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

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

September 25, 2015

Exemption No. 13038
Regulatory Docket No. FAA−2015-2761

Mr. Jeffrey W. Logan
Vice President Operations
Paragon Geophysical Services, Inc.
3500 North Rock Road, Building 800, Suite B
Wichita, KS 67226

Dear Mr. Logan:

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

By letter dated June 8, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Paragon Geophysical Services, Inc. (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct site survey, quality control data collection, volumetric, geo-location magnetic and gravity measurements, aerial photography, videography, agriculture, scientific studies, wildlife monitoring and forestry.

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 are the Sensurion Magpie MP-1, DJI Spreading Wings S1000+, DJI Inspire, and DJI Phantom.

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

The Basis for Our Decision

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

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

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

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Paragon Geophysical Services, Inc. is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

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

Conditions and Limitations

In this grant of exemption, Paragon Geophysical Services, Inc is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the Sensurion Magpie MP-1, DJI Spreading Wings S1000+, DJI Inspire, and DJI Phantom 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 September 30, 2017, unless sooner superseded or rescinded.

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

Enclosures

PARAGON
GEOPHYSICAL SERVICES, INC

June 8, 2015

U.S. Department of Transportation
Docket Operations
1200 New Jersey Ave., SE
Washington, DC 20590

Re: Submission of Request for Authorization to Conduct Unmanned Aircraft System Operations Allowed by Section 333 of the FAA Modernization and Reform Act of 2012 Through the Exemption Process Identified Under 14 C.F.R. Section 11.81

Dear Mr. Secretary,

Pursuant to Section 333 of PL 112-95 commonly known as the "FAA Modernization and Reform Act of 2012" or "The Reform Act", Paragon Geophysical Services, Inc. (Paragon) petitions for authorization to conduct commercial unmanned aerial system (UAS) operations for the oil and gas exploration industry, within the United States National Airspace System (NAS). These operations include but are not limited to, site survey, quality control data collection, volumetric, geo-location magnetic and gravity measurements, aerial photography, videography, agriculture, scientific studies, wildlife monitoring and forestry.

The name and address of the applicant is:

Paragon Geophysical Services, Inc.
Attn: Jeffrey W. Logan, Vice President Operations
3500 N. Rock Road, Building 800 Suite B
Wichita, KS 67226
Ph: 316-636-5552
jeff@paragongeo.com

Paragon petitions to be exempt from the following C.F.R.s in accordance with precedent set by the following approvals: Exemptions 11062 through 11067, 11080, 11109, 11110 and 11213.

Paragon also requests the secretary determine 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.

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

14 C.F.R. § 61.23(a) and (c),
14 C.F.R. § 61.101(e)(4) and (5), 61.113 (a) and (b), 61.315(a);
14 C.F.R. § 91.7(a);
14 C.F.R. § 91.103;
14 C.F.R. § 91.109(a)
14 C.F.R. § 91.119(c);
14 C.F.R. § 91.121
14 C.F.R. § 91.151(a);
14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(2), 91.417(a) and (b)

Appendix A discusses each rule listed above and explains why exemptions pursuant to the proposal set forth in this letter are appropriate, provide an equivalent level of safety, and are in the public interest.

Paragon Geophysical Services, Inc. has been in operation for more than 30 years and is dedicated to helping companies discover oil, natural gas and geothermal reservoirs, while maintaining the highest safety and quality standards. Based out of Wichita, Kansas, Paragon recruits highly experienced crew members and utilizes the latest technology to deliver results and information quicker than our competitors. Paragon's continual investment in people and technology results in a less environmentally invasive and less costly final product. Paragon's use of unmanned aerial systems will reduce the amount of surface traffic on native grasslands, pastures and cultivated areas, which will in turn reduce possible surface damage and compaction in environmentally sensitive areas, thus would be in the best "public interest".

Equivalent Level of Safety

The applicant proposes that the exemption requested herein apply to civil aircraft that have the characteristics and that operate with the limitations listed herein. These limitations provide for at least an equivalent or even higher level of safety to operations under the current regulatory structure because the proposed operations represent a safety enhancement to operations that would be conducted with conventional aircraft. These conditions are drawn from Exemptions 11062 through 11067, 11080, 11109, and 11110.

Below are the limitations and conditions to which Paragon (or "operator") agrees to be bound when conducting commercial operations under an FAA issued exemption:

1. Operations will be limited to the Unmanned Aerial Systems (UAS) listed below with type, weight and airspeeds indicated. All UAS listed have a weight of less than 55 pounds including payload, and having a maximum airspeed of less than 87 knots (100

miles per hour). Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

Model	Type	Weight	Speed
Sensurion Magpie UAS	Fixed-Wing	<15lbs	<68mph
DJI S-1000+	Multi-Rotor	<26lbs	<60mph
DJI Inspire	Multi-Rotor	<15lbs	<50mph
DJI Phantom	Multi-Rotor	<15lbs	<50mph

Additional Documentation:

- Sensurion Magpie UAS Operations and Maintenance Manuals *(Proprietary - provided as secondary document upon request)*
- DJI S-1000+, Inspire and Phantom Operations/User and Maintenance Manuals *(Provided as secondary document upon request)*

2. The UAS will not be operated at a speed exceeding 87 knots (100 miles per hour). In no case will the UAS be operated at airspeeds greater than the maximum UAS operating airspeed recommended by the aircraft manufacturer.

