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

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

June 23, 2015

Exemption No. 11869
Regulatory Docket No. FAA–2015–0609

Mr. Raymond Apruzzese
Project Controls Manager
Yonkers Contracting Co., Inc.
969 Midland Avenue
Yonkers, NY 10704

Dear Mr. Apruzzese:

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 5, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Yonkers Contracting Co., Inc. (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct aerial imaging.

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 Walkera - TALI H500.

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. 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, Yonkers Contracting Co., 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) 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, Yonkers Contracting Co., 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 Walkera - TALI H500 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 5 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

Yonkers Contracting Company, Inc.

Building Quality for Over 65 Years

969 Midland Avenue Yonkers, NY 10704 ***Tel*** *914.965.1500* ***Fax*** *914.378.8883*

March 5, 2015

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

RE: Submission to FAA Exemption Request
- Small Unmanned Aircraft Systems (sUAS)

Dear Sir or Madam:

Attached please find the Yonkers Contracting Company, Inc. (YCC) request for an exemption from the listed Federal Aviation Regulations to allow commercial operation of its Small Unmanned Aircraft System (sUAS). The purpose of this request is to allow for aerial imaging as required under awarded contracts by agencies such as the New York State Department of Environmental Protection (NYSDEP) as well as for safety and monitoring of secured construction sites. This exemption request is specific for the use of the sUAS manufactured by Walkera – TALI H500.

Also attached you will find the Walkera TALI H500, DEVO F12E, Settings Manual, which outlines the Radio Settings specific to Senser View – Displaying Data such as Timer, Horizontal Distance, Altitude Display, Move Speed Display, Longitude Display and Latitude Display – All useful in safe and controlled operation of the sUAS.

Thank you for your consideration, and please let me know if you have any questions.

Sincerely,

Ray Apruzzese
Yonkers Contracting Co., Inc.
Project Controls Manager
sUAS Operator

Yonkers Contracting Company, Inc.

Building Quality for Over 65 Years

969 Midland Avenue Yonkers, NY 10704 ***Tel*** *914.965.1500* ***Fax*** *914.378.8883*

March 5, 2015

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

RE: Submission to FAA - Exemption Request
- Small Unmanned Aircraft Systems (sUAS)
Section 333 of the FAA Reform Act and Part 11 of the Federal Aviation Regulations from 14 CFR

Dear Sir or Madam:

In regard to Section 333 of the FAA Reform Act and 14 CFR of the Federal Aviation Regulations, Yonkers Contracting Company, Inc. (YCC), the operator of the Walkera TALI H500 (TALI H500) Small Unmanned Aircraft System (sUAS), seeks an exemption from the Federal Aviation Regulations (FARs) listed below.

The requested exemption would permit YCC to operate their TALI H500 for aerial imaging as required under awarded contracts by agencies such as the New York State Department of Environmental Protection (NYSDEP) as well as aerial imaging for safety and monitoring of secured construction sites. With the landowner's permission, the TALI H500 uses a mounted camera to capture high quality digital images. Use of the sUAS for aerial imaging reduces the need to operate conventional aircraft for the same purpose and provides very high quality imaging at a fraction of the cost. These savings result in enhanced efficiency and productivity for the affected activities, as well as environmental benefits.

Operations under the exemption will be subject to strict operating requirements and conditions to ensure at least an equivalent level of safety to currently authorized operations using manned aircraft and under conditions as may be modified by the FAA as required by Section 333.

As described below, the requested exemption would authorize commercial operations of aerial imaging using the sUAS, which at less than 8 lbs, is small in size. The sUAS will be operated

under controlled conditions at low altitude in airspace that is limited in scope; it will have automated control features, as described below. In an effort to reduce risk and retain operation quality control.

YCC will utilize this sUAS in lieu of comparatively hazardous operations now conducted with fixed wing and rotary conventional aircraft, the FAA can have confidence that the operations will achieve at least an equivalent level or greater level of safety. Approval of this exemption would thereby enhance safety and fulfill the Secretary of Transportation's (the FAA Administrator's) responsibilities under Section 333(c) of the Reform Act to "establish requirements for the safe operation of such aircraft systems in the national airspace system (NAS).

The name and address of the applicant are:

Yonkers Contracting Company, Inc.
Raymond M. Apruzzese
914-965-1500 x772
rapruzzese@yonkerscontractingco.com
969 Midland Avenue
Yonkers, NY 10704

The FARs from which the exemption is requested are as follows:

14 C.F.R. 45.23(b);
14 C.F.R. 61.113(a) & (b);
14 C.F.R. 61.133(a);
14 C.F.R. 91.7(a);
14 C.F.R. 91.9(b)(2);
14 C.F.R. 91.109(a);
14 C.F.R. 91.119;
14 C.F.R. 91.151(a);
14 C.F.R. Part 21;
14 C.F.R. 91.203(a) & (b);
14 C.F.R. 91.405(a);
14 C.F.R. 91.407(a)(1);
14 C.F.R. 91.409(a)(2);
14 C.F.R. 91.417(a).

