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

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

August 28, 2015

Exemption No. 12655
Regulatory Docket No. FAA–2015–1606

Mr. Jonathan Adams
Chief Operating Officer
Strat Aero International, Inc.
19500 State Highway 249
Suite 655
Houston, TX 77070

Dear Mr. Adams:

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 5, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Strat Aero International, Inc. (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 Aerialtronics Altura Zenith ATX8, STR8, Aeryon Labs SkyRanger, and DJI S1000.

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, Strat Aero International, Inc. is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a)

[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.

and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Strat Aero International, Inc. is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the Aerialtronics Altura Zenith ATX8, STR8, Aeryon Labs SkyRanger, and DJI S1000 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

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May 5, 2015

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U.S. Department of Transportation
Docket Management System
1200 New Jersey Ave., SE
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Subject: Exemption Request under Section 333 of the Federal Aviation Administration Reform Act and Part 11 of the Federal Aviation Regulations

Dear Sir or Madam:

Pursuant to Section 333 of the Federal Aviation Administration (FAA) Modernization and Reform Act of 2012 (the "Reform Act") and Title 14 of the Code of Federal Regulations (CFR) Part 11, Strat Aero International, Inc. ("Strat Aero"), a Texas-based business providing aviation consulting, aviation software, and UAS training, seeks exemptions for the Federal Aviation Regulations ("FARs") in order to train Strat Aero UAS operators and to provide aerial photography and persistent surveillance of multiple events and facilities. Strat Aero's limited proposed use of sUASs does not create a hazard to the public or other aircraft in the national air space (NAS), nor does it threaten national security. The small size, low speed, and safety features of the sUASs to be used and operating distance from populated areas ensure the proposed operations would be safer than conducting the same operations with manned aircraft and as such is in the best interest of the public. Strat Aero's proposed use of sUASs addresses criteria identified in the FAA's exemptions granted to Commonwealth Edison (Exemption No. 11185), BNSF Railway Company (Exemption No. 11206), Phoenix Air Unmanned (Exemption No. 11241), State Farm Mutual Automobile Insurance Company (Exemption No. 11188) and the City of Roswell Coalition (Exemption No. 11265). Please note that Strat Aero is the operator for the City of Roswell Coalition as described in the City of Roswell Coalition Exemption, and whenever possible, Strat Aero operations will be similar to those approved the same exemption (No. 11265).

The requested exemptions would permit Strat Aero to conduct operations with the Aerialtronics Altura Zenith ATX8, the STR8 (an octocopter with operational characteristics similar to the Ascending Technologies Falcon 8 sUAS), the Aeryon Labs SkyRanger, and/or the DJI S1000 for various purposes (please refer to section 6 for a detailed list.

Strat Aero would issue a NOTAM to Air Traffic Control in the area and follow all safety protocols to inspect these facilities with sUASs. Strat Aero believes using sUASs responsibly to conduct these types of inspections is immensely safer than having personnel or manned aircraft conduct the same inspections.

The aerial data provided by a UAS will improve the ability of customer companies to assess the condition and safety of their equipment in a timely manner, thereby enhancing safety for customer companies and for their customer bases.

Strat Aero UAS flying operations under the exemption will be conducted according to strict standard operating procedures and safety guidelines as set forth by the operator and as may be modified by the FAA. Any sUAS system operated by Strat Aero will be flown under controlled conditions by qualified operators. It will be flown at low altitudes in airspace that are limited in scope with the exception of industrial inspections as described in section 7 below and only under strict conditions. Strat Aero operations with these sUASs will not be conducted in a way that violates established industry privacy guidelines or reasonable expectations of privacy.

Regarding the Unmanned Aircraft System

1. Safety

Characteristics of the Aerialtronics Altura Zenith

The Altura Zenith ATX8 is an octocopter that can be flown with a tablet or radio controls and can carry a wide array of sensors. The Zenith has a maximum takeoff weight of 8.5 kg (18 lbs) and measures 23.6 inches square. It can fly for up to 35 minutes at a time and has a maximum cruise speed of 20 m/s (40 kts). This sUAS has software that allows for automatic take-off and landing, automatic fly home and landing, GPS waypoint navigation, direction lock, and geographic information system (GIS) mapping. The FAA has previously granted exemptions for this model UAS.

