October 3, 2014

Simon Nielsen
CEO
Drone Fleet & Aerospace Management, Inc.
606 Venice Blvd, Suite E
Venice, CA 90291
(213) 379-0629
Simon.Nielsen@drone-fleet.com
www.drone-fleet.com

Mr. James Williams
Manager, Flight Standards Service
Unmanned Aircraft Systems Integration Office
Federal Aviation Administration
800 Independence Avenue, SW
Washington, DC 20591

U.S. Department of Transportation, Docket Operation
West Building Ground Floor, Room w12-140
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Request for exemption from multiple regulatory provisions to allow the use of small unmanned aerial systems on land controlled by clients of Drone Fleet & Aerospace Management (DFAM) to assist in the safe evaluation of infrastructure and operations for our clients.

Dear Mr. Williams:

Drone Fleet & Aerospace Management (DFAM) respectfully requests an exemption from several provisions of Title 14 of the Code of Federal Regulations (C.F.R.) to permit the use of small unmanned aerial systems (sUAS) to assist in the evaluation of infrastructure and operations for our clients. This request is motivated primarily by the desire to maximize safety in infrastructure and operations. While an exemption would not eliminate the current need for in-person visual inspection required by various federal regulatory departments, it would allow DFAM to broadly evaluate assets and operations with sUAS, resulting in a safer and more efficient infrastructure network. Accordingly, the grant of an exemption is consistent with Congress' intent, reflected in Section 333 of the FAA Modernization and Reform Act of 2012 (Modernization Act),[1] that safe systems be permitted in the national airspace prior to the issuance of final regulations governing general use of these systems.[2] A summary of this request suitable for publication in the Federal Register is provided as Appendix A.

Appendix B provides the manufacturers information regarding the design, aircraft performance, and fail-safe features. We have provided manufacturer information related to operating limitations, normal and emergency procedures, and maintenance and inspection procedures. As we add aircraft designs, we will update this appendix appropriately.

Appendix C provides the Drone Fleet & Aerospace Management Operations Manual for flights covered under this Exemption Request.

[1] P.L. 112-95, 126 Stat 11, February 14, 2012.
[2] Section 333(b) (2) specifically contemplates that the FAA may issue a certificate of waiver upon a finding that a type of UAS, as a result of its size, weight, speed, operational capacity, proximity to airports and populated areas, and operations within visual line of sight do not create a hazard to users of the NAS or the public or pose a threat to national security.

Background Information

DFAM is in the business of Consulting on, Building & Maintaining Mission Specific sUAS for our clients. DFAM Clients look to us for Safe Operations of sUAS. We have developed specific DFAM Safe UAV Operational Procedures. Increasingly, we have clients looking to operate sUAS for Infrastructure Safety & Maintenance Inspections.

Infrastructure Safety Inspection Operations:

- Utility Inspection
- Railroad Inspection
- Pipeline Inspection
- Oil-Field Inspection
- Petro/Chemical/Manufacturing Inspection
- Construction Site Inspection
- Agriculture Inspection

As part of this DFAM is requesting FAA Exemption for sUAS operations for safety, inspection and video capture usage.

Regulatory Basis for Exemption Request

In addition to the waiver authority provided in §333 of the Modernization Act, the FAA may grant an exemption under 49 U.S.C. §44701(f) if it has determined that such an exemption is in the public interest. The FAA has imposed a separate requirement in its procedural regulations, providing that the petitioner shall explain why granting the exemption would not adversely affect safety or how the exemption would provide at least an equivalent level of safety as compliance with the underlying regulation. In this case, approval of this exemption would advance the public interest by significantly enhancing the safety and efficiency of infrastructure operations and by providing the FAA with valuable user experience on sUAS in a context with appreciable economic and societal benefits. As described more fully below, the requested exemption would permit the operation of sUAS under tightly controlled conditions, thus ensuring that operations will not have an adverse impact on safety. To the contrary, as explained below, DFAM anticipates that use of sUAS will enhance safety in infrastructure operations. Granting an Exemption is in the Public Interest. The safety and efficiency of infrastructure operations is heavily dependent upon constant analysis of assets, right-of-way, infrastructure and other assets/facilities. There are a wide variety of factors that can affect conditions and cause problems for infrastructure. Even relatively small objects or minor failures can lead to accidents or other incidents causing downtime of infrastructure. Extreme weather events can lead to flooding or overheating infrastructure. For example earthquakes, landslides, and abandoned vehicles at grade crossings can block infrastructure. The potential for sabotage and terrorism – or even just trespassing – are also among the many risks that modern infrastructure faces.

As a result, pursuant to federal regulations and company policy, our client's maintenance employees routinely inspect the infrastructure, such as bridges, tunnels, support structures, and signals. At present, this work is done primarily by company personnel in

motor vehicles, on foot, in specialized equipment. This is often a labor-intensive and sometimes arduous job. While our clients do all they can to make these inspections as safe as possible, there is an irreducible element of risk involved whenever employees are required to go out on structures. Employees may need to climb over or onto structures, which can be slippery, rough, and/or exposed to the elements. Some structures, such as bridges, are high above the ground. Equipment moving through inspection zones can increase risk as well, especially in high-traffic areas. While the use of sUAS for supplemental infrastructure and general asset evaluation would not eliminate these risks entirely (as it is an additive safety measure), it would reduce the risks to employees by allowing for remote aerial review.

