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

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

June 1, 2015

Exemption No. 11726
Regulatory Docket No. FAA–2015–0858

Mr. Randall Creel
Survey/GIS Coordinator
Soutex Inc. dba Soutex Surveyors & Engineers
3737 Doctors Drive
Port Arthur, TX 77642

Dear Mr. Creel:

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

By letter posted to the public docket on March 31, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Soutex Inc. dba Soutex Surveyors & Engineers (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct high definition surveys and inspections.

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 Aibotix Aibot X-6.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

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

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

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

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Soutex Inc. dba Soutex Surveyors & Engineers 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

[1] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Soutex Inc. dba Soutex Surveyors & Engineers 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 Aibotix Aibot X-6when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

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

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

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

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

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

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating

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

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

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

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

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

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

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal

government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

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

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

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

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

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

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

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

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The

exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N−Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

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

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

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

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

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

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

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be

reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

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

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

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

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

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

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

Sincerely,

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

Enclosures

SOUTEX
SURVEYORS & ENGINEERS

TBPE Firm No. 5755
TBPLS Firm No. 10123800

3737 Doctors Drive
Port Arthur, Texas 77642
Office (409) 983.2004
Fax (409) 983.2005

U.S. DEPARTMENT OF TRANSPORTATION
DOCKET MANAGEMENT SYSTEM
1200 NEW JERSEY AVE. SE
WASHINGTON, DC 20590

RE: Petition for Exemption from 14 CFR Part 21, Subpart H; 14 CFR § 91.203(a)(1); 14 CFR Part 27: 14 CFR §§ 91.9(c), 45.23(b) and 45.27(a);14 CFR § 61.113 (a) & (b);14 CFR § 91.7(a); 91.9(b)(2); 91.103; 91.109(a); 91.119; 91.121; 91.151(a); 91.203 (a) & (b); 91.405(a); 91.407(a)(1); 91.409(a)(2); 91.417 (a) & (b)

Dear Sir or Madam,

Soutex Inc., doing business as Soutex Surveyors & Engineers (SOUTEX) is applying for an exemption from regulations detailed below in order to conduct high definition surveys (HDS) and inspections with a small-unmanned aircraft system (sUAS) manufactured by Aibotix, the model Aibot X-6 V2 (X6). The manufacturer states that it has developed the X6 for survey of challenging sites such as quarries, sand pits, landfills, coal stockpiles, industrial and commercial developments, and bridge inspections all of which SOUTEX intends to pursue. In addition SOUTEX would like to offer services to local emergency management teams, fire departments, and law enforcement to assist in disaster recovery or emergency situations. These uses could include aerial scanning after a natural disaster to identify persons in need of assistance, assess damage to property, and scouting of usable ground transportation routes.

I. Company Background

Soutex, Inc. (Soutex), based in Port Arthur, Texas was founded in 1959 to provide residential, commercial, and industrial surveying and engineering services to southeast Texas. Today the owner-operated company is a premier provider of services to both the public and private sector. Soutex is a full service company, assisting our clients in almost every step of their development process. With services that include boundary surveying, topographic surveying, engineering design, architectural design, construction staking, inspection, and construction management, Soutex stands poised to meet its client's needs whatever they may be.

As new technologies are developed, Soutex explores new, more efficient means of serving its clients. As the use of unmanned aircraft has expanded commercially and recreationally throughout the world, Soutex has prepared to put this new technology to use in conducting survey and inspection work. Soutex has created an operations manual it hopes will demonstrate its commitment to conducting work in a matter that will ensure the safety of people and property. Aibotix, a small-unmanned aircraft manufacturer, has trained Soutex personnel in the use of its product.

II. Business Climate

Texas in general and southeast Texas in particular is a cornerstone of the oil and gas business in the United States. Southeast Texas is the number one refiner of jet fuel in the nation and refines a minimum of 13% of the country's daily fuel consumption[1]. The area also retains 55% of the nation's strategic petroleum reserves and is linked to an extensive energy pipeline system[1]. While southeast Texas is home to some of the nation's largest refineries, the backbone of the industrial and commercial sectors of the economy lies with its position along the Sabine-Neches Waterway. The waterway is the nation's number one bulk liquid cargo waterway, and the third largest by cargo volume, moving over 100 million tons of cargo annually[1]. Being the nation's number one commercial military out load port, the Sabine-Neches Waterway is an integral component of U.S. energy & military transportation infrastructure[1].

