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

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

May 12, 2015

Exemption No. 11552
Regulatory Docket No. FAA–2015–0374

Mr. Jeffrey A. Miller
Assistant Vice President, Workforce Development
Sinclair Community College
444 West Third Street
Dayton, OH 45402

Dear Mr. Miller:

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 February 12, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Sinclair Community College (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct educational research and training.

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 an Altavian Nova F6500.

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 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, Sinclair Community College 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, Sinclair Community College 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 Altavian Nova F6500 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 May 31, 2017, unless sooner superseded or rescinded.

Sincerely,

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

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC

Regulatory Docket No. _____

IN THE MATTER OF THE PETITION FOR EXEMPTION OF:
SINCLAIR COMMUNITY COLLEGE, DAYTON, OHIO
SEEKING RELIEF FROM THE REQUIREMENTS OF
PART 21 AND SECTIONS 45.23(b), 91.9(b), 91.151(a)(1), 91.203(a) & (b), 91.405(a),
91.407(a)(1), 91.409(a)(1) & (a)(2), 91.417(a) & (b) OF
TITLE 14 OF THE CODE OF FEDERAL REGULATIONS (14 CFR)
CONCERNING OPERATION OF NOVA F6500 UNMANNED AIRCRAFT SYSTEM
INSIDE CLASS D AIRSPACE AT WILMINGTON AIR PARK (KILN), OHIO
IN ACCORDANCE WITH SECTION 333 OF
FAA MODERNIZATION AND REFORM ACT OF 2012 (PUBLIC LAW 112-95)

Submitted on February 12, 2015

Jeffrey A. Miller
Assistant Vice President
Workforce Development
Sinclair Community College

TABLE OF CONTENTS

Page

GLOSSARY OF ABBREVIATIONS 3
SUMMARY 4
INTRODUCTION AND INTERESTS OF THE PETITIONER 4
BACKGROUND 5
BASIS FOR PETITION 6
A. Name And Address Of The Petitioner 7
B. The Specific Sections Of 14 CFR From Which Sinclair Seeks Exemption. 7
C. The Extent Of Relief Sinclair Seeks And The Reason Sinclair Seeks The Relief. 9
D. The Reasons Why Granting Sinclair's Request Would Be In The Public Interest 10
E. The Reasons Why Granting The Exemption Would Not Adversely Affect Safety 12
F. A Summary That Can Be Published In The *Federal Register* 24
G. Any Additional Information, Views, Or Arguments Available To Support Sinclair's Request. 25
CONCLUSION 26
Attachment 1 MOA between Clinton County Port Authority and Sinclair Community College 27
Attachment 2 COA for Wilmington Air Park 36
Attachment 3 Nova F6500 Operator Manual 61
Attachment 4 Nova F6500 Maintenance Manual 149

GLOSSARY OF ABBREVIATIONS

AGL	above ground level
ATC	air traffic control
AV	aerial vehicle
COA	Certificate of Authorization
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FCC	Federal Communications Commission
FMRA	FAA Modernization and Reform Act of 2012 (P.L. 112-95)
GCS	ground control station
KILN	Wilmington Air Park
MOA	Memorandum of Agreement
MSL	mean sea level
NAS	National Airspace System
nm	nautical mile(s)
OAT	outside air temperature
PIC	Pilot In Command
P.L. 112-95	Public Law 112-95
Section 333	FMRA Section 333
UA	unmanned aircraft
UAS	unmanned aircraft system
VFR	visual flight rules
VLOS	visual line of sight
VMC	visual meteorological conditions
VO	visual observer

SUMMARY

SINCLAIR COMMUNITY COLLEGE seeks exemption from the requirements of Part 21 and Sections 45.23(b), 91.9(b), 91.151(a)(1), 91.203(a) & (b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), 91.417(a) & (b), 45.23(b), and 21.185 of Title 14 CFR to operate an unmanned aircraft system (UAS) in accordance with Section 333 of the FAA Modernization and Reform Act of 2012. This exemption will permit SINCLAIR COMMUNITY COLLEGE to operate a UAS for the purpose of educational research and training.

INTRODUCTION AND INTERESTS OF THE PETITIONER

SINCLAIR COMMUNITY COLLEGE (hereinafter referred to as "Sinclair") is a public community college located in Dayton, Ohio. Sinclair's mission is offer transfer and technical associate degree programs, certificate programs, and continuing education opportunities through a system of diverse resources and delivery alternatives accessible to the citizens of Montgomery County and the larger learning community. Sinclair also prepares today's workforce to meet the needs of a rapidly changing, technologically advanced, global economy through traditional and nontraditional alternatives. Within Sinclair's structure is the Workforce Development Division.

Sinclair's Workforce Development Division, UAS Branch is focused on providing practical, real-world applications of UAS technologies through classroom instruction, cutting-edge simulation training and hands-on vehicle operations. To that end, Sinclair intends to use unmanned aircraft (UA) for educational research, training, and data collection on UAS operational concepts and safety.

Sinclair seeks to operate its Altavian Nova F6500 UAS over the Wilmington Air Park, Clinton County, Ohio (KILN) Class D airspace during published air traffic control (ATC) tower operating hours. KILN Class D airspace is surrounded by Class G airspace and is located 10 nm from Class C airspace. KILN is located in a mostly unpopulated, agricultural area, away from dense population centers. The primary UAS flight area will remain over agricultural land owned by KILN. Specifically, the Nova F6500 UAS will be used as an educational research platform, to provide UAS training services to military and non-military candidates, develop business concepts for the use of UAS in the civilian sector, and provide the FAA with data for furthering safe UAS operations in the NAS.