Additionally, the sheer amount of assets and the widely dispersed locations – in many instances far from sizeable population centers – means that visual inspection in all instances by company personnel can be inefficient. Aerial analysis by traditional fixed wing aircraft is impractical because the required altitudes for safe flight reduce visibility below meaningful levels – it is simply not possible to see all asset anomalies from such heights. Helicopters present better vantage points; however manned helicopters are much more costly, subject to human safety and carry highly explosive jet fuel making them impractical for deployment. By using sUAS for supplemental asset evaluation, DFAM will be able to substantially upgrade its capacity to detect and address issues with the right-of-way and other assets before they become a problem for safe operations. Thus, the use of sUAS has the potential to improve efficiency, resulting in faster and safer delivery of goods, energy & natural resources vital to the U.S. economy.

Granting an Exemption will not Adversely Affect Safety

DFAM notes that there is no applicable standard for an equivalency determination. Some have argued that the appropriate standard is that for model aircraft, noting that their operations, if conducted for recreational purposes, would fall completely within the allowable operations for model aircraft. We believe it is difficult to argue that there is sufficient correlation between model operations controlled by the Academy of Model Aeronautics and the ones contemplated by DFAM. At the same time, it is clear that equivalency cannot be established for traditional, manned civil aircraft because the design and use profiles between traditional aircraft and sUAS are simply too different. As such, we believe it makes more sense to focus on why the contemplated operations would not adversely affect safety, which is all that §11.81(e) requires.

Granting an exemption will not adversely affect safety. DFAM contemplates conducting sUAS operations over client owned or controlled land, solely during daylight hours, at altitudes well below that which would pose a risk to other aircraft. In general, sUAS operations are intended to be conducted in areas distant from both congested areas and airports. Moreover, because of the inherent risks presented by standard infrastructure operations, our clients have already taken steps to secure property against unauthorized public access. For example, substantial stretches of pipeline, utilities, railroad track and oil production sites are fenced, elevated, or otherwise secured to prevent access. Other long stretches of infrastructure are, as noted above, in very remote wilderness areas. The nature of operations anticipated by DFAM requires that the sUAS be flown at relatively low altitudes and relatively low speeds. DFAM expects that in most instances, the sUAS will be flown less than 75 feet from the highest structure along the path of the sUAS. Accordingly, the risk of interference with another aircraft is minimal. DFAM also plans to conduct sUAS operations at least three miles from any public airports (including heliports). In the event an operation needs to be conducted closer to an airport, DFAM will inform the airport operator and airport air traffic control tower of the contemplated operation and will comply with any directions issued by air traffic control at that airport.

Approval of exemptions allowing commercial operations of sUASs in the infrastructure aerial inspection industry will enhance safety by reducing risk. Conventional operations, using jet or piston power aircraft, operate at extremely low altitudes just feet from the subject being inspected and in extreme proximity to people and structures; and present the risks associated with vehicles that weigh in the neighborhood of 4,000lbs., carrying large amounts of jet A or other fuel (140 gallons for jet helicopters). Such aircraft must fly to and from the inspection site. In contrast, a sUAS weighing fewer than 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 sUAS is carried to the inspection site. The sUAS will carry no passengers or crew and, therefore, will not expose them to the risks associated with manned aircraft flights.

The operation of small UASs, weighing less than 55 lbs., conducted in the strict conditions outlined above, will provide an equivalent level of safety supporting the grant of the exemptions requested herein, including 333 Aircraft Exemption Status exempting the applicant from conventional aircraft requirements and allowing commercial

operations. These lightweight aircraft operate at slow speeds, close to the ground, and in a controlled environment and, as a result, are far safer than conventional operations conducted with turbine helicopters operating in close proximity to the ground and people.

The safety of those on the ground is protected by the fact that no one will be allowed into the area without the permission of the company. Security will be established for the flight area as part of the pre-flight control. Each individual within the secure area will be briefed prior to flight and will consent to being in the area. All others will be excluded from the area.

DFAM initially intends to use a dedicated staff for sUAS operations. All operations will be within visual line-of-sight (i.e., no more than approximately 0.5 miles from the manipulator of the controls, or pilot in command (PIC)). Each PIC will conduct at least three take-offs and landings with the sUAS on which he or she is trained every 90 days. PIC's will establish their qualifications thru a combination of aeronautical knowledge, UAS airmanship skills, and verification through testing of flight ability before infrastructures operations have commenced. Depending on the type of operation, additional ground-based visual observers may be employed as well. These observers will be within constant visual line of sight and in constant contact with the PIC. The visual observers will assist the PIC in avoiding objects near the sUAS.