Characteristics of the STR8

The STR8 sUAS consists of an unmanned vehicle, a remote control, and a mobile ground station. The aerial vehicle consists of a small V-form rotorcraft lifted and propelled by eight rotors. It is electrically powered by lithium power and therefore presents no fuel spill risk. The STR8 has enhanced safety features including constant self-monitoring, resistance to external magnetic disturbances, two independent data links, three emergency modes, and battery life monitoring. Each of these features help mitigate the risks inherent in flying.

The aerial vehicle can hold a pre-planned position. All systems monitor their operational status and battery life. An enhanced contingency detection system automatically notifies the pilot when error statuses are detected. There are three emergency modes from which the pilot can choose should the data links be lost – the pilot can direct an immediate landing or that the system return to base at its current height or at maximum mission height (whichever is the safest option).

Airworthiness of the Aeryon SkyRanger

The Aeryon SkyRanger provides two semiautonomous flight modes using a point-and-click map and video interface. The user clicks on a map to direct the SkyRanger to fly to the point on the map where the operator is pointing, or programmed flight plans may be entered for a series of waypoints or grid-based area. Additional navigation aids including landing zones and flight areas may be designated to ensure the SkyRanger operates only within user-specified flight parameters (geo-fencing). All flight operations are GPS controlled making the system easy to navigate, and the flight control system also employs a variety of sensors including sonar, barometric pressure, temperature, wind speed and others to ensure the high stability and reliability in challenging weather conditions. During flight operations, the operator can intervene with a programmed flight and take immediate control. The SkyRanger also has a significant set of automated features to ensure safe takeoff, flight and landing in many conditions, further details of operation can be found in Attachment 3.

As a result of the considerable number of safety features identified above, the SkyRanger has received multiple approvals for previous operations. Aeryon Labs believes it has shown compliance through its history of successful flight operations which include cooperation with several public agencies. The list of organizations who have used SkyRanger includes: Michigan State Police, US Navy SPAWAR, Mass Development (Joint Base Cape Cod), Unmanned Experts (NIJ Partnership), Western Washington University, Aetos (via Northwest Michigan College), University of Alaska Fairbanks, University of New Mexico, Kansas State University, and Virginia Tech University. The SkyRanger has also successfully completed the Department of Homeland Security RAPS Trial in 2013. In Canada, Aeryon has obtained 19 Special Flight Operations Certificates (SFOCs) from Transport Canada over 5 years and its customers have received multiple certificates to perform demonstration, research and development, public and commercial operations. The criteria set forth in the certificates granted specify the substantive showings of the device's safety and fitness for operation to ensure that the FAA has sufficient basis to evaluate the aircraft's safety.

Airworthiness of the DJI Spreading Wings S1000

The DJI S1000 has been approved in over 20 granted Section 333 exemptions to date. This is an octocopter with a maximum takeoff weight of 11 kg (24 lbs.) and a 15 minute flight time. The S1000 has numerous built-in safety measures. It can adjust automatically should an engine fail and alerts the PIC to the possibility of a lost link before it occurs. If the control link is broken, the UAS will return to a pre-programmed location for landing.

2. Procedures Ensuring UAS in Condition for Safe Flight

The pilot will manually inspect the sUAS according to manufacturer's instructions prior to each operation (refer to page 11 in Attachment 2 for the STR8, page 20 in Attachment 3 for the SkyRanger, and page 5 in Attachment 4 for the DJI S1000). The PIC will ensure all visible parts are in good working condition, a good

signal connection exists between the device used to operate the system and the vehicle itself, and will run any available diagnostics to further ascertain the overall status of the sUAS.

Risk to National Airspace System (NAS)

Strat Aero will issue a NOTAM no later than 24 hours prior to any operation, and will notify any additional applicable agencies to enhance traffic de-confliction and safe operation in airspace. When authorized for flying above the FAA blanket AGL altitude, Strat Aero will remain within a 50 foot radius (horizontally and/or vertically) of any protruding structure that is the object of our inspection. These structures have been previously identified by the FAA on aeronautical charts. In consideration of the 50 foot radius limitation, the risk of interference with another aircraft is minimal.

