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

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

August 14, 2015

Exemption No. 12461
Regulatory Docket No. FAA–2015–1826

Mr. Jerry Speasl
ImageKeeper LLC
President and CEO
P. O. Box 27740
Las Vegas, NV 89126

Dear Mr. Speasl:

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 May 18, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of ImageKeeper LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial data collection.

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 3D Robotics IRIS+, DJI Phantom 2, and the DJI Inspire 1.

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 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), 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, delegated to me by the Administrator, ImageKeeper LLC 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, ImageKeeper LLC 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 3D Robotics IRIS+, DJI Phantom 2, 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 August 31, 2017, unless sooner superseded or rescinded.

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

Enclosures

ImageKeeper.com

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

Subject: **ImageKeeper's Request for Exemptions Pursuant to FMRA Section 333 and Part 11, FARs to Use Small Unmanned Aircraft Systems in the property and casualty insurance industry**

Dear Sir or Madam:

Pursuant to Section 333 of the FAA modernization and Reform Act of 2012 ("FMRA") and 14 C.F.R. Part 11, ImageKeeper LLC hereby petitions for exemptions from the listed Federal Aviation Regulations ("FARs") and any other rules necessary to allow operation of small unmanned aircraft systems ("UAS") under the conditions set forth in this petition. FMRA Section 333 grants the FAA authority to allow the operation of certain UAS within the national airspace. ImageKeeper respectfully requests authorization to conduct small UAS operations (aerial data collection) related to its property insurance, risk and reporting business area, including (but not limited to) roof inspections, automatic hail imaging damage assessment, analysis, certified report system, underwriting report, risk assessment, risk controls, accident reconstruction and small UAS pilot training and development. As explained below, ImageKeeper's FAA certified commercial pilot will conduct operations under the requested exemptions, under strict operating requirements and conditions to ensure safety.

ImageKeeper[1] provides multiple image data acquisition systems, and survey systems for insurance emergency claims processing, involving catastrophic events such as hurricane, tornado, and earthquake and flood events. This work involves aerial image data collection, processing and dissemination for insurance claims damage reporting which includes businesses, schools, homes that suffer damages to roofs. Collections also include foundations, buildings, farms, roads, bridges and infrastructure etc.

ImageKeeper[2] has developed a range of mobile digital image system tools for the flood insurance marketplace including FEMA compliant technology. This technology

[1] ImageKeeper has (2) FAA Certified Pilots, Commercial and Private Pilots, current FAA Medicals with over 50 years of combined pilot aeronautical, knowledge and experience on staff, in charge of all flight operations. Commercial Pilot is a graduate of Embry Riddle Aeronautical University with Degrees in Aeronautical Science, Aeronautical Studies and has been involved with many government UAS Programs since the early 90's, awards received from Association for UVS For High Altitude and Very Long Endurance Aircraft (Classified Program)

[2] ImageKeeper's founders invented Direct Digital Airborne Camera Systems (Patents 5,999,211/5,604,534) for the U. S Government and 25 other patents relating to GPS, imaging technology, airborne surveillance. Google acquired the airborne camera company.

and economic benefits or ImageKeepers's products also includes all taxpayers that fund FEMA. ImageKeeper is committed to keeping up with the ever-changing safety and secure technology needs of our customers, by offering the first mobile application to report flood insurance claims and commit payment on the spot. ImageKeeper leads the industry in this mobile technology. The use of UAS will allow ImageKeeper to stay competitive and to further advance innovative technologies that benefits its insurance clients, customers, government and courts. By providing certifiable data, our clients are saving time and money. They can prevent fraud and litigation.

Types of Operation

Request to Use UAS for Inspection of Private Property

ImageKeeper requests an exemption to use small UAS to inspect, collect geo referenced aerial data and assess the nature and extent of damage to policyholders' private property. ImageKeeper would conduct these UAS operations only with the express written consent of the property owner. ImageKeeper is specifically interested in studying how UAS can be used to obtain ultra precise and detailed images of a geo referenced, certified policyholder's roofing systems and any other portion of the property that would normally require utilizing remote access to acquire such information. In addition to the roofing we are developing an advanced hail damage reporting system along with floodwater precision elevation technology before and after an event. By using this technology, this experience will allow ImageKeeper to continue to innovate technology more efficiently and rapidly adjust claims, enhance the experience of the customers and further ImageKeeper's overall goals of improving safety for personnel, equipment, and customers. This exemption will also provide ImageKeeper pilots with real-world training and experience on UAS and will generate valuable data about the operational and safety of UAS that could also be beneficial to the FAA.