BACKGROUND

Unmanned Aircraft System: Altavian Nova F6500 UAS

Sinclair seeks an exemption to operate the Altavian Nova F6500 UAS (also known as the Nova Block III UAS), Serial Numbers 3009 and 3010, for compensation or hire within the National Airspace System (NAS). The Nova F6500 UAS is comprised of a UA and a transportable ground control station (GCS). The Nova F6500 UA has a maximum gross weight of approximately fifteen (15) pounds, a wingspan of 108 inches, and a length of 65 inches. It is equipped with a single propeller driven by a Lithium Polymer battery powered electric motor.

Figure 1: The Nova F6500 UA.

Proven Operational History at Sinclair of the Nova F6500 UAS in the NAS

The Nova F6500 UAS is currently operating safely within the NAS under approximately fifteen (15) Certificates of Authorization (COAs) granted by the Federal Aviation Administration (FAA) to Middle Tennessee State University; SINCLAIR COMMUNITY COLLEGE in Dayton, Ohio; the U.S. Army Corps of Engineers (Jacksonville District and Mobile District); Mississippi State University for the Pearl River Basin; University of Florida. In addition, the operator Woolpert, Inc. was granted Section

333 waivers in December 2014 for certain operations of their Nova F6500 UAS (Exemption Nos. 11111 and 11114.) Also, the U.S. Army Corps of Engineers will be operating the Nova F6500 UAS pursuant to additional COAs in the foreseeable future, pending approval by the FAA.

The Nova F6500 UAS is safely operating by Sinclair within the NAS under two FAA Certificates of Authorization (COAs) granted to Sinclair. The COA covering operations at KILN (2013-CSA-58) is in effect through July 25, 2015. Under this and another COA at Springfield Airpark, Sinclair is conducting safe and effective operations with the Nova F6500 UAS, completing over 44 flight hours in 128 flights.

BASIS FOR PETITION

Petitioner, SINCLAIR COMMUNITY COLLEGE, by and through undersigned counsel, in accordance with the provisions of the Federal Aviation Regulations (14 CFR Section 11.61) and the FAA Modernization and Reform Act of 2012, Section 333, *Special Rules for Certain Unmanned Aircraft Systems*, hereby petitions the Administrator to operate the Nova F6500 UAS in the NAS, and for an exemption from the requirements of 14 CFR Part 21 and Sections 45.23(b), 91.9(b), 91.151(a)(1), 91.203(a) & (b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), 91.417(a) & (b).

In consideration of the Nova F6500 UA size, weight, speed, and limited operating area, Sinclair's operation of the Altavian Nova F6500 UAS does not require an airworthiness certificate in accordance with 14 CFR Part 21, Subpart H. Therefore, Sinclair requests relief from Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), 91.417(a) & (b), as these sections set forth requirements for aircraft with an airworthiness certificate.

Sinclair submits that the requested relief is proper since an equivalent level of safety will be ensured. Sinclair, as the operator of the Nova F6500 UAS, will use its trained technicians to perform maintenance, alterations, or preventive maintenance on the UAS using the methods, techniques, and practices prescribed in the manufacturer's maintenance manual. Furthermore, Sinclair will document and maintain all maintenance records for the Nova F6500 UAS.

Sinclair also seeks an exemption from the requirements of Section 91.151(a)(1), *Fuel requirements for flight in VFR conditions*. Sinclair submits that safety will not be

affected by terminating flights of the battery powered Nova F6500 UA after 90 minutes of continuous operation or with 20% remaining battery power, whichever occurs first.

In accordance with 14 CFR Section 11.81, Sinclair provides the following information in support of its petition for exemption:

A. Name And Address Of The Petitioner.

The name and address of the Petitioner is:

Sinclair Community College
Dayton Campus
444 West Third Street
Dayton, Ohio 45402-1460

The point of contact for this Petition and specific contact information is as follows:

Jeffrey A. Miller,
Assistant Vice President,
Workforce Development
Sinclair Community College
Phone 937.512.4848

B. The Specific Sections Of 14 CFR From Which Sinclair Seeks Exemption.

1. Sinclair Seeks Exemption From The Requirements Of Section 91.151(a)(1).

Section 91.151, entitled *Fuel requirements for flight in VFR conditions*, subsection (a)(1), states the following:

(a) No person may begin 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[.]

2. Sinclair Seeks Exemption From The Requirement Of Section 91.405(a).

Section 91.405, entitled *Maintenance required*, subsection (a), states the following:

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[.]

3. Sinclair Seeks Exemption From The Requirements Of Section 91.407(a)(1).

Section 91.407, entitled *Operation after maintenance, preventive maintenance, rebuilding, or alteration*, subsection (a)(1), states the following:

(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 Section 43.7 of this chapter[.]

4. Sinclair Seeks Exemption From The Requirements Of Sections 91.409(a)(1) and 91.409(a)(2).

Section 91.409, entitled *Inspections*, subsection (a), states the following:

(a) 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 --

(1) An annual inspection in accordance with part 43 of this chapter and has been approved for return to service by a person authorized by Section 43.7 of this chapter; or

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

5. Sinclair Seeks Exemption From The Requirements Of Sections 91.417(a) and 91.417(b).

Section 91.417, entitled *Maintenance records*, subsections (a) and (b), state the following:

(a) Except for work performed in accordance with Sections 91.411 and 91.413, each registered owner or operator shall keep the following records for the periods specified in paragraph

(b) of this section:

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

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

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

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

(2) Records containing the following information:

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

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

(iii) The time since last overhaul of all items installed on the aircraft 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 Section 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 Section 43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.