There are no standards for either Private or Commercial sUAS pilot certificates. The safe operation and control of the UAS as described in this application does not depend on the type of FAA license held by the PIC. Given the restricted and controlled airspace within which operations will take place, the key factors needed by the PIC are knowledge of the airspace within which the operation will take place and how that airspace fits into the National Airspace System (NAS). That knowledge can be and is gained primarily through ground school and not through flight training in fixed wing or rotor aircraft, nor is it dependent on the acquisition of a commercial or private pilot's certificate. Those certificates demonstrate knowledge of the factors and skills needed for the safe operation of those types of aircraft (fixed wing or rotorcraft). It cannot be assumed that a commercial pilot, approved to operate a helicopter or fixed wing aircraft, has the skill or ability to safely operate a small unmanned aerial vehicle, operating at 400 AGL or lower, within strictly controlled pre-approved airspace. Besides knowledge of airspace regulations, dexterity in the control and operation of the sUAS acquired from actual operation of the aircraft is the most important factor in establishing an equivalent level of safety.

If the PIC has acquired the necessary knowledge of airspace requirements, the relevant issues are (1) where the aircraft will be flown, (2) the size of the aircraft relative to what is being used today to accomplish the same mission, and (3) what precautions will be taken to ensure the safety of those in the area of operation. We propose that the PIC has at least an FAA Private Pilots Certificate and a Class III medical; the aircraft be operated within a secure environment; and that no one be allowed to enter the secure environment unless they are part of the operation, have been fully briefed of the risks prior to operation of the sUAS, and have consented to the risks associated with being in the

operating area. Should there be a mishap, the sUAS being flown pose significantly less of a threat than the helicopters and fixed wing aircraft now being employed because they are a fraction of the size, carry no flammable fuel, do not carry crew or passengers, and pose an infinitesimal risk to others. This is in stark contrast to conventional aircraft that are flown to the site, carry explosive fuel, carry passengers and crew, and operate in a much larger area.

From a practical standpoint, there are relatively few licensed full-scale aircraft pilots who are also qualified to fly the type of sUAS that are utilized for infrastructure image-capture operations. There are even fewer commercial pilots that can fly these sUAS – to the point that to do both is considered rare. Assuming that it is unlikely for a company to find a pilot that has both qualifications, that company would either have to source a qualified sUAS pilot to train and obtain a commercial certificate, or find a commercial certificated pilot who would be willing to learn to fly a sUAS to the competency level required for professional use.

Minimum requirements for the PIC include:

1) Private Pilot's license and a Class III medical;
2) A minimum of 200 flight cycles and 25 hours of total time as a sUAS rotorcraft pilot and at least 10 hours logged as a sUAS pilot with a similar sUAS type (single blade or multirotor);
3) A minimum of 5 hours as sUAS pilot with the make and model of sUAS to be utilized for operations under the exemption and 3 take offs and landings in the preceding 90 days;
4) Have undergone a qualification process as specified in the Flight Operations & Procedures Manual consisting of a knowledge & skill test of the aircraft to be used.

Another consideration supporting the certificate requirement is that pilots holding a private pilot certificate are subject to security screening by the Department of Homeland Security. This requirement should ameliorate security concerns over UAS operations under this exemption.

DFAM intends to use commercially available sUAS Components for sUAS. These sUAS systems will be tested for quality & safety in our test facility before being deployed to the field. The sUAS is less than 55 lbs. fully loaded, carries neither a pilot nor passenger, and operates exclusively within a secured area. We have a routine maintenance schedule to verify that the sUAS will remain in safe and operational condition. Please see **Appendix B**, for Specific Types of sUAS.

Notes Regarding: 14 C.F.R. Part 21, Subpart H

In accordance with the statutory criteria provided in Section 333 of PL 112-95 in reference to 49 USC 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, we request that this aircraft exemption meets the conditions of Section 333. Therefore, if granted Section 333 relief of 14 CFR part 21, and any associated noise certification and testing requirements of part 36, is not necessary.

Notes Regarding: 14 C.F.R. § 45.23 (b). Marking of the Aircraft
Given the size of the sUAV, two-inch lettering will be impossible. UA will 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 will be as large as practicable.

Notes Regarding: 14 CFR § 91.7(a) Civil Aircraft Airworthiness
DFAM's request is based on the fact that no airworthiness certificate will be issued for the UAS. DFAM's UAS will not require an airworthiness certificate in accordance with 14 CFR part 21, Subpart H. Based on the fact that an airworthiness certificate will not be issued, exemption from § 91.7(a) is not necessary.

Notes Regarding: 14 CFR § 91.9(b)(2) Civil aircraft flight manual, marking & placard
Certifications required, the original intent of these regulations was to display an aircraft's airworthiness, certification, and registration documents so they would be easily available to inspectors and passengers. Based on the FAA Memorandum subject "Interpretation regarding whether certain required documents may be kept at an unmanned aircraft's control station," dated August 8, 2014, the requested relief from 14 CFR §§ 91.9(b)(2) and 91.203(a) and (b) is not necessary.

