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

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

July 14, 2015

Exemption No. 12030
Regulatory Docket No. FAA–2015–1380

Mr. Paul Choi
National Claims Product Director
American Family Mutual Insurance Company
6000 American Parkway
Madison, WI 53783

Dear Mr. Choi:

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 1, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of American Family Mutual Insurance Company (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography and videography and to conduct research and development on catastrophe response.

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

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

Airworthiness Certification

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

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria

provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *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, American Family Mutual Insurance Company 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, American Family Mutual Insurance Company is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the DJI Phantom 2 Vision+ 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 July 31, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

Pillsbury Winthrop Shaw Pittman LLP
1200 Seventeenth Street, NW | Washington, DC 20036 | tel 202.663.8000 | fax 202.663.8007

Jennifer E. Trock
Jennifer.trock@pillsburylaw.com

May 1, 2015

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

Re: Exemption Request Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012, 49 U.S.C. § 44701(f), and Part 11 of the Federal Aviation Regulations

Dear Sir or Madam:

On behalf of American Family Mutual Insurance Company ("American Family"), pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the "Reform Act") ("Section 333"), Subsection (f) of 49 U.S.C. § 44701, and 14 C.F.R. Part 11, we request an exemption from the Federal Aviation Administration regulations listed below and discussed in Appendix A to allow American Family to conduct commercial operations with the DJI Phantom 2 Vision+ ("Phantom")[1] and the DJI Inspire 1 ("Inspire")[2] small unmanned aircraft systems ("sUAS") for aerial photography and videography in connection with homeowner and private-property insurance inspections for policyholders of American Family or its subsidiaries,[3] and to conduct research and development operations to explore the use of sUAS to improve catastrophe response.[4]

Conducting the requested sUAS operations — building and private property inspection and research and development — can be done safely in the National Airspace System ("NAS") and is in the public interest for several reasons, which are detailed further herein and include: (1) removing safety risks associated with requiring both underwriters and claims adjustors to access and inspect potentially dangerous areas, including slippery or unstable roofs, (2) reducing the risks associated with performing inspections of catastrophe areas with manned aircraft, (3)

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[1] The Phantom already has been approved for commercial use in similar contexts. *See* Exemption Nos. 11138, 11153, 11189, 11191, 11195.

[2] The Inspire is similar in form and function to the DJI Phantom but is equipped with more sophisticated safety features (explained below).

[3] The FAA has granted similar exemptions. *See* Exemption 11175, 11293.

[4] The FAA has granted similar exemptions. *See* Exemption 11188, 11309.

reducing time required to complete underwriting and pay claims, (4) improving the efficiency of American Family's business operations.

Applicant Information:

The names of the applicant: **American Family Mutual Insurance Company**

The primary contact for this application, with a copy to me at the address above and American Family Corporate Legal at the address below, is:

Paul Choi
National Claims Product Director
6000 American Parkway
Madison, WI 53783
Phone: (608) 242-4100

Corporate Legal
American Family Mutual Insurance Company
6000 American Parkway
Madison, WI 53783

Exemptions Requested

American Family requests exemptions from the following regulations:

14 C.F.R. Part 21, Subpart H;
14 C.F.R. 61.23(a) and (c);
14 C.F.R. 61.101(e)(4) and (5);
14 C.F.R. 61.113(a) and (b);
14 C.F.R. 61.315(a);
14 C.F.R. 91.7(a);
14 C.F.R. 91.119(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) and (2);
14 C.F.R. 91.417(a) and (b).

Airworthiness of the sUAS

Both the Phantom and Inspire are quadcopters with gimbal-mounted cameras manufactured by DJI, a market leader in sUAS. The Phantom has been authorized to conduct commercial operations, including property inspections, under several Section 333 exemptions.[5] The Inspire is DJI's newer model with enhanced features.

Technical specifications for the Phantom and the Inspire are summarized in the table below.