On June 10, 2014, the President signed H.R. 3080(113th): Water Resources Reform and Development Act of 2014 in to law. Included in this package was the authorization to deepen the Sabine-Neches Waterway from 40 to 48 feet, allowing larger ships to reach ports along the waterway. This can only serve to speed the growth of industry in the area. Plans for expansion of local refineries are in the works, railroad infrastructure is being expanded, and new developments to increase the capacity of the areas import and export have begun. The region is poised for an era of unprecedented growth, and Soutex wants to be ready to meet any survey, inspection, and engineering needs that may arise.

Surveying is a unique business with specialized equipment, methods, and personnel. While its roots go back as far as ancient Egypt, and its American history includes the likes of George Washington, Thomas Jefferson, and Abraham Lincoln, surveying has steadily changed as new technologies have become available. In times past, distances would be measured with a chain and directions with a compass. Now surveyors use a total station that measures both distance and

[1] Based on information obtained in *Fact Sheet: The Sabine-Neches Waterway, An American Asset* available online at http://www.navigationdistrict.org/projects/deepening-project

direction, in a much safer and more efficient manner. Over the previous two decades, the use of global positioning systems has increased that efficiency even more and allowed surveyors to locate a piece of property relative to the entire world rather than just those pieces of property that adjoin it. The use of laser scanners has also had an impact on the industry of surveying. Detailed scans of complex environments can be taken at a distance rather than putting the safety of personnel at risk by having them physically climb or otherwise interact with the subject of the scan.

The newest technology available to the surveyor is that of the sUAS. This technology has the potential to revolutionize the way some surveying and inspection tasks are accomplished. Some tasks previously performed by laser scanners, such as determining the quantity of a stockpile, can be performed to greater accuracy at a fraction of the cost. Whereas a land based laser scanner would have to be moved to various locations around the pile to obtain all of the data needed to generate a quantity, a sUAS can be used to measure the pile from above and at oblique angles, giving it access to contours obscured from the view of ground based scanners and performing the task in a fraction of the time. Inspections are another area where the use of sUAS will be of great benefit. Bridge inspections for example can be assisted by using sUAS to perform visual inspections of bridge infrastructure that would normally require a human being to be dangerously suspended high above the ground or water the bridge is crossing or the bridge decking itself. There are many other environments, such as refineries, wetlands, and marine sites, in which use of a sUAS would be safer, more environmentally friendly, and more efficient than having personnel on the ground or in the water collecting data. The use of sUAS for low altitude survey and inspection would improve accuracy, reduce risk to personnel, and improve efficiency by reducing reliance on watercraft and on-the ground operations.

III. Benefit to the Public

The public will benefit from SOUTEX receiving this exemption in three different ways. Survey projects in which use of a sUAS is practical will be completed in a manner much safer than current methods, with better accuracy, and a reduced cost to the consumer.

The proposed exemption will allow the operator to mitigate safety risks for those who must conduct regular surveys of roofs, bridges, towers and of hazardous stockpiles; will reduce the risk of climb and fall during equipment inspection; will reduce the number of flights of manned aircraft for regular survey thereby diminishing the danger of such use, both to those onboard as well as to people and property under the flight path; and will reduce the environmental impact of fossil fuel use in aircraft. SOUTEX has also developed the Soutex Flight Operations and

Safety Manual (SFOSM), which outlines procedures that will insure surveys, and inspections are performed in a safe manner, lowering risk to participants, bystanders, and the environment.

Another benefit to the public is that of providing the consumer with more accurate data than can be obtained using traditional methods of surveying. The quantity of a stockpile for example can be determined with greater accuracy by scanning from the air using both overhead and oblique angle shots to obtain contours that are currently unable to be observed using ground based scanners. Having more accurate data such as this can help the consumer to better estimate the cost of projects, or to generate more accurate bills to their client for material used. Land development is another good example of the benefit of HDS with a sUAS. Scans of a work site before and after dirt work has been done will provide more accurate quantities of material that was used to fill in or build up the work site. This would potentially save the developer from overpaying for materials.