Notes Regarding: §91.109 Flight instruction; Simulated instrument & certain flight tests
Small UASs, by their design, do not have fully functional dual controls. Flight control is accomplished through the use of a control box that communicates with the aircraft via radio communications. Aircraft being considered for use by DFAM allow the UAS Instructor to place the aircraft into 'loiter' mode (fixed altitude stationary hold). In the event of the student losing control, the UAS Instructor can quickly and via alternate equipment (equipment not in the hands of the student) place the aircraft into a mode that then allows the instructor to bring the aircraft back into control and back to the pre-determined and/or safe landing location.
DFAM does not describe training scenarios in which a dual set of controls would be utilized or required, i.e. dual flight instruction, provided by a flight instructor or other company-designated individual, that would require that individual to have fully functioning dual controls. Rather, DFAM evaluates the qualification of its PICs based on their experience with the UAS to be operated and verifies through testing, in lieu of formalized training. As such, DFAM does not seek relief from 14 CFR § 91.109.

Notes Regarding § 14 CFR 91.119(b)
Relief from § 14 CFR 91.119(b), operation over congested areas, is not applicable, because the DFAM's operations will only be conducted within the secured area described herein.

DFAM Safety Operations & Procedures Overview:

Technology Considerations:

Best-in-class, tried and proven technologies that are in advanced iterations. Software from highly-reputable industry partners will include features -

1. Auto descent (landing) if communication signal were to be severed. If the sUAS loses communications, the sUAS will have capability to return to a pre-determined location within the Security Perimeter and land.
2. Auto descent (landing) if battery were to drop lower than nominal level.
3. Flights will be terminated at 25% battery power reserve.
4. Live video for operator gives real-time positioning feedback. In other words, we can monitor the scene from the vehicle's perspective for collision avoidance, and to maintain spatial orientation.
5. The sUAS will have the capability to abort a flight in case of unpredicted obstacles or emergencies.
6. On-Screen-Display (OSD) contains operating information to ascertain vehicle health at all times: speed, altitude, number of GPS satellites (when available), heading and voltage.
7. GPS lock supplies for return-to-home (RTH). Should Command and Control (C2) link failures occur (highly improbable), vehicle returns automatically to the point of launch.
8. Altitude information will be provided to the sUAS pilot via a digitally encoded telemetric data feed, which downlinks from the aircraft to a ground-based on-screen display. This altitude information will be generated by equipment installed on board the aircraft, using GPS triangulation, or digitally encoded barometric altimeter, or radio altimeter, or any combination thereof. Prior to each flight, a zero altitude initiation point will be established and confirmed for accuracy by the pilot.

Mechanical/Physical:

1. We will fly line-of-sight (LOS) only. The vehicle will always remain in direct LOS to the pilot, thus eliminating the concern of signal severance (flying behind objects/walls).
2. The sUAS will weigh less than 55 lbs and travel at less than 50 knots.
3. Batteries should far exceed the capacity required for actual flight time.
4. Flights will be operated at an altitude of no more than 400 feet AGL.
5. Fireproof bags for storage and charging of high capacity Lipo batteries on-site.
6. UA operated under this exemption will be marked in accordance with 14 CFR part 45 or as otherwise authorized by the FAA.

Personnel:

1. Spotters ensure safe operation and act as a redundant set of eyes for operators (pilot, gimbal op, director)
2. Radio spectrum analysis for interference on the frequencies utilized for vehicle control/communication.
3. A briefing will be conducted in regard to the planned sUAS operations prior to each day's activities. It will be mandatory that all personnel who will be performing duties within the boundaries of the safety perimeter be present for this briefing.
4. The operator will obtain the consent of all persons involved in the sUAS operations

and ensure that only consenting persons will be allowed within 100 feet of the flight operations.
5. Observer and pilot will at all times be able to communicate by voice.
6. Written and/or oral permission from the relevant property holders will be obtained.
7. Pilot and observer will have been trained in operation of UAS generally and received up-to-date information on the particular UAS to be operated.

Operations:

1. The unmanned aircraft (UA) must weigh less than 55 pounds (25 Kg), including energy source(s) and equipment. Operations authorized by this petition of exemption are limited to the following aircraft described in Appendix B. Proposed operations of any other aircraft will require a new petition or a petition amendment to this request.

2. The UA may not be flown at a ground speed exceeding 50 knots.

3. Flights must be operated at an altitude of no more than 400 feet above ground level (AGL), as indicated by the procedures specified in the operator's manual. All altitudes reported to ATC must be in feet AGL.

4. 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 medical certificate.

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

6. The operator's manual included as Appendix C and this petition of exemption must be maintained 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 operator's manual, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operator's manual.

The operator may update or revise its operator's manual. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator upon request. The operator must also present updated and revised documents if it petitions for extension or amendment. If the operator determines that any update or revision would affect the basis for which the FAA grants this petition for exemption, then the operator must petition for amendment to their exemption. The FAA's UAS Integration Office (AFS-80) may be contacted if questions arise regarding updates or revisions to the operator's manual.

7. Prior to each flight the PIC must inspect the UAS to ensure it is in a condition

for safe flight. 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. The Ground Control Station, if utilized, must be included in the preflight inspection. All maintenance and alterations must be properly documented in the aircraft records.

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 in accordance with the operator's manual. The PIC who conducts the functional test flight must make an entry in the UAS aircraft records of the flight. The requirements and procedures for a functional test flight and aircraft record entry must be added to the operator's manual.