	DJI Phantom 2 Vision+	**DJI Inspire 1**
Size	~1 foot x 1 foot	~1 foot x 1 foot
Total Weight	1242 g (2.74 lbs)	2935 g (6.47 lbs)
Max Ascent Speed	6 m/s (12 knots)	5 m/s (10 knots)
Max Descent Speed	2 m/s (4 knots)	4 m/s (8 knots)
Max Flight Speed	15 m/s (29 knots)	22 m/s (43 knots)
Hover Accuracy: Vertical / Horizontal	.8 m (2.6') / 2.5 m (8.2')	.5 m (1.6') / 2.5 m (8.2')
Controller Frequency (Main Channel)	5.725-5.825 GHz (FCC Compliant)	5.725-5.825 GHz (FCC Compliant)
Controller Range	800 m (.5 mi)	2 km (1.24 mi)
Communications (Second Channel)	2.4 GHz Wi-Fi (No Interference)	2.4 GHz Wi-Fi (No Interference)

DJI provides a comprehensive suite of training manuals, maintenance procedures and user's guides for the Phantom and Inspire.[6] Collectively, these documents will be referred to as "Operating Documents" for each specific sUAS model. PICs will be required to comply with all maintenance and inspection procedures outlined in the Operating Documents.

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[5] *See* Exemption Nos. 11138, 11153, 11189, 11191, 11195.

[6] The Phantom Operating Documents are attached in Appendix C. The Inspire Operating Documents are attached in Appendix D. The Phantom Operating Documents are available at http://www.dji.com/product/phantom-2-vision/download, and the Inspire Operating Documents are available at http://www.dji.com/product/inspire-1/download.

Operating Conditions

American Family requests an exemption subject to the conditions listed in Appendix B, which are similar to the operating conditions required for the FAA's previous grants of exemptions under Section 333.

In accordance with the conditions approved in previous exemption grants, American Family is requesting authority to operate the Phantom and Inspire within visual line of sight and below 400 feet AGL, except as provided by FAA Air Traffic Control via COA. These operating conditions, along with those listed in Appendix B, and the sUAS safety features listed below provide an equivalent level of safety.

The following safety features are incorporated into both the Phantom and Inspire to ensure public safety and safe integration into the NAS:

- Stability Control with Auto-Takeoff and Auto-Land: The automated flight-control system can take off and land automatically, and the system autocorrects the aircraft's position to adjust for environment disturbances such as wind.

- Intelligent Orientation Control (IOC) and Inertial Measurement Unit (IMU): The built-in inertial sensor and barometric altimeter measures orientation and altitude, respectively, and communicates this data back to the controller.

- Live Map and Radar with Failsafe & Battery Warnings: The controller displays a live map and radar to show the aircraft's recent flight path, heading, bearing and distance from "home" (a predetermined start location within the boundaries of the privately owned property) for complete situation awareness. It also illustrates battery status and low-battery warnings with estimated time to return "home" to alert the PIC and ensure that the aircraft does not power down unexpectedly during use.

- LED Flight Indicators: LED lights are mounted to the four rotor arms of each model to visually indicate aircraft orientation (attitude) and status of the flight control system, alerting the PIC of possible issues.

- Maximum Height and Radius Limits: Before beginning flight, the PIC may set a maximum altitude and distance that prevent the sUAS from exceeding altitude limits and distance from "home."

- Flight-limited Safety Zones: The sUAS flight software comes loaded with a list of restricted areas that are divided into one of three categories: category A, category B, or no fly. Category A areas include major international airports; Category B is comprised of

smaller airports; and the no-fly zones are sensitive national security areas such as the White House. Each restricted area is comprised of a no-fly zone in which the sUAS cannot be operated and a warning zone surrounding the no-fly zone in which the PIC is alerted to the sUAS' proximity to a restricted area. Category A areas also include larger restricted-altitude zones in which the sUAS will only fly below a certain altitude. Additional details regarding the safety zones can be found in the Phantom and Inspire manuals, attached as Appendices C and D.

- Loss of link. The built-in GPS system that aids in stability control will automatically return the sUAS to "home" if communication between the controller and aircraft is lost. The sUAS will enter failsafe mode when connection with the controller is lost and will wait 3 seconds before either landing or returning to a home point to land, depending on whether the sUAS is operating in GPS mode. When in non-GPS mode, the sUAS automatically lands after 3 seconds. In GPS mode, the aircraft automatically returns to home and lands. When flying back to home, the aircraft first will ascend to pre-set altitude to avoid obstacles. If the aircraft is above the pre-set altitude when loss of link occurs, it will fly directly back to the home point.

- Loss of GPS. If a loss of GPS occurs, the PIC maintains positive control of the aircraft and can either land the sUAS, hover in place until GPS is reacquired, or continue the flight. Additionally, the sUAS have the ability to abort a flight in the event of unpredicted obstacles or emergencies.

Operator Requirements

As a condition to the grant of the exemptions, American Family will require that the PIC hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC will also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Colombia, Puerto Rico, a territory, a possession, or the Federal government. The PIC will 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.