In addition to safety, and accuracy, cost is another benefit to the public of performing surveys and inspections using a sUAS as opposed to other methods. When surveying using ground based methods, equipment must be set up, torn down, and set up again multiples times to be able to collect data due to line of sight issues. Use of a sUAS would save a tremendous amount of time in data collection, reducing the cost of the consumer. When performing inspections, on a bridge for example, progress is very slow, utilizes large teams of personnel, and requires the use of expensive equipment to insure the safety of the inspectors. Use of a sUAS reduces the number of personnel needed, does not require specialized equipment, and drastically cuts the time needed to perform the inspections. All of these savings equate to lower costs to the consumer.

IV. CFR Code from which exemption is requested

The Federal Aviation Act expressly grants the FAA the authority to issue exemptions. By its terms, this statutory authority includes exempting civil aircraft, as the term is defined under §40101 of the Act, including sUAS, from its safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest.

Petitioner seeks an exemption from several interrelated provisions of 14 CFR Parts 21, 45 and 91 for purposes of conducting aerial surveys and inspections using sUAS. Listed below are: (1) the specific sections of 14 CFR for which exemption is sought; and (2) the operating procedures and safeguards that Petitioner has established which will ensure a level of safety equal to or better than the rules from which exemption is sought.

Petitioner acknowledges that some of the below cited requests were addressed in FAA Order 11062 (Grant of Exemption to Astraeus Aerial, Docket

FAA-2014- 0352) and for which no action was taken by the FAA. The FAA's analysis did, however, recite the petitioner's information as the basis for the no action; this Petition recites all of the previous sections for which exemptions were requested therein.

A. 14 C. F.R. Part 21, Subpart H -Airworthiness Certificates & 14 C. F.R. § 91.203(a) (1).

This petition seeks an exemption from 14 CFR Part 21, Subpart H, which establishes the procedural requirements for the issuance of airworthiness certificates as required by 14 CFR §91.203(a)(1). Given the size, weight, speed and limited, obstructed and unpopulated operating area associated with the Aibot X6 V2 to be utilized by the Petitioner, an exemption from Part 21 Subpart H meets the requirements of an equivalent level of safety under Part 11 and Section 333 of the Reform Act.

The Federal Aviation Act (49 U.S.C.§ 44701(f)) and Section 333 of the Reform Act both authorize the FAA to exempt aircraft from the requirement for an airworthiness certificate, upon consideration of the size, weight, speed, operational capability, and proximity to airports and populated areas of the particular sUAS.

The Aibot X6 V2 to be operated hereunder is less than 14.55 pounds fully loaded, carries neither a pilot nor passenger, carries no explosive materials or flammable liquid fuels, and operates exclusively within a sterile area adjacent to structures that are considered obstructions to manned aircraft. Unlike other civil aircraft, aircraft operations will be tightly controlled and monitored by the PIC and SO pursuant to the SFOSM requirements and in compliance with local public safety requirements. Site security measures for areas of operation are consistent with existing requirements for maintaining public safety. The operation has been reviewed by a panel of subject matter experts to identify risks and safety requirements, and mitigate those risks per the SFOSM.

Equivalent Level of Safety

In all cases, an analysis of these criteria demonstrates that the Aibot X6 V2 operated without an airworthiness certificate, in the restricted environment and under the conditions proposed will be at least as safe, or safer, than a conventional rotorcraft operating with an airworthiness certificate issued under 14 CFR Part 21, Subpart H. without the restrictions and conditions of the

proposed Aibot X6 V2 operations. The same criteria demonstrate that there is no credible threat to national security posed by the Aibot X6 V2, due to its size, speed of operation, location of operation, lack of explosive materials or flammable liquid fuels and inability to carry a substantial external load.

B. 14 C. F.R. Part 27: Airworthiness Standards: Normal Category Rotorcraft.

14 CFR Part 27 sets forth the procedural requirements for airworthiness certification of normal category rotorcraft. To the extent the Petitioner's Aibot X6 V2 would otherwise require certification under Part 27, as a rotorcraft, Petitioner requests an exemption from Part 27's airworthiness standards for the same reasons identified in the exemption request from item A. 14 CFR Part 21, Subpart H.

