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

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

April 22, 2015

Exemption No. 11408
Regulatory Docket No. FAA–2015–0131

Mr. Michael Bradshaw
ArrowData, LLC
777 N. Rainbow Boulevard
Suite 380
Las Vegas, NV 89107

Dear Mr. Bradshaw:

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.

The Basis for Our Decision

By letter dated January, 8, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of ArrowData, LLC (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct electronic news gathering in Las Vegas, Nevada.

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 CineStar 8 Okto XL.

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, ArrowData, LLC is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, ArrowData, LLC is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the CineStar 8 Okto XL 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.

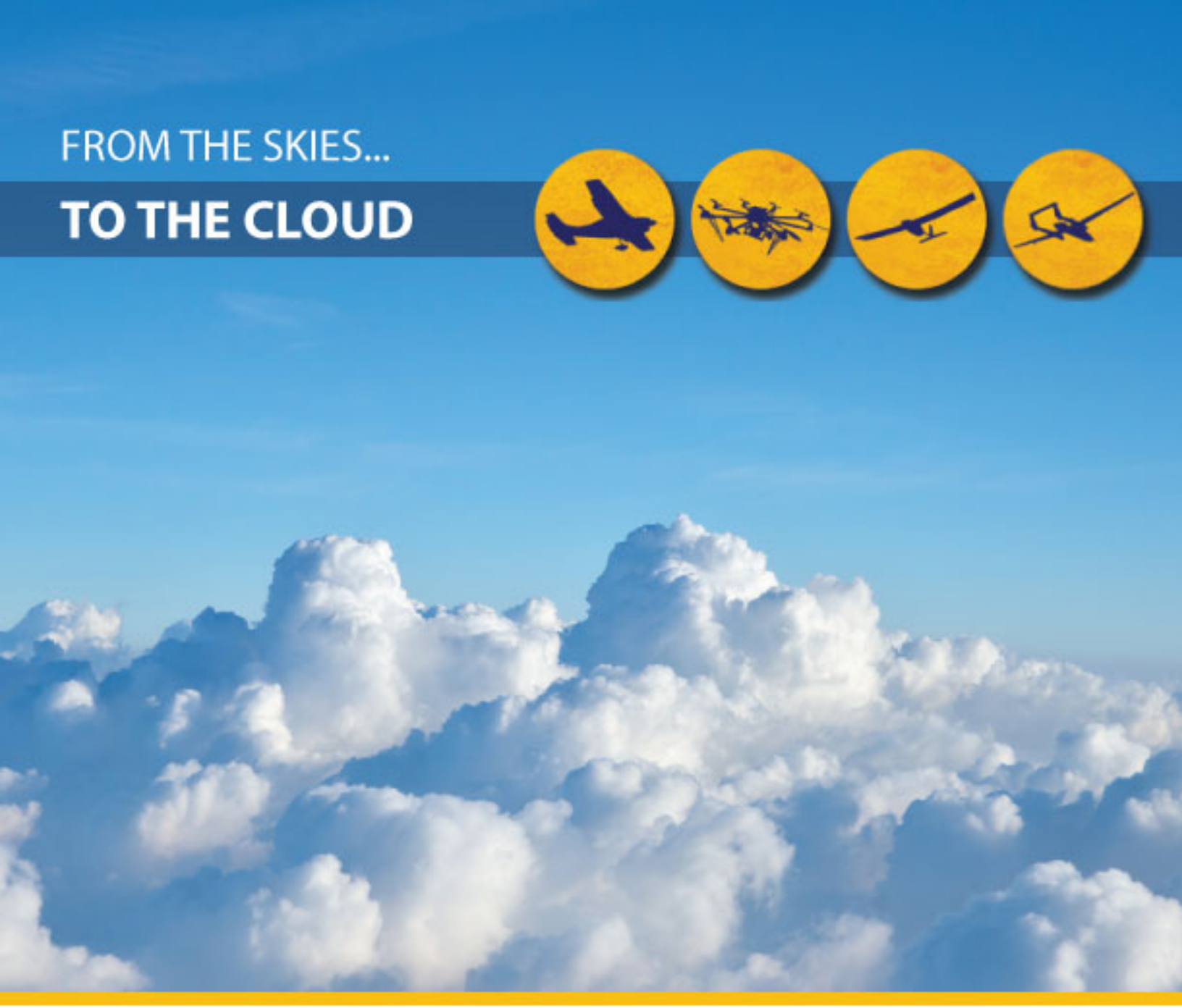
31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

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 April, 30, 2017, unless sooner superseded or rescinded.