At the conclusion of the training, the PIC will be able to safely operate the sUAS 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. This training will include the following, to the extent necessary for the operations:

1) Perform an appropriate number of flights with the specific sUAS to be operated to obtain proficiency.

2) Successfully learn and demonstrate all relevant flight maneuvers in the Phantom 2 Vision Pilot Training Guide.[7]

3) Study and be knowledgeable of all relevant sections of the model-specific User's Manual, Safety Guidelines, Battery Safety Guidelines, and other relevant applicable manuals, updates, alerts, warnings and safety bulletins provided by DJI for the specific sUAS to be operated.

4) Study and be knowledgeable of all relevant sections of the Inspire 1 Maintenance Manual and the Guide to the Phantom 2 Vision & Vision+.[8]

5) Understand and demonstrate relevant evasive maneuvers outlined in the "Always be Prepared for the Worst" scenarios outlined in the Guide to the Phantom 2 Vision & Vision+ (applicable for operators of both the Phantom and the Inspire 1).

Training flights will be conducted over private or controlled-access property, including but not limited to American Family's headquarters, which is located at 6000 American Parkway in Madison, Wisconsin. Training flights will be logged for each PIC in training in a manner consistent with 14 CFR § 61.51(b).

American Family respectfully submits that the operator qualifications take into account the operating conditions and characteristics of the sUAS.

Public Interest

American Family respectfully submits that using sUAS to inspect roof tops in lieu of requiring its employees to visually inspect roofs and to conduct research and development into catastrophe support operations offers a net safety benefit and will achieve an enhanced level of safety, as mandated under Section 333(c) of the Reform Act. Approval of this application also will benefit the public interest by providing faster and more cost-efficient insurance claim processing and insurance underwriting.

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[7] Since the maneuvers are universal, the Phantom Training Guide will be used for training PICs on both the Inspire 1 and the Phantom.

[8] The Guide to the Phantom 2 Vision & Vision+ contains maintenance information and technical and safety-related guidelines. It is included in Appendix C. The Guide to the Phantom 2 Vision and Vision+ also is available at https://www.dropbox.com/s/mv8d1hohc3mceym/DJI%20Phantom%20Vision%20Summary%20Guide.pdf?dl=0.

Inspection operations over catastrophe areas with conventional manned aircraft involve very heavy aircraft, transiting to the operational location, carrying significant quantities of combustible fuels, and a multi-person crew in piloting and observation roles. By contrast, the sUAS weigh less than seven pounds, use a battery for power, are carried to and from the area of activity, remove the need for airborne pilots and observers, and pose less risk to people and infrastructure on the ground, as well as other aircraft.

Additionally, no national security issue is raised by the grant of the requested exemption due to the sUAS' small size and load-carrying capacity, as well as their operational limitations and lack of flammable fuel. All PICs will have been screened by the Department of Homeland Security.

The grant of the requested exemption is in the public interest based on the clear direction in Section 333 and 49 U.S.C. § 44701(f),[9] the equivalent and enhanced level of safety of the proposed operations, and the significant public benefit, and cost savings to be realized as a result of the use of sUAS for aerial inspections. Accordingly, the applicant respectfully requests that the FAA grant the requested exemption without delay.

Privacy Concerns

The proposed operations will take place only over private or controlled-access property and only after obtaining written or verbal consent from the individual who owns or controls the property or is the property owner's authorized representative before each flight. No privacy issues are raised by this application.

Federal Register Summary

Pursuant to 14 C.F.R. § 11.81(f), the following summary is provided for publication in the Federal Register, should the FAA determine that publication is needed:

> Docket No.: No. FAA-2015-____
> Petitioner: American Family Mutual Insurance Company
> Section of 14 CFR: Part 21, Subpart H, § 61.23(a) and (c), § 61.101(e)(4) and (5), § 61.113(a) and (b), § 61.315(a), § 91.7(a), § 91.119(c), § 91.121, § 91.151(a), § 91.405(a), § 91.407(a)(1), § 91.409(a)(1) and (2), and §91.417(a) and (b).

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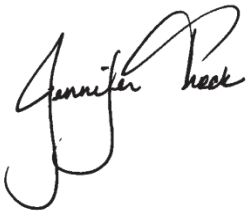
[9] Pursuant to 49 U.S.C. § 44701(f), the "Administrator may grant an exemption from a requirement of a regulation prescribed under subsection (a) or (b) of this section or any of sections 44702-44716 of this title if the Administrator finds the exemption is in the public interest."