The risk posed by using manned aircraft to conduct these operations is higher than with sUASs, and in some cases manned aircraft cannot duplicate the UAV capabilities. These smaller, lightweight unmanned systems have much less kinetic energy than higher mass manned aircraft, thus much less impact effect. Also, they do not carry fuel and as such do not pose the explosion hazard compared to manned aircraft.

Risk to Persons and Property on the Ground

Each of the four sUAS's Strat Aero requests to use commercially has software-based fail-safes that minimize the risk of catastrophic system failure. When these features are coupled with the strict safety procedures to which Strat Aero operators will adhere, Strat Aero sUAS operations will achieve at least an equivalent level of safety to those achieved in manned aircraft operations. For inspection operations, these areas are often access-controlled by the company and/or individuals owning the structures, further ensuring safety of the operational area and reducing risk to people and property.

Please reference attachments to further review operational characteristics of these systems.

3. Radio Frequency (RF) spectrum

Aerialtronics Altura Zenith Radio Frequencies: 868/900 MHz, 2.1-2.9 GHz, 5.8 GHz
STR8 Control Link: 2.4 GHz, 5.8 GHz, 10-100Mw
Aeryon SkyRanger Radio Frequencies: 900 MHz, 2.4 GHz, 5.8 GHz, Custom
DJI Spreading Wings S1000 Signal Frequency: 30 Hz – 450 MHz, 8KHz

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Regarding the Unmanned Aircraft PIC

4. Qualifications Required of PIC(s)

   Strat Aero PICs will comply with FAA minimum guidelines for sUAS pilot certification and training standards. The current minimum requirement is to possess a sport pilot's license. In addition, Strat Aero will ensure that pilots complete manufacturer and company-developed training and will also require currency training at regular intervals.

5. Medical Standards and Certification of the PIC

   Per guidance in Exemption No. 11265, at a minimum, the PIC and VO will each possess 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.

Regarding the Operation of Unmanned Aircraft

6. Intended UAS Operation(s)

   Strat Aero proposed operations include but are not limited to:

   - Utility infrastructure monitoring and inspection (e.g. electricity generation facilities (wind, water, solar, gas, and coal), water management, and gas and oil production and transportation facilities);
   - UAS operator training and curriculum development;
   - Contingency site surveillance for emergency management;
   - Aerial mapping and surveying;
   - Wildlife monitoring; mining, forestry, and other agricultural applications;
   - Transportation analytics;
   - Intelligence, surveillance, and reconnaissance support to commercial and governmental agencies (to include military and/or law enforcement/EMS applications);
   - Still photography;
   - And aerial data collection to aid in research and development initiatives.

7. Proposed Flight Parameters

   Strat Aero expects to be subject to the following mandatory conditions contained in similar recent exemptions:

   - Operations to be conducted over private or controlled access property.
   - Permission from land owner/controller required before commencing any flight.
   - Operations to occur during Visual Flight Rules Meteorological Conditions (VMC).

- Aircraft to remain within Visual Line of Sight (VLOS).
- Operations to occur during daylight hours.
- Above Ground Level (AGL) altitude to be restricted to 400 feet with the possible exception of certain industrial inspections as described below.
- All operations conducted in vicinity of airport to remain within the boundaries of the authorized location and so as to adhere to any conditions set forth in that authorization.
- Operator will file a NOTAM and/or notify ATC prior to each flight per conditions of authorization.
- All required permissions and permits will be obtained from territorial, state, county or city jurisdictions, including local law enforcement, fire, or other appropriate governmental agencies.
- All operations will include one pilot for flight control and one observer for VLOS enhancement.

The requested exemption would especially assist with inspections of industrial and utility infrastructure that can be dangerous and difficult to conduct either manually or with manned aircraft. Strat Aero requests permission to inspect those types of structures that extend above 200 feet above ground level (AGL).[1] Standard operating procedures would be adhered to that restrict any exceedance of 200 feet AGL to inspection activities within a radius of 50 feet of the structure being inspected. A greater than equivalent level of safety would be achieved by the PIC/Observer focused on inspection activities and avoiding UAV contact with the nearby structure beyond that achieved now using helicopters or people to conduct these inspections. Per the OSHA website, there were 11 fatalities in 2014 and 13 fatalities in 2013 attributed to accidents on or near communications towers. [2]

- Some example structure types follow:
  - Wind turbines – Up to 540 ft. altitude (495 turbine height plus 50 feet maximum vertical allowance). Per the 2011 Wind Energy Industry Manufacturing Supplier Handbook, some wind turbine towers are as tall as 330 feet, and blades can be as large as 165 feet. [3] If power to the turbine is shut down (as would be the case in preparation for inspection), a blade could come to rest in its apex position, rendering the maximum height of the entire structure 495 feet.
  - Radio, television, and cell phone communications towers.