9. The operator must follow the manufacturer's UAS aircraft/component, maintenance, overhaul, replacement, inspection, and life limit requirements. When unavailable, aircraft maintenance/component/overhaul, replacement, and inspection/maintenance requirements must be established and identified in the operator's manual. At a minimum, requirements for the following must be included in the operator's manual:

a. Actuators / Servos;
b. Transmission (single rotor);
c. Powerplant (motors);
d. Propellers;
e. Electronic speed controller;
f. Batteries;
g. Mechanical dynamic components (single rotor);
h. Remote command and control;
i. Ground control station (if used); and
j. Any other components as determined by the operator;

10. The Pilot In Command (PIC) must possess at least a private pilot certificate and at least a current third-class medical certificate. 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.

11. Prior to operations conducted for the purpose of infrastructure inspections, the PIC must have accumulated and logged, in a manner consistent with 14 CFR § 61.51(b), a minimum of 200 flight cycles and 25 hours of total time as a UAS rotorcraft pilot and at least 10 hours logged as a UAS pilot with a similar UAS type (single blade or multirotor). Prior documented flight experience that was obtained in compliance with applicable regulations may satisfy this requirement. Training, proficiency, and experience-building flights can also be conducted under this petition of exemption to accomplish the required flight cycles and flight time. 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.

12. Prior to operations conducted for the purpose of infrastructure inspection, the PIC must have accumulated and logged, in a manner consistent with 14 CFR § 61.51(b), a minimum of five hours as UAS pilot operating the make and model of UAS to be utilized for operations under the exemption and three take-offs and three landings in the preceding 90 days. Training, proficiency, experience-building, and take-off and landing currency flights can be conducted under this petition of exemption to accomplish the required flight time and 90 day currency. During training, proficiency, experience-building, and take-off and landing currency 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.

13. Prior to any flight operations authorized by this petition of exemption, the PIC and VO must have successfully completed a qualification process, as outlined in the operator's manual. As this is a requirement stipulated by the operator, the test must be developed and implemented by a qualified person designated at the sole discretion of the operator. A record of completion of this qualification process must be documented and made available to the Administrator upon request.

14. Prior to operations conducted for the purpose of infrastructure inspection, a flight demonstration, administered by an operator-approved and -qualified pilot must be successfully completed and documented. This documentation must be available for review upon request by the Administrator. Because the knowledge and airmanship test qualifications have been developed by the operator, and there are no established practical test standards that support a jurisdictional FAA FSDO evaluation and approval of company designated examiners, the petitioner will conduct these tests in accordance with the operator's manual.

15. The UA may not be operated directly over any person, except authorized and consenting personnel, below an altitude that is hazardous to persons or property on the surface in the event of a UAS failure or emergency.

16. Regarding the distance from participating persons, the operator's manual has safety mitigations for authorized and consenting personnel. At all times, those persons must be essential to the operations.

17. Regarding distance from nonparticipating persons, the operator must ensure that no persons are allowed within 500 feet of the area except those consenting to be involved and necessary for the infrastructure inspection operations. This provision may be reduced to no less than 200 feet if it would not adversely affect safety and the Administrator has approved it. For example, an equivalent level of safety may be determined by an aviation safety inspector's evaluation of the infrastructure inspection area to note terrain features, obstructions, buildings, safety barriers, etc. Such barriers may protect nonparticipating persons (observers, the public, news media, etc.) from debris in the event of an accident.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the security perimeter and land or be recovered in accordance with the operator's manual.

19. The UAS must abort the flight in the event of unpredicted obstacles or emergencies in accordance with the operator's manual.

20. Each UAS operation must be completed with 25% battery power remaining.

21. The operator must obtain an Air Traffic Organization (ATO) issued Certificate of Waiver or Authorization (COA) prior to conducting any operations under this petition of exemption. This COA will also require the operator to request a Notice to Airman (NOTAM) not more than 72 hours in advance, but not less than 48 hours prior to the operation.

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. The operator must develop procedures to document and maintain a record of the UAS maintenance, preventative maintenance, alterations, status of replacement/overhaul component parts, and the total time in service of the UAS. These procedures must be added to the operator's manual.

24. Each UAS operated under this exemption must comply with all manufacturer Safety Bulletins.

25. The operator must develop UAS technician qualification criteria. These criteria must be added to the operator's manual.

26. The preflight inspection section in the operator's manual must be amended to include the following requirement: The preflight inspection must account for all discrepancies, i.e. inoperable components, items, or equipment, not covered in the relevant preflight inspection sections of the operator's manual.

27. Before conducting operations, the radio frequency spectrum used for operation and control of the UA must comply with the Federal Communications Commission (FCC) or other appropriate government oversight agency requirements.

28. At least three days before scheduled infrastructure inspection, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local FSDO with jurisdiction over the area of proposed infrastructure inspection. 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 infrastructure

inspection operations conducted under this petition 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 infrastructure inspection event;
f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the infrastructure inspection 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 infrastructure inspection will be conducted and the altitudes essential to accomplish the operation.