Description of Relief Sought: American Family seeks an exemption to conduct commercial building and private property inspection operations using a small unmanned aircraft (55 pounds or less).

Sincerely,



Jennifer E. Trock

cc: Mark V. Afable, Chief Legal Officer, American Family Mutual Insurance Company
Scott J. Seymour, Corporate Legal & Regulatory Affairs Vice President, American Family Mutual Insurance Company

APPENDIX A

EXEMPTION REQUEST AND EQUIVALENT LEVEL OF SAFETY SHOWINGS UNDER APPLICABLE RULES SUBJECT TO EXEMPTION

American Family requests an exemption from the following regulations as well as any additional regulations that the FAA deems necessary to the operation of the DJI Phantom Vision 2+ and DJI Inspire 1 sUAS:

14 C.F.R. Part 21, Subpart H: Airworthiness Certificates

Tile 14, Part 21, Subpart H of the Code of Federal Regulations establishes the procedural requirements for the issuance of airworthiness certificates as required by § 91.203(a)(1). Given the size and weight of the aircraft, the operating conditions, design safety features, and the proposed conditions and limitations, it is unnecessary to go through the certificate of airworthiness process under Part 21 Subpart H to achieve or exceed current safety levels. Such an exemption meets the requirements of an equivalent level of safety under Part 11 and Section 333. Section 333 authorizes the FAA to exempt aircraft from the requirement for an airworthiness certificate, upon consideration of the size, weight, speed, operational capability, and proximity to airports and populated areas of the sUAS involved.

In this case, an analysis of these criteria demonstrates that the sUAS operated without an airworthiness certificate, under the conditions proposed herein, will be at least as safe, or safer, than a conventional aircraft (fixed wing or rotorcraft) with an airworthiness certificate. The Phantom and Inspire weigh 2.74 and 6.47 pounds, respectively. They will not carry a pilot, passenger or flammable fuel. They will operate exclusively within a controlled area pre-disclosed and in compliance with the conditions set forth herein. Unlike other civil manned aircraft operations, operations under this exemption will be tightly controlled and monitored by the PIC and visual observer, pursuant to the conditions set forth in Appendix B, the Operating Documents, and local public safety requirements. The FAA will have advance notice of all operations, to the extent required, through the filing of NOTAMs. The lack of flammable fuel and the fact that the aircraft are carried to the location and not flown there all establish an equivalent level of safety. The sUAS provide at least an equivalent level of safety to that of such operations being conducted with conventional aircraft that would be orders-of-magnitude larger and would be carrying passengers, cargo, and flammable fuel.

14 C.F.R. § 61.23 (a) & (c)

Section 61.23(a) requires a person exercising the privileges of a transport pilot certificate to hold a first-class medical certificate, the privileges of a commercial pilot certificate to hold a second-class medical certificate, and the privileges of a private or recreational pilot certificate to hold a

third-class medical certificate. Section 61.23(c) requires a person to hold a medical certificate or U.S. driver's license when exercising the privileges of a sport pilot certificate in a light-sport aircraft other than a glider or balloon.

The operations proposed herein will provide an equivalent level of safety by complying with the conditions and limitations of this exemption. The FAA has found that these conditions and limitations provide an equivalent level of safety in numerous previous exemptions, including but not limited to Exemptions 11213, 11252, 11275, 11277, and 11278.

14 C.F.R. § 61.101 (e)(4) & (5): Recreation Pilot Privilege and Limitations; 14 C.F.R. § 61.315(a): What are the privileges and limits of my sport pilot certificate

Section 61.101(e)(4) prohibits a recreational pilot from acting as pilot in command of an aircraft for compensation or hire. Section 61.101(e)(5) prohibits a recreational pilot from acting as pilot in command of an aircraft in furtherance of a business. Section 61.315(a) authorizes persons holding a sport pilot certificate to act as pilot in command of a light-sport aircraft.

As with previous Section 333 exemptions,[10] an equivalent level of safety is established because (1) the aeronautical knowledge requirements that would be applicable to UAS operations for a recreational pilot and sport pilot certificate were substantially similar as those for a private pilot certificate; (2) holders of recreational and sport pilot certificates are subject to security screening by the Department of Homeland Security; and (3) risk was mitigated through conditions and limitations regarding PIC training.