Sincerely,

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



Exemption Request Section 333 of the FAA Reform Act and Part 11 of the Federal Aviation Regulations from 14 CFR 45.23(b); 14 CFR Part 21; CFR 61.113 (a) & (b); 91.7 (a); 91.9 (b) (2); 91.103 (b); 91.109.119; 91.121; 91.151 (a); 91.203 (a) & (b); 91.405 (a); 91.407

ArrowData

January 8, 2015
U.S. Department of Transportation
Docket Operations
West Building Ground Floor, Room w12-140
1200 New Jersey Ave. SE
Washington, DC 20590

January 8, 2015
U.S. Department of Transportation
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Re: Exemption Request Section 333 of the FAA Reform Act and Part 11 of the Federal Aviation Regulations from 14 CFR 45.23(b); 14 CFR Part 21; CFR 61.113 (a) & (b); 91.7 (a); 91.9 (b) (2); 91.103 (b); 91.109.119; 91.121; 91.151 (a); 91.203 (a) & (b); 91.405 (a); 91.407

INTRODUCTION

Pursuant to Section 333 of the FAA Modernizations and Reform Act of 2012 and 14 CFR Part 11, ArrowData, LLC, operator of Small Unmanned Aircraft Systems ("sUASs") equipped to conduct aerial photography for KLAS-TV for the purpose of electronic news gathering in Las Vegas, NV, hereby applies for an exemption from the listed Federal Aviation Regulations ("FARs") to allow commercial operation of sUASs under the conditions outlined here or modified by the FAA.

In the detailed explanation to follow, the series of exemptions being requested would allow operation of the commercially procured, off-the-shelf Cinestar 8 Okto XL, an eight engine and blade, light weight, relatively slow (<50 knots) unmanned rotary aircraft (or like platform) in and around the city of Las Vegas during active news, traffic and weather events using very controlled conditions and operational procedures to provide robust safety buffers both vertically and horizontally to ensure personnel and property safety. These flights would only fly within 150 feet of the control vehicle with a dismounted pilot and safety team using an auto-pilot system that would control speed, vectoring and hovering. At no time would the vehicle fly directly over locally assembled crowds or over any ongoing fires or crime scenes. The launch and recovery point would be cordoned off by the safety team in coordination with law enforcement and/or first response units. Approval of this exemption would help to prove the safe concept of UAS activity while conducting electronic news gather (ENG) during active news, weather or traffic events in a major metropolitan environment with safety controls to provide proactive risk management that is technically within the National Airspace System, but realistically segregated well below any other air traffic and well clear of the McCarran Class B airspace (beneath the lateral confines). ArrowData, LLC is a partner with Bowhead Business and Technology Solutions who is currently is providing contract support as the PMO to one of the six FAA approved commercial UAS test ranges operated by the Nevada Institute for Autonomous Systems (NIAS). The composition of this team is unparalleled in the unmanned aviation industry, uniquely qualified to leverage the collective capabilities of UAS operations, FAA approved range testing and Analytical Risk Management. This exemption application will be accompanied with an Operations Plan, Maintenance Plan, and Risk Assessment that will depict all contingencies.