Each regulation is explained below as to why exemptions have been requested and how each is appropriate. Also, how YCC can provide an equivalent level of safety as required for the operator, those observing operations as well as the public.

THE APPLICABLE LEGAL STANDARD UNDER SECTION 333

YCC submits that grant of this exemption application for use of the TALI H500 in aerial imaging in accordance of the law which directs the Secretary of Transportation to consider whether certain sUAS may operate safely in the NAS before completion of the

rulemaking required under Section 333 of the Reform Act. In making this determination, the Secretary is required to determine which types of sUAS do not create a hazard to users of the NAS or the public or pose a threat to national security in light of the following:

- The sUAS size, weight, speed, and operational capability;
- Operation of the sUAS in close proximity to airports and populated areas;
- Operation of the sUAS within visual line of sight of the operator.

Reform Act § 333(a)(1). If the Secretary determines that such vehicles "may operate safely in the national airspace system, the Secretary shall establish requirements for the safe operation of such aircraft in the national airspace system." *Id.* §333(c). The Federal Aviation Act expressly grants the FAA the authority to issue exemptions. This statutory authority, by its terms, includes exempting civil aircraft, as the term is defined under §40101 of the Act, from the requirement that all civil aircraft must have a current airworthiness certificate and those regulations requiring commercial pilots to operate aircraft in commercial service: 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 4470244716 of this title if the Administrator finds the exemption is in the public interest.

The grant of the requested exemption is in the public interest based on the clear direction in Section 333 of the Reform Act; the additional authority in the Federal Aviation Act, as amended; the strong equivalent level of safety surrounding the proposed operations; and the significant public benefit, including enhanced safety and cost savings associated with transitioning to sUAS for aerial imaging. Accordingly, the applicant respectfully requests that the FAA grant the requested exemption without delay.

Mandatory Operating Conditions

Grant of the exemption to YCC will be subject to the following mandatory conditions, which are based upon operating conditions set forth for operation of sUAS by public entities pursuant to Certificates of Authorization, with additional restrictions:

- All operations to occur in Class G airspace
- 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)
  - VLOS guaranteed with a cylinder of operation around operator of ½ nautical miles (NM)
- Above Ground Level (AGL) altitude to be restricted to 400 feet
- All operations conducted in vicinity of airport to remain more than 2.5 NM from centerline azimuth of runway centerline measured from runway thresholds
- 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

Operator Requirements

YCC respectfully proposes that operator requirements should take into account the characteristics of the particular sUAS. Certain sUAS, such as the YCC TALI H500, are characterized by a high degree of pre-programmed control and various built-in technical capabilities that limit the potential for operation outside of the operating conditions set forth above.

The TALI H500 flights can be pre-programmed with precision GPS guidance and do not require human intervention. In the case of unplanned events, the aircraft will follow p-programmed maneuvers including the initiation of holding at present position; Fail Safe-Return to Home (RTH) and climb to an elevation of 15m, return to the launch point and land safely. Additional automated safety functions and safety enhancing features of the TALI H500 include the following:

- Detection of lost GPS or radio signal from transmitter will initiate RTH.
- Low power warning; the radio start buzzing and shaking when you have 2 minutes of flight time remaining on the H500 battery.
- The aircraft, weighing less than 10 lbs., fully loaded, is constructed of EPP foam, or similar material which is intended to absorb impact energy.

Given these safety features, YCC proposes that operators of the TALI H500 should not be required to hold a commercial or private pilot certification.

Federal Aviation Regulations – Exemption detail

YCC requests an exemption from the following regulations as well as any additional regulations that may technically apply to the operation of the TALI H500:

14 C.F.R. § 45.23(b): Marking of the Aircraft

The regulation provides:

> When marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light-sport," "experimental," or "provisional," as applicable.

The TALI H500 has no entrance to the cabin, cockpit, or pilot station on which the word "Experimental" can be placed. Given the size of the sUAS, two-inch lettering will be impossible. The word "Experimental" will be placed on the forward fuselage in compliance with § 45.29(f). The equivalent level of safety will be achieved by having the TALI H500 marked on its forward fuselage as required by § 45.29(f) where the pilot, observer, and others working with the sUAS will see the identification of the sUAS as "Experimental." The FAA has issued the following exemptions to this regulation to others, including Exemption Nos. 8738, 10167 and 10167A.