8. Area of Intended Operation(s)

Strat Aero customers and corporate partners are dispersed throughout the United States. As such, Strat Aero requests that approval be granted nationwide. Strat Aero will comply with all notice filing and any other operational requirements specified by the FAA. Strat-Aero will describe a finite and limited area of operation for each mission. Any structure to be inspected that protrudes above the 200'AGL plane will be

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[1] Source: FAA Website - http://www.faa.gov/news/updates/?newsId=82245
[2] Source: OSHA website - https://www.osha.gov/doc/topics/communicationtower/index.html
[3] Source: From the American Wind Energy Association (AWEA) website - http://awea.files.cms-plus.com/FileDownloads/pdfs/Supplier-Handbook.pdf

specifically identified. All other flight activity will be conducted below the FAA specified blanket altitude, including transit between take-off/landing spot and the target of our inspection. Such structures have already been identified and met FAA criteria. Staying within a 50' radius of these structures should not present a measureable increase of risk nor jeopardize the safety of the public.

9. Proximity to Airports

   Strat Aero will adhere to FAA-issued restrictions with regards to flying in close proximity to airports. The company will not operate sUASs within:

   - 5 nautical miles (NM) from an airport having an operational control tower; or
   - 3 NM from an airport having a published instrument flight procedure, but not having an operational control tower; or
   - 2 NM from an airport not having a published instrument flight procedure or an operational control tower; or
   - 2 NM from a heliport

   unless a letter of agreement with that facility's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the facility or airport management must be made available to the Administrator or any law enforcement official upon request.

10. Compliance with VLOS Requirement

    Both the PIC and VO will ensure operations are conducted within VLOS only. The PIC and VO will use 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.

11. Pre-flight Safety Risk Assessment

    PIC and VO will conduct a thorough visual sweep of the area of intended operations and a safety briefing before commencing operations. In addition, PIC will ensure all manufacturer and Strat Aero pre-flight inspection procedures are complete including pre-set of minimum and maximum altitudes (see user manuals for specific checklists).

12. Coordination with Flight Standards District Offices (FSDOs)

    Strat Aero will coordinate our flight activities with the local FSDO as required and will submit monthly flight reports as directed.

13. Certificate of Authorization (COA) Application Requirement

Strat Aero will apply for new COAs or COA amendments as required by the FAA or as is necessary based on changes in standard operating procedures, aircraft and equipment, and/or other operational considerations that would affect the basis upon which the FAA granted this exemption.

The name and address of the applicant is as follows:

Strat Aero International, Inc.
Attn: Jonathan Adams, Chief Operating Officer
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E-mail: jon@strat-aero.com

Attachments

1) Aerialtronics Altura Zenith ATX8 Manual - (this document is being sent to Strat-Aero by the OEM, but is the same document as submitted in conjunction with Public Docket No. FAA-2014-0856 by State Farm Mutual Automobile Insurance Company) will be sent to FAA e-mail upon receipt
2) STR8 Operating Manual – submitted to FAA e-mail as directed
3) Aeryon SkyRanger User Guide – submitted to FAA e-mail as directed
4) DJI S1000 User Manual – submitted to FAA e-mail as directed