29. The 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.

30. The UA must remain clear and yield the right of way to all other manned operations and activities at all times (including, but not limited to, ultralight vehicles, parachute activities, parasailing activities, hang gliders, etc.).

31. 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.

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

33. 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.

34. The UA may not operate in Class B, C, or D airspace without written approval from the FAA. The UA may not operate within 5 nautical miles of the geographic center of a non-towered airport as denoted on a current FAA-published aeronautical chart unless a letter of agreement with that airport's management is obtained, and the operation is conducted in accordance with a NOTAM as required by the operator's COA. The letter of agreement with the airport management must be made available to the Administrator upon request.

35. 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. Further flight operations may not be conducted until the incident, accident, or transgression is reviewed by AFS-80 and authorization to resume operations is provided.

Support for Petition for Exemption

In accordance with the procedural requirements of 14 C.F.R. §11.81, DFAM provides the following information:

Contact Information:

Simon Nielsen
CEO
Drone Fleet & Aerospace Management, Inc.
606 Venice Blvd, Suite E
Venice, CA 90291
(213) 379-0629
Simon.Nielsen@drone-fleet.com
info@drone-fleet.com

Regulatory Provisions from which DFAM seeks an Exemption

DFAM believes it may need an exemption from the following provisions to conduct the contemplated operations. In some instances, relief is needed because relief from another provision renders compliance with the regulation at hand infeasible.

333 Aircraft Exemption Status
14 C.F.R. §61.113(a) and (b)
14 C.F.R. §91.119(c)
14 C.F.R. §91.121
14 C.F.R. §91.151
14 C.F.R. §91.405(a)
14 C.F.R. §91.407(a)
14 C.F.R. §91.409(a)(1)&(2)
14 C.F.R. §91.417(a)&(b)

DFAM believes an exemption is only needed from the above-listed regulatory provisions. To the extent that the FAA believes that additional relief is required for DFAM to conduct the operations described here, we request an exemption from any such regulatory provisions as well.[3]

3 For example, 14 C.F.R. §91.417(a) imposes certain maintenance record keeping requirements "as applicable". Since none of the underlying requirements (e.g., inspection intervals) can be met and will require an exemption, DFAM believes a separate exemption should not be required for §91.417(a).

The Extent of Requested Relief and the Reasons Relief is Needed

Section 333 Aircraft Exemption Status:

Section 333 of the Modernization Act authorizes the FAA to exempt aircraft from the requirement for an airworthiness certificate based on a consideration of the size, weight, speed, operational capability of the particular UAS, as well as its proximity to airports and populated areas. An analysis of these criteria demonstrates that the sUAS operated without an airworthiness certificate in the areas and under the conditions contemplated by DFAM will be at least as safe, or safer, than a conventional aircraft (fixed wing or rotorcraft) operating with an airworthiness certificate without the conditions proposed in this request.

The sUAS is less than 55 lbs. fully loaded, carries neither a pilot nor passenger, and operates exclusively within a secured area. Unlike other civil aircraft, operations under this exemption will be tightly controlled and monitored by the operator and observer. Operations will be conducted in compliance with the FAA and with local public safety requirements to provide security for the area of operation as is now done with conventional equipment, infrastructure, bridge and out building evaluation. These safety enhancements provide an expanded degree of safety to the inspectors over conventional operations. Lastly, application of these same criteria demonstrates that there is no credible threat to national security posed by the sUAS, due to its size, speed of operation, location of operation, lack of explosive materials and inability to carry a substantial external load.

Given the size and limited operating area associated with the aircraft to be utilized by the Applicant, this 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. In all cases, an analysis of these criteria demonstrates that the UAS 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 aircraft (fixed wing or rotorcraft) operating with an airworthiness certificate without the restrictions and conditions proposed.

14 C.F.R. §61.113(a) and (b)

> **§61.113 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.
> *****

DFAM anticipates initially using a cadre of specially trained staff to conduct the sUAS operations. While these individuals will not hold commercial pilot licenses. The sUAS will not carry property for compensation or hire since they will be used solely to assist in evaluation of the infrastructure, equipment, right-of-way, assets, bridges, tunnels and out-buildings in furtherance of DFAM's client's primary business, the successful operation of a infrastructure; however, the employees' operation of the sUAS will not be incidental to their employment with DFAM, and they will be compensated for such work. Without an exemption, the pilot would be required to hold a commercial pilot certificate under §61.133. However, the risk associated with the contemplated operations is less than the risk posed by a traditional aircraft. The sUAS will fly at altitudes well below the permissible limits for other civil aircraft, eliminating the risk to other aircraft, and within a geographical envelope under the sole control of DFAM clients. Accordingly, the risk would be limited to DFAM personnel, who will be appropriately outfitted in safety gear, and DFAM client's property on the ground. Requiring a commercial pilot certificate would provide no appreciable safety benefit and would needlessly impose additional cost on DFAM. Because the contemplated operations would not comply with §61.113(b)(1) and none of the other exceptions to paragraph (a) apply, relief is needed from both paragraphs (a) and (b).

14 C.F.R. 91.119(c)

§91.119 Minimum safe altitudes: General.

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.