C. The Extent Of Relief Sinclair Seeks And The Reason Sinclair Seeks The Relief.

1. Extent of Relief Sinclair Seeks And The Reason Sinclair Seeks Relief From Section 91.151(a)(1).

Relief from Section 91.151(a)(1) is requested to the extent required to allow flights of the battery powered Nova F6500 UA during daylight hours under visual flight rules (VFR) in visual meteorological conditions (VMC) to continue for a total duration of 90 minutes, or until

20% battery power is remaining (whichever occurs first). Sinclair seeks the requested relief because without an exemption from Section 91.151(a)(1), the flight time duration of the battery powered Nova F6500 UA will be reduced by one third, which would severely constrain the practicality of any educational research and training operations that Sinclair proposes to conduct as requested in this petition.

Significantly, the technical specifications of the Nova F6500 UAS, the Nova Operations Manual, and Sinclair's proposed operating limitations ensure that Sinclair will safely operate the battery powered Nova F6500 UA during daylight hours under day VFR in VMC for a total duration of 90 minutes, or until 20% battery power is remaining, whichever occurs first.

2. Extent of Relief Sinclair Seeks And The Reason Sinclair Seeks Relief From Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b).

Since Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) only apply to aircraft with an airworthiness certificate, Sinclair requests relief from these Sections because the Nova F6500 UAS does not require an airworthiness certificate. The Nova F6500 UAS meets the conditions of Section 333 for operation without an airworthiness certificate. Accordingly, Sinclair will use its trained technicians to perform maintenance, alterations, or preventive maintenance on the UAS using the methods, techniques, and practices prescribed in the manufacturer's maintenance manual and as accomplished in the current COAs. Furthermore, Sinclair will document and maintain all maintenance records for the Nova F6500 UAS. This is identical to the process Sinclair successfully uses today under the existing COAs. Since we are requesting relief from these sections, Section 91.203 (a) and (b), 45.23 (b), 21.185 and 91.9(b) also would not apply.

D. The Reasons Why Granting Sinclair's Request Would Be In The Public Interest That Is, How It Would Benefit The Public As a Whole.

Granting Sinclair's request for a waiver will further the public interest by allowing Sinclair to safely, efficiently, and economically perform UAS educational research and training over the KILN airspace under the jurisdiction of the KILN ATC tower under the current MOA, shown in Attachment 1. Additionally, use of the Nova F6500 UAS will provide significant benefits to the economy by allowing additional training opportunities and further the collection of safety data. The data collected would help further the FAA goals of integrating UAS into the

NAS without reducing existing capacity, decreasing safety, negatively impacting current operators, or increasing the risk to airspace users or persons and property on the ground any more than the integration of comparable new and novel technologies, through this collaboration. Additionally, the benefits of the proposed operation of the Nova F6500 UAS will be realized without implicating any privacy issues.

1. The Public Will Benefit From Increased UAS Educational Research.

Sinclair submits this Petition to perform UAS educational research and training. Sinclair has an enrollment of 24,000 students. The single-campus college located in downtown Dayton, Ohio, is among the largest community college campuses in America. Sinclair is a member of the board of the League for Innovation in the Community College. Part of Sinclair's innovative approach is promoting educational research into the future use of UAV systems.

2. The Public Will Benefit From Increased UAS Training Within The NAS.

The mission of Sinclair's Workforce Development Division is the training of a viable workforce for the community with the skills necessary for future achievement. Sinclair's Workforce Development Division, UAS Branch provides practical, real-world applications of UAS technologies through classroom instruction, cutting-edge simulation training and hands-on vehicle operations.

By operating the Nova F6500 UAS, Sinclair will be able to perform safe, efficient, and economical aerial educational operations that will directly benefit the public. Specifically, the Nova F6500 UAS will be used to further the training is the proper use of UAVs in commercial applications.

3. Performing Educational Research and Training With The Nova F6500 UAS Will Benefit The Economy.

In addition to being safe and efficient, the Nova F6500 UAS is also an economical alternative to using manned aircraft to conduct aerial educational research and training. As such, operation of the Nova F6500 UAS will allow United States based companies to remain competitive and contribute to growth of the U.S. economy. Educational institutions, like Sinclair, will benefit by remaining relevant and on the leading edge of technology advances in UAS, as UAS systems become more prevalent in commercial applications, taking the place of many, previously manned flight applications due to rising costs. Specifically, with the high cost of aviation fuel and the Environmental Protection Agency (EPA) regulatory actions

phasing out leaded fuels, U.S. owned and operated companies must adopt new and alternative technology in order to remain competitive. Operating the battery powered Nova F6500 UAS is one such technology that not only allows companies greater operational flexibility compared to manned aircraft, but provides such flexibility without the high operational cost of a traditional manned aircraft.

By operating the Nova F6500 UAS, companies can remain competitive and profitable, and therefore provide greater job stability to employees and contractors, which will ultimately contribute to growth of the U.S. economy. Improved financial performance of U.S. companies, through commercial use of the Nova F6500 UAS, provides a stable workforce that increases consumer spending; improves local, state, and federal tax revenues; and allows companies to invest in research and development in order to remain competitive both in the United States and abroad.

In order for these companies to employ competent personnel safely, these employees and contractors must receive training from established institutions like Sinclair. By having institutions like Sinclair accomplish the training, the FAA benefits from the data available on small UAS (under 55 pounds), in furthering the FAA UAS Roadmap.

4. There Are No Privacy Issues.

Like the manned aerial flight operations that have been conducted for decades, the proposed operation of the Nova F6500 UAS will not implicate any privacy issues. Specifically, the Nova F6500 UAS will be operated in accordance with all Federal Aviation Regulations, including the minimum altitude requirements of 14 CFR Section 91.119. Most significantly, the Nova F6500 UAS will not be operated closer than 500 feet to any person, vessel, vehicle, or structure, except when necessary for takeoff or landing.

