Albany
Atlanta
Brussels
Denver
Los Angeles
Miami
New York

McKenna Long & Aldridge LLP
1676 International Drive • Penthouse
McLean, VA 22102
Tel: 703.336.8800
mckennalong.com

Northern Virginia
Orange County
Rancho Santa Fe
San Diego
San Francisco
Seoul
Washington, DC

MARK A. DOMBROFF
703.336.8700

EMAIL ADDRESS
mdombroff@mckennalong.com

August 13, 2014

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

Re: Petition of Total Safety U.S., Inc. for Exemption Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012

Dear Gentlemen:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 ("Reform Act") and 14 C.F.R. Part 11, Total Safety U.S., Inc. ("Total Safety"), hereby applies for an exemption from Federal Aviation Regulations ("FARs") identified below, to allow commercial operations of small unmanned aerial vehicles (*i.e.*, "small unmanned aircraft " or "sUAS").

This exemption is in accordance with protocols outlined in this petition for exemption, the enclosed Total Safety Global Integrated Industrial Safety Services UAS Operations Manual ("Manual")[1], the UAS manufacturer's operations and/or instructions manual ("Aircraft Operations Manual") and any other requirements established by the FAA pursuant to Section 333 of the Reform Act.

[1] Petitionor submits the Manual as a Confidential document under 14 C.F.R. § 11.35(b), as the entire Manual contains confidential commercial and proprietary information that the Petitioner has not and will not share with others. The Manual contains operating conditions and procedures that are not available to the public and are protected from release under the Freedom of Information Act, 5 U.S.C. § 552 *et seq.*

For your convenience, the petition is organized as follows:

VII. Privacy

VIII. Federal Registry Summary

IX. Conclusion

I. Petitioner's Description

Total Safety, headquartered in Houston, Texas, is a global provider of integrated industrial safety services, strategies and equipment necessary to keep workers, facilities and the environment safe. Total Safety provides the oil, natural gas, petro-chemical and pipeline industries with practical and reliable flare ignition systems, as well as portable and permanent flare stacks. Total Safety provides a wide range of flare stack inspection and maintenance services.

Total Safety has been providing industrial safety services for over 20 years. The company currently has over 134 locations world-wide. Total Safety's goal is to secure an accident-free environment through:

- Demonstrated commitment by management, strong leadership and coaching by field supervisors, and the personal and emotional involvement of the entire workforce.
- Intense focus on hazard identification, elimination and control; early intervention and feedback about unhealthy and unsafe work practices and positive reinforcement of safe work practices.
- The integration of safety into engineering, fabrication and construction, as well as the protection of people and the environment "by design."

Total Safety maintains Health, Safety, and Environment (HSE) as a core value and provides support on HSE matters as they relate to our business activities. Total Safety's vision is to create an incident-free environment and to conduct business with no adverse environmental impact. By integrating HSE into all of its business activities, Total Safety demonstrates industry leadership in HSE performance.

The contact information for Petitioner is as follows:

Total Safety U.S., Inc.
Attn: Royce Goddard
11111 Wilcrest Green Drive, Suite 300, Houston, TX 77042
Phone: (713) 353-7100
Fax: (713) 785-1475

II. Relevant Statutory Authority

This petition for exemption is submitted to fulfill Congress' goal in passing Section 333(a) through (c) of the Reform Act. Congress has directed the FAA "to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system." Pursuant to Section 333 of the Reform Act, the FAA Administrator is to consider whether certain unmanned aircraft systems may operate safely in the National Airspace ("NAS") before completion of the formal UAS rulemaking, based on the following considerations:

- The UAS's size, weight, speed, and operational capability;
- Operation of the UAS in close proximity to airports and populated areas; and
- Operation of the UAS within the visual line of sight of the operator.[2]

If the Secretary determines that such vehicles "may operate safely in the National Airspace System, the Secretary **shall establish requirements** for the safe operation of such aircraft in the National Airspace System" (emphasis added).[3]

Additionally, the FAA Administrator has general authority to grant exemptions from its safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest. *See* 49 U.S.C. § 44701(f) (permitting exemptions from §§ 44701(a), (b) and §§ 44702 – 44716, *et seq*.). A party requesting an exemption must explain the reasons why the exemption: (1) would benefit the public as a whole, and (2) would not adversely affect safety (or how it would provide a level of safety at least equal to the existing rules). *See* 14 C.F.R. § 11.81 (petitions for exemption).

[2] *Id.* at § 333(b)(1).

[3] *Id.* at § 333(c).