*****

DFAM submits that the only relief it requires from §91.119 is from the minimum altitudes listed in paragraph (c). Relief is required from paragraph (c) for fixed wing operations because asset evaluation conducted at 500 feet or higher is insufficiently distinct to be meaningful. Since operations at this altitude also pose a heightened risk of collision with another aircraft, safety can only be assured through the grant of an exemption. The anticipated rotorcraft operations should be adequately addressed by paragraph (d) (1). Additionally, relief should not be needed from paragraph (a) because an emergency landing of the aircraft due to a power failure will not create an undue hazard to persons or property on the surface. As noted in the explanation of why an exemption will not adversely affect safety, DFAM clients has exclusive use of the land over which the sUAS will be operated, and public access is restricted. It also has exclusive use of significant portions of land adjacent to the infrastructure and structures that will be the objects of evaluation and analysis. DFAM's Clients tightly control access to land and have the ability to assure that no individuals unassociated with the planned operations are on the affected land. As such, the risk of injury is minimal. DFAM does not contemplate conducting operations over congested areas, so relief is not requested from paragraph (b).

14 C.F.R. 91.121

14 C.F.R. §91.121 Altimeter Settings

This regulation requires each person operating an aircraft to maintain cruising altitude by reference to an altimeter that is set "…to the elevation of the departure airport or an appropriate altimeter setting available before departure."

*****

As the sUAS may not have a barometric altimeter, but instead a GPS altitude read out, an exemption may be needed. An equivalent level of safety will be achieved by the operator, pursuant to the Manual and Safety Check list, confirming the altitude of the launch site shown on the GPS altitude indicator before flight.

Altitude information will be provided to the sUAS pilot via a digitally encoded telemetric data feed, which downlinks from the aircraft to a ground-based on-screen display. This altitude information will be generated by equipment installed on board the aircraft, using GPS triangulation, or digitally encoded barometric altimeter, or radio altimeter, or any combination thereof. Prior to each flight, a zero altitude initiation point will be established and confirmed for accuracy by the pilot.

14 C.F.R. 91.151

§91.151 Fuel requirements for flight in VFR conditions.

(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.

(b) No person may begin a flight in a rotorcraft under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 20 minutes.

*****

Operating the sUAS in a pre-defined area with less than 30 minutes of reserve fuel does not raise the type of risk contemplated by §91.151, i.e., that an aircraft could run out of fuel in the event it has to be flown to an alternate airport or circle the planned airport in the event of unanticipated conditions. DFAM does not intend to use the sUAS for point-to-point flights and will not operate the sUAS beyond visual line of sight. Nor will the sUAS require an airport in order to land. Rather, DFAM will operate the sUAS using pre-planned flight paths (taking into account weather conditions) designed to allow the sUAS to fly to the point of intended landing. As such, there is no need for a time-based excess fuel requirement. Rather it should be sufficient to require only as much additional excess flight capacity as necessary to safely land the sUAS. We believe that a 25% battery reserve is more than sufficient to meet this objective.

14 C.F.R. 91.405(a), 91.407(a) (1), 14 C.F.R. 91.409(a) (1)&(2) and 14 C.F.R. 91.417(a) & (b)

§91.405 Maintenance required.

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

(a) No person may operate any aircraft that has undergone 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 Inspections.

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

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

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

*****

§91.417 (a) & (b)

*****

DFAM believes that an exemption from these three maintenance requirements is appropriate because the FAA has not developed maintenance standards that would allow an operator to meet the part 91 maintenance requirements. In particular, there are no individuals authorized by the FAA to approve a sUAS for return to service under §91.407(a) or to conduct the initial airworthiness and annual return to service inspections required by §91.409(a). DFAM will maintain the aircraft as instructed in the owner's manual and ASTM F2909, where applicable, and will not operate the aircraft until it has reasonably determined that any needed repairs have been made. However, because of the technical impossibility of meeting the requirements of §§91.405(a), 407(a), 409(a) and 417(a)&(b), we believe an exemption from these provisions is appropriate.

Please do not hesitate to contact me at the phone number or via the e-mail address provided above should you have any questions or concerns.

Respectfully submitted,

Simon Nielsen
CEO, Drone Fleet & Aerospace Management, Inc.

Appendix A
Summary for Federal Register Publication

Pursuant to 14 C.F.R. Part 11, the following summary is provided for publication in the Federal Register should the FAA determine that publication is needed.