The established rules, currently under the existing COA (2013-CAS-58) will be in force. Operation of the Nova F6500 unmanned aircraft system (UAS) in Class D airspace will occur at or below 2,500 feet mean sea level (MSL) in KILN airspace under the jurisdiction of KILN ATC tower. See COA at Attachment 2.

E. The Reasons Why Granting The Exemption Would Not Adversely Affect Safety Or How The Exemption Would Provide A Level Of Safety At Least Equal To That Provided By The Rule From Which Sinclair Seeks Exemption.

1. Reasons Why The Nova F6500 UAS Meets The Conditions Of The FAA Modernization and Reform Act of 2012 (FMRA) Section 333.

In consideration of the size, weight, speed, and limited operating area associated with the UA and its operation, Sinclair's operation of the Nova F6500 UAS meets the conditions of FMRA Section 333, and will not require an airworthiness certificate in accordance with 14 CFR Part 21, Subpart H.

Section 333 provides authority for UAS to operate without airworthiness certification and sets forth requirements for considering whether a UAS will create a hazard to users of the NAS or the public, or otherwise pose a threat to national security. Specifically, FMRA Section 333 states the following, in part:

> *(a) In General.--Notwithstanding any other requirement of this subtitle, and not later than 180 days after the date of enactment of this Act, the Secretary of Transportation shall determine if certain unmanned aircraft systems may operate safely in the national airspace system before completion of the plan and rulemaking required by Section 332 of this Act or the guidance required by Section 334 of this Act.*
>
> *(b) Assessment of Unmanned Aircraft Systems.--In making the determination under subsection (a), the Secretary shall determine, at a minimum--*
>
> *(1) which types of unmanned aircraft systems, if any, as a result of their size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight do not create a hazard to users of the national airspace system or the public or pose a threat to national security; and*
>
> *(2) whether a certificate of waiver, certificate of authorization, or airworthiness certification under Section 44704 of Title 49, United States Code, is required for the operation of unmanned aircraft systems identified under paragraph (1).*
>
> *(c) Requirements for Safe Operation.--If the Secretary determines under this section that certain unmanned aircraft systems may operate safely in the national airspace system, the Secretary shall establish requirements for the safe operation of such aircraft systems in the national airspace system.*

In seeking this exemption, Sinclair submits that the Nova F6500 UAS can operate safely in the NAS in accordance with FMRA Section 333, as demonstrated by: (a) the safe operational history and current use of the Nova F6500 UAS in the NAS; (b) the inherent characteristics of the Nova F6500 UAS; (c) the limited area of Sinclair's intended operation; (d) the Private Pilot certification requirements for the PIC; and, (e) the specific operating limitations.

a. The Nova F6500 UAS Has A Proven History Of Operation In The NAS In Accordance With the current Certificate Of Authorization (COA).

The Nova F6500 UAS is currently operating safely in the NAS in accordance with the current COA granted by the FAA to Sinclair Community College, in the requested KILN airspace.

b. The Specifications Of The Nova F6500 UAS Demonstrate Its Safe Characteristics.

The Nova F6500 UAS does not create a hazard to users of the NAS or the public, or otherwise pose a threat to national security considering its size, weight, speed, or operational capability.

i. Technical Specifications of the Nova F6500 UAS.

Unmanned Aircraft System (UAS)	The Nova F6500 is a UAS comprised of an unmanned aircraft (UA) and a transportable ground control station (GCS)
Serial No.	Current: 3009, 3010 Reserved with Manufacturer: 3027, 3028, 3029, 3030
UA Dimensions	Wingspan: 108 in. Length: 65 in.
Engine (Propulsive Unit)	Engine (Propulsive Unit)
	(1) Altavian, Inc. P/N : 30027 (Electric) FAA Engine Type Cert: None Propulsive Unit Type: 25V, 11 amp hour capacity, Lithium Ion battery powered, direct drive electric motor Motor, Electric Sub-Assembly:
	Manufacturer: NeuMotor Model: 1509 2.0 HP Peak Power Direct Drive 10 oz. weight Motor, Controller Sub-Assembly:
	Manufacturer: Castle Creation Model: Phoenix Ice 100 Type: Speed controller 100 amps maximum 4.6 oz. weight Motor, Battery:
	Manufacturer: MaxAmps, Inc. Type: Lithium Ion 11 amp hour, 22.2V (nominal)

Fuel	Not Applicable NOTE: Nova F6500 UAS is powered by a Lithium Polymer rechargeable battery, Altavian, Inc. P/N 30142
Engine (Propulsive Unit) Limits	Maximum power output: 2.0 HP Maximum RPM: 60,000 RPM (reduced to 7,200 propeller RPM) Maximum motor temp.: 170 °F (77 °C) NOTE: Motor temp. not displayed to the operator Maximum motor, controller sub-assembly temp.: 194 °F (90 °C) Minimum voltage, motor battery during pre-flight engine run up after 3 sec. at max throttle: 22.6V
Propeller and Propeller Limits	(1) Altavian, Inc. P/N 30360 FAA Propeller Type Certificate: None Propeller Type: 2-blade, hinged (folding), carbon fiber reinforced plastic, fixed pitch, tractor Propeller Sub-Assembly:
	Manufacturer: Aeronaut Model: CAM 15x13 Diameter (Nominal): 15 in.
Battery Command & Control	Nova Air Vehicle Battery P/N 30142 powers the motor and battery command and control.
Airspeed Limits	Vne (Never Exceed Speed) 58 knots (30 m/s) Vno (Maximum Structural Cruising Speed) 48 knots (25 m/s) Va (Maneuvering Speed) 48 knots (25 m/s) Landing Speed: 27 knots (14 m/s)
Empty Weight C.G. Range	20.2 – 21.7 in. aft of datum
Datum	Front of Motor Case
Mean Aerodynamic Chord (MAC)	13 in. long with leading edge 21.2 in. from nose
Leveling Means	Not Applicable
Maximum Weights	Ramp 15 lbs. Takeoff 15 lbs. Landing 15 lbs.