14 C.F.R. §§ 61.113(a) & (b): Commercial Pilot Privileges

Sections 61.113(a) & (b) limit private pilots to non-commercial operations. Unlike a conventional aircraft that carries a pilot, passengers, and cargo, the UAS are remotely controlled with no passengers or property of others on board. The area of operation is controlled and restricted, and all flights are planned and coordinated in advance as set forth in the Operating Documents. In conjunction with the PIC's required training, the level of safety provided by the requirements included in the Operating Documents meets or exceeds that provided by a single individual holding a commercial pilot certificate operating a conventional aircraft. The proposed operations will achieve at least an equivalent level of safety.

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[10] *See, e.g.,* Exemption Nos. 11310, 11311, 11312, 11313, 11315.

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

Section 91.7(a) prohibits an individual from operating a civil aircraft unless it is in an airworthy condition. No FAA standard exists for determining an aircraft's airworthiness when an airworthiness certificate is not issued. As the FAA has done with previous exemption grants,[11] airworthiness will be ensured and an equivalent level of safety will be achieved by compliance with the Operating Documents prior to every flight.

14 C.F.R. § 91.119(c): Minimum Safe Altitudes

Section 91.119 establishes safe altitudes for operation of civil aircraft. Specifically, Section 91.119(c) limits aircraft flying over areas other than congested areas to 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. Because the aerial photography and videography work must be accomplished at altitudes less than 500 feet AGL an exemption is required.

The equivalent level of safety will be achieved given the sUAS' size, weight, speed, and proposed operating conditions. sUAS operations will be conducted over private or controlled-access property with consent granted by the property owner/controller or authorized representative prior to each operation.

14 C.F.R. § 91.121: Altimeter Setting

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." The Phantom's and Inspires' Inertial Measurement Units have barometric altimeters, but they cannot be set to the elevation of the departure location. Rather, upon initialization, the sUAS calibrate their positions without user input and transmit a single altitude measurement to the ground station. Thus, an exemption is required. An equivalent level of safety will be achieved by the operator, pursuant to the Operating Documents, confirming the altitude of the launch site shown on the altitude indicator before flight.

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[11] Exemption Nos. 11156, 11158, 11159.

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

This regulation prohibits an individual from beginning "a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed – (1) During the day, to fly after that for at least 30 minutes; or (2) At night, to fly after that for at least 45 minutes."

The Phantom and Inspire batteries provide approximately 25 and 18 minutes of powered flight, respectively. Without an exemption from 14 C.F.R. § 91.151, the sUAS flights would not be allowed. Given the limitations on its proposed operations, allowing the sUAS to operate without the required reserve fuel is reasonable and is consistent with prior exemptions.[12] An equivalent level of safety will be achieved because operating the sUAS without 30 minutes of reserve fuel does not engender the type of risks that Section 91.151(a) was meant to prevent given the size and speed at which the sUAS operate. In the unlikely event that a sUAS should run out of battery power, it would simply land. Given the sUAS's weight and construction material, the risks are less than contemplated by the current regulation. American Family will require the UAS to return home and land when the battery reaches 30% capacity.

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

Section 91.405(a) requires that an aircraft operator or owner "shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter." Section 91.407 similarly makes reference to requirements in Part 43. Section 91.409(a)(2) requires an annual inspection for the issuance of an air worthiness certificate. Section 91.417(a) requires the owner or operator to keep records showing certain maintenance work that has been accomplished by certificated mechanics, under Part 43, or licensed pilots and records of approval of the aircraft for return to service.

An equivalent level of safety will be achieved by complying with the Operating Documents maintenance and inspection requirements because the sUAS will carry no external payload, will operate only in restricted predetermined areas. In addition, the PIC will ensure that the sUAS is in working order prior to initiating flight, perform required maintenance, and keep a log of any

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[12] Exemption 10673 (allowing Lockheed Martin Corporation to operate without compliance with 91.151(a)); *see also* Exemptions 2689F, 5745, 10673 and 10808.

maintenance that is performed. Moreover, the PIC is the person most familiar with the aircraft and is best suited to maintain the aircraft in an airworthy condition and to ensure an equivalent level of safety.

APPENDIX B

AMERICAN FAMILY OPERATING LIMITATIONS

1) Operations authorized by the grant of exemption are limited to the following aircraft: DJI Phantom 2 Vision+ and DJI Inspire 1, which weigh 2.74 and 6.47 pounds, respectively.

2) The DJI Phantom 2 Vision+ shall not be flown at a speed exceeding 15 m/s. The DJJI Inspire 1 shall not be at flown at a speed exceeding 22 m/s.

3) The sUAS will not be operated at an altitude more than 400 feet above. All altitudes reported to ATC shall be in feet AGL.