III. Qualifications for Approval Under Section 333 of the Reform Act

The proposed operations in this petition for exemption qualify for expedited approval under Section 333 of the Reform Act. Each of the statutory criteria and other relevant factors are satisfied.

The proposed operations would permit the use of small and relatively inexpensive UAS under controlled conditions in airspace that is: (1) limited; (2) predetermined; (3) controlled as to access; and that (4) provides an increased level of safety beyond that existing when fixed or rotor wing aircraft are used to accomplish the same purpose.

Petitioner's sUAS are rotorcraft, weighing 25 or fewer pounds including payload. They operate, under normal conditions, at low speed and have the capability to hover, and move in the vertical and horizontal plane. Petitioner's sUASs will operate in line of sight and will only operate within a sterile area described in the enclosed Manual.[4]

Given the small size of the sUASs involved and the restricted sterile environment within which they will operate, this petition exemption falls within the zone of safety *i.e.*, an equivalent level of safety, in which Congress desired the FAA to permit commercial UAS operations by exemption pending completion of formal rulemaking. Also, due to the size of the sUASs and the restricted area in which the sUASs will operate, approval of the application presents no national security issue.

Considering the clear direction in Section 333 of the Reform Act, the authority contained in the Federal Aviation Act, as amended, the equivalent level of safety surrounding the proposed operations, and the significant public benefit, the grant of the requested exemptions is also in the public interest.

Accordingly, Petition respectfully requests the FAA grant the requested exemption without delay.

IV. Description of Proposed Operations

The enclosed Manual describes, in detail, the policies and procedures for Petitioner's proposed sUAS operations. To assist the FAA in its safety assessment of Petitioner's proposed sUAS operations, below is a summary of operational limitations and conditions which will ensure an equivalent or higher level of safety to operations conducted under current regulatory guidelines:

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[4] *See* Manual Sections 6 and 7.

1. The sUAS will weigh less than 25 pounds.

2. Flights will be operated within line of sight of a pilot and/or observer.

3. Maximum total flight time for each operational flight will be limited to the amount of time the sUAS can be flown and still maintain a reserve battery power of no less than 25%.

4. Flights will be operated at an altitude of no more than 400 feet above ground level ("AGL").

5. Flights will be operated at a lateral distance of least 100 feet from any inhabited structures, buildings, vehicles, vessels, or people not associated with the operation or who have not signed a waiver in advance of the operation.

6. Minimum crew for each operation will consist of the sUAS Pilot, a Visual Observer, and a Sensor Operator.

7. The sUAS Pilot will be an FAA licensed airman with at least a private pilot's certificate and second class medical certificate.

8. The sUAS Pilot will be Pilot in Command ("PIC"). If a pilot certificate holder other than the sUAS Pilot, who possesses the necessary PIC qualifications, is also present, that person can be designated as PIC.

9. The sUAS will operate only within a confined "Sterile Area" as defined in the Manual.[5]

10. Prior to the operation, a project packet will be created which includes all safety and operational information necessary to safely carry out the flight.

11. A briefing will be conducted in regard to the planned sUAS operations prior to each day's missions. It will be mandatory that all personnel who will be performing duties within the boundaries of the safety perimeter be present for this briefing.

[5] *See* Manual Section 7.

12. Pilot, Visual Observer and Sensor Operator will at all times be able to communicate by voice and/or text.

13. Pilot, Visual Observer and Sensor Operator will have been trained in operations of UAS generally and received up-to-date information on the particular UAS to be operated as required in the Manual.

14. Written and/or oral permission from the relevant property holders will be obtained.

15. All required permissions and permits will be obtained from territorial, state, county or city jurisdictions, including local law enforcement, fire or other appropriate governmental agencies.

16. The operator will file a FAA Form 7711-1, or its equivalent, as modified in light of the requested exemption, with the appropriate Flight Standards District Office ("FSDO").

17. If the sUAS loses communications or loses its GPS signal, the sUAS will have the capability to return to a pre-determined location within the Sterile Area and land.

18. Contingency plans will be in place to safely terminate flight if there is a loss of communication between the pilot and the observer.