Empty Weight	8.35 lbs. NOTE: Excludes weight of battery and payload modules.
Frequencies	902-928 MHz (ISM Band) 2.4 GHz (ISM Band) NOTE: FCC license is not required to utilize the above frequencies; uplink and downlink are on 900Mhz band. If video is utilized, uplink, downlink, and video are on 2.4 Ghz
Computer Software	Avionics embedded processor
Minimum Crew	(1) The Nova F6500 UAS can be operated by a single operator
Number of Seats	Not Applicable
Fuel Capacity	Not Applicable
Oil Capacity	Not Applicable
Maximum Operating Altitude	1,000 ft (304 m) AGL
Control Surface Movements	Wing Flaps N/A Ailerons Up 30° Down 30° "V" tail elevator action Up 60° Down 60° "V" tail rudder action Up 60° Down 60° "V" tail max. combination Rudder elevator action Up 60° Down 60°
Nominal Endurance	90 min. above 32 °F (0 °C) 45 min. below 32 °F (0 °C)
Ambient Outside Air Temperature (OAT)	Maximum OAT: 120 °F (49 °C) Minimum OAT (At Altitude): -20 °F (-29 °C)
Wind Limit	19 knots
Maintenance	This Nova F6500 UAS must be maintained in accordance with the manufacturer's maintenance manual, or later FAA accepted revision.

ii. The Nova F6500 UAS Autonomous Flight And Navigation Modes Enable The UAS To Remain Within A Defined Operational Area.

A complete description of the autonomous modes and methods of navigation for the Nova F6500 UAS is provided in the Nova F6500 UAS Operator Manual at pages 7-2 through 74. A copy of the Nova F6500 UAS Operator Manual, containing proprietary information, is in Attachment 3 and is to be held in a separate file pursuant to 14 CFR Section 11.35(b).

iii. The Nova F6500 UAS Is Designed For Complete Autonomy From Launch To Landing Even In The Unlikely Event Of Loss Of The Control Link Or Navigation.

Although a degradation or loss of the control link, and/or degradation or loss of the source of navigation, is unlikely, it is a situation that is well planned for and therefore, is a benign event. The Nova F6500 UA is designed for complete autonomy from launch to landing with a line of sight operator in the loop monitoring the airframe.

The Nova F6500 UA uses a two-stage failsafe approach for all avionics failure conditions, including the event of a loss of communications ("lost link"). Upon loss of the communication signal, the Nova F6500 UA will attempt to reacquire the link. If after 10 seconds the link has not been reacquired, the Nova F6500 UA will continue to attempt to reacquire the link while maintaining the current altitude and navigating to the home waypoint, which is the same as the location of the GCS. Once at the home waypoint, the Nova F6500 UA will loiter while continuing its attempt to reacquire the link for 300 seconds (to allow for rebooting of the GCS, if needed). The Nova F6500 UA will then continue to attempt to re-acquire the link while it navigates through the landing procedure.

Attachments to this Petition contain proprietary information, and in accordance with 14 CFR Section 11.35(b), are not to be included in the Federal Docket Management System (FDMS).

The landing procedure for Lost Link is identical to a normal landing procedure. The Nova F6500 UA will descend from "minimum safe altitude" to a breakout altitude (site specific) while continuing to loiter around the rally point. Once at the breakout altitude, the Nova F6500 UA will depart the loiter along a tangential path toward the touchdown spot. The Nova F6500 UA will descend on glide slope from the tangent point to the touchdown spot, slowing down to flare speed (12 m/s) in the final moments before touchdown and automatically flare 3 meters above the ground.

Loss of GPS signal will result in a two tiered recovery approach. Upon loss of a GPS signal, the Nova F6500 UA will immediately enter a loiter orbit in an attempt to reacquire a signal. If after 15 seconds, GPS is not reacquired, the UA will enter tier two. At any time in tier one or two, the PIC can take over with augmented control and utilize its onboard magnetometer to navigate back to the home waypoint through dead-reckoning. During this failure mode, the VO will call out UA position and movement back to the PIC. Once the UA is close enough to resolve orientation, or if operating with a live video payload, the PIC can engage manual control and perform a manual landing at the pre-decided landing site.

If a cascade of failures has occurred and Lost-Link has also occurred during tier two, the Nova F6500 UA will enter into a loiter-land procedure; descending in a loiter while reducing speed until contact with the ground at flare speed. During this decent, the Nova F6500 UA is still in controlled flight and at touchdown the forward speed should not exceeded 11 m/s with the propeller off, minimizing damage to anything that the Nova F6500 UA may contact.

The Nova F6500 UAS Operator Manual, Attachment 3, at Chapter 9 "Emergency Procedures" fully describes the features of the Nova F6500 UA and sets forth its operation in the event of a power loss, loss of communications, loss GPS, loss of video link, or software crash. A copy of Nova F6500 UAS Operator Manual, containing proprietary information, is in Attachment 3 and is to be held in a separate file pursuant to 14 CFR Section 11.35(b). Additional Lost Link Procedures are included in Attachments 2.

iv. The Nova F6500 Ground Control Station (GCS) and its Operation.