4) The sUAS must be operated within visual line of sight 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.

5) All operations must use a VO. The VO and PIC must be able to communicate verbally at all times. The PIC must be designated before the flight. The PIC must ensure that the VO can perform the functions prescribed in the operating documents.

6) The operating documents and this grant of exemption must be accessible during UAS operations and made available to the Administrator upon request. If a conflict exists between the conditions and limitations in the exemption and the procedures outlined in the operating documents, the conditions and limitations in the exemption take precedence and must be followed. Otherwise, American Family must follow the procedures as outlined in its operating documents. American Family may update or revise its operating documents. It is American Family's responsibility to track such revisions and present updated and revised documents to the Administrator upon request. American Family must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption.

7) Prior to each flight the PIC must inspect the sUAS to ensure that it is in a condition for safe flight. The PIC shall not operate the aircraft if the inspection reveals a condition that affects the safe operation of the sUAS until the necessary maintenance has been performed and the sUAS is found to be in a condition for safe flight. The Ground Control Station, if utilized, must be included in the preflight inspection. All maintenance and alternations must be properly documented in the aircraft records.

8) Any sUAS that has undergone maintenance or alterations that affect the sUAS operation or flight characteristics (e.g., replacement of a flight critical component)

must undergo a functional test flight in accordance with the Operator's Manual. The PIC who conducts the functional test flight must make an entry in the aircraft records of the flight. The requirements and procedures for a functional test flight and aircraft record entry shall be included in the Operator's Manual.

9) The pre-flight inspection must account for all discrepancies, e.g. inoperable components, items, or equipment, not already covered in the relevant sections of the operating documents.

10) American Family must follow DJI's aircraft/component, maintenance, overhaul, replacement, inspection, and life limit requirements.

11) American Family must carry out its maintenance, inspections, and record keeping requirements, in accordance with the operating documents. Maintenance, inspection, alterations, and status of replacement/overhaul component parts must be noted in the aircraft records, including total time in service, description of work accomplished, and the signature of the person authorized to return the sUAS to service.

12) Each sUAS operated under this exemption must comply with all manufacturer Safety Bulletins.

13) The 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 Colombia, 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) American Family may not permit any PIC to operate unless the PIC meets the operator's qualification criteria and demonstrates the ability to safely operate the sUAS in a manner consistent with how the sUAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures.[13] PIC qualification flight hours and currency must be logged in a manner consistent with 14 C.F.R. § 61.51(b). The PIC must ensure that the VO is trained appropriately in order to fulfill his or her duties. A record of training and qualification must be documented and made available

[13] Prior documented flight experience that was obtained in compliance with applicable regulations may satisfy this requirement.

upon request by the Administrator. Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building), 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 these operating conditions.

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

16) The sUAS may not operate within 5 nautical miles of an airport reference point as denoted on a current FAA-published aeronautical chart unless a letter of agreement with that airport's management is obtained, and the operation is conducted in accordance with a NOTAM as required by American Family's COA. The letter of agreement with the airport management must be made available to the Administrator upon request.

17) The sUAS 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 sUAS loses communications or loses its GPS signal, the sUAS 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 in accordance with the Operator's Manual.

20) The PIC will be prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough power to fly at normal cruising speed to the intended landing point and land the UA with 30% battery power remaining in accordance with the operating documents.

21) 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 the requested exemption must be identified by serial number, registered in accordance with 14 C.F.R. Part 47, and have identification (N-Number) markings in accordance with 14 C.F.R. Part 45, Subpart C. Markings shall be as large as practicable.

23) The radio frequency spectrum used for operation and control of the sUAS must comply with Federal Communication (FCC) or other appropriate government oversight agency requirements.

24) The documents required under 14 C.F.R. §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the sUAS any time the aircraft is operating. These documents shall be made available to the Administrator or any law enforcement official upon request.

25) The sUAS must remain clear and yield the right of way to all other manned operations and activities at all times.

26) The sUAS may not be operated from any moving device or vehicle.

27) The sUAS may not be operated over congested or densely populated areas.

28) Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, structures, and public access roads unless:

    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the sUAS 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 sUAS, flight operations must cease immediately and/or;

    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.

29) Operations nearer than 500 feet to the PIC, VO, operator trainees or essential persons as defined in the operating documents are permitted if those operations do not present an undue hazard to those persons per § 91.119(a) as determined by the PIC.

30) All operations must be conducted over private or controlled-access property.

31) Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA shall 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.