Petitioner: Drone Fleet & Aerospace Management, Inc. (DFAM)

Sections of 14 C.F.R. Affected:
333 Aircraft Exemption Status
14 C.F.R. §61.113(a) and (b)
14 C.F.R. §91.119(c)
14 C.F.R. §91.121
14 C.F.R. §91.151
14 C.F.R. §91.405(a)
14 C.F.R. §91.407(a)
14 C.F.R. §91.409(a)
14 C.F.R. §91.417(a)&(b)

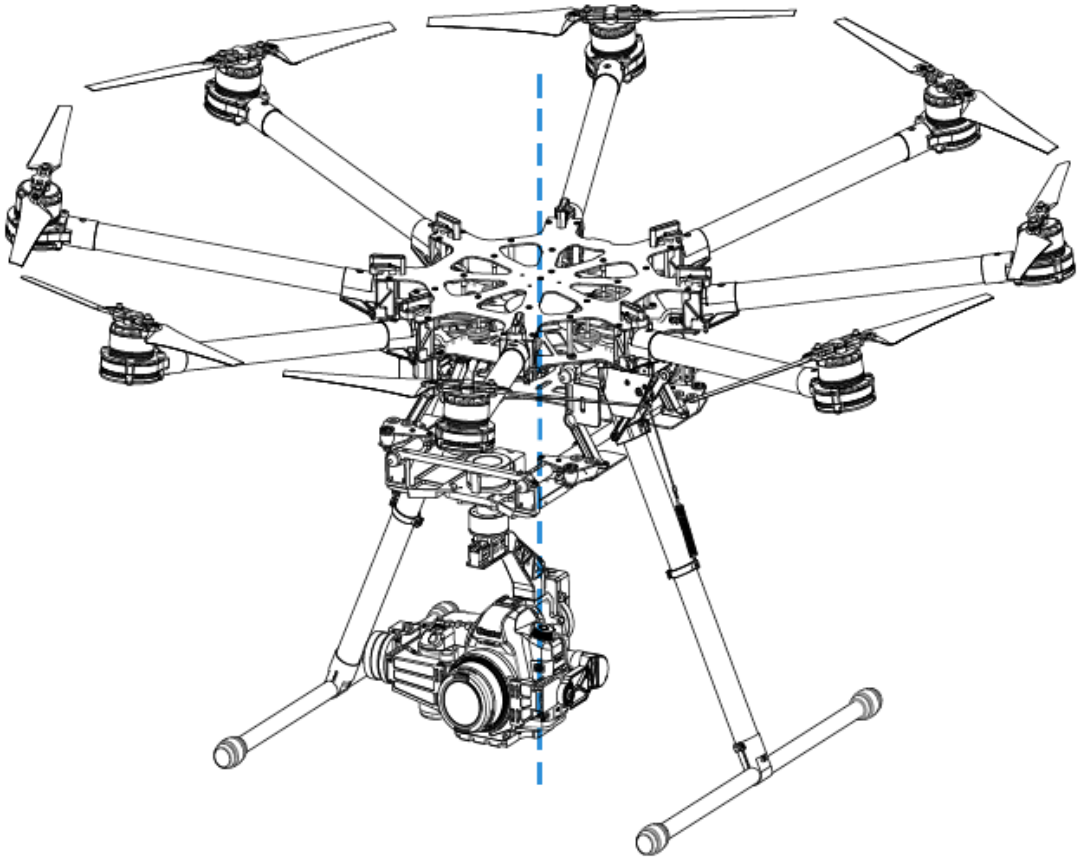
Description of Relief Sought:

Petitioner seeks relief from the requirements of 333 Aircraft Exemption Status, 14 C.F.R., 61.113(a)&(b)), 91.119(c), 91.121, 91.151, 91.405(a), 91.407(a), 91.409(a), and 91.417(a)&(b) to conduct sUAS operations over DFAM Client's owned or controlled land, solely during daylight hours, to assist in the safe evaluation and analysis of infrastructure and operations. In general, sUAS operations are intended to be conducted in areas remote from both congested areas and airports. The nature of operations anticipated by DFAM requires that the sUAS be flown at relatively low altitudes. DFAM expects that in most instances, the sUAS will be flown less than 75 feet from the highest structure along the path of the sUAS and in no instances will be flown higher than 400 feet above the ground. Accordingly, the risk of interference with other aircraft is minimal.

Appendix B

Specific type(s), make, and model

#1 - DJI S1000



See Attached Flight Manuals:

DJI S1000 User Manual V1.08
DJI A2_ Flight Control System Manual_v1.18
3D Robotics PixHawk Flight Manual Rev6 (Alternative Controller)

#2 - DJI Phantom 2

See Attached Flight Manuals:

DJI Phantom 2 User Manual

NAZA-M_Flight Control System_v1.26

#3 – Drone-Fleet Carbon Fiber V5 – Proprietary sUAS Aircraft Variant, Serial #001 onward herein referred to as CF5

The CF5 is a Carbon Fiber sUAS as designed by Drone Fleet. It utilizes Commercial Off the Shelf sUAS Components and has electronic flight controls from DJI & 3D Robotics for Flight Control Systems.

DFAM offers a very unique FPV CF5 Drone. This CF5 is based on Carbon Fiber & 3D Printed Composite Body Technologies. It offers many unique performance enhancement features and includes 3D Robotics 3DR PixHawk Flight Controller or DJI NAZA Flight Controller.

See Attached Flight Manuals:

- ***CF5 Flight Modes - Operations & Conditions***
- ***CF5 - Pixhawk Flight Safety Checklist***
- ***3D Robotics PixHawk Flight Manual Rev6***
- ***NAZA-M_Flight Control System_v1.26***

Appendix C

Please see the attached Confidential & Proprietary:
Drone Fleet & Aerospace Management, Inc.
Flight Operation & Procedures Manual (FOPM)