C. 14 C. F.R. §§ 91.9(c), 45.23(b) and 45.27(a). Aircraft Marking and Identification Requirements:

This petition seeks an exemption from the aircraft marking and identification requirements of 14 CFR §§ 91.9(c), 45.23(b) and 45.27(a).

14 CFR § 91.9(c), Civil aircraft flight manual, marking, and placard requirements, provides that:

> No person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with part 45 of this chapter.

14 CFR § 45.23(b), Markings of the Aircraft, 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.

14 CFR § 45.27(a), Rotorcraft, states:

> Each operator of a rotorcraft must display on that rotorcraft horizontally on both surfaces of the cabin, fuselage, boom, or tail the marks required by

§45.23.

Exemption from § 45.23(b) is warranted because the Aibot X6 V2 has no cabin, cockpit, or pilot station or entrance of any kind on which the word "Experimental" can be placed. Moreover, given the size of the Aibot X6 V2, two-inch lettering would be impossible. The word "Experimental" will be placed on the fuselage in compliance with § 45.29(f).

Given the nature of the specific relief sought by this exemption request, Petitioner requires relief from the associated marking and identification requirements of § 45.27(a) and § 91.9(c), which would require compliance with § 45.23(b).

Equivalent Level of Safety
An equivalent level of safety for exemptions to the aircraft marking and identification requirements of §§ 91.9(c), 45.23(b) and 45.27(a), will be provided by having the sUAS marked on its fuselage as required by §45.29(f) where the pilot, observer, and others working with the sUAS will see the identification of the sUAS as "Experimental." Additionally, Petitioner will ensure compliance with any requests of sUAS marking by the FAA.

The FAA has issued the following exemptions to the aircraft marking requirements of § 45.23(b): Exemptions Nos. 10700, 8738, 10167 and 10167A.

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

This petition seeks an exemption from the private pilot privileges and limitations of §61.113 (a) & (b), which states:

> **Private pilot privileges and limitations: Pilot in command.**
>
> (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. Private Pilot Privileges and Limitations: Pilot in Command.

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
A private pilot may, for compensation or hire, act as pilot in command of an aircraft in connection with any business or employment if:

The flight is only incidental to that business or employment; and the aircraft does not carry passengers or property for compensation or hire. Section 61.113(a) limits private pilots to being in command of non-commercial flights. Section 61.113(b) (1) provides an exception that allows a private pilot to command an aircraft without passengers or property, in connection with business or employment if "the flight is only incidental to that business or employment." That exception likely does not apply to the proposed operations under this petition for exemption, as the flights are not incidental to the proposed aerial surveys and inspections but rather essential to it. Accordingly, this petition seeks an exemption to § 61.113(a)'s commercial limitation and/or § 61.113(b) (1)'s requirement that the flight be incidental to the business to benefit from the exception.

Equivalent Level of Safety

As required by the SFOSM, Petitioner's Aibot X6 V2 operators acting as PIC will hold a private pilot license and manufacturers flight training specific to the Aibot X6 V2. Because the Aibot X6 V2 will not carry a pilot or passengers, the proposed operations can achieve the equivalent level of safety to § 61.113 (a) and (b), by requiring the PIC operating the sUAS to have a private pilot license or sUAS certificate and flight training specific to the Aibot X6 V2.

Unlike a conventional aircraft that carries the pilot and passengers, the Aibot X6 V2 is remotely controlled with no living being on board. Moreover, the area of operation is controlled and restricted, and all flights are planned and coordinated in advance as set forth in the SFOSM.

The level of safety provided by the requirements included in the SFOSM exceeds that provided by a single individual holding a commercial pilot's certificate operating a conventional aircraft in accordance with § 61.113 (a) & (b). The risks associated with the operation of small, lightweight sUAS in an airspace adjacent to obstructions are diminished from the level of risk associated with commercial operations contemplated by Part 61 when drafted, that allowing the proposed operations in this petition for exemption with a PIC holding a private pilot exceeds the present level of safety achieved by §61.113 (a) & (b).

