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United States Department of Transportation
Federal Aviation Administration
Docket Management System
1200 New Jersey Avenue, NE
Washington, DC 20590

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Re: Petition for Exemption of SkyPan International under Section 333 of the FAA
Modernization and Reform Act, 49 U.S.C. 44701(f), and 14 C.F.R. Part 11

On behalf of SkyPan International (“SkyPan”), we hereby seek an exemption from certain Federal Aviation Regulations enumerated below, as authorized by Section 333 of the FAA Modernization and Reform Act (“Section 333”), Subsection 44701(f) of the Federal Aviation Act, and pursuant to the procedures set forth in Part 11 of the Federal Aviation Regulations, to allow SkyPan to operate the T Rex 700E F3C UAV rotorcraft manufactured by Align to perform inspections of unimproved or vacant properties for the construction industry, developers, and property owners.

Chicago-based SkyPan International has been conducting aerial panorama photography operations above private property in urban areas for 27 years under very controlled conditions using both manned and unmanned aviation systems (UAS), that is, both full-size helicopters and radio-controlled helicopters. Under contract to leading real estate developers, SkyPan flies over unbuilt properties, normally large dirt, grass, or paved lots. Using professional-grade digital camera equipment SkyPan produces interactive 360-degree photos showing future high rise views at exactly-measured, multiple heights to assist developers with pre-planning needs such as entitlements, investor presentations, pricing studies, and architectural design. In later phases of development, the marketing teams utilize SkyPan’s 360-degree digital assets as integral components of their pre-sales presentations.

SkyPan, using its patented panoramic aerial technology, has assisted real estate developers accelerate their business, saving time and money, greenlighting construction and job creation, increasing return-on-investment, and improving economies, city by city, across 14 states. Since 1988, some \$55 billion worth of commercial and residential real estate in the United States has been sold and/or leased with SkyPan imagery as one of the primary marketing tools. SkyPan’s

SkyPan International Petition for Exemption
December 22, 2014
Page 2

longtime repeat clients include the most recognizable names among the nation's elite developers, such as: John Buck, BCRE, Durst, Extell, Fifield, Four Seasons, Hines, Related, Rudin, Ritz Carlton, Silverstein, Trump, Vornado, Howard Hughes, GID, Witkoff, and Zeckendorf. SkyPan is proud of its robust record of protecting the public's safety, security, and privacy. SkyPan believes that its developer and builder clients would vouch for SkyPan's commitment to safety and privacy.

SkyPan never operates over public property. SkyPan maintains strict safety measures including emergency autorotation trials, constant system testing/upgrades, failsafe backups, insurance coverage & an experienced crew of pilot, camera operator & safety personnel. SkyPan notifies local police district community affairs officers in advance of flights. The T Rex 770E F3C is a two-blade remotely-piloted UAV made of carbon fiber, Delren plastic and aluminum, and weighs 13 pounds, 19 pounds with payload. SkyPan's typical flight is under 400-feet above ground level ("AGL") under four minutes in duration. SkyPan's flights are considered straight up/straight down; the vehicle ascends straight up over private property, has the capability of hovering in place, and then descends straight down. While hovering, the camera platform takes 12 still images in one 360-degree revolution. Average speed up and down is 5-10 feet per second; the UAV moves laterally only if necessary, at no more than 1 to 2 miles per hour. Battery power provides 8 minutes of operation; SkyPan operators will receive an audible reminder at 5 minutes, 30 seconds, and Sky Pan will land the UAV well before battery power is exhausted.

The T Rex includes an Ace One flight assist electronics system, with three modes: Normal, where the pilot controls all movement; ATTI keeps the UAV attitude stable while hovering; and GPS, which locks in the UAV altitude and position accurately while hovering. In the event of a loss of GPS signal, the UAV will not lock in its position and automatically go to ATTI mode and remain stable. Should there be a loss of power, the pilot has control of the UAV to perform auto rotation capability and land the aircraft. If the UAV encounters an unexpected obstacle, the pilot will either divert the flight or maintain the UAV in a safe hover position away from the obstacle.

The crew consists of a pilot, camera operator, and a visual observer/safety technician. The pilot and visual observe are in close proximity to each other so that there is no risk of a loss of communication between them throughout the flight.