In addition to improving ImageKeepers' customer experience and claim effectiveness, granting this petition would improve safety for claims professionals and reduce the further human risk by eliminating visual on site inspections involved with real time storm surge, flash flood and major flooding. Some of ImageKeeper's clients were involved in the recent Sandy hurricane and processed around 30,000 claims. Using ImageKeeper's imaging technology with a UAS and supporting mobile claims processing system, that process can be improved, enhanced significantly and customers will benefit with accuracy, streamlined process, and chain of custody documentation. The government will benefit by eliminating fraudulent claims, increase-processing speed, and lower the labor involved in establishing the claim paperwork. ImageKeeper will be able to eliminate the need for roof & water intrusion inspections in wet, after storm slippery conditions, where risk is everywhere to inspectors. The risk of water and downed electrical lines pose risks of all types to inspectors/adjustors. However, by comparison, the risk posed by the type of UAS roof and floodwater inspections proposed in this petition are minimal. This is due to the characteristics of the small UAS that ImageKeeper will use,

including the extremely small size and lightweight low operating altitudes. Experienced FAA pilots understand the airspace, operations, and safety of flight rules.

ImageKeeper's pilots have never experienced any FAA violations/warnings and have been accident free. The level of pilot training received at Embry Riddle Aeronautical University is the absolute best in the world. Even with the pilot credentials and aeronautical skills, Imagekeeper will use required comprehensive UAS flight and ground training in all aspects of UAS. This includes flight planning, preflight, maintenance, inspections, geo fencing, flight, recovery, emergency power management, flight reviews and keeping up with any FAA new rules governing use of UAS. Over the long term, granting this petition will undoubtedly save lives, and prevents serious injuries.

With the appropriate process enhancements, inspection with UAS will not only is safer than sending an inspector, but will be faster and will result in enhanced customer experience. It is important to point out the significant public interest associated with ImageKeeper proposed UAS integration. As with flood we have learned how slow the process is to get insurance to pay the flood victim who has lost every thing in a flood. By developing a mobile flood claims application tied to a cloud system, we are able to write the flood victim approval for funds on the spot while at the flooded property scene. Given ImageKeeper's role in flood claims payment quickly and efficiently, those 30,000 victims of Sandy who waited a month or more for funds could have received funds within days, which allows quicker repairs and less productive time lost for paperwork. When considered with the contrast and scale of catastrophic events such as hurricanes, tornadoes or earthquakes, these efficiencies will translate into quicker recoveries and save money, time and lives.

ImageKeeper's UAS operational model poses no risk to the national airspace system. In the supporting material for this petition, ImageKeeper will provide an operating model that will require UAS inspections take place within a very confined (GPS box including altitude of 100 feet or less), tight footprint around and above an individual structure. The vast majority of UAS work will take place 20 foot above an individual structure. The majority of UAS work will take place at 15 feet above the roof surface. This will allow for roof inspection and flood at the same time, due to ImageKeeper's multispectral technology. Since ImageKeeper will be operating so close to the actual earth surface, the UAS will pose no greater risk to the national airspace than the structure themselves. The only concern will be the lost connection or run-a-way UAS. ImageKeeper will use geo-fence (GPS box including altitude of 100 feet or less) and lost-link (return to preprogrammed recovery point) technology.

ImageKeeper is requesting permission to integrate UAS technology into its mobile claims processing workflow, which includes cloud integration, mapping, reporting, analysis, and overall management.

Mobile Flood Insurance Claims Processing

ImageKeeper requests an exemption to use the UAS to conduct private property inspections in connection with claims arising out of ImageKeeper's Flood Claims System. ImageKeeper has developed an advanced mobile claims system in the flood and roof insurance area and is finalizing deployment of the system for flood and roof insurance. ImageKeeper is working with the largest flood claims insurer in the United States. This mobile claims system already saves time, protects against fraud and creates data that meets chain of custody requirements. ImageKeeper believes that by adding mobile UAS aerial data directly on site to the mobile claims application, a comprehensive claim can be completed faster, safer, more efficiently. Geospatial data provides certifiable complete damage reporting capability. By using this system, the claims can be processed, the damage repaired and people can go on with their business. Agents, adjustors and investigators will have complete records which will be correct, accurate, and searchable and geo located.