The following is contact information for the applicant:

ArrowData, LLC.
777 N. Rainbow Boulevard, Suite 380
Las Vegas, NV 89107
Attn: Michael Bradshaw
Tel: 702-816-5088

EXEMPTIONS (Regulations from which the exemption is requested)

- 14 CFR Part 21, Subpart H– Airworthiness Certificates
- 14 CFR 45.23 (b), ,
  - Aircraft Marking
  - Certification and Registration
- 14 CFR 61.113 (a) & (b)
  - Pilot in Command
- 14 CFR 91.7 (a)
  - Civil aircraft airworthiness
- 14 CFR 91.9 (b) (2)
  - Document/Flight Manuals
- 14 CFR 91.103 (b)
  - Preflight action
- 14 CFR 109
  - Flight instruction
- 14 CFR 91.113
  - Right-of-way rules
- 14 CFR 91.119
  - Minimum safe altitude
- 14 CFR 91.121
  - Altimeter setting
- 14 CFR 91.131 (a) (1) (c) (2) (d) (1)
  - Operations in Class B airspace
- 14 CFR 91.145 (b)
  - Management of aircraft operations in the vicinity of aerial demonstrations and major sporting events.
- 14 CFR 91.151
  - Fuel requirements for VFR flight
- 14 CFR 91.203 (a) & (b)
  - Civil Aircraft: Certifications required
- 14 CFR 91.405 (a); 407 (a) (1); 409 (a); 417 (a) & (b)
  - Maintenance and maintenance inspections

- 14 CFR 407
    - Operation after Maintenance, preventive maintenance, rebuilding and inspections
- 14 CFR 409
    - Inspections
- 14 CFR 417
    - Maintenance records
- NOTAM 9/5151
    - Flying Around Sporting Events

AIRCRAFT OPERATIONS AND EQUIVALENT LEVEL OF SAFETY

Section 333 refers to exemptions for sUASs for commercial operations. Those operations could include a vast array of events such as electronic news gathering (ENG). Much like the movie industry, aerial news and traffic/weather information gathering is both useful and entertaining to the general public. The quick deployment and less restrictive weather constraints will create a safer environment, while delivering a superior and timelier product to the general public, providing near real time information for traffic, severe weather and crime scene avoidance considerations.

The sUAS aircraft to be employed by ArrowData, LLC has a number of safety features that make it ideal for use in this environment. The state of the art Cinestar 8 Okto XL with dual 21,000 mAh, 22.2 volt battery technology and the ability to fly with two engines inoperable. It is well under 55 pounds with a top speed of approximately 50 knots. Additionally, there is redundancy in the power system to the data link, motherboard, and wireless communications within the sUAS team operating the system. The mobile vehicle to be used with the UAS is already fitted with redundant power sources for satellite and camera operations and would be available to the UAS safety team as well. The aircraft would be employed utilizing Line-of Sight (LOS) operations not to exceed 150 and launched from a sterile area created upon arrival at the news event by the safety team in coordination with local law enforcement and first responders. Any vertical obstructions would be noted upon arrival and the pilot and safety team would ensure operations remained well clear of those obstructions. The pilot would launch the aircraft and navigate to an acceptably safe hover point at which time a waypoint would be designated and the auto-pilot would be engaged in an auto-hover mode while filming commences. A loss of communication “return to base” fail-safe system is integrated as well. The battery life is approximately 45 minutes with a planned flight time of not more than 25 minutes. ArrowData, LLC will file a FAA Form 7711-1 or any such form deemed appropriate with the local Flight Standards District Office. Additionally, an Operations Plan would be submitted on a mutually agreed periodical basis to the FSDO.

All sUAS pilots being employed by ArrowData, LLC for this mission will have a FAA Commercial Pilot Certificate with Instrument Rating and a second class FAA medical certificate with additional experience in unmanned aircraft operations. Pilots will be required to have a minimum of 200 hours of manned flight time and 500 hours of unmanned flight time. The team composition will consist of a minimum of one pilot, one camera operator and one safety observer during all mobile news events, giving

redundancy to the human element as well. Pilots will be well trained in areas of both normal and abnormal operations equipped with checklists and operations and maintenance manuals to be able to contend with any scenario. After extensive range testing and pilot training, the sUAS team will perform "dry-runs" to simulate and practice actual news events and situations. Additionally, a simulation evaluation will be completed by using the Monte Carlo modeling program. This program simulates 10,000 flights and provides a failure expectation value. To help prepare for actual flight and news gathering with a UAS, the team would deploy with the mobile news team and observe conditions and scenarios where future operations might take place. This would give the team a feel for the "cadence" of an active news event to allow them to be able to plan timing and coordination issues. Unlike other uses for sUASs, these flights would be mostly shorter in length, obviating the need for a backup pilot. The designated safety observer would help to provide greater situational awareness for the team in order maintain alertness and vigil at all times. A radio frequency spectrum assessment will be conducted before the first operational mission. Additionally, an environmental assessment will be performed to measure such parameters as noise and hazardous material concerns.

