the proceeding 90 days. In order to meet the stated national security goal outlined by Congress in the 2012 FAA Reform Act PE will require all PIC to pass a criminal background check at the time of hiring.

In addition to the and experience requirements PE has placed restrictions on its flight operations to ensure and extra margin of safety The TAP will operate in an area away from persons and property not involved in the operation with written permission from those involved or within a 200' radius. All Operations will be flown base on a VLOS at 149' AGL or below, with a maximum altitude of 50' higher than the tallest obstruction within a 200' radius. A NOTAM will be issued between 48 and 72 hours before the flight is to occur, and the flight will be coordinated with the applicable FSDO if so directed by the FAA.

In the event the FAA Determines that a waiver of 14 C.F.R. § 61.3 is inappropriate, PE requests that the exemption from 14 C.F.R. § 61.113 still be granted. The training and currency standards set forth by the PE in the attached Operations Manual are more than adequate to provide an extra margin of safety to allow a private pilot to act as a PIC for compensation or hire.

VI. Drug and Alcohol Program

PE has policies in place to ensure that no person may act as a PIC, Visual Observer or Sensor Operator if they are under the influence of alcohol or any drug. A random drug test program will be implemented at the request of the FAA for PIC and Visual Observers.

VII. Public Interest

The Public interest will be served by granting PE's Petition for Exemption. Congress has established a national policy that favors early integration of TAP into the NAS in controlled, safe working environments such as those proposed in this Petition. In addition, the public also has an interest in reducing hazards associated with alternate methods of inspection and photography operations. Allowing the use of a TAP, allows close video examination from the ground, limiting the exposure of the inspector to the physical hazards of conducting inspections by the use of ladders and ropes. Once the inspection is complete a more accurate value can be placed on the property, because the faults of the property will be known. Additional still photos and video can be used to more accurately portray the property to any potential buyer. It is a widely held view among National Realtor Associations, that a minimum of 87% of all individual's, begin their home search on the internet, looking for pictures and video to describe the home they are looking for.

Benefits to the public will include better descriptions of homes brought to market, and increased sales by educating the consumer through pictures and videos. Allowing them to become familiar with a home, subdivision or community without having to travel to and from that community, particularly if they are being transferred from one city to another.

VIII, Privacy

All flights will be conducted in accordance with any federal, state, or local laws regarding privacy. In addition PE will adopt a series of standards to protect the privacy rights of person impacted by TAP operations.

IX. Federal Register Summary

Pursuant to 14 C.F.R. part 11 the following Summary is Provided for publication in the Federal Register, should it be determined that the publication is needed:

PE seeks an Exemption from the following rules:

14 C.F.R. Part 21, Subpart H
14 C.F.R. Part 27
14 C.F.R. 45.23(b)
14 C.F.R. Part 61
14 C.F.R. 61.3
14 C.F.R. § 113
14 C.F.R. 91.7(a)
14 C.F.R. 91.9(b)(2)
14 C.F.R. 91.103
14 C.F.R. 91.109(a)
14 C.F.R. 91.119
14 C.F.R. 91.121
14 C.F.R. 91.151(a)
14 C.F.R. 91.203 (a) and (b)
14 C.F.R. 91.405(a)
14 C.F.R. 91.407(a)(1)
14 C.F.R. 91.409(a)(2)
14 C.F.R. 91.417(a) and (b)

The exemption will enhance safety by reducing risk to the general public and property owners from the substantial hazards associated with performing equivalent work with conventional aircraft, rotorcraft, or other methods.

X. Conclusion

PE's Petition for Exemption satisfies the criteria articulated in Section 333 of the Reform Act of 2012 including, weight, speed, operating Capabilities, proximity to airports and populated areas, operation within a visual line of sight and national security. This Petition provides more than adequate justification for the grant of the requested exemptions to permit PE to operate described TAPs for operations described herein.

The public interest will be served by granting PE's Petition for Exemption. Congress has established a national policy that favors early integration of TAP into the NAS in controlled, safe working environments such as those proposed in this Petition.

In addition, the public also has an interest in reducing hazards associated with alternate methods of inspection operations. Allowing the use of a TAP, allows close video examination from the ground, limiting the exposure of the inspector to the physical hazards of conducting inspections by the use of ladders and ropes. Once the inspection is complete a more accurate value can be placed on the property, because the faults of the property will be known. Additional still photos and video can be used to more accurately portray the property to any potential buyer. It is a widely held view among National Realtor Associations, that a minimum of 87% of all individual's, begin their home search on the internet, looking for

pictures and video to describe the home they are looking for.

Benefits to the public will also include better descriptions of homes brought to market, and increased sales by educating the consumer through pictures and videos. Allowing them to become familiar with a home, subdivision or community without having to travel to and from that community, particularly if they are being transferred from one city to another.

Sincerely,

Philip D. Eisenhauer

(Submitted in Confidence Document under 14.C.F.R. § 11.35(b) and exempt from disclosure under the freedom of Information Act, 5 U.S.C. § 552 *et seq.,* and any other requirements established by the FAA pursuant to Section 333 of the Reform Act)

Attachments:

1. **PE's TAP Flight Operations and Procedures Manual**
2. **PEs Pre –Flight Checklist**
3. **PEs Flight, PIC, VO, SO**
4. **PE's TAP Maintenance Manual & Logbook**
5. **PEs / DJI Ground Station Manual**
6. **NAZA M V2 Manual**