ImageKeeper requests an exemption to use UAS to conduct property inspections in connection with claims in the flood, flood areas, and after storm in rising water situations. Many properties are in rural outlying areas, and farms in unpopulated areas. Use of the UAS in this area would provide ImageKeeper valuable data without risk to property or persons. ImageKeeper's small operational footprint, UAS, (under 5.5 lbs.) low operational altitude of 100 feet or less, geo-fenced, lost-link equipped, FAA Certified Pilots, will pose no threat to the national airspace or neighboring persons or property.

Use of UAS in this this setting would further the goal of improving overall safety. Under current protocols, each such inspection would be conducted by FAA pilots who understand aeronautics, national airspace, TFRs, Restricted airspace, Class A, B, C, D, E and G airspace requirements, UAS, safety, security, operational security. ImageKeeper employees have been involved in every aspect of mission planning, safety, operations and flight activities.

ImageKeeper will fly 25 practice insurance roof claims inspection in a real and simulation situation before moving to a real scenarios in a remote area with structure measurement documenting each flight and logging each flight. ImageKeeper will be using the UAS to measure, inspect, and capture aerial image data, geospatial data, testing signal strength, and recording all data in a secure cloud.

Request to Use UAS for R & D, Training and Certification at ImageKeeper Test Site located in Sherman, TX

ImageKeeper also requests as exemption to use UAS to perform Research and Development, training, sensor testing, pilot certification at it own facilities on property owned or leased by ImageKeeper. The testing facility will not be open to the public and access will be restricted to ImageKeeper employees. The test site will contain uninhabited structures, which will enable ImageKeeper to test various

sensor types and measurement technologies. The test site is located in a sparsely populated area of north Texas. The land is flat, with no obstruction and no airports within 25 miles, or homes within two miles. The footprint of the test area is one to ten acres. The land is tillable but fallow, with fencing around the entire complex. There is no special use airspace above the area test site.

Pilot Requirements

ImageKeeper will establish an internal program that will focus on skills, knowledge and expertise required to operate small UAS of which ImageKeeper intends to operate, 5.5 lbs. or less. ImageKeeper will utilize its own FAA Commercial Licensed pilot to develop and implement a practical training program with operation of small lightweight UAS. ImageKeeper also intends to work with Embry Riddle Aeronautical University who has developed advanced program degrees in UAS. By staying involved with this respected world-class aeronautical university, ImageKeeper will stay informed of every new educational tool available for UAS. A general pilot certification program for UAS must be as stringent as a private pilot license, which will apply the same duty of care and operational safety when operating a UAS. Not only is a knowledge test important, but should be required, as well as a flight evaluation completed by an FAA examiner.

ImageKeeper has two FAA Rated Pilots, Commercial and Private, with current FAA Medical Examinations and over combined 50 years of pilot and aeronautical knowledge and experience on staff, which will oversee all flight operations. ImageKeeper's commercial pilot is a graduate of Embry Riddle Aeronautical University with Degrees in Aeronautical Science, Aeronautical Studies and has been involved with many government UAS programs since the early 90's, with awards received from the Association of UVS for High Altitude and Very Long Endurance Aircraft (Classified Program). ImageKeeper's founders invented Direct Digital Airborne Camera Systems, US Patents 5,999,211, 5,604,534 for the U. S Government and 25 other patents relating to GPS, digital cameras, imaging technology and airborne surveillance. Google acquired the airborne camera company and technology established by the ImageKeeper founders.

ImageKeeper will develop a complete training course designed by our staff FAA Commercial Certified pilot who has an extensive security background as well as considerable experience with fixed wing aircraft and technology development. ImageKeeper will require each potential UAS company pilot to successfully complete a training that combines private pilot ground school that is relevant to small UAS. He/she will be required to log 15 hours of total time as a UAS pilot and 5 hours as a UAS pilot operating the particular make and model of UAS to be utilized for operations under this exemption. In addition, the UAS pilot will be required to certify that he or she has no medical defects that would make him or her unable to pilot a small UAS in a safe manner, including requirement to wear correct lenses if required. In addition, in order to meet all ImageKeeper requirements, the candidate will be required to have a clear criminal background check and drug test. All pilot

certification training will take place under the direct supervision and control of a person holding an FAA Commercial or private pilot certificate.

Public Interest Benefits

Approval of ImageKeepers' request to use UAS to inspect insurance policyholders' private property in time of need is in the public interest. Granting this petition advances Congress' goal of integrating civil UAS into the national airspace safely and expeditiously. Allowing ImageKeeper to conduct the aerial data inspections proposed herein is a necessary step toward realizing the consumer benefits of using UAS in the insurance industry for flood, hail damage, hurricane and tornado. In addition, ImageKeeper is a proven hi- technology leader and developer of new and novel technology. Its past proven management team has over 25 patents which have created many digital camera companies that have provided thousands of jobs in the United States. They continue to develop technology useful to many businesses and the law enforcement communities, which provide safety and security for the United States.