E. 14 C. F.R. § 91.7(a): Civil Aircraft Airworthiness.

This petition seeks an exemption from 14 CFR § 91.7(a), which requires that a civil aircraft be in an airworthy condition to be operated. Inasmuch there will be no airworthiness certificate issued for the sUAS, should this exemption be granted, no FAA regulatory standard will exist for determining airworthiness.

Equivalent Level of Safety

The Aibot X6 V2 has over 200 commercial operators around the world and a stellar safety record. Given the size of the sUAS, the requirements contained in the SFOSM, Aibot X6 V2 User Manual (X6UM), the training requirements of the PIC and SO and use of safety checklists prior to each flight, an equivalent level of safety will be provided.

The FAA has issued the following exemptions to this regulation: Exemption Order 11062.

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

This petition seeks an exemption from the flight manual requirements of 14 CFR § 91.9(b) (2), which states:

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

Given its size, configuration, and load capacity, the Aibot X6 V2 has no ability to carry such a manual on the aircraft, not only because there is no pilot on board, but because there is simply no room or capacity to carry such an item on the aircraft.

Equivalent Level of Safety

The safety related purpose of this manual requirement can be equally satisfied by maintaining the Aibot X6 V2 User Manual (X6UM) at the ground control point where the pilot flying the Aibot X6 V2 will have immediate access to it. Accordingly, Petitioner requests an exemption from § 91.9(b) (2)'s flight manual requirements, on the condition that the Aibot X6 V2 flight manual be available at the control point during each operation.

The FAA has issued the following exemptions to this regulation: Exemption Order 11062.

G. 14 C. F.R. § 91.103: Preflight Action.

This petition seeks an exemption from § 91.103, which requires a PIC to become familiar with specific information before each flight, including information contained in the FAA -approved Flight Manual on board the aircraft. Inasmuch as an FAA approved flight manual will not be provided for the sUAS, an exemption will be needed.

Equivalent Level of Safety

An equivalent level of safety will be provided by following the Aibot X6 V2 User Manual comprehensive preflight checklist and SOUTEX General Preflight Checklist. The PIC will take all actions, including reviewing weather and NOTAMs, flight battery requirements, landing and takeoff distances, and aircraft performance data, before initiation of flight.

H. 14 C. F.R. § 91.109(a): Flight Instruction.

This petition seeks an exemption from 14 CFR § 91.109(a), which provides that:

(a) 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…

sUAS's and remotely piloted aircraft, by their design do not have fully functional dual controls. Instead, flight control is accomplished through the use of a control box that communicates with the sUAS via radio communications.

Equivalent Level of Safety

Given the size and speed of the Aibot X6 V2, an equivalent level of safe training can still be performed without dual controls because no pilot or passengers are aboard the Aibot X6 V2, the system is equipped with an automatic come home feature that can be triggered at any time to respond to unpredicted challenges and all persons will be a safe distance away should the Aibot X6 V2 experience any difficulties during flight instruction. Additionally, the aircraft's light weight and slow speeds with no pilot or passengers on board create less of a danger to the public than aircraft equipped with dual controls.

The FAA has approved exemptions for flight training without fully functional dual controls for a number of aircraft and for flight instruction in experimental aircraft (See Exemption Nos. 5778K & 9862A) and other SUASs (See FAA Order 11062).

I. 14 C. F.R. § 91.119: Minimum Safe Altitudes.

This petition seeks an exemption from the minimum safe altitude requirements of 14 CFR § 91.119. Section 91.119 prescribes the minimum safe altitudes under which aircraft may not operate, including 500 feet above the surface and away from any person, vessel, vehicle, or structure in non-congested areas. See 14 CFR § 91.119(c). Section § 91.119(d) (1) allows for a helicopter to operate at less than those minimum altitudes when it can be operated "without hazard to persons or property on the surface," provided that "each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA."

To provide the intended High Definition Surveys (HDS) and inspections, the Aibot X6 V2 will normally need to be operated within a range of 75 feet laterally from the structures being inspected and under 400' AGL. Accordingly, due to the nature of the proposed operations, the PIC and the SO will be less than 100 feet away from structures during the operation, and an exemption is

therefore required.