19. The sUAS will have the capability to abort a flight in case of unpredicted obstacles or emergencies.

V. Regulations From Which Exemption is Requested

The Federal Aviation Act expressly grants the FAA the authority to issue exemptions. This statutory authority, by its terms, includes exempting civil aircraft, as the term is defined under § 40101 of the Act, including sUASs, from its safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest.[6]

Petitioner seeks an exemption from several interrelated provisions of 14 C.F.R. Parts 21, 45 and 91 for purposes of conducting Flare Stack inspections using sUASs. Listed below are (1)

[6] *See* 49 U.S.C. § 44701(f) (authorizing the grant of exemptions from requirements of regulations prescribed pursuant to Sections 44701(a) and (b) and Sections 44702 - 44716).

the specific sections of 14 C.F.R. for which exemption is sought, and (2) the operating procedures and safeguards that Petitioner has established which will ensure a level of safety better than or equal to the rules from which exemption is sought.[7]

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

Petitioner seeks an exemption from 14 C.F.R. Part 21, Subpart H, which establishes the procedural requirements for the issuance of airworthiness certificates as required by 14 C.F.R. § 91.203(a)(1). Given the size and limited operating area associated with the sUAS to be utilized by the Petitioner, an exemption from Part 21, Subpart H, meets the requirements of an equivalent level of safety under Part 11 and Section 333 of the Reform Act.

The Federal Aviation Act 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 UAS.

In all cases, an analysis of these criteria demonstrates that the sUAS operated without an airworthiness certificate, in the restricted environment and under the conditions proposed, will be at least as safe as, or safer than, a conventional rotorcraft operating with an airworthiness certificate without restrictions and conditions of the proposed sUAS operations.

Equivalent Level of Safety

The sUAS to be operated hereunder, DJI Innovations S1000 multi-rotor rotorcraft, weighs less than 25 pounds with payload, carries neither a pilot nor passenger, carries no explosive materials or flammable liquid fuels, and operates exclusively within a secured and sterile area. Unlike other civil aircraft, the proposed operations will be controlled and monitored by the operator, as well as an observer and sensor operator, pursuant to the Manual's requirements. Moreover, the FAA will have advance notice of all operations conducted under this exemption.

These safety enhancements, which already apply to civil aircraft operated in connection with existing inspection operations, provide a greater degree of safety to the Petitioner's

[7] *See* 14 C.F.R. § 11.81(e), which requires a petition for exemption to include:

> The reasons why granting the exemption would not adversely affect safety, or how the exemption would provide a level of safety at least equal to that provided by the rule from which you seek exemption.

employees, members of the public, and property owners than conventional operations conducted with airworthiness certificates issued under 14 C.F.R. Part 21, Subpart H. 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, lack of explosive materials or flammable liquid fuels, and inability to carry a substantial external load.

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

14 C.F.R. Part 27 sets forth the procedural requirements for airworthiness certification of normal category rotorcraft. To the extent the Petitioner's sUAS would otherwise require certification under Part 27, Petitioner seeks an exemption from Part 27's airworthiness standards for the same reasons identified in the exemption request from 14 C.F.R. Part 21, Subpart H.

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

Petitioner seeks an exemption from the aircraft marking and identification requirements contained in 14 C.F.R. § § 91.9(c), 45.23(b) and 45.27(a).

- 14 C.F.R. § 91.9(c), Civil Aircraft Flight Manual, Marking and Placard requirements, provides that:

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

- 14 C.F.R. § 45.23(b), Markings of the Aircraft, states:

  > When marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light-sport, "experimental," or "provisional," as applicable.

- 14 C.F.R. § 45.27(a), Rotorcraft, states:

  > Each operator of a rotorcraft must display on that rotorcraft horizontally on both surfaces of the cabin, fuselage, boom, or tail the marks required by § 45.23.

Exemption from 14 C.F.R. § 45.23(b) is warranted because the sUAS has no entrance to the cabin, cockpit, or pilot station on which the word "Experimental" can be placed. Moreover,

given the size of the sUAS, two-inch lettering will be impossible. The word "Experimental" will be placed on the fuselage in compliance with 14 C.F.R. § 45.29(f).

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

Equivalent Level of Safety

The equivalent level of safety for exemptions to the aircraft marking and identification requirements of §§ 91.9(c), 45.23(b) and 45.27(a) will be provided by having the sUAS marked on its fuselage as required by § 45.29(f).

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

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

Petitioner seeks an exemption from the flight manual requirements of 14 C.F.R. § 91.9(b)(2), which states:

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

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

Equivalent Level of Safety

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

The FAA has issued the following exemptions to this regulation: Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 32827, and 10700.

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

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

Equivalent Level of Safety

The DJI Innovations S1000 has a stellar safety record, demonstrating that the sUAS is airworthy. Further, given the size of the sUAS and the requirements contained in the Manual for maintenance and pre-flight safety check lists, an equivalent level of safety will be provided.

The FAA has issued the following exemptions to this regulation: Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 32827, and 10700.

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

Petitioner seeks an exemption from 14 C.F.R. § 91.103, which requires a PIC to become familiar with specific information before each flight, including information contained in the FAA-approved Flight Manual on board the aircraft. While the PIC will be familiar with all information necessary to safely conduct the flight, an exemption is requested to the extent that an FAA-approved Flight manual is required on board the aircraft.