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Exemptions Sought

Section No. (§)	Description	Reasoning and/or Mitigation
14 CFR Part 21 & 14 CFR §91.203 (a)	Airworthiness Certificates	Given the size of the aircraft (6 lbs.) and the limited operating area associated with its utilization, it is unnecessary to go through the certificate of airworthiness process under Part 21 Subpart H to achieve or exceed current safety levels. It will not carry a pilot or passenger, will not carry flammable fuel, and will operate exclusively within an area pre-disclosed and in compliance with conditions set forth herein. Operations under this exemption will be tightly controlled and monitored by both the operator, pursuant to the conditions set forth above, and by local public safety requirements. The FAA will have advance notice of all operations through the filing of NOTAMs. Receipt of the prior permission of the land owner, the size of the aircraft, the lack of flammable fuel, and the fact that the aircraft is carried to the location and not flown there all establish the equivalent level of safety.
14 CFR §61.23	Medical certificates: Requirement and duration	Per previously-granted exemptions, both the PIC and VO will possess a valid U.S. driver's license issued by a state, territory, or the federal government. Medical certification should not be required as these sUASs are lightweight, not manned, do not carry liquid fuel, and have built-in software ensuring automatic responses to potential safety issues. In addition, to further mitigate safety concerns, the on-site lead will pre-brief personnel on safety procedures, and any personnel can initiate the cessation of operations for any safety-related reason.
14 CFR §61.101	Recreational pilot privileges and limitations	The PIC will undergo manufacturer and company-specific training in order to achieve a level of safety at least equivalent to that of a recreational pilot operating manned aircraft pursuant to this section. Strat Aero requests an exemption to this section based on the similarities of our petition with that of the reliefs granted under Exemption No. 11241.
14 CFR §61.113	Private pilot privileges and limitations	The PIC would possess at least a sport pilot license per guidance in previous exemptions (i.e. Exemption No. 11265). Strat Aero can achieve an equivalent level of safety to those achieved by current regulations because the sUASs are unmanned and will only be flown with mission-essential personnel in the area. In addition, The Strat Aero operator

		will successfully complete manufacturer and petitioner-developed training.
14 CFR §61.133 (a)	Commercial pilot privileges and limitations	Strat Aero operators will be trained with manufacturer-developed and company specific training that will provide adequate safety training. Completion of this training and adherence to Strat Aero SOPs and manufacturer guidelines will guarantee a level of safety equivalent to those required of larger manned aircraft.
14 CFR §61.315	Sport pilot privileges and limitations	The PIC will undergo manufacturer and Strat Aero-specific training in order to achieve a level of safety at least equivalent to that of a pilot with a sport license operating manned aircraft pursuant to this section. Strat Aero requests an exemption to this section based on the similarities of our petition with that of the reliefs granted under Exemption Nos. 11241 and 11265.
14 CFR §91.7 (a)	Civil aircraft airworthiness	The PIC will comply with standards outlined in the appropriate operator's manual to ensure the rotorcraft is in an airworthy condition prior to every operation. Pre-flight inspections will ensure the craft is safe for operating and will meet the intent of this section without requiring a certificate.
14 CFR §91.9 (b) (2) & (c)	Civil Aircraft Fight Manual in the Aircraft	sUAS vehicles cannot carry a manual due to their small size, but a manual will be available at the ground control station where the pilot flying the sUAS will have immediate access to it. The FAA has granted this to others in the following exemptions: 8607, 8737, 8738, 9299, 9565, 10167, 10602, 10700, and 11265.
14 CFR §91.103 (b) (2)	Pre-flight action	While the FAA has not approved a flight manual for rotorcraft, the PIC will achieve an equivalent level of safety by following the manufacturer's pre-flight checklists. Reference page numbers described in section 2 for these checklists.
14 CFR §91.105	Flight crewmembers at stations	As the sUASs are unmanned, crew cannot be at stations aboard the aircraft, but the pilot, visual observer, and any other mission-essential personnel will be at their appropriate stations prior to take-off.
14 CFR §91.109	Flight instruction; simulated instrument flight and certain flight tests	Neither the Falcon 8 nor the SkyRanger have fully functioning dual controls, but the pilot will attend manufacturer-developed training. After successful completion of the training, the pilot will be fully competent with the aircraft and able to meet safety requirements as outlined by the FAA