Further, ImageKeeper desires to work with, report, share findings, discuss, or brief on technology, that might happen to be in development in any process or avenues the FAA would like to collaborate in order to insure safety, security, and interest in the United States.

In addition to improving UAS operational safety, granting this petition would improve safety for our customers, clients, and professionals with whom we work, as well as reduce the risk and damage to customer properties by eliminating the need to put humans on roofs and in dangerous flooding conditions. In addition, these UAS surveys will prove faster, cheaper, fraud resistant and more accurate technology. ImageKeeper makes the data un-modifiable. ImageKeeper also believes that these benefits will integrate into other areas of advanced electronic insurance processes, such as automatic mobile claims processing, underwriting processing and quality assurance, thereby saving money for the consumers.

System Operation Parameters, Operations, Inspection and Maintenance Manual

The proposed operating limitation describes how ImageKeepers' UAS operations will be safely conducted to minimize risk to the national airspace or to person and property on the ground.

1. The operations will be conducted using only one of these at a time, a 3DR IRIS+, DJI Phantom 2 or DJI Inspire 1, which are small UAS, weighing approximately 4.4 to 6.4 pounds with payload.[3]
2. Flights will be operated at all times within visual line of sight (VLOS) of a pilot (PIC) under FAA issued medical requirement certificate, corrective

[3] The operational/user, safety manuals for each, 3DR IRIS+, DJI Phantom 2, DJI Inspire 1 are included as part of this document as an attachment.

lenses if required by FAA medical and logging all time, location and duration of flights, and having a U. S. driver's license. The VO and PIC will be able to communicate verbally at all times. The PIC will be designated before each flight and will not transfer designation for the duration of the flight. The PIC is required to ensure the VO can perform the duties required of the VO. The VO and PIC will not use electronic messaging or texting during flight operations.

3. The UAS will be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.
4. The UAS will not be flown at ground speeds exceeding 87 knots using either ground speed or calibrated airspeed to determine compliance with 87 know speed restrictions. In no case will the UAS be operated at airspeeds greater than the maximum UAS operating airspeed recommended by the aircraft manufacturer.
5. The ImageKeeper UAS will not carry any persons, pilots, crew, animals, flammable liquid fuels, chemicals, explosive materials or defensive weapons.
6. All ImageKeeper UAS flights will terminate at 30% battery reserve.
7. All ImageKeeper flights will be operated at an altitude of no more than 400 feet AGL.
8. All ImageKeeper flights will be operated in only VFR conditions and official daylight conditions reported by nearest airport ATIS. UAS operations will not be permitted during night as defined in 14 CFR1.1.
9. Prior to any ImageKeeper UAS removed from active status for maintenance or alteration that affects the UAS operation or flight characteristics, such as component replacement, etc., will undergo a functional test flight in accordance with ImageKeepers Maintenance process manual prior to returning to active flight status complete with notes/approval signatures.
10. Prior to each flight, the ImageKeeper pilot must inspect the UAS to ensure that it is in a safe flight condition with a checklist. If any item on the checklist is deficient, then the UAS is prohibited from operating until the required maintenance has been performed and found safe for flight. The flight manager is required to properly document in the aircraft records the type, parts, date, the person who made the changes, and a signature approval of the pilot noting corrections and flight safety approval.
11. Each manual contains the preflight information for each model. Preflight inspection includes the requirements that the inspection must account for including any discrepancies (squawks found). They shall be listed and noted. Preflight must account for all potential discrepancies, inoperable components, items, or equipment. If the inspection reveals a condition that effects the safe operation of the UAS, the aircraft is prohibited from operating until the required maintenance has been performed and UAS is found to be in a condition for safe flight.
12. The operator must follow the UAS manufacturer's inspection and record keeping requirements in accordance with the manual. Maintenance, inspection and alterations must be noted in the aircraft records, including total flight hours, description of work accomplished and the signature of the authorized person returning the UAS into service. The operator will be

