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

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

June 16, 2015

Exemption No. 11816
Regulatory Docket No. FAA–2015–1056

Mr. Matt Johnson
Director
The Lyle Company
3140 Gold Camp Drive
Unit 30
Rancho Cordova, CA 95670

Dear Mr. Johnson:

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

By letter dated March 3, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of The Lyle Company (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photo and video of unmanned wireless facilities.

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

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

**Airworthiness Certification**

The UAS proposed by the petitioner is a DJI Inspire 1.

In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited

operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates,* and any associated noise certification and testing requirements of part 36, is not necessary.

**The Basis for Our Decision**

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

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

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

**Our Decision**

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, The Lyle 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, The Lyle 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 Inspire 1 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

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

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

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

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

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

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed.

Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

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

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

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

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

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

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

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be

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

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

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

17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

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

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

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.

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

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification

(N−Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

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

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

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

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

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

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

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

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

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

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

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

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

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

Sincerely,

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

Enclosures

March 03, 2015

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

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

Dear Sir or Madam:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 and 14 CFR Part 11, the Lyle Company hereby requests an exemption from the Federal Aviation Regulations outlined below. The Lyle Company requests exemption in order to allow its use of the DJI Inspire 1 Unmanned Aerial System (UAS) in commercial operations for purposes of aerial photo and video of unmanned wireless facilities, so long as such operations are conducted within and under the conditions and limitations outlined herein or as may be established by the FAA as required by Section 333.

**NAME AND ADDRESS OF THE PETITIONER**

The Lyle Company
Attn: Matt Johnson, Director
3140 Gold Camp Drive #30
Rancho Cordova, CA 95670
Phone: 916-266-7019
Email: mjohnson@lyleco.com

**REGULATIONS FROM WHICH THE EXEMPTION IS REQUESTED**

14 CFR § 61.113(a) & (b)
14 CFR § 91.7(a)
14 CFR § 91.119(c)
14 CFR § 91.151(a)
14 CFR § 91.405(a)
14 CFR § 91.407(a) (1)
14 CFR § 91.409(a) (1) & (2)
14 CFR § 91.417(a) & (b)

The Petitioner also requests exemption from any other regulations the FAA deems necessary in order to operate the UAS as described herein.

# The Lyle Company

During the past 25 years Lyle has been a leading Solutions Partner of the wireless industry. We provide solutions for the Wireless Industry's Network and Infrastructure needs including Strategic Site Development, Collocation Management, Portfolio Optimization, Auditing and Data Management, and Professional Services. In an effort to stay ahead of our client's needs Lyle continuously looks to provide the most time and cost efficient services to serve our clients. Utilizing new technology is an important part of remaining viable in the ever changing business sector.

## I. DESCRIPTION OF ACTIVITIES

The Lyle Company wishes to use the DJI Inspire 1 UAS for commercial photography and videography of cell phone towers under controlled conditions in airspace that is limited, predetermined and access-controlled. The Lyle Company wishes to have authorized employees be the Pilot in Command (PIC) of a UAS system in order to photograph and map equipment on towers. Using a UAS system in place of physically climbing a tower would significantly increase the safety of not only the qualified employee, but the general public as well. According to AGL magazine, "In 2013 thirteen climbers lost their lives in this industry and in 2014, another twelve" (Bishop, 2014). Tower climbers run the risk of accidently dropping tools and equipment from the tower, which could pose an immediate threat to individuals below. This risk is greatly reduced when a UAS system is used in place of climbing a tower.

By operating a small, lightweight aircraft under a strict set of limitations, the Lyle Company will be able to operate UAS in the National Airspace System (NAS) while satisfying the FMRA § 333 requirement to achieve an equivalent level of safety when compared to traditional aircraft. The Lyle Company further believes that its proposed operations will actually increase the level of safety when compared to traditional, manned aircraft carrying combustible fuel.

## II. DESCRIPTION OF AIRCRAFT

The Lyle Company plans to operate a DJI Inspire 1 UAS system. The Inspire 1 is a quad copter equipped with retractable landing gear. The DJI Inspire 1 features a flight controller that enables the UAS to operate safely if the GPS signal is lost. This UAS also features a low battery failsafe that is triggered when the flight battery is depleted to a point that may affect the safe return of the aircraft. Users are advised to return home or land the aircraft immediately when these warnings are shown. The aircraft will automatically return to the home point if no action is taken after 10 seconds countdown. The maximum loaded takeoff weight of the DJI Inspire 1 is 6.47 LBS and the maximum airspeed (no wind, ATI mode) is 22 m/s.[1]