A complete description of the operation and specifications of the GCS and flight control software for the Nova F6500 UAS is provided in the Nova F6500 UAS Operator Manual at Chapter 2. A complete overview of the features and operation of the GCS software is provided at Chapter 7. A copy of the Nova F6500 UAS Operator Manual, containing proprietary information, is in Attachment 3 and is to be held in a separate file pursuant to 14 CFR Section 11.35(b). Additional Ground Station Procedures are included in Attachments 2.

c. Flight Operations Of The Nova F6500 UAS Are Conducted Within Visual Line Of Sight (VLOS) Of A Certificated Private Pilot PIC With A Visual Observer (VO).

Sinclair will only utilize certificated Private Pilots who possess a valid Second Class Airman Medical Certificate to act as PIC of the Nova F6500 UAS. Additionally, a visual observer (VO) will assist all pilots. Both the PIC and VO must complete the Sinclair Nova Operator's Course and meet the experience requirements as set forth in the Nova Family of Systems Operations Manual. A copy of the Nova Family of Systems Operations Manual, containing proprietary information, is in Attachment 3 and is to be held in a separate file pursuant to 14 CFR Section 11.35(b). Furthermore, all flight operations will be conducted in accordance with 14 CFR Section 91.119, *Minimum safe altitudes: General.*

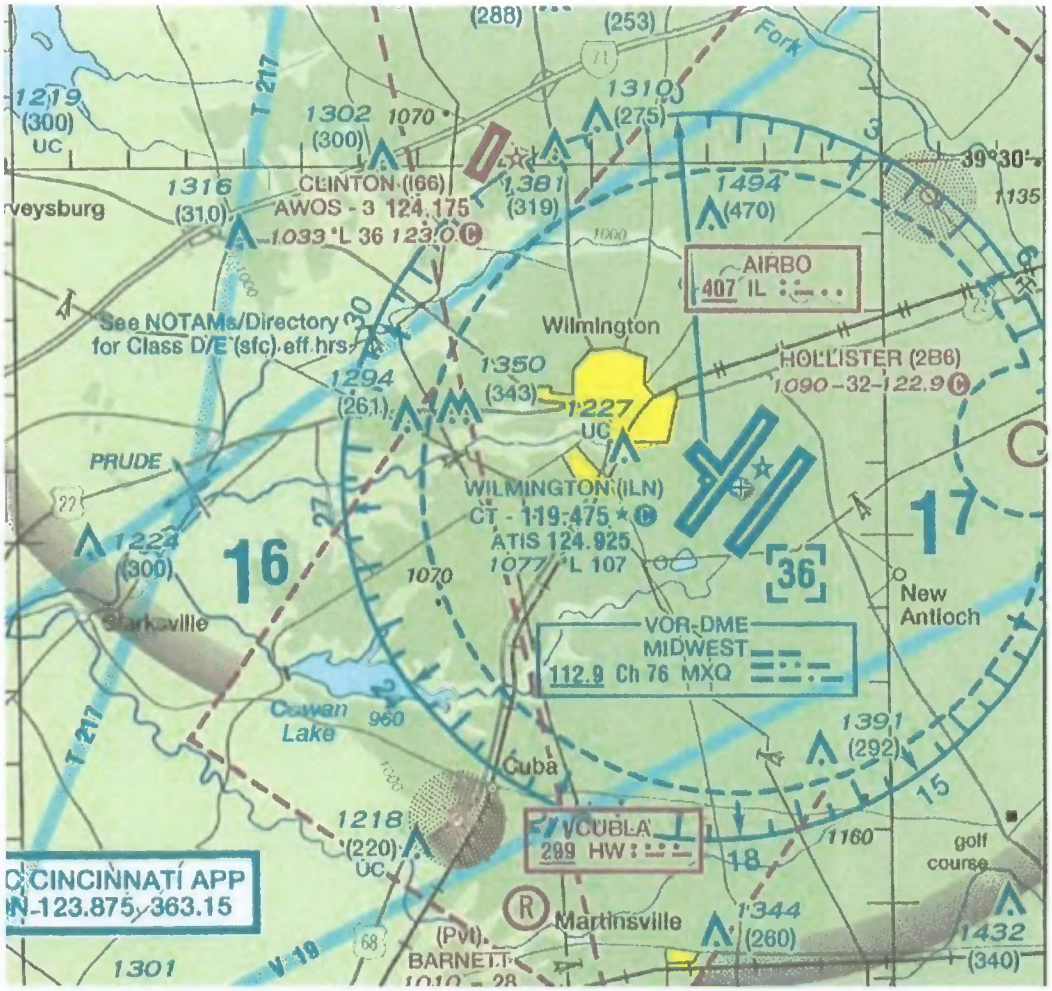

Figure 2: Cincinnati TAC view of KILN.

d. Flights Will Be Conducted Under Specific Operating Limitations.

In seeking this exemption, Sinclair proposes to commercially operate the Nova F6500 UAS for the special purpose of educational research and training:

1. Flight operations are permitted only in the defined areas over the KILN Class D airspace and surrounding Class G airspace as is currently used in the existing COA (Attachment 2).

2. The Nova F6500 UA will be operated at or below 3,577 ft MSL, except as necessary to comply with the requirements of 14 CFR Section 91.119.

3. The Nova F6500 UA will be operated within one mile, and within VLOS, of the PIC and VO.

4. The Nova F6500 UA will be operated under day VFR in VMC. The Nova F6500 UAS will be operated only during daylight hours (*i.e.* between the end of morning civil twilight and the beginning of evening civil twilight, as published in the American Air Almanac, converted to local time).

5. Flights of the Nova F6500 UA will continue for a total duration of 90 minutes, or until 20% battery power is remaining, whichever occurs first.

6. The Nova F6500 UA will operate from on-site takeoff/landing location(s) directly next to the PIC and co-located VO. If the operation is from a watercraft, the PIC and VO will remain co-located on the same watercraft.