Equivalent Level of Safety

Compared to flight operations with rotorcraft weighting far more than the maximum 14.55 lbs. proposed herein, and the lack of flammable fuel, any risk associated with these operations is far less than those presently presented with conventional aircraft. An equivalent level of safety will be achieved given the size, weight, speed of the UAS as well as the location where it is operated. As set forth in the SFOSM, the Aibot X6 V2 will be operated in a geo-fenced sterile area, where buildings and people will not be exposed to operations without their pre-obtained consent. No flight will be taken without the permission of the property owner and/or local officials. Because of the advance notice to the property owner and participants, all affected individuals will be aware of the planned flight operations as set forth in the SFOSM. Furthermore, by operating at such lower altitudes adjacent to obstructions, the Aibot X6 V2 will not interfere with other aircraft that are subject to the minimum safe altitude regulations.

J. 14 C. F.R. § 91.121 Altimeter Settings.

This petition seeks an exemption from 14 CFR § 91.121, which requires a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. An exemption is required because the Aibot X6 V2 does not have a barometric altimeter, but rather a GPS altitude read out.

Equivalent Level of Safety

An equivalent level of safety will be achieved by following the procedures set forth in the General Preflight Checklist in SFOSM. As prescribed in the SFOSM, the operator will confirm the altitude of the launch site shown on the GPS altitude indicator before flight. The flight plan will be programmed to maintain appropriate altitude above ground and under 400' AGL. Moreover, the PIC will use the GPS altitude indicator to constantly monitor the Aibot X6 V2 height, thus ensuring operation at safe altitudes.

K. 14 C. F.R. § 91.151(a): Fuel Requirements for Flight in V F R Conditions.

This petition seeks an exemption from 14 CFR § 91.151(a)'s fuel requirements for flight in VFR conditions. Section 91.151 states:

(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; or
(2) At night, to fly after that for at least 45 minutes.

The battery powering the Aibot X6 V2 provides approximately 30 minutes of powered flight. An exemption from the 30 minute reserve requirement in 14 CFR §91.151 is therefore required.

Equivalent Level of Safety

An equivalent level of safety can be achieved by limiting flights to 30 minutes or 25% of battery power, whichever happens first. This restriction would be more than adequate to return the Aibot X6 V2 to its launch location from anywhere within its limited operating area. Operation of the Aibot X6 V2 with less than 30 minutes of reserve fuel does not engender the type of risks that Section 91.151(a) was intended to alleviate given the size and speed of the Aibot X6 V2. Moreover, operation will be limited to controlled areas where only people and property owners, or official representatives who have signed waivers will be allowed.

This request for exemption falls within the scope of prior exemptions. See e.g. Exemption Order 11062

L. 14 C. F.R. § 91.203 (a) & (b): Carrying Civil Aircraft Certification and Registration.

This petition seeks an exemption from civil aircraft certification and registration requirements of 14 CFR § 91.203 (a) and (b). The regulation provides in pertinent part:

(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….

(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.

In addition to the fact that Petitioner is seeking an exemption from the airworthiness certificate requirements, an exemption to this regulation is necessary because:
(1) The Aibot X6 V2 load capacity and size does not allow it to carry Certification and registration documents;
(2) The Aibot X6 V2 does not have a cabin or cockpit entrance at which the Documents could be displayed; and
(3) There are no passengers or crew for whom the certificates need be displayed.

Equivalent Level of Safety

An equivalent level of safety will be achieved by keeping these documents, to the extent they are applicable to the Aibot X6 V2, at the ground control point where the pilot flying the Aibot X6 V2 will have immediate access to them.

The FAA has issued numerous exemptions to this regulation. See, inter alia, Exemption Order 11062

M. 14 C. F.R. §§ 91.405(a); 91.407(a) (1); 91.409(a) (2); 91.417 (a) & (b): Maintenance Inspections.

This petition seeks an exemption from the maintenance inspection requirements of 14 CFR §§ 91.405(a); 91.407(a) (1); 91.409(a) (2); 91.417 (a) & (b). Which state:

These regulations specify maintenance and inspection standards in reference to 14 CFR Part 43. See, e.g., 14 CFR § 91.405(a) (stating that each owner or operator of an aircraft "[s]hall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections . . . have discrepancies repaired as prescribed in part 43 of this chapter"). An exemption to these regulations is needed because Part 43 and these sections apply only to

aircraft with an airworthiness certificate, which the Aibot X6 V2 will not have.