Specifications

| Aircraft | |
|---|---|
| Model | T600 |
| Weight (Battery Included) | 2935 g |
| Hovering Accuracy (P Mode) | Vertical: 0.5 m<br>Horizontal: 2.5 m |
| Max Angular Velocity | Pitch: 300°/s<br>Yaw: 150°/s |
| Max Tilt Angle | 35° |
| Max Ascent Speed | 5 m/s |
| Max Descent Speed | 4 m/s |
| Max Speed | 22 m/s (ATTI mode, no wind) |
| Max Flight Altitude | 4500 m |
| Max Wind Speed Resistance | 10 m/s |
| Max Flight Time | Approximately 18 minutes |
| Motor Model | DJI 3510 |
| Propeller Model | DJI 1345 |
| Indoor Hovering | Enabled by default |
| Operating Temperature Range | -10° to 40° C |
| Diagonal Distance | 559 to 581 mm |
| Dimensions | 438x451x301 mm |

Appendix

[1]See DJI Inspire 1 User Manual V1.0 at *http://www.dji.com/product/inspire-1/download* for complete information

## III. FAA Regulations and Justification for Exemption

**Sections 61.113(a) and (b)** prescribes that-

> *(a) No person who holds a private pilot certificate may act as a PIC of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as PIC of an aircraft.*
>
> *(b) A private pilot may, for compensation or hire, act as PIC of an aircraft in connection with any business or employment if—*
>
> *(1) The flight is only incidental to that business or employment; and*
>
> *(2) The aircraft does not carry passengers or property for compensation or hire.*

The DJI Inspire 1 UAS that the Lyle Company wishes to operate is small in size, weighs less than seven pounds, does not carry any human passengers, and is remotely controlled. The level of safety will exceed that provided by an individual holding a commercial pilot's certificate. The Lyle Company PIC will adhere to the requirements outlined in the DJI Inspire 1 User Manual and will only operate the UAS in visual line-of-sight (VLOS).

The Lyle Company PIC will satisfy the operator requirements outlined by the FAA in which the PIC will:

- Pass an initial aeronautical knowledge test at an FAA-approved knowledge testing center.
- Be vetted by the Transportation Security Administration.
- Obtain an unmanned aircraft operator certificate with a small UAS rating (like existing pilot airman certificates, never expires).
- Pass a recurrent aeronautical knowledge test every 24 months.
- Be at least 17 years old.
- Make available to the FAA, upon request, the small UAS for inspection or testing, and any associated documents/records required to be kept under the proposed rule.
- Report an accident to the FAA within 10 days of any operation that results in injury or property damage.
- Conduct a preflight inspection, to include specific aircraft and control station systems checks, to ensure the small UAS is safe for operation.

The area of operation will be limited to private property owned or leased by the tower owner. Cell tower sites are typically located on private property surrounded by a privacy fence and are referred to in the industry as "Unmanned Wireless Facilities". The Lyle Company PIC will only operate the UAS at an Unmanned Wireless Facility – a low-risk, controlled environment. Because of this limited area of operation and the lightweight nature of the DJI Inspire 1, the chances of a crash that could potentially harm individuals will be virtually non-existent. Therefore, The Lyle Company believes that the additional manned airmanship of a commercially certificated pilot would not correlate to the airmanship skills necessary for the proposed operations.

See the aerial view below of a typical Unmanned Wireless Facility.

***Section 91.7(a)*** *prescribes that no person may operate a civil aircraft unless it is in an airworthy condition.*

The FAA has found in numerous exemptions that similar UAS operations do not require an airworthiness certificate in accordance with 14 CFR part 21, Subpart H. The Lyle Company proposes that compliance with its operating documents be a sufficient means for determining an airworthy condition. Given the size of the aircraft and the requirements by which the Lyle Company has agreed to abide, an equivalent level of safety will be achieved by ensuring compliance with the Inspire 1 manual prior to each flight. The FAA has approved similar exemptions in 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11110, and 11153.

***Section 91.119(c****) prescribes that, except when necessary for takeoff or landing, no person may operate an aircraft below 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.*

An exemption from section 91.119(c) is necessary because Cell Towers that the aircraft inspects will always be less than 500 feet AGL. In addition, the low-altitude operations of the UAS will ensure separation between these small-UAS operations and the operations of conventional manned aircraft that must comply with Section 91.119.

***Section 91.151(a)*** *prescribes that no person may begin a flight in an airplane under visual flight rules (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*

Relief from § 91.151(a) is necessary because the DJI Inspire 1 will only operate for approximately 18 minutes per charge, making operation of the aircraft impossible under this section. Furthermore, the DJI Inspire 1 will only be operated during daytime hours. Safety features of the Inspire 1 include low battery blinking lights. These features, teamed with the small size and weight of the UAV, should more than achieve an equivalent level of safety. The FAA has approved similar exemptions in 2689, 5745, 10650, 10673, 10808, 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11110, 11112, and 11153.