3. The UAS will be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude will be reported in feet AGL.

4. The UAS must be operated within visual line of sight (VLOS) of the pilot-in-command (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.

5. All operations must utilize a visual observer (VO). The UAS 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.

6. A copy of the FAA approved exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in the grant of exemption, will be 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 the FAA approved exemption and the procedures outlined in the operating documents, the conditions and limitations in the FAA approved exemption 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 of or amendment to its FAA approved exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted its 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.

7. 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.

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

9. 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.

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

11. Each UAS operated under this petition will comply with all manufacturer safety bulletins.

12. The 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.

13. 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 petition for 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 will adhere to the conditions and limitations specified within this petition for exemption. 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 UAS with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

14. 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.

15. The UAS 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.

16. The UAS 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.

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

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

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19. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UAS to conduct the intended operation and to operate after that for at least 5 minutes or with the reserve power recommended by the manufacturer if greater.

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

21. 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.

22. 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.

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

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

25. 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 UAS 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 UAS, 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.

26. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission

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from property owner/controller or authorized representative will be obtained for each flight to be conducted.

27. 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.

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

The operation of small UAS, weighing less than fifty pounds, conducted in the strict conditions outlined above, will provide an equivalent level of safety supporting the grant of the exemptions requested herein. These lightweight aircraft operate at relatively slow speeds, near the ground, and in areas that are under the control of the operator. As a result, they are far safer than conventional operations conducted with manned aircraft operating in close proximity to the ground and people.

Sincerely,

Jeffrey W. Logan
Vice President Operations
Paragon Geophysical Services, Inc.

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APPENDEX A

Regulations – Exemption Requested

- 14 C.F.R. § 61.23(a) and (c);
- 14 C.F.R. § 61.101(e)(4) and (5), 61.113 (a) and (b), 61.315(a);
- 14 C.F.R. § 91.7(a)
- 14 C.F.R. § 91.103
- 14 C.F.R. § 91.109(a)
- 14 C.F.R. § 91.119(c)
- 14 C.F.R. § 91.121
- 14 C.F.R. § 91.151(a)
- 14 C.F.R. § 91.405(a), § 91.407(a)(1), § 91.409(a)(2) and § 91.417(a) & (b)

Pursuant to 14 C.F.R. § 11.81(e), Paragon Geophysical Services, Inc. seeks exemption from the below mentioned regulations and provides reason as to why the exemption should be approved based on the level of safety at least equal to that of which the rules require.

- **14 C.F.R. § 61.23(a) and (c);**
  - **States:** *(a) Operations requiring a medical certificate. Except as provided in paragraphs (b) and (c) of this section, a person: ...*
    and
    (c) Operations requiring either a medical certificate or U.S. driver's license.

  As set forth within FAA granted Exemptions 11062 through 11067, 11080, 11109, 11110 and 11213 and others, the minimum requirement to operate a UAS for commercial purposes is to hold at least a sport license and a valid driver's license. The granted exemptions exempt the UAS PIC from this limitation to his or her license. Paragon petitions for the same exemption as approved within the previously listed exemptions.

- **14 C.F.R. § 61.101(e)(4) and (5), 61.113 (a) & (b), 61.315(a);**
  - **61.101(e)(4) and (5);**
    States: *(4) Except as provided in paragraphs (d) and (i) of this section, a recreational pilot may not act as pilot in command of an aircraft—*

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(4) For compensation or hire;
(5) In furtherance of a business;

- **61.113 (a)and (b);**
  States: *(a) Except as provided in paragraphs (b) through (g) 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:*

- **61.315(a);**
  States: *(a) If you hold a sport pilot certificate you may act as pilot in command of a light-sport aircraft, except as specified in paragraph (c) of this section.*
  (c)(2) For compensation or hire;
  (c)(3) In furtherance of a business;

Under the current limitations of a private, recreational, or sport pilot license, a pilot holding a valid private, recreational or sport license cannot operate for compensation or hire or in the furtherance of a business. As set forth within FAA granted Exemptions 11062 through 11067, 11080, 11109, 11110 and 11213 and others, the minimum requirement to operate a UAS for commercial purposes is to hold at least a sport license and a valid driver's license. The granted exemptions exempt the UAS PIC from this limitation to his or her license. Paragon petitions for the same exemption as approved within the previously listed exemptions.