14 CFR Part 21, Subpart H– Airworthiness Certificates 14 CFR 91.203 (a) (1)

Subpart H (Airworthiness Certificates) defines the requirements for airworthiness certificate issuance IAW FAR 91.203 (a) (1). Existing law (49 USC 44701 (f)), Part 11 and Section 333 allow the FAA to exempt aircraft from the requirements of an airworthiness certificate upon consideration of the size, weight, speed, operational capability and proximity to airports and populated areas of the identified sUAS. Unlike a manned helicopter, the sUAS being employed is lightweight, has no flammable fuel or other lubricants, operates at very slow speeds and stays well below any conflicting air traffic thereby providing, an equivalent level of safety when compared to currently employed manned aircraft.

The proposed sUAS to be employed is under 55 lbs. when outfitted with all equipment and batteries. There are no flammable liquids or other hazardous materials that would propose a danger to the public or event participants. Accordingly, no threat to national security exists due to the inability of carriage of any external stores or ordnance and the exhaustive vetting of team personnel, most of whom possess a current or recent DoD/government security clearance. All activities will be closely monitored by a team of aviation professionals and using a system with redundancies in all areas.

14 CFR 45.23 (b) Display of Marks; general

CFR 45.23 states:

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.

An exemption to this section is needed due to the lack of a cabin, cockpit or pilot station where any reference to the term "Experimental" could be affixed. Accordingly, the wording will be placed on the fuselage. This equivalent level of safety will allow the team to clearly see "Experimental." Previous precedence exists within Exemptions 10700, 10167, and 10167A.

CFR 61.113 (a) & (b) Private Pilot Privileges and Limitations: Pilot in Command

CFR 61.113 (a) & (b) states:

(a) Except as provided in paragraphs (b) through (h) of this section, no person who holds a private pilot certificate may act as pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as pilot in command of an aircraft.

(b) A private pilot may, for compensation or hire, act as pilot in command 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.

To reach an equivalent level of safety, the self-imposed experience and training requirements would more than offset any risk introduced by using private pilots to fly an unmanned aircraft in very restricted and controlled areas.

CFR 91.7 (a) Civil aircraft worthiness

CFR 91.7 (a) states:

No person may operate a civil aircraft unless it is in an airworthy condition.

Assuming no airworthiness certificate will be required due to relief from Subpart H, no regulatory standard exists for determining airworthiness. The equivalent level of safety will be achieved through the employment of flight manual and maintenance manual procedures, pilot training and analytical risk management for each event.

CFR 91.9 (b) (2) Civil Aircraft Flight Manual in the Aircraft

CFR 91.9 (b) (2) states:

No person may operate a U.S.-registered civil aircraft—

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 of the sUAS being utilized in this endeavor, there is no room onboard for an aircraft flight manual.

The equivalent level of safety will be achieved by keeping the flight manual with the pilot/team on the ground with easy access. Previous precedence is resident in Exemptions 8607, 8737, f8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, f32827, and 10700.

CFR 91.103 (b) Preflight action

CFR 91.103 (b) states:

Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include—

(b) For any flight, runway lengths at airports of intended use, and the following takeoff and landing distance information:

(1) For civil aircraft for which an approved Airplane or Rotorcraft Flight Manual containing takeoff and landing distance data is required, the takeoff and landing distance data contained therein; and

(2) For civil aircraft other than those specified in paragraph (b)(1) of this section, other reliable information appropriate to the aircraft, relating to aircraft performance under expected values of airport elevation and runway slope, aircraft gross weight, and wind and temperature.

This regulation dictates that a pilot conduct preflight activities. Without an FAA approved flight manual, relief is required from this regulation. Extensive pre-flight planning will provide an equivalent level of safety by using the operations plan, aircraft flight manual, maintenance manual and available weather and NOTAM information.