***Section 91.405(a)*** *prescribes, in pertinent part, that each owner of an aircraft 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, Maintenance, Preventive Maintenance, Rebuilding, and Alteration.*

***Section 91.407(a)(1)*** *prescribes that no person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless it has been approved for return to service by a person authorized under § 43.7 of this chapter.*

***Section 91.409(a)*** *prescribes, in pertinent part, that no person may operate an aircraft unless, within the preceding 12 calendar months, it has had—*

***Section 91.417(a) and (b)*** *prescribe, in pertinent part, that—*

*(a) Each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:*

*(1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include—*

*(i) A description (or reference to data acceptable to the Administrator) of the work performed; and*

*(ii) The date of completion of the work performed; and*

*(iii) The signature and certificate number of the person approving the aircraft for return to service.*

*(2) Records containing the following information:*

*(i) The total time in service of the airframe, each engine, each propeller, and each rotor.*

*(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.*

*(iii) The time since last overhaul of all items installed on the aircraft that are required to be overhauled on a specified time basis.*

*(iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.*

*(v) The current status of applicable airworthiness directives (AD) and safety directives including, for each, the method of compliance, the AD or safety directive number and revision date. If the AD or safety directive involves recurring action, the time and date when the next action is required.*

*(vi) Copies of the forms prescribed by § 43.9(d) for each major alteration to the airframe and currently installed engines, rotors, propellers, and appliances.*

*(b) The owner or operator shall retain the following records for the periods prescribed:*

*(1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.*

*(2) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.*

*(3) A list of defects furnished to a registered owner or operator under § 43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.*

The Lyle Company requests an exemption to the above inspection/maintenance Federal Aviation Regulations (FARs) and proposes the following maintenance/inspection procedures that will achieve an equivalent level of safety:

1. Prior to each flight the PIC will inspect the UAS to ensure it is in a condition for safe flight. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft will be prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight. The Ground Control Station will be included in the

preflight inspection. All maintenance and alterations will be properly documented in the aircraft records.

2. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g. replacement of a flight critical component, will undergo a functional test flight. The PIC who conducts the functional test flight will make an entry in the aircraft records.

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

4. The Lyle Company will follow the UAS manufacturer's aircraft/component, maintenance, overhaul, replacement, inspection, and life limit requirements.

5. The Lyle Company will 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 will be noted in the aircraft records, including total time in service, description of work accomplished, and the signature of the authorized person returning the UAS to service.

6. Each UAS operated under the exemption will comply with all manufacturer Safety Bulletins.

7. The authorized person will make an entry in the aircraft record of the corrective action taken against discrepancies discovered between inspections.

Adherence to the above procedures, as well as others included in the attached documentation (including a preflight checklist) should provide more than an equivalent level of safety to the above FARs. The FAA has approved similar exemptions in 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11110, 11112, and 11153.

## IV. Public Interest

Manned aircraft conducting aerial photography/videography can weigh 6,000 pounds or more and contain one or more individuals on board. The Lyle Company's UAV will weigh less than 7 pounds and contain no living crew (the PIC and VO being remotely located from the UAV). The limited weight significantly reduces the potential for harm to participating and nonparticipating individuals or property in the event of an incident or accident. There is no risk to an onboard crew while using a UAV.

Traditional manned aircraft contain highly-flammable fuel and are at risk of fuel spillage and fire in the event of an incident or accident. The battery-powered Inspire 1 carries no fuel, eliminating this fire and environmental risk.

Traditional aerial photography/videography operations using conventional aircraft can operate in very close proximity to persons and property on the ground. While the FAA mitigates these risks in a variety of ways, the proposed UAS operations would reduce risks even further due to the limited size, weight, speed, operating conditions, and safety features of the Inspire 1.

Furthermore, as Congress outlined in the FAA Modernization and Reform Act, integration of UAS into the NAS is inherently in the public interest, as long as it can be accomplished safely. As described above, not only will the proposed UAS operations provide an equivalent level of safety to current operations – they will actually provide a greatly-improved level of safety to construction managers and the general public.

## V. Privacy

All operations will be conducted over private or controlled-access property (surrounded by a fenced perimeter in nearly all sites) with permission from the tower owner. Permission from an authorized representative will be obtained for each flight to be conducted.

## VI. Conclusion

The Lyle Company seeks exemption from the FARS outlined above in order to commercially operate a small UAV that weighs less than ten pounds for the purposes of photographing and mapping cell phone tower equipment located within Unmanned Wireless Facilities.

Approval of this exemption will enhance safety by removing many of the risk factors associated with larger, manned aircraft systems. Approval will also enhance safety for construction managers, who will no longer have to climb towers for equipment mapping.

The operation of the UAS described herein, under the strict conditions outlined above and in the operating documents, will provide an equivalent level of safety to support the grant of the requested exemptions.

Please do not hesitate to contact me if you have any questions or concerns.

Sincerely,

Matt Johnson
Director, Lyle Company

## VII. References

Bishop, Don (2015, February). Year of the Climber. *Above Ground Level Magazine*, p. 33