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

13. The operator must follow the UAS manufacture's hull/components maintenance overall replacement, inspection and life limit requirements.
14. All ImageKeeper UAS operated under the exemption must comply with all manufacturer safety and operational materials, bulletins, documents, and safety of flight notification.
15. All ImageKeeper flights shall be conducted over private or controlled access property with permission for each flight from the landowner or authorized represented. Permission for the owner or authorized represented will be obtained for each flight to be conducted. A record shall be made of each of the approvals with time, date, and name. All of this will become part of the overall mission data capture located in ImageKeeper's electronic system.
16. Each ImageKeeper flight will be operated by a PIC holder of a commercial, private, recreational, or sport pilot certificate, with current FAA medical certificate, a valid U. S. driver's license issued by a state. The PIC will also meet flight review requirements specified in 14 CFR 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.
17. Flight operations will be conducted at least 500 feet from any non-person who is nonparticipating. The operator will ensure the nonparticipating person remains under protection. If nonparticipating leave protection and within 500 feet then all flight operations will cease immediately. The UAS will not be operated near a vessel or structures where the owner of such vessel or structures have not granted permission.
18. By using GPS technology, ImageKeeper establishes boundaries made up of GPS coordinates (GPS operations box area with ceiling of 400 feet AGL) in which the UAS will operate.
19. ImageKeeper will have a 25-foot clearance around the UAS departure point and the recovery area, which will be located at same point of departure. This will be the landing and take off point for the UAS. There will be no overhead obstructions within 400 feet of the vertical departure point. The UAS pilot will be the sole designation for ImageKeeper in locating the departure and recovery location.
20. The ImageKeeper UAS will be preprogrammed to return to the departure point for any false takeoff, emergency or aborted flight. No obstruction, including animals, birds, or power lines shall be in the takeoff path of the UAS prior to takeoff. If the UAS loses communication or loses its GPS signal, the UAS will return to a predetermined location within the private or controlled access property.
21. All ImageKeeper aircraft will have an N number marking identification by serial number and registered in accordance with 14 CFR Part 47, 49 C.
22. ImageKeeper will comply with all Federal Communication Commission requirements for control and operation of UAS.
23. The UAS will meet the VFR flight minimums including cloud clearance and visibility requirements. UAS 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. The PIC is prohibited from beginning a flight

unless considering wind and forecast weather conditions there is enough available power for the UAS to conduct the intended operation and operate after that for at least five minutes or with reserve power recommended by the manufacturer.

24. Before conducting operations, a qualified UAS pilot will demonstrate and log per 14 CFR 61.51 (b) ability to operate the UAS in a manner consistent with how the UAS will be operated under the exemptions, including evasive and maneuvers, emergency and maintaining appropriate distances from people, vessels, vehicles, and structures. PIC qualification flight hours and currency will be logged consistent with 14 CFR 61.51 (b).
25. ImageKeeper flight operations will only occur in Class G airspace. The UAS may operate within 5 nautical miles of geographic center of an airport as found on current FAA published aeronautical charts unless an agreement with the airport management and COA is obtained and operated in accordance to NOTAM. Any agreement must be made available to the Administrator or any law enforcement official upon request.
26. ImageKeeper (operator) will comply with the operating, inspection, maintenance and record keeping procedures set forth in the UAS manual.
27. The UAS must remain clear and yield the right of way to all other manned operations and activities.
28. The PIC will abort the flight in the event of unpredicted obstacles or emergencies.
29. The UAS may not be operated by pilot from any moving device or vehicle, such as a car, trucks, cranes, hi-lift etc.
30. All documentation required under 14 CFR § 91.9, 203 will be accessible to the pilot at the ground station, during flight operations and to the FAA administrator and or law enforcement. It is operator responsibility to track revisions and present them to the Administrator of law enforcement.
31. Any accident must be reported to the NTSB. In the event a Certificate of Authorization (COA) is required, any incident, accident, or flight operation that transgresses beyond the boundaries of the operating area as defined by the COA must be reported to the FAA' AUS Integration Office within 24 hours.

Operation and Training Manuals

ImageKeeper will follow the operating procedures set forth in the manual attached to this document in support of this petition. The manual will be maintained and will be made available to the FAA if requested. ImageKeeper will communicate with the FAA on any issue relating to operation and training manuals. The manuals and training will be under configuration control.

Inspection and Maintenance

ImageKeeper will manage its UAS fleet according to procedures called out in the inspection and maintenance sections of the UAS manuals, which will be submitted as part of this petition. The manuals will be maintained at ImageKeeper and will be made available to the FAA as required or requested.