- **14 C.F.R. § 91.7(a)**
  - **States:** *No person may operate a civil aircraft unless it is in an airworthy condition.*

Currently, there are no airworthiness certificates for the proposed UAS. Pre- and post-flight inspections will be accomplished in accordance with manufacture's maintenance manual(s) and guidance. During flight, the PIC will adhere to C.F.R. § 91.7(b) and abort air operations immediately upon identification of an in-flight emergency. By applying the prescribed operations, inspection and maintenance procedures within the limitations and conditions of Paragon's petition for exemption, an equivalent level of safety will be achieved.

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- **14 C.F.R. § 91.103**
  - **States:** *Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include- (paragraphs a, b, 1 and 2)*

A pre-flight mission brief will be attended by all crew members. This "PMB" will contain weather and all flight information including emergency and abort procedures. A signature will be required by all crew members indicating they have received the PMB and have read any NOTAMs or other procedural updates which may have impact to standard operating procedures. In addition, the PIC will verify the UAS is ready for flight by conducting a pre-flight inspection.

The exemption requested for this section is specifically addressed toward the requirements which do not apply to UAS operations such as runways and air traffic control integration.

- **14 C.F.R. § 91.109(a)**
  - **States:** *No person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls.*

The majority of UAS by design are developed with single operational control through the use of pre-determined GPS enabled waypoints programmed before or during flight and/or the use of a single hand held transmitter or control station controlled by the PIC. This design does not allow for dual controls during flight training and therefore the exemption is requested. To assist in mitigating this limitation, all training will be conducted through the use of a "buddy box" where the PIC/Trainer can regain control of the UAS at any time at their discretion.

- **14 C.F.R. § 91.119 (c)**
  - **States:** *Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes: (c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.*

Paragon operations will normally be conducted at or below 200 feet AGL in accordance with the automatically issued "blanket" COA (as per the recently announced Section 333 exemption streamlining - https://www.faa.gov/news/updates/?newsId=82245) and in primarily Class G and E airspace. When operations require a higher ceiling and/or are

within Class C and D airspace, Paragon will submit a request and operate under an approved COA.

As UAS are inherently safer than traditional aircraft due to their small size, light weight, battery operation versus fuel and have no humans on-board; Paragon will not operate within 500 feet of any vehicles, persons or structures other than those part of the flight operation being conducted. In addition, objects and hazards identified and geo-located prior to flight operations will be utilized within the flight planning stages to ensure this objective is met.

- **14 C.F.R. § 91.121**
  - **States:** *Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating...*

UAS are equipped with Global Positioning System (GPS) which provide altitude and geo-location data to the operator versus utilizing an altimeter. Due to this fact, an exemption is required for this system to be utilized in flight. GPS are precise within a few feet vertically and therefore meet a safety level equal to if not higher than regulatory guidance.

As described in the limitations and conditions section of Paragon's petition for exemption; in the event the UAS loses GPS signal, automated landing will immediately commence. The flight plan is built in such a way that hazards are identified prior to launch and an immediate landing within the flight plan will ensure all hazards are avoided.

- **14 C.F.R. § 91.151(a)**
  - **States:** *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;*

This regulation is based on the capabilities of a traditional aircraft which have flight times of several hours or greater; therefore, with the majority of UAS, which have flight times of an hour or less, this regulation would effectively deny the ability of the UAS to operate.

Drawing from previously approved Exemptions the PIC is will not begin a flight unless (considering wind and forecast weather conditions) there is enough available power for the UAS to conduct the intended operation and to operate after that for at least 5 minutes

thereafter or with the reserve power recommended by the manufacturer if greater. The ability to quickly and safely land UAS in non-traditional environments ensures at least an equal level of safety.

- **14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(2) and 91.417(a) & (b)**
  - **91.405(a) States:** *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*
  - **91.407(a)(1) States:** *(a) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless—(1) It has been approved for return to service by a person authorized under § 43.7 of this chapter*
  - **91.409(a)(2) States:** *(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—(2) An inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter. No inspection performed under paragraph (b) of this section may be substituted for any inspection required by this paragraph unless it is performed by a person authorized to perform annual inspections and is entered as an ''annual'' inspection in the required maintenance records.*
  - **91.417(a) & (b) States:** *(a) Except for work performed in accordance with §§ 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: (paragraphs 1 (i – iii), 2 (i – vi)); (b) The owner or operator shall retain the following records for the periods prescribed: (paragraphs 1 – 3)*

Due to the fact the proposed UAS presently do not have airworthiness certificates, these regulations do not apply and therefore an exemption is required. Pre/Post flight and routine inspections and maintenance will be conducted in accordance with the manufacturer's guidance as stated in the user/maintenance manuals. Paragon will maintain logs of pre- and post-flight inspections. In the event maintenance is required, the PIC will verify the UAS is in an airworthy status prior to operational use.

All inspection and maintenance will be documented and maintained in-house. These actions will meet the intent of the regulation exemption is being requested and lead to the equivalent level of safety.