The name of the applicant is SkyPan International. The primary SkyPan contact is Mr. Mark Segal, Principal, 711 N. Milwaukee Avenue, Chicago, Illinois 60642. Telephone is 312-491-8776 and fax is 312-491-8934. His email is mark@skypanintl.com and SkyPan's web address is www.SkyPanIntl.com.

SkyPan International Petition for Exemption
December 22, 2014
Page 3

Exemptions requested

14 C.F.R. Part 21 (airworthiness certification)
14 C.F.R. Part 27 (normal category rotocraft)
14 C.F.R. 61.113 (a) and (b) (pilot certification and qualification)
14 C.F.R. 91.7(a) (airworthiness)
14 C.F.R. 91.119(b) and (c) (minimum safe altitudes)
14 C.F.R. 91.151(a) and (b) (fuel requirements in VFR conditions)
14 C.F.R. 91.405 (a) and (b) (maintenance)
14 C.F.R. 91.407(a)(1) (approval for return to service)
14 C.F.R. 91.409(a) (annual and airworthiness certification inspection)
14 C.F.R. 91.417(a) and (b) (maintenance records)

Safety equivalence or no adverse effect on safety

Unmanned Aerial Vehicle and System

The T Rex 700E F3C UAV, with DJI's Ace One system, has a number of technological capabilities to demonstrate its airworthiness. In the event of a loss of GPS signal, the UAV will not lock in its position and automatically go to ATTI mode and remain stable. Should there be a loss of power, the pilot has control of the UAV to perform auto rotation capability and land the aircraft. If the UAV encounters an unexpected obstacle, the pilot will either divert the flight or maintain the UAV in a safe hover position away from the obstacle.

Given its small size, operational capabilities, and restricted area in which the UAV will operate, an exemption from Part 21, Subpart H, Airworthiness Certificates, and 14 C.F.R. 91.7(a), is warranted, as SkyPan's UAV satisfies the equivalent level of safety as compared with manned aircraft and meets the criteria in section 333. Operating the UAV without an airworthiness certificate in the restricted environment over vacant private property under the conditions proposed will be safer than operating a manned helicopter operating with an airworthiness certificate and not subject to such conditions.

The UAV with payload is less than 20 pounds; it carries no explosive materials or flammable liquid fuels, and operate exclusively over private property, with no passengers or crew on board. As the FAA has found in granting an exemption to Clayco, Exemption No. 11109, at page 10:

SkyPan International Petition for Exemption
December 22, 2014
Page 4

The limited weight significantly reduces the potential for harm to participating and nonparticipating individuals or property in the event of an incident or accident. The risk to an onboard pilot and crew during an incident or accident is eliminated with the use of a UA for the aerial filming operations.

For the reasons outlined above, SkyPan also seeks an exemption from the certification requirements for normal category rotorcraft in Part 27.

In support of SkyPan's request for an exemption from 14 C.F.R. 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), SkyPan will adhere to the following inspection and maintenance program: SkyPan will inspect the UAV before and after each operation, as well as perform daily, weekly, monthly, and annual inspections, as set forth in its operations manual. Before each flight, the pilot in command will inspect the UAV to ensure it is in a safe condition for flight. The preflight inspection will account for any discrepancy, such as an inoperable component, item, or equipment. SkyPan will not initiate a flight if the inspection reveals a condition that adversely affects the safety of operations, and will not operate that UAV until it is found to be in a safe condition. Any UAV that has undergone maintenance or an alteration that affects the UAV's operation or flight characteristics will undergo a functional flight test before return to service.

SkyPan will follow the manufacturer's UAV requirements relating to components, maintenance, overhaul, replacement, inspection and life limits. SkyPan will record all maintenance, alterations, and the functional flight test in the UAV logbook, including total flight hours, description of work accomplished, and the signature of the UAV technician who returned the UAV to service.

SkyPan's UAV is equipped with an altimeter that provides the pilot with a constant digital display of altitude. Moreover, the UAV will be operated within the visual line of sight of the pilot in command and observer and below 400 feet, above vacant property. Accordingly, SkyPan does not believe an exemption from 14 C.F.R. 91.121 is required.

In support of SkyPan's request for an exemption from fuel requirements in 14 C.F.R. 91.151(a) and (b), SkyPan notes that its UAV is battery-powered and is operated for brief periods of time, within the battery capacity of the UAV, and only vertically up and down over private property.