ImageKeeper's AUS Vehicles

ImageKeeper proposes to utilize the following models types of UAS to conduct operations, a DJI Phantom 2, 3DR IRIS+ and DJI Inspire 1. 3DR IRIS+ has a weight of 2.8 pounds and a range of 300 meters. Its maximum flight time is averaging at 22 minutes. The DJI Phantom 2 has a weight of 2.56 pounds and a range of 300 meters. Its maximum flight time is averaging about 25 minutes. DJI Inspire 1 has a weight of 5.4 pounds without gimbal using standard cameras and an average flight time of 18 minutes.

ImageKeeper will maintain a GPS coordinate box perimeter/boundary (GPS geo-fence) including a maximum ceiling of 400 feet AGL. GPS lateral box boundaries will be maintained at all times and clearances with structures and humans will be surveyed prior to any flight. Flight launch and recovery location will be cleared of any non-participants at all times during operation. The property owner prior to any operation will consent/approve all property surveys. At all times the automatic recovery to the recovery site will be engaged and programmed according the operational manual on each UAS. All operation will be conducted in official daylight hours and under the VFR rules and visibility conditions by an ImageKeeper certified UAS pilot. Each ImageKeeper UAS will have the proper markings identifying the serial number and identification (N-number), which will also be integrated into ImageKeeper data, capture system. All UAS operations will comply with the manufacturer's operational, training, and safety notices. ImageKeeper will maintain a log showing date, time, mission, mission parameters, altitude, and geographic position of the AUS at every point of the mission. This data is unalterable, stored in an off site location, and will be made available to the FAA for any reason necessary. This is part of the ImageKeeper technology. ImageKeeper's system allows tracking, organized aerial image data, image location, image capture times and the ability to look at large data image files, as all data is globally searchable. It would be possible to utilize this data system as a UAS black box data recovery system. We would be happy to share this information with the FAA if interested. ImageKeeper records offsite the exact UAS location, direction, time and date.

FAA has Authority Under FMRA Section 333 to Grant the Requested Exemptions.

By granting this request for exemption will allow promotion of Congress' goal in enacting Section 3333 of the FMRA. Sec. 333 directs the Sec. of Transportation to consider whether certain UAS may operate safely in the national airspace before completion of the rulemaking required under Section 332 of the FMRA. The Secretary is required to determine the kind of UAS operations that do not create a hazard to users of the national airspace or the public or pose a threat to national security in light of the UAS' size, weight, speed, operational capability and areas of operation and whether the operations will occur within the visual line of sight of the

operator.[4] Section 333 reflects Congressional intent that FAA will grant exemptions to allow small UAS operations under conditions that ensure safety, like those proposed in this ImgeKeeper petition.

In addition, the Federal Aviation Act expressly grants the FAA the authority to issue exemptions. This statutory authority by the terms includes exempting civil aircraft (as defined under 40101 of the Act, which in includes UAS) from the requirements that all such aircraft must have a current airworthiness certificate and granting exemptions from the pilot certification requirements. The Administrator may grant an exemption from a requirement of a regulation under § 44701 (a.) or (b.) or in § 44702-44716 of the Act, if the Administrator finds the exemption is in the public interest. [5]

Application Information

Name and address of the applicant

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List of Regulation from which ImageKeeper requests Exemption

14 C.F.R. § §61.113 (a.) and (b.), 61.133 (a)
14 C.F.R. § 91.7 (a.)
14 C.F.R. § 91.119 (b.) and (c.) 14 C.F.R. § 91.121
14 C.F.R. § 91.151 (a)
14 C.F.R. § 91.405 (a)
14 C.F.R. § 91.407 (a), (1)
14 C.F.R. § §91.409 (a), (1), (2)
14 C.F.R. § §91.417 (a), (b)

Federal Register Summary

Petitioner: ImageKeeper LLC
Affected regulations: 14 C.F.R. § §61.113 (a) and (b), 14 C.F.R 61.133 (a), and 14 C.F.R. § 91.7 (a); 14 C.F.R. § 91.119 (b) and (c); 14 C.F.R. § 91.121; 14 C.F.R. § 91.151 (a); 14 C.F.R. § 91.405 (a); 14 C.F.R. § 91.407 (a), (1); 14 C.F.R. § §91.409 (a), (1), (2); 14 C.F.R. § §91.417 (a), (b)

[4] FAA Modernization and Reform Act of 2012, Pub.L.No. 112-95, 126 Stat.75-76 (codified as Note to 49 U. S. C § 40101).
[5] 49 U.S.C. § 44701(f) also 49 U.S.C. § 44711 (a.), 49 U.S.C. § 44704; 14 C.F.R. § 91.203 (a,) (1.)