CFR 91.109 Flight instruction

CFR 91.109 states:

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.

sUASs clearly have no onboard flight controls. An equivalent level of safety will be accomplished by conducting pilot training via the control system that communicates with the aircraft from the ground. ArrowData, LLC intends to conduct this training on the Nevada test site under controlled conditions.

CFR 91.113 Right-of-way rules: Except water operations.

CFR 91.113 deals with the many scenarios whereby different types of aircraft in different states must give way to other aircraft.

Because the sUAS PIC does not have "see and avoid" capability, the petitioner requests relief from this regulation. All operations will be within LOS of the pilot and well below any airspace where other flight activity is taking place.

CFR 91.119 (d) (1) Minimum safe altitudes; general

CFR 91.119 states:

(d) ***Helicopters, powered parachutes, and weight-shift-control aircraft.*** If the operation is conducted without hazard to persons or property on the surface—

(1) A helicopter may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section, provided each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA.

Recognizing that this relief is unprecedented, the petitioner asks that the FAA recognize the inherent capability of the ArrowData, LLC/BBTS/NIAS team. With a proven leader in risk management (ArrowData, LLC) and a leading FAA test site (NIAS/Nevada), we feel that an acceptable level of safety can be achieved. Extensive range testing and additional on-site testing in a benign environment would be conducted in real or near-real time conditions. The current altitude and/or horizontal restrictions on rotorcraft assumes a much heavier manned aircraft loaded with fuel and possible external stores. The light-weight sUAS being proposed for use in this activity along with its precise guidance and redundant systems create an entirely different paradigm that should be considered by regulatory bodies.

The activities being proposed by this petitioner are in a very controlled and open area. The flights would be confined to the immediate area of the mobile control center (MCC). Given these considerations, ArrowData, LLC proposes allowing flights to operate no more than 150 feet from the MCC and well clear of the Class B airspace and attendant manned air traffic.

CFR 91.121 Altimeter settings

CFR 91.121 states:

Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating—

Below 18,000 feet MSL, to—

The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft;

The sUAS aircraft intended for this activity will not be equipped with a barometric altimeter. Instead it will incorporate radio altimetry via the onboard GPS. An equivalent level of safety will be achieved through use of the operations and maintenance manuals governing altitude control. A preflight calibration of launch site altitude will be accomplished.

CFR 91.131 (a) (1) (c) (2) & (d) (1) Operations in Class B airspace

CFR 91.131 states:

(a) ***Operating rules.*** No person may operate an aircraft within a Class B airspace area except in compliance with § 91.129 and the following rules:

(1) The operator must receive an ATC clearance from the ATC facility having jurisdiction for that area before operating an aircraft in that area.

(c) ***Communications and navigation equipment requirements.*** Unless otherwise authorized by ATC, no person may operate an aircraft within a Class B airspace area unless that aircraft is equipped with—

(2) ***For all operations.*** An operable two-way radio capable of communications with ATC on appropriate frequencies for that Class B airspace area.

(d) ***Other equipment requirements.*** No person may operate an aircraft in a Class B airspace area unless the aircraft is equipped with—

(1) The applicable operating transponder and automatic altitude reporting equipment specified in § 91.215 (a), except as provided in § 91.215 (e), and

Much of the city of Las Vegas lies within the limits of the Class B airspace. Because the planned sUAS to be employed lacks an onboard transponder or two way communication capability, relief from

this regulation is required. An equivalent level of safety will be achieved by limiting the operating ceiling of the sUAS to altitudes well below any conflicting manned aircraft traffic (no higher than 150 feet). This assures de-confliction with all other traffic and specifically traffic within the Class B airspace. Additionally, the sUAS will remain clear of the McCarran Class B airspace at all times. ArrowData, LLC will periodically report to the FSDO on operations and risk management issues.

CFR 91.145 (b) Management of aircraft operations in the vicinity of aerial demonstrations and major sporting events.

CFR 91.145 states:

In deciding whether a temporary flight restriction is necessary for an aerial demonstration or major sporting event not listed in paragraph (a) of this section, the FAA considers the following factors:

(1) Area where the event will be held.