SkyPan International Petition for Exemption
December 22, 2014
Page 5

UAV and UAS Operator Qualifications and Training

In support of SkyPan's request for an exemption from the pilot certification and qualifications requirements in 14 C.F.R. 61.113(a) and (a), SkyPan asserts that an equivalent level of safety is achieved by the UAV-specific experience of its UAV pilot. Mr. Jeff Jones has over 10,000 hours operating a variety of remotely-controlled aircraft over 35 years. In particular, he has been operating the T-Rex 770E, the UAV type SkyPan proposes to operate under the requested exemption, since 2010. He is widely recognized as a world-class operator of UAVs. In the course of his aviation career, he has gained extensive knowledge of the airspace and rules governing manned aircraft, fixed-wing and rotorcraft far beyond the knowledge gained by completing a ground school instruction course and passing the FAA private pilot exam.

SkyPan recognizes the FAA's position that section 333 does not allow the FAA to waive the requirement of a UAV operator to hold an airman certificate, relying on section 44711. Assuming for the moment that section 44711 requires a UAV operator to hold a private pilot certificate, section 333 is a more recent enactment and provides explicit authority to the FAA to exempt a UAV operator from *any* certification requirement. Section 333 instructs the FAA to consider *whether* to require airworthiness certificates, certificates of waiver, and certificates of authorization, "*at a minimum.*" Thus, Congress vested FAA with discretion to waive other certificates, including an airman certificate.

Even if section 333 were read not to convey that discretion, section 44711 applies only to operations in *air commerce*. SkyPan submits that its UAV will be operated below 400 feet AGL above vacant property in metropolitan areas where manned aircraft are not permitted to operate. Thus, its operations will not be conducted in "air commerce."

Even if FAA construes its subsection 44701(f) exemption authority to be limited to its regulations, the FAA certainly has discretion to exempt UAV operators from the requirements of Parts 61 and 67 (as opposed to the certification requirement itself) and develop an airman certificate specifically designed for small UAV operations. Applying manned aircraft pilot certification requirements to small UAVs is not necessary as a matter of safety, and does not make sense as a matter of public policy.

SkyPan believes that FAA's determination in the Astraeus Aerial and other exemptions that a commercial pilot certificate is not required for the operators of UAVs for closed set filming applies equally to the nature of its UAV operations:

SkyPan International Petition for Exemption
December 22, 2014
Page 6

[T]he experience obtained beyond a private pilot certificate in pursuit of a commercial pilot certificate in manned flight does not necessarily aid a pilot in the operational environment proposed by the petitioner; *the FAA considers the overriding safety factor for the limited operations proposed by the petitioner to be the airmanship skills acquired through UAS-specific flight cycles, flight time, and specific make and model experience, culminating in verification through testing.*

(Emphasis added.) SkyPan believes this reasoning supports a UAV/UAS-focused training and experience regimen that should obviate not only a commercial pilot certificate but also a private pilot certificate because any training will be focused on the particular skills of operating the particular small UAV and the particular nature of UAS operations. Should SkyPan elect to use a different type or model of UAV, its pilot would receive 25 hours of training, including 50 take-offs and landings, before operating that make and model of UAV for commercial purposes.

UAV and UAS Operating Parameters

SkyPan will operate its UAV in full compliance with any local permit or safety ordinance, in accordance with its manual. All flights will be conducted within the visual line of sight of the pilot in command, in a tightly circumscribed area of a single parcel of property, with the consent of the property owner and/or developer. Although the UAV may be operated in a metropolitan area, it will remain within the vertical planes of the vacant property, and be flown below 400 feet AGL, except in rare occasions where the proposed construction on the vacant parcel will exceed 400 feet AGL, in which case the UAV will operate at a higher altitude. However, in such rare cases, Sky Pan will not operate its UAV above any existing building or structure within a two-block radius, thereby posing no risk to manned aircraft. SkyPan will notify the appropriate Flight Standards District Office (“FSDO”) and Air Traffic Control for any operation within five miles of an airport.