Equivalent Level of Safety

An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with the Aibot X6 V2 User Manual. The operator will ensure that the Aibot X6 V2 is in working order prior to initiating flight, perform required maintenance, and keep a log of any maintenance performed. The operator is most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety.

If mechanical issues arise, the Aibot X6 V2 can land immediately and will be operating no higher than 400 feet AGL. Moreover, the Aibot X6 V2 small size, carrying capacity, and the fact that flight operations will only take place in restricted areas for limited periods of time, create less risk than the same factors associated with conventional fixed-wing aircraft and rotorcraft performing the same operation.

V. Privacy

All flights will occur over Petitioner's property or the customer's property with the customer's prior knowledge and consent.

VI. Federal Register Summary

Pursuant to 14 CFR Part 11, the following summary is provided for publication in the FEDERAL REGISTER, should it be determined that publication is needed:
Soutex, Inc. seeks an exemption from the following rules:

14 CFR Part 21, Subpart H; 14 CFR § 91.203(a)(1); 14 CFR Part 27; 14 CFR §§ 91.9(c), 45.23(b) and 45.27(a); 14 CFR § 61.113 (a) & (b); 14 CFR § 91.7(a); 91.9(b)(2); 91.103; 91.109(a); 91.119; 91.121; 91.151(a); 91.203 (a) & (b); 91.405(a); 91.407(a)(1); 91.409(a)(2); 91.417 (a) & (b)

Approval of exemptions allowing commercial operations of small and lightweight unmanned aircraft (sUAS) in the surveying and engineering industry will enhance safety by reducing risk to human life. Conventional operations in this industry using personnel to climb stockpiles, quarries, sand pits, or other type structures present the risks associated with unknown hazards that often lead to

accidents, incidents and fatalities.

In contrast, the Aibot X6 V2 weighing fewer than 14.55 lbs. and powered by batteries eliminates virtually all of that risk, given the reduced mass and lack of combustible fuel carried on board. The Aibot X6 V2 is transported, not flown, to the designated survey area and set up. The Aibot X6 V2 carries no passengers or crew and provides the inspection services eliminating the requirement for personnel to climb the structure and, therefore does not expose personnel to the risks associated with unknown hazards.

The operation of sUAS like the Aibot X6 V2, weighing less than 14.55 lbs., provides an equivalent level of safety and thus supports the grant of the exemptions requested herein, including exempting the applicant from the requirements of Part 21 and allowing commercial operations. The lightweight sUAS operate at slow speeds, close to the ground, and in a sterile environment adjacent to obstructions. As a result, they are far safer than conventional aerial survey and inspection operations conducted with fixed-wing aircraft or helicopters or manned tower climbs.

VII. Conclusion

The Aibotix X6 V2 as a result of its size, weight, speed, and operational capability, does not create a hazard to users of the national airspace system or pose a threat to national security. The Aibotix X6 V2 will be operated in accordance with safety protocols defined in the SFOSM, for which we request approval by the FAA according to its authority granted by Congress in Section 333 of the FAA Modernization and Reform Act of 2012. When operated by licensed pilots over quarries, stockpiles, landfills, and marsh land the sUAS used for survey and inspection will reduce the risk and duration of exposure to risk for employees, contractors, and nearby communities. Adequate justification exists for the grant of the requested exemptions allowing commercial operation of sUAS by Soutex, Inc.

Submitted separately as confidential documents under 14 CFR Section 11.35 (b) are:

Aibotix X6 Spec Sheet
Aibotix X6 User Manual
Soutex Flight Operations and Safety Manual (SFOSM)

These documents contain proprietary information that is not available to the public and are protected from release under the Freedom of Information Act 5 USC 552et.seq.

Thank you for your time,

Randall Creel
Survey/GIS Coordinator
Soutex, Inc.
3737 Doctors Drive
Port Arthur, Texas 77642
409-983-2004 (office)
randall@soutex.net