14 C.F.R. § 61.113(a) & (b); 61.133(a): Private Pilot Privileges and Limitations; Pilot in Command; Commercial Pilot Privileges and Limitations.

Section 61.113(a) & (b) limit private pilots to non-commercial operations. Unlike a conventional aircraft that carries a pilot, passengers, and cargo, the TALI H500 in this case is remotely controlled with no passengers or property of others on board. Section 61.133(a) requires an individual with a commercial pilot's license to be pilot in command of an aircraft for compensation or hire. YCC respectfully proposes that operator requirements should take into account the characteristics of the particular sUAS. Certain sUAS, such as the YCC TALI H500, are characterized by a high degree of pre-programmed control and various built-in technical capabilities that limit the potential for operation outside of the operating conditions set forth above.

The TALI H500 flights can be pre-programmed with precision GPS guidance and do not require human intervention. In the case of unplanned events, the aircraft will follow p-programmed maneuvers including the initiation of holding at present position; Fail Safe-Return to Home (RTH) and climb to an elevation of 15m, return to the launch point and land safely. Additional automated safety functions and safety enhancing features of the TALI H500 include the following:

- Detection of lost GPS or radio signal from transmitter will initiate RTH.
- Low power warning; the radio start buzzing and shaking when you have 2 minutes of flight time remaining on the H500 battery.
- The aircraft, weighing less than 10 lbs., fully loaded, is constructed of EPP foam, or similar material which is intended to absorb impact energy.

Given these safety features, YCC proposes that operators of the TALI H500 should not be required to hold a commercial or private pilot certification.

Given these conditions and restrictions, an equivalent level of safety will be provided by allowing operation of the TALI H500 without a private pilot's certificate or a commercial pilot's certificate, under the conditions set forth herein.

The risks associated with the operation of the TALI H500 (given its size, speed, operational capabilities, and lack of combustible fuel) are so diminished from the level of risk associated with private pilot operations or commercial operations contemplated by Part 61 with conventional aircraft (fixed wing or rotorcraft), that allowing operations of the sUAS as set forth above meets or exceeds the present level of safety provided under 14 C.F.R. § 61.113(a) & (b) and does not rise to the level of requiring a commercial pilot to operate the aircraft under § 61.133(a).

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

This regulation requires that no person may operate a civil aircraft unless it is in airworthy condition. Should the exemption be granted allowing commercial operation of the TALI H500 without an airworthiness certificate, no standard will exist for airworthiness of the TALI H500. Given the size of the aircraft and routine pre-flight inspection before flight, an equivalent level of safety will be achieved.

14 C.F.R. § 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft.

> The regulation provides:
>
> No person may operate a U.S.-registered civil aircraft ... (2) For which an Airplane or Rotorcraft Flight Manual is not required by §21.5 of this chapter, unless there is available in the aircraft a current approved airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

Given the size and configuration of the TALI H500, it has no ability or place to carry such a flight manual on the aircraft, not only because there is no pilot on board, but because there is no room or capacity to carry such an item on the aircraft. The equivalent level of safety will be achieved by keeping the flight manual at the ground control point where the pilot flying the sUAS will have immediate access to it. The FAA has issued to others the following exemptions to this regulation: Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 32827, and 10700.

14 C.F.R. § 91.109(a) & 91.319(a)(1): Flight Instruction

These regulations provide that no person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls. The TALI H500 is a remotely piloted aircraft and by design, does not have fully functional dual controls. Flight control is accomplished through the use of a control box that communicates with the aircraft via radio communications. An equivalent level of safety will be assured. The FAA has approved exemptions for flight training without fully functional dual controls for a number of aircraft and for flight instruction in experimental aircraft. *See* Exemption Nos. 5778K & 9862A.

14 CFR § 91.119: Minimum Safe Altitudes

Section 91.119 establishes safe altitudes for operation of civil aircraft. Specifically, 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.

As set forth herein, the TALI H500 will never operate at higher than 400 feet AGL. It will, however, be operated to avoid congested or populated areas. Because aerial imaging work must be accomplished at relatively low altitudes and at altitudes less than 500 feet AGL, an exemption from Section 91.119(c) is needed. The equivalent level of safety will be achieved given the size, weight, speed, and material with which the TALI H500 is built. Also, no flight will be taken without the permission of the land owner or those who control the land. Because of the advance notice to the landowner, all affected individuals will be aware of the flights. Compared to aerial imaging operations conducted with aircraft or rotorcraft weighing far more than 10 lbs. and carrying flammable fuel, any risk associated with these operations will be far less than those currently allowed with conventional aircraft operating at or below 500 feet AGL. Indeed, the low-altitude operations of the sUAS will maintain separation between

these sUAS operations and the operations of conventional aircraft that must comply with Section 91.119.