SkyPan’s typical flight will be operated under 400 feet AGL and last no longer than four minutes. SkyPan’s flights are considered straight up/straight down; the vehicle ascends straight up over private property, has the capability of hovering in place, and then descends straight down. Average speed up and down is 5-10 feet per second; the UAV moves laterally only if necessary, at no more than 1 to 2 miles per hour. Battery power provides 8 minutes of operation; SkyPan operators will receive an audible reminder at 5 minutes, 30 seconds, and SkyPan will land the UAV well before battery power is exhausted.

SkyPan conducts a briefing before each day’s operations, which all personnel participating in the operations must attend. SkyPan will obtain written consent of any person who will be

SkyPan International Petition for Exemption
December 22, 2014
Page 7

participating in the operations or otherwise be on the property being filmed. SkyPan will provide notice to any adjacent buildings or structures.

SkyPan will limit its operations to daytime Visual Flight Rules (“VFR”) plus 30 minutes before sunrise and 30 minutes after sunset (dusk), with each operation ending no later than 30 minutes after sunset. The UAV is equipped with LED lighting visible for 3 miles. Accordingly, we do not believe an exemption from 14 C.F.R. 91.209 is necessary.

SkyPan seeks an exemption from the requirement in 14 C.F.R. 91.119, subsection (b), that an aircraft must remain at least 1,000 feet above any congested area or open air assembly of persons, and subsection (c), that an aircraft must remain at least 500 feet above any person or structure in an area other than populated or congested, and not closer than 500 feet to any person, vehicle, or structure. These requirements were adopted with fixed-wing, manned aircraft operations in mind. While SkyPan may operate its UAV in a metropolitan area, the operations will be strictly confined to private property that is unimproved or vacant, and thus its UAV will not be operated *over* a congested area or open air assembly of persons. SkyPan will ensure that no unauthorized person will be on the parcel of land over which the UAV will be operated, and will provide notice to adjacent buildings and furnish proctors to ensure that unauthorized persons do not come within the narrow parameters in which the UAV will be operated. Combined with the technological capabilities of the UAV and that the UAV will be operated within the visual line of sight of the pilot and an observer, SkyPan submits that its operational limitations provides an equivalent level of safety to that provided in section 91.119.

Public interest

SkyPan’s UAV operations will substantially benefit the local and regional economy. SkyPan’s panoramic aerial technology has assisted real estate developers accelerate their business, saving time and money, greenlighting construction and job creation, increasing return-on-investment, and improving economies, across 14 states. SkyPan’s deliverable product to real estate owners and developers relies on a coterie of specialists including architects, 3D animation studios, rendering companies, video production houses, web designers, interior architect designers, graphic designers, air rights and investment analysts, city planners, ad agencies, and sales and marketing consultants. SkyPan’s aerial photography gives the general public a much-enhanced preview of apartments, condos and office space prior to their construction, which improves pre-release and pre-sales decision making. SkyPan has been conducting aerial panorama photography operations above private property in urban areas for 27 years under very controlled conditions. Operating UAVs under the limitations proposed by SkyPan will avoid any risk of harm to pilots as well as persons and people on the ground that would be present during the operation of

SkyPan International Petition for Exemption
December 22, 2014
Page 8

manned helicopters. UAV operations will also require a much smaller energy footprint than with manned helicopters.

Operations limited to the United States

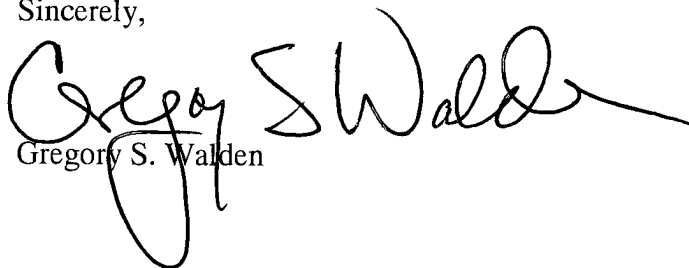
SkyPan does not intend to operate its UAV outside of the United States.

Summary for Federal Register

SkyPan submits the following summary to be included in the Federal Register, should the FAA determine that publication of a summary is required.

SkyPan International seeks an exemption to operate the T Rex 700E F3C UAV rotorcraft manufactured by Align to perform inspections of unimproved or vacant properties for the construction industry, developers, and property owners.

Sincerely,



Gregory S. Walden

Copy to: Mark Segal, Sky Pan International