Description: Petitioner seeks an exemption from the requirements of 14 C.F.R. § §61.113 (a) and (b), 61.133 (a); 14 C.F.R. § 91.7 (a); 14 C.F.R. § 91.119 (b) and (c); 14 C.F.R. § 91.121; 14 C.F.R. § 91.151 (a); 14 C.F.R. § 91.405 (a); 14 C.F.R. § 91.407 (a), (1); 14 C.F.R. § §91.409 (a), (1), (2); and 14 C.F.R. § §91.417 (a), (b) to use UAS small unmanned aircraft systems in order to conduct small UAS operations related to its insurance business, including but not limited to hail roof damage, roof inspections, underwriting process enhancements, risk assessment, risk and accident reconstruction, catastrophic response for flood, tornado, hurricane, earthquake and UAS pilot training, development, maintenance.

Exemptions Sought by ImageKeeper the Petitioner

ImageKeeper requests exemptions from the following regulations to the extent necessary to enable the requested UAS operations for the reasons detailed below.

14 C.F.R. § §61.113 (a) & (b): Private pilot privileges and limitations;
14 C.F.R. § 61.133 (a): Commercial pilot privileges and limitations

Section 61.113 (a) and (b) limit private pilots to non-commercial operations. Section 61.133 (a) requires an individual with a commercial pilot's license to be pilot in command of an aircraft for compensation or hire. The FAA has already determined that it is appropriate to exempt small UAS pilots from the commercial pilot's license requirements in section 61.133 (a). In situations analogous of those presented by this petition. See Exemptions #11109, 11110, 11136, and 11138. However, to date, FAA has required such operators to have a private pilot's license.

ImageKeeper respectfully submits that, given the characteristics of the 3DR IRIS+, DJI Phantom 2 and DJI Inspire 1, the operating GPS box and ImageKeeper's level of past and current aeronautical education, licenses, aviation sensor development, and FAA certified commercial pilot, are applicable specifically to small UAS operators like (ImageKeeper). Given the aeronautical skills, historical knowledge of developing complex airborne sensors, and fielded UAS in support of wartime national interest, indicates ImageKeeper is competent in performing UAS services important to the United States. FAA certified pilots on staff, in a business that can be grown by creating technology made in America by Americans is important to meeting Congress' requirements.

The 3DR IRIS+, DJI Phantom 2 and DJI Inspire 1 are exceedingly small and very lightweight. They are both advertised as lightweight UAS and are already widely flown by recreational and real estate companies. They operate both autonomously and manually. They have pre programmable GPS fencing features. They have lost link and lost GPS capabilities. In the event of loss of communications link or GPS the aircraft automatically returns to preprogrammed recovery location. They also have emergency flight termination system where the pilot hits a kill switch and it will then land. The UAS will not carry a pilot, passenger, animals, flammable, explosive, drugs, weapons or defensive systems, such as jammers, or microwave sensors, radar

systems, or stealth technology. The operating area is controlled and restricted, and all flights are planned and coordinated in advance as set forth in the manual. Image Keeper submits that the proposed operation can be achieved an equivalent level of safety by requiring the pilot of this very small lightweight, low altitude, low speed limited range UAS to be trained in a UAS specific certification program approved by FAA and administered by a Commercial FAA certified pilot.

14 C.F.R. § 91.7 a: Civil aircraft airworthiness

Section 91.7 (a) requires that no person may operate a civil aircraft unless it is in airworthy condition. Given the characteristics of the UAS and stringent operating restrictions and conditions proposed in this petition, and equivalent level of safety will be achieved by compliance with the operations manual. Imagekeeper therefore requests FAA to grant an exemption from section 91.7 (a) and finds that the operator may ensure that the UAS are in an airworthy condition by complying with the manual and the proposed operating restrictions and conditions. FAA has granted similar exemptions in Exemptions # 11136 and 11138.