Equivalent Level of Safety

An equivalent level of safety will be provided by following the Aircraft Operations Manual. The PIC will take all required preflight actions - including reviewing weather, flight battery requirements, landing and takeoff distance, and aircraft performance data - before initiation of flight. The Aircraft Operations Manual will be kept at the ground station with the operator at all times.

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

Petitioner seeks an exemption from 14 C.F.R. § 91.109(a), which provides that "[n]o person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls." sUASs and remotely piloted aircraft, by their design, do not have functional dual controls. Instead, flight control is accomplished through the use of a box that communicates with the aircraft via radio communications.

Equivalent Level of Safety

Given the size and speed of the sUAS, an equivalent level of safe training can still be performed without dual controls because no pilot or passengers are aboard the sUAS, and all persons will be a safe distance away in the event that the sUAS experiences any difficulties during flight instruction.

The FAA has approved exemptions for flight training without fully functional dual controls for a number of aircraft and for flight instruction in experimental aircraft. Exemptions include: Nos. 5778K and 9862A.

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

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

To provide the intended Flare Stack inspections, the sUAS is normally operated below 400 feet AGL. Additionally, due the nature of the proposed operations, the sUAS will maintain a lateral distance of at least 100 feet from inhabited structures, buildings, vehicles, and vessels, and from people not associated with the operation.

Equivalent Level of Safety

Compared to flight operations with rotorcraft weighing far more than the maximum 25 pounds proposed herein, and given the lack of flammable fuel, any risk associated with these operations is far less than those that presently exist with conventional aircraft. An equivalent level of safety will be achieved given the size, weight, and speed of the UAS, as well as the location where it is operated. As set forth in the Manual, the sUAS will be operated in a restricted and sterile area, where buildings and people will not be exposed to operations without their pre-obtained consent. Because of the advance notice to the property owners and participants, all affected individuals will be well aware of the planned flight operations as set forth in the Manual.

Furthermore, by operating at such lower altitudes, the sUAS will not interfere with other aircraft that are subject to the minimum safe altitude regulations. Finally, the successful safety record of the DJI 21000 demonstrates that the sUAS can be safely used at these lower altitudes and closer operating environments.

I. 14 C.F.R. § 91.121: Altimeter Settings

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

Equivalent Level of Safety

An equivalent level of safety will be achieved by following the procedures set forth in the Manual. As prescribed in the Manual, the operator will confirm the altitude of the launch site shown on the GPS altitude indicator before flight. Moreover, the PIC will use the GPS altitude indicator to constantly monitor the sUAS's height, thus ensuring operation at safe altitudes.

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

Petitioner requests an exemption from 14 C.F.R. § 91.151(a)'s fuel requirements for flight in VFR conditions. Section 91.151 states:

> (a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed –
>
> (1) During the day, to fly after that for at least 30 minutes; or
>
> (2) At night, to fly after that for at least 45 minutes.

Here, the battery powering the DJI Innovations S1000 provides approximately 15 minutes of powered flight. To meet the 30 minutes reserve requirement in 14 C.F.R. § 91.151, sUAS flights could not be conducted. Given the limitations on the sUAS's proposed flight area and the location of its proposed operations within a predetermined area, a safety margin based on a reserve amount of battery life is needed. Petitioner will not be conducting any sUAS flights at night.

Equivalent Level of Safety

An equivalent level of safety will be achieved because the operations will be conducted on-site without significant transit time by the sUAS. All flights will be planned to be terminated with no less than 25% reserve battery power still available. This restriction would be more than adequate to return the sUAS safely to the ground and its planned landing zone from anywhere in its limited operating area even in the event of an unexpected occurrence. Operation of the sUAS

with less than 30 minutes of reserve fuel does not include the type of risks that Section 91.151(a) was intended to alleviate given the size and speed of the small UAS, and the proximity of the flight operation to the landing zone. Moreover, operation will be limited to controlled areas where only people and property owners, or official representatives who have signed waivers. will be allowed.

This request for exemption falls within the scope of prior exemptions, including Exemption Nos. 10673, 2689F, 5745, 10673, and 10808.

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

Petitioner seeks an exemption from civil aircraft certification and registration requirements of 14 C.F.R. § 91.203(a) and (b). The regulation states in pertinent part:

> (a) Except as provided in § 91.715, no person may operate a civil aircraft unless it has within it the following:
>
> (1) An appropriate and current airworthiness certificate…
>
> (b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under § 91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

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

Equivalent Level of Safety

To the extent these regulations are applicable to the proposed sUAS operations, an equivalent level of safety will be achieved by keeping these documents at the ground control point where the PIC will have immediate access to them.