		and per the operating instructions set forth in the manufacturer's guidance.
14 CFR §91.119 (b) and (c)	Minimum safe altitudes	The sUAS will remain below 400 feet above ground level (AGL) at all times unless during brief periods of industrial inspections as described on page 4 of this exemption request letter. The PIC will ensure the sUAS is flown in accordance with manufacturer's safety guidelines and in such a way that achieves a level of safety equivalent to those allowed for helicopters operating at similar altitudes.
14 CFR §91.121	Altimeter settings	The above-referenced sUASs do not have a traditional altimeter. The onboard data systems monitor altitude, all flight data is monitored by the operator, and readings are stored on an SD card onboard. All operations will be conducted within line of sight, out of the airspace used by most manned aircraft, and below 400 feet AGL.
14 CFR §91.151	Fuel requirements for flights in VFR conditions	Each of the sUASs identified in this petition indicate low power status to the pilot when there is still sufficient power to conduct a safe landing (up to five minutes left in battery power). Warnings continue and increase in intensity and frequency after the first indication of the battery charge being low.
14 CFR §91.203 (a) & (b)	Civil aircraft: Certifications required	The request for exemption from 14 CFR §91.203 (a) is coupled with the request for relief from 14 CFR Part 21 (see top of page 5). With regards to §91.203 (b), the sUASs are too small to carry COAs onboard, but the document(s) will be available at the ground station. This will ensure the pilot has access to these documents at all time.
14 CFR §91.405	Maintenance required	The PIC will conduct pre-flight checks to include any visible need for maintenance prior to operations. If a problem is present but not visible to the pilot, the issue will still be corrected – both sUASs notify the PIC of maintenance issues on startup and continue to monitor status after takeoff. When the PIC or other qualified maintainer is alerted to maintenance issues, he or she will conduct maintenance as directed in the sUAS-specific operating manual. Strat Aero will also ensure the systems are periodically inspected for any issues to further prevent in-flight errors or failures. A maintenance log will be maintained for reference and will be available to regulatory officials upon request.
14 CFR §91.407	Operation after maintenance	Due to these systems' consistent self-monitoring and Strat Aero's compliance with manufacturer's pre-flight inspection

		checklists, the PIC or other trained technician is qualified to ascertain the suitability of the sUAS for continued operations.
14 CFR §91.409	Inspections	Inspections will be conducted before and after each flight as well as at periodic intervals. These regular inspections ensure a level of safety equivalent to that of inspecting manned aircraft annually is achieved.
14 CFR §91.417 (a) and (b)	Maintenance records	The PIC or other similarly-qualified technician will perform any maintenance and will make note of any maintenance work. Strat Aero seeks exemption from the specified time periods, however, as the sUAS conducts self-inspection throughout the operation.

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Conclusion

The planned uses for the Aerialtronics Altura Zenith ATX8, STR8, Aeryon SkyRanger, and DJI S1000 systems satisfy the criteria set forth in Section 333 of the Reform Act. Strat Aero's proposed sUAS operations, subject to the conditions listed above, do not create a hazard to users of the national air space (NAS) or the public or threaten national security. The small size, low weight, low speed, safety features, and operating distance from airports and populated areas mitigate these safety issues.

The operation of the sUAS for aerial data collection in accordance with the strict conditions outlined herein will provide more than an equivalent level of safety, supporting the grant of the exemptions requested. Approval of the exemptions allowing operations of the aforementioned systems for aerial photography and surveillance will enhance safety by reducing the risks inherent in the same services when conducted manually or with manned aircraft. Other aerial inspection options available to Strat Aero customers using conventional rotary aircraft, present risks associated with vehicles that often weigh several thousand pounds and carry large quantities of fuel, passengers, and cargo. Such aircraft must fly to and from the inspection locations. While these sUASs will operate at similar speeds and altitudes of manned aircraft, the heaviest weighs approximately 6 pounds (89% less weight than the 55 pound maximum established by the FAA), is powered by batteries, and will be carried to the inspection location. The sUASs will not fly over residences and will not expose any individuals to the risks associated with manned aircraft flights. All of these factors greatly reduce the risks associated with conventional operations.

Given their reduced size, speed, load capacity, and lack of fuel spill risk, the Aerialtronics Altura Zenith ATX8, DJI S1000, STR8, and Aeryon SkyRanger sUASs pose no threat to national security. Further, the operating capabilities, avoidance of airspace used by other aircraft, operation within visual line of sight, and use of licensed pilots provide adequate justification to grant the requested exemptions.

Best regards,

//signed, rc, 05 May 15//
Renae Compton
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