(2) Effect flight restrictions will have on known aircraft operations.

(3) Any existing ATC airspace traffic management restrictions.

(4) Estimated duration of the event.

(5) Degree of public interest.

(6) Number of spectators.

(7) Provisions for spectator safety.

(8) Number and types of participating aircraft.

(9) Use of mixed high and low performance aircraft.

(10) Impact on non-participating aircraft.

(11) Weather minimums.

(12) Emergency procedures that will be in effect.

If KLAS intends to use the sUAS to cover sporting events from the outside of the activity, coordination will be completed by contacting the FSDO prior to the event to ascertain the presence of any other unmanned activities. Flight activity will be conducted using the same operations plan as with any other ENG activity with particular attention to the avoidance of overflight of large concentrations of people. All of the concerns in the above twelve subparagraphs have been or will be addressed in other portions of this exemption application. However, specific relief from this regulation is still necessary to ensure compliance with FARs.

CFR 91.151 (b) Fuel requirements for flight in VFR conditions.

CFR 91.151(b) states:

No person may begin a flight in a rotorcraft 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, to fly after that for at least 20 minutes.

The batteries that power the Cinestar 8 Okto XL have a mission life of approximately 45 minutes. To meet the 20 minute reserve requirement, the airborne mission would be limited to approximately 25 minutes. Given the limitation of the proposed flight area during any ENG, a more liberal flight time is a reasonable request. The aircraft would never be further than 150 feet from the recovery area, literally representing seconds to land. In no case would the aircraft be operated with less than 25% battery life remaining.

No night time operations are currently planned.

CFR 91.203 (a) & (b) Civil Aircraft: Certifications required

CFR 91.203 (a) & (b) states:

(a) Except as provided in § 91.715, no person may operate a civil aircraft unless it has within it the following:

(1) An appropriate and current airworthiness certificate. Each U.S. airworthiness certificate used to comply with this subparagraph (except a special flight permit, a copy of the applicable operations specifications issued under § 21.197(c) of this chapter, appropriate sections of the air carrier manual required by parts 121 and 135 of this chapter containing that portion of the operations specifications issued under §21.197(c), or an authorization under § 91.611) must have on it the registration number assigned to the aircraft under part 47 of this chapter. However, the airworthiness certificate need not have on it an assigned special identification number before 10 days after that number is first affixed to the aircraft. A revised airworthiness certificate having on it an assigned special identification number, that has been affixed to an aircraft, may only be obtained upon application to an FAA Flight Standards district office.

(2) An effective U.S. registration certificate issued to its owner or, for operation within the United States, the second copy of the Aircraft registration Application as provided for in § 47.31(c), or a registration certification issued under the laws of a foreign country.

(b) 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.

The sUAS to be employed has no cockpit or pilot and therefore has no ability to carry onboard any certification or registration documentation.

The equivalent level of safety will be achieved by keeping these documents with the pilot/team on the ground at the event. Previous precedence is resident in Exemptions 9565, 9665, 9789, 9789A, 9797, 9797A, 9816A and 10700.

CFR 91.405 (a); 407 (a) (1) (2); 409 (a) (2); & 417 (a) & (b) Maintenance

These CFRs state:

Each owner or operator of an aircraft—

(a) 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;

Operation after maintenance, preventive maintenance, rebuilding, or alteration.

(a) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless—

(1) It has been approved for return to service by a person authorized under § 43.7 of this chapter; and

(2) The maintenance record entry required by § 43.9 or § 43.11, as applicable, of this chapter has been made.

Except as provided in paragraph (c) of this section, no person may operate an aircraft unless, within the preceding 12 calendar months, it has had—

(2) An inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

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 which 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) of this chapter 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.

These FARs only concern aircraft with an airworthiness certificate and therefore would not apply in this situation. All maintenance and inspections will be conducted IAW the maintenance manual and operations manual. The ability for an almost immediate safe recovery and landing if a malfunction occurs and the eight engine configuration with the ability to fly with loss of thrust on 2 engines provides a comfortable operating envelope and ensures an equivalent level of safety.