The FAA has issued numerous exemptions to this regulation, including: Exemption Nos. 9565, 9665, 9789, 9789A, 9797, 9797A, 9816A, and 10700.

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

Petitioner also seeks an exemption from the maintenance inspection requirements contained in 14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b). These regulations specify maintenance and inspection standards in reference to 14 C.F.R. Part 43. *See, e.g.*, 14 C.F.R. § 91.405(a) (stating that each owner or operator of an aircraft "[s]hall have the aircraft inspected as prescribed in subpart E of this part and shall between required inspections …have discrepancies repaired as prescribed in part 43 of this chapter"). An exemption to these regulations is needed because Part 43 and these sections only apply to aircraft with an airworthiness certificate, which the sUAS will not have.

Equivalent Level of Safety

An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with the Aircraft Operations Manual as referenced in the Manual. As provided in the Manual, the operator will ensure that the sUAS is in working order prior to initiating flight, perform required maintenance, and keep a log of any maintenance performed. The operator is the person most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety.

If mechanical issues arise, the sUAS's size and carrying capacity, and the fact that flight operations will only take place in restricted areas for limited periods of time during daylight hours, creates less risk than that associated with conventional rotorcraft performing the same operation.

VI. PUBLIC INTEREST

Granting Total Safety's exemption request furthers the public interest. National policy set by Congress favors early integration of UAS into the national airspace in controlled, safe working environments such as those propose in this petition. In addition, maintaining industrial safety has been a priority of state and local governments for decades.

By their nature, flare stacks present unique difficulties for persons attempting to inspect and maintain this vital piece of infrastructure. Flare stacks are tall and there is limited access to the tops of the stack. Sending a human observer to the top of the stack or using helicopters to inspect the tops of the stacks both carry certain risks. These risks can be avoided by using a small UAS under controlled conditions to photograph and document the state of the equipment. This helps to facilitate repairs and identify issues before they become problems. Petitioner current options for inspecting the flare stacks is limited to using human personnel. Petitioner's employees will either use a normal roto wing manned-aircraft or basket to send a human

observer to the top of the flare stacks. The use of an sUAS reduces the risk to human life by removing them from dangerous aspects of the inspection process.

In addition, granting the exception will help advance the knowledge base for conducting commercial UAS operations. This additional data will help the FAA set future rules regarding UAS flight operations, maintenance, and crew qualifications. The public also has an interest in reducing the hazards and emissions associated with alternate use of helicopters to conduct similar inspection operations. The UAS in question is very light weight and does not carry any flammable fuel, further reducing the risk from any potential accident.

VII. Privacy

All flights will occur over property with the property owner's prior consent and knowledge.

VIII. Federal Registry Summary

Pursuant to 14 C.F.R. Part 11, the following summary is provided for publication in the Federal Register, should it be determined that publication is needed:

Total Safety U.S., Inc. seeks an exemption from the following rules:

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

Approval of these exemptions allowing commercial operations of small and lightweight unmanned aircraft ("sUAS") to conduct flare stack inspections will enhance safety by reducing risk to Total Safety's employees, the general public and property owners.

The DJI Innovations sUAS, weighing less than 25 pounds 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 transported to the designated survey area set up. It is not flown from an external location to the work-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 this small UAS will provide an equivalent level of safety, supporting the grant of the exemptions requested herein, including exempting the applicant from the requirements of Part 21 and allowing commercial operations. These lightweight sUASs operate at slow speeds, close to the ground, and in a sterile environment. As a result, they are far safer than conventional aerial survey and inspection operations conducted with fixed wing aircraft or helicopters.

IX. Conclusion

Satisfaction of the criteria provided in Section 333 of the Reform Act of 2012—size, weight, speed, operating capabilities, proximity to airports and populated areas and operation within visual line of sight and national security—provides more than adequate justification for the grant of the requested exemptions to permit Total Safety U.S. to operate sUASs in support of its flare stack inspections in accordance with the Manual appended hereto.

Granting the requested exemption will benefit the public interest as a whole in many ways, including (1) significantly improving safety and reducing risk by alleviating human exposure to danger, (2) improving the inspection process and decreasing operating costs, and (3) providing an environmental way of inspecting Flare Stacks used by the energy industry.

If additional information is required, or if you have any questions regarding this Petition for Exemption, please contact the undersigned or John McGraw at:

John McGraw Aerospace Consulting, LLC
Phone: 540-219-1638
Email: John@JmacAerospace.aero