7. Private pilot certificated airmen, who have completed training, checking, currency, will conduct operations and recency of experience requirements as approved by the FAA Administrator.

8. Operation of the Nova F6500 UAS with any inoperative instruments or equipment shall be prohibited.

9. The Nova F6500 UAS will be maintained in accordance with the manufacturer's Maintenance Manual.

10. The Nova F6500 UAS will be operated pursuant to 14 CFR Part 91, *General Operating and Flight Rules*.

11. For the proposed flight operation, only one Nova F6500 UA shall be airborne at any given time.

12. Prior to flight operations, Sinclair will coordinate and establish two-way communications with the nearest ATC facility.

13. For any flight operations over U.S. Government or state managed lands, Sinclair will coordinate with the appropriate authority and ensure that the property owners have at least twelve (12) hours of advance notice prior to the

proposed flight operations. Coordination shall include anticipated periods of operation, purpose of the flights, and contact information for the PIC should questions or issues arise.

2. Reasons Why An Exemption From The Requirements Of Section 91.151(a)(1) Would Not Adversely Affect Safety.

A grant of this exemption would ensure the level of safety established by 14 CFR Section 91.151(a)(1) because the technical specifications of the Nova F6500 UAS, the Nova Operations Manual, and Sinclair's proposed operating limitations ensure that Sinclair may safely operate the battery powered Nova F6500 UA under day VFR in VMC for a total duration of 90 minutes, or until 20% battery power is remaining, whichever occurs first. Furthermore, previous exemptions granted by the FAA concerning Section 91.151(a)(1) establish that safety is not adversely affected when the technical characteristics and operating limitations of a UAS are considered.

The Nova F6500 UA is powered by a Lithium Ion 11 amp hour, 22.2 V battery, and is protected by two low battery failsafes, while the GCS provides a battery indicator on the heads-up display, which indicates the remaining battery power of the Nova F6500 UA measured in Volts, providing the PIC with constant awareness of the real-time battery voltage during a flight.

The two low battery failsafes that protect the Nova F6500 UA are a "Low AV battery" failsafe and a "Critically low AV battery" failsafe. The "Low AV battery" failsafe flies the UA to the location of the GCS, or identified Rally point, when the UA battery reaches a certain threshold of time as configured by the operator, or 20.4V. The "Critically low AV battery" shuts the propulsion motor off and lands the UA at its current location. This failsafe is triggered if the battery drops below the critical battery voltage as configured by the operator, or 19.4V.

Furthermore, an exemption from the requirements of Section 91.151(a)(1) would not adversely affect safety because Sinclair will only conduct flights under day VFR in VMC, with the duration of each flight not to exceed 90 minutes, as set forth by the Nova Family of Systems Operations Manual. A copy of the Nova Family of Systems Operations Manual, Attachment 3, contains proprietary information and is to be held in a separate file pursuant to 14 CFR Section 11.35(b).

Likewise, as set forth above, Sinclair has proposed specific operating limitations in this Petition that will maintain the level of safety established by Section 91.151(a)(1), including the following: (1) the Nova F6500 UA will only be operated during daylight hours (i.e. between the end of morning civil twilight and the beginning of evening civil twilight, as published in the American Air Almanac, converted to local time); (2) Nova F6500 UA will only be operated pursuant to day VFR in VMC; and (3) the duration of each flight shall not exceed 90 minutes or 20% of battery life remaining, whichever occurs first.

Significantly, previous exemptions granted by the FAA concerning Section 91.151(a)(1) establish that safety is not adversely affected when the technical characteristics and operating limitations of the UAS are considered. Relief has been granted for manned aircraft to operate at less than the minimums prescribed in Section 91.151(a), including Exemption Nos. 2689, 5745, and 10650. Moreover, the FAA has previously granted relief from Section 91.151(a)(1), specific to UAS, in circumstances similar to those presented here (e.g. Exemption Nos. 8811, 10808, 10673, 11042, 11062, 11063, 11064, 11065, 11066, 11067, 11080).

3. Reasons Why An Exemption From The Requirements Of Sections 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) Would Not Adversely Affect Safety.

In seeking this exemption, Sinclair submits that the level of safety with regard to the regulatory maintenance and alteration requirements established by Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), 91.417(a) & (b) will be met because Sinclair, as operator of the Nova F6500 UAS, will use its trained technicians to perform maintenance, alterations, or preventive maintenance on the UAS using the methods, techniques, and practices prescribed in the manufacturer's maintenance manual, as it does today within the procedures set forth in its existing COAs. Furthermore, Sinclair will document and maintain all maintenance records for the Nova F6500 UAS.

Since the Nova F6500 UAS will be inspected as prescribed by the manufacturer's maintenance manual, Sinclair will maintain the level of safety established by Sections 91.405(a), 91.409(a)(1), and 91.409(a)(2). The Nova F6500 Maintenance Manual sets forth Scheduled Maintenance Inspection Procedures for each system and component. Inspection

intervals for the Nova F6500 UAS include preflight and post flight inspections, as well as scheduled inspections every 25 hours, 50 hours, 75 hours, and 100 hours.

Likewise, the exemption sought will not adversely affect safety because Sinclair will perform maintenance, alterations or preventive maintenance on the UAS using the methods, techniques, and practices prescribed by the manufacturer's maintenance manual. The Nova F6500 Maintenance Manual details procedures for each component of the UA, including the components of the propulsion system, avionics system, payload system, fuselage system, wing, and tail.

The Nova F6500 Maintenance Manual, shown in Attachment 4, contains proprietary information and is to be held in a separate file pursuant to 14 CFR Section 11.35(b).