14 C. F. R. § 91.119 b and c: Minimum safe altitudes

Section 14 C. F. R. § 91.119 (b) and (c) established certain minimum altitude for operation of civil aircraft. Section 91.119 provides, in pertinent part, that "except for when necessary for takeoff and landing, no person may operate an aircraft below the following altitudes: (b). Over congested area. Over any congested area of a city, town, or settlement, or over any open-air assembly of persons, an altitude of 1,000 feet above the heights obstacle and within a horizontal radius of 2,000 feet of the aircraft. c. Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

ImageKeeper requests relief from this section since the UAS flights will operate at altitude of no higher than 100 feet AGL. Given the small size, lightweight, low speeds and limited range of the UAS, and the fact that they carry no persons or explosives or flammable materials, and the UAS flights may be safely operated at much lower altitudes than conventional aircraft. ImageKeeper will restrict all of its operations to an altitude of 100 feet or less and will utilize GPS geo fencing technology to prevent deviation. Relief from this rule is warranted because the operations will be conducted with the safeguards and under the operating conditions outlined herein and in the safety and operations manual. The FAA has issued an exemption from Section 91.119 (c) in Exemptions # 11136 and 11138.

14 C. F. R. Altimeter Settings § 91.121: Altimeter settings

Section 91.121 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. An

exemption may be needed because the UAS does not have a barometric altimeter, but instead have a GPS altitude read out. An equivalent level of safety will be achieved by the operator, pursuant to the manual, confirming the altitude of the launch site shown on the GPS altitude indicator before flight. The FAA issued an exemption to this regulation for UAS operations in Exemptions # 11136 and 11138.

14 C.F.R. 91.151 a Fuel requirements for VRF 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, 2. During the day, and after that for at least 30 minutes.

An exemption is needed because the UAS have a maximum flight time of less than 30 minutes and this cannot meet the 30-minute reserve requirements. Given the characteristics of the UAS including their small size, low weight and speed, limited range, ability to land very quickly, operations within visual line of sight, restricted operating area, and the fact that they do not carry persons or any explosive or flammable materials, grant of the exemption is justified. An equivalent level of safety can be achieved by terminating flights at 25% battery power reserve, which will occur before the 25-minute flight duration. The FAA issued an exemption to this regulation for UAS operation in Exemption # 11062, 10673, 111136 and 11138.

14 C.F.R. § 91.405 a: Maintenance required
14 C.F.R. § 91.407 a, 1: Operation after maintenance, preventive maintenance, rebuilding or alteration
14 C.F.R. §§ 91.409 a, 1 and 2; Inspections
14 C.F.R. §§ 91.417 (a) and (b); Maintenance records

These regulations require that an aircraft operator owner (i) shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspection, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter.... And (ii) shall inspect or maintain the aircraft in compliance with part 43. Because these sections and part 43 apply only to aircraft with an airworthiness certificate, these sections will not appy to the petitioner. Maintenance will be accomplished by the operator pursuant to the manufacturer's manual. An equivalent level of safety will be achieved because the UAS are very small in size and weight, will carry a small payload and operate only in very restricted areas (defined by the GPS fence) and 100 feet of altitudes for short periods of time. If mechanical issues arise, the UAS can land immediately and will be operating from no higher than 100 feet AGL. As provided in the manual, 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 most familiar with the UAS and best suited to maintain the UAS in an airworthy condition and provide an equivalent level of safety. The FAS issued an exemption to these regulations in Exemption # 11062, 11136 and 11138.

Such other relief as the FAA deems appropriate to enable the requested operation

ImageKeeper also requests exemption from such other FARs as the FAA deems appropriate to enable the requested operations. If, during the effective dates of the exemption issued per this petition, thee FAA issues interim or final rules for small UAS, ImageKeeper requests that it be relieved of the requirements of any conditions and limitation of the exemptions and allowed to comply with any less restrictive applicable regulations that may have become effective.

Privacy

The petition raises no privacy issues because all flights will occur over private or controlled access property with the property owner's prior knowledge and consent. In addition, ImageKeeper's privacy polices would apply to all UAS operations.

National Security

No national security issues are presented by grant of this exemption. ImageKeeper's management, experience with UAS, small UAS footprint, lightweight, lost link, geo fencing, and carrying no defensive, offensive, guns, flammable, chemicals, or explosives or any dangerous materials and operated by professionals, assures this.

Conclusion

For the reasons stated above, ImageKeeper proposed use of UAS satisfies the criteria in the FMRA Section 333 regarding size, weight, speed, operating capabilities, operating areas, operation within visual line of sight, and national security.

Petitioner's proposed safety measures and operating parameters provide more than adequate justification for the grant of the requested exemptions allowing operation of UAS. ImageKeeper therefore respectfully asks the FAA to grant the requested exemptions. Please do not hesitate to contact ImageKeeper, (petitioner) with any questions about this filing.

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Attachments: Maintenance, Operations/User Manuals

- 3DR IRIS+
- DJI Phantom 2
- DJI Inspire 1