The reasons why granting ArrowData, LLC's request would be in the public interest; that is, how it would benefit the public as a whole:

Granting the exemption to ArrowData, LLC would allow the public to safely view breaking news from a dynamic and unprecedented aerial perspective. ArrowData, LLC has created a unique way to view news events that benefits the general public socially and economically. ArrowData, LLC sets the industry standard in using purpose built Small Unmanned Aircraft Systems (sUAS) with multiple redundant features that enhance safety. ArrowData, LLC builds and engineers its Cinestar 8 Okto XL platform with dual electronic motherboards and flight control systems, dual high-capacity batteries rated at 21,000 mAh each, and the ability to maintain controlled flight with the loss of 2 engines.

The reasons why granting the exemption would not adversely affect safety:

ArrowData, LLC is leading the sUAS industry by using a safe and beneficial business model. ArrowData, LLC is a partner with Bowhead Business and Technology Solutions, LLC (BBTS). BBTS currently provides contract support as the Program Management Office (PMO) contractor to one of the six FAA approved commercial UAS test ranges operated by the Nevada Institute for Autonomous Systems (NIAS). The composition of this team is unparalleled in the unmanned aviation industry, uniquely qualified to leverage the collective capabilities of UAS operations, FAA approved range testing and Analytical Risk Management.

In addition, enhanced safety is achieved by using an unmanned aircraft that does not carry passengers or crew and does not carry flammable fuel.

IAW 14 CFR Part 11.81, the following summary is provided for publication in the Federal Register, should it be deemed necessary:

Applicant seeks relief from the following rules:

> 14 CFR Part 21, Subpart H– Airworthiness Certificates, 14 CFR 45.23 (b),14 CFR 61.113, (a) & (b), 14 CFR 91.7 (a), 14 CFR 91.9 (b) (2), 14 CFR 91.103 (b), 14 CFR 109, 14 CFR 91.119, 14 CFR 91.113, 14 CFR 91.121, 14 CFR 91.131 (a) (1) (c) (2) (d) (1), 14 CFR 91.145 (b), 14 CFR 91.151, 14 CFR 91.203 (a) & (b), 14 CFR 91.405 (a); 407 (a) (1); 409 (a); 417 (a) & (b), 14 CFR 407, 14 CFR 409, 14 CFR 417, NOTAM 9/5151

The unparalleled operational and testing capabilities created by the partnership between ArrowData, LLC, Bowhead Business and Technology Solutions (Program Management Office contractor for NIAS), and the Nevada Institute for Autonomous Systems (the Nevada test range) will enable the Federal Aviation Administration to allow for the introduction of sUASs into environments not previously allowed with an acceptable level of safety. This is an opportunity to use highly dependable, multi-redundant unmanned aircraft in a major metropolitan area, but to do so with stringent controls, pervasive risk management and detailed mitigation strategies to ensure that the public is not at any time exposed to unsafe conditions. Extensive range testing, “dry-run” testing under benign conditions and simulated emergencies will demonstrate that this activity can be accomplished without hazard to the general public. Additionally, a simulation evaluation will be completed by using the Monte Carlo modeling program. This program simulates 10,000 flights and provides a failure expectation value. The rotorcraft being proposed for this operation has redundancy in every conceivable area: thrust, communications, and electrical power for both the aircraft itself and the supporting system. Eight engines powered by two separate 21,000 mAh batteries and a data link system with “fly home” capability ensure that at no time will the aircraft not be able to land safely should that need arise. Pre-plotted waypoints using Geographic Instrument System coordinates and auto-pilot “fly to” commands provide extremely precise navigation. A Safety Management System will be employed and will address such issues as environmental impact (noise and hazardous material) and coordination with local Emergency Services/Incident Management personnel to include:

- Fire fighting
- Medical response
- Incident investigation

These capabilities, in total, provide a level of safety that should be satisfactory to the FAA and general public.

In view of the beneficial advantages to public safety, we respectfully submit our Section 333 exemption request.

Sincerely,

Michael S. Bradshaw
President
ArrowData, LLC
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Las Vegas, NV 89107