Furthermore, the exemption sought would maintain the level of safety established by Sections 91.407, 91.417(a) and 91.417(b) because all maintenance of the Nova F6500 UAS will be performed by trained technicians, who will document and maintain maintenance records for the Nova F6500 UAS. Sinclair trained technicians are qualified to conduct any and all maintenance to ensure the safe operation of the Nova family of UAS, conduct all service inspections, and authorize the use of each vehicle in the Nova family of UAS based upon completion of appropriate inspections. *See* Nova Family of Systems Operations Manual, Attachment 3 at page 3-4. In accordance with the Nova Family of Systems Operations Manual and the Nova F6500 Maintenance Manual, a Maintenance Action Form must be completed and saved in the maintenance logs for all maintenance that is performed on the UAS. The procedures for maintaining the maintenance logs for the UAS are fully set forth in the Nova Family of Systems Operations Manual, Attachment 3, at Chapter 5, and the Nova F6500 Maintenance Manual, Attachment 4, at Chapter 5.

Significantly, previous exemptions granted by the FAA concerning Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), 91.417(a) & (b) establish that safety is not adversely affected when the technical characteristics and operating limitations of a UAS are considered.

4. The FAA May Prescribe Any Other Conditions For Safe Operation.

In accordance with FMRA Section 333 and 14 CFR Section 21.16 entitled *Special Conditions*, Sinclair requests that the FAA prescribe special conditions for the intended operation of the Nova F6500 UAS, which contain such safety standards that the Administrator

finds necessary to establish a level of safety equivalent to that established by 14 CFR Part 21, Subpart H, and 14 CFR Sections 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b). Such special conditions will permit safe operation of the UA for the limited purpose of educational research and training. FMRA Section 333 sets forth the requirements for considering whether a UAS will create a hazard to users of the NAS or the public, or otherwise pose a threat to national security; and further, provides the authority for such UAS to operate without airworthiness certification in accordance with any requirements that must be established for the safe operation of the aircraft systems in the NAS.

Likewise, the Administrator may prescribe special conditions pursuant to 14 CFR Section 21.16, for operation of the Nova F6500 UAS, since the airworthiness regulations of 14 CFR Part 21 do not contain adequate or appropriate safety standards, due to the novel or unusual design features of the aircraft. Section 21.16, entitled *Special Conditions*, states the following:

> *If the FAA finds that the airworthiness regulations of this subchapter do not contain adequate or appropriate safety standards for an aircraft, aircraft engine, or propeller because of a novel or unusual design feature of the aircraft, aircraft engine or propeller, he prescribes special conditions and amendments thereto for the product. The special conditions are issued in accordance with part 11 of this chapter and contain such safety standards for the aircraft, aircraft engine or propeller as the FAA finds necessary to establish a level of safety equivalent to that established in the regulations.*

See 14 CFR Section 21.16.

Therefore, in accordance with FMRA Section 333 and 14 CFR Section 21.16, the FAA may prescribe special conditions for Sinclair's intended operation of the Nova F6500 UAS, which contain such safety standards that the Administrator finds necessary to establish a level of safety equivalent to that established by 14 CFR Part 21, Subpart H.

F. A Summary That Can Be Published In The *Federal Register* stating:

The Rules From Which Sinclair Seeks Exemption:

SINCLAIR COMMUNITY COLLEGE seeks exemption from the requirements of Part 21 and Sections 45.23(b), 91.9(b), 91.151(a)(1), 91.203(a) & (b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), 91.417(a) & (b) of Title 14 CFR.

A Brief Description Of The Nature Of The Exemption Sinclair Seeks:

This exemption will permit SINCLAIR COMMUNITY COLLEGE to operate an unmanned aircraft system (UAS) for educational research and training, while keeping the documents required by the regulations at the ground control station and immediately accessible to the pilot in command. Furthermore, the exemption will relieve Sinclair Community College from the airworthiness certificate standards and the requirement to have a certificate of airworthiness for its UAS.

G. Any Additional Information, Views, Or Arguments Available To Support Sinclair's Request.

This Petition is made pursuant to FMRA Section 333, which directs the Secretary of Transportation to determine if certain UAS may operate safely in the NAS. As such, Sinclair's request for exemption may be granted pursuant to the authority of FMRA Section 333 and 14 CFR Part 11, as set forth above.

FMRA Section 333 sets forth the requirements for considering whether a UAS will create a hazard to users of the NAS or the public, or otherwise pose a threat to national security; and further, provides the authority for such UAS to operate without airworthiness certification.

As discussed in detail above, the Nova F6500 UAS has a strong record of being operated in the NAS without creating a hazard to users of the NAS or the public, or otherwise posing a threat to national security. Following procedures outlined in this request, Sinclair will continue to safely operate the Nova F6500 UAS in the NAS.

CONCLUSION

As requested, Sinclair seeks an exemption in accordance with 14 CFR Section 11.61 and FMRA Section 333, which will permit safe commercial operations of the Nova F6500 UAS, without an airworthiness certificate, for the limited purpose of conducting educational research and training in Wilmington Air Park airspace. By granting this Petition, the FAA Administrator will be fulfilling the Congressional mandate of P.L. 112-95, while also advancing the interests of the public by allowing Sinclair to safely, efficiently, and economically operate the Nova F6500 UAS commercially within the NAS.

Therefore, in accordance with the Federal Aviation Regulations and the FAA Modernization and Reform Act of 2012 Section 333, Sinclair respectfully requests that the FAA Administrator grant this Petition for an exemption from the requirements of Part 21 and Sections 45.23(b), 91.9(b), 91.151(a)(1), 91.203(a) & (b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), 91.417(a) & (b) of Title 14 CFR, and permit Sinclair to operate the Nova F6500 UAS for the purpose of educational research and training.

Dated: February 12, 2015

Respectfully submitted,

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