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 TALI H500 batteries provide approximately 25 minutes of powered flight. Without an exemption from § 14 CFR 91.151, the limitations proposed would greatly reduce its utility. Given the type of operation, as well as the rural location of those proposed operations, a longer time frame for flight in daylight VFR conditions is reasonable. Additionally, given the proposed VLOS restriction, the aircraft would always be well within 5 minutes of its landing position. Finally, recognizing its weight and construction material, the risks are less than contemplated by the current regulation.
YCC believes that an exemption from 14 CFR § 91.151(a) is safe and within the scope of a prior exemption. *See* Exemption 10673. 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 operates. The fact that it carries no pilot, passenger, or cargo also enhances its safety.
YCC believes that an equivalent level of safety can be achieved by maintaining 10 minutes of reserve fuel, which would be more than adequate to return the sUAS to its planned landing zone from anywhere in its operating area.

14 C.F.R. Part 21, Subpart H: Airworthiness Certificates
14 C.F.R. § 91.203 (a) & (b): Carrying Civil Aircraft Certification and Registration

Section 91.203(a) requires all civil aircraft to have a certificate of airworthiness. Part 21, Subpart H, entitled Airworthiness Certificates, establishes the procedural requirements for the issuance of airworthiness certificates as required by FAR § 91.203(a). Section 91.203(b) requires No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under §91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

Given the size of the aircraft (Under 10 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. Such an exemption meets the requirements of an equivalent level of safety under Part 11 and Section 333 of the Reform Act. The Federal Aviation Act and Section 333 of the Reform Act both authorize 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 TALI H500 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 TALI H500 weighs less than 10 lbs. fully loaded. 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 TALI H500 construction with absorbent material provides 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. A representative sample of other exceptions includes Exemption Nos. 9565, 9665, 9789, 9789A, 9797, 9797A, 9816A, and 10700.

14 C.F.R. § 91.405(a); 407(a)(1); 409(a)(2); 417(a): 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. Maintenance of the TALI H500 components will be accomplished by a YCC technician or outside repair representative if necessary. An equivalent level of safety will be achieved because the sUAS is small in size, will carry no external payload, will operate only in restricted predetermined areas and is not a complex mechanical devise. The operator of TALI H500 will also ensure that the sUAS is in working order prior to initiating flight, and keep a log of any maintenance that is performed on the aircraft. Moreover, the operator is the person most familiar with the aircraft and is best suited to ensure that the aircraft is in an airworthy condition and to guarantee an equivalent level of safety.
YCC will be putting our TALI H500 aircraft through a routine, but rigorous, inspection of the airframe and components every 50 flights. Likewise, we will replace the servos, motor, and speed controller every 300 flights. This will ensure an equivalent level of safety to the maintenance requirements in Part 91.

In summary, applicant seeks an exemption from the FARs set forth above to allow commercial operations of a small unmanned vehicle conducting precision aerial imaging flights. Approval of the exemption allowing commercial operations of the TALI H500 for precision survey work will enhance safety by reducing risk. Conventional aerial survey operations, using jet or piston-powered aircraft present risks associated with vehicles that weigh between 5,000 to 7,000 lbs., carry large quantities of fuel, passengers, and, in some cases, cargo. Such aircraft must fly to and from the survey location. In contrast, a TALI H500 weighing less than 10 lbs. and powered by batteries eliminates a portion of that risk given the reduced mass and lack of combustible fuel carried on board. The TALI H500 is carried to the flight location, not flown there. The TALI H500 will carry no passengers or crew and, therefore, will not expose any individuals to the risks associated with manned aircraft flights. Additionally, no national security issue is raised by the grant of the requested exemptions. Given the size, load carrying

capacity, speed at which it operates, and the fact that it carries no explosives or other dangerous materials, the TALI H500 poses no threat to national security. The operation of the TALI H500, weighing less than 10 lbs., for aerial imaging in accordance with the strict conditions outlined above, will provide an equivalent level of safety supporting the grant of the exemptions requested herein, including exempting YCC from the requirements of Part 21. The TALI H500's satisfaction of the criteria set forth in Section 333 of the Reform Act—size, weight, speed, operating capabilities, lack of proximity to airports and populated areas, operation within visual line of sight, and national security—and its showing of an equivalent level of safety as it may relate to the requirement for a pilot's license, provide more than adequate justification for the grant of the requested exemptions allowing commercial operation of the TALI H500 in the commercial construction business for purposes of aerial imaging required by awarded contract (NYSDEP) as well as aerial imaging for safety and monitoring of secured construction sites.

Thank you for your consideration, and please let me know if you have any questions.

Sincerely,

Ray Apruzzese
Yonkers Contracting Co., Inc.
Project Controls Manager
sUAS Controller