

Aerial Cinematography

What you need to know



And frequently asked questions (FAQ's)

A guide to understanding and using small Unmanned Aircraft Systems (sUAS) on your production set

Welcome!

And thanks for considering SkySight Motion Cinema for your aerial filming needs.

In this manual you will find valuable information that relates to hiring a drone filming company. Please take the time to read through this document in its entirety, as it will help you to understand more about the way we operate, and will clarify many of the questions that will likely come up around hiring our team.

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FEDERAL AVIATION ADMINISTRATION

What are the main requirements needed for us to operate an unmanned aircraft or drone for our business?

Answer: (Hint—SkySight has all of these)

- ✓ an aircraft registered with the FAA, and
- ✓ a pilot with an FAA Remote Pilote License

By law, any aircraft operation in the national airspace requires a certificated and registered aircraft, a licensed pilot, and operational approval. [Section 333 of the FAA Modernization and Reform Act of 2012 \(FMRA\) \(PDF\)](#) grants the Secretary of Transportation the authority to determine whether an airworthiness certificate is required for a UAS to operate safely in the National Airspace System (NAS).

The Section 333 Exemption process provides operators who wish to pursue safe and legal entry into the NAS a competitive advantage in the UAS marketplace, thus discouraging illegal operations and improving safety. It is anticipated that this activity will result in significant economic benefits, and the FAA Administrator has identified this as a high priority project to address demand for civil operation of UAS for commercial purposes.

Still have questions about FAA regulations?

http://www.faa.gov/uas/legislative_programs/section_333/333_faqs/

INSURANCE AND SAFETY

SkySight LLC carries \$2,000,000 in liability insurance.

This provides the necessary financial security for operating sUAS when on set. Regardless of financial insurance, we always operate using the utmost discretion when it comes to safety. If in doubt about weather conditions or other external factors, we will always err on the side of safety.

TWO-PERSON TEAMS

We operate as a team, consisting of a pilot and camera operator, and there are many reasons for this that are worth mentioning:

The sUAS consists of the aircraft and gimbal (the gimbal is the camera stabilization system mounted under the aircraft itself), and these two main components operate independently of one another, each requiring a separate controller.

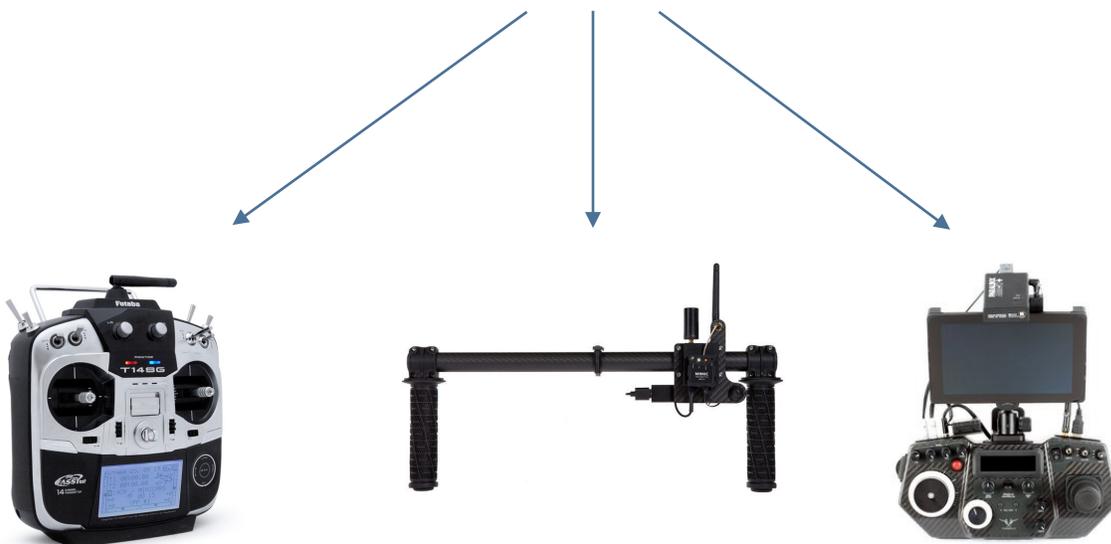
Can you hire just our pilot, and use your own camera operator to save money?

Yes (not recommended). The camera operator does much more than tilt and pan, or start/stop record on the camera. The logistics involved with air travel, driving, packing and unpacking, and the setup and teardown of an unwieldy collection of pelican cases and technology, is very difficult with just one person.

That said, sometimes it is more beneficial to hire just our pilot. In this situation, it is necessary for the DP or other assigned crew member to have experience using the Movi controller, Mimic, or Futaba 14SG.

Once airborne, proper communication between the pilot and camera operator is essential, and can be the final piece in what makes or breaks the shot. Communication between multiple people that are controlling multiple devices, each with different orientations in 5-dimensional space (craft up-down, left-right, forward-backward, and camera tilt/pan), can be confusing. Even as experienced teams, we still run into communication errors. If you are looking to use one of your own camera operators, it helps if they've had experience working with drone pilots, and at the very least, they need experience working with one of these:

Camera operator must have experience with one of these:



FLIGHT OPERATIONS

Visual Line of Sight (VLOS)

The FAA requires that all operators of Unmanned Aircraft maintain a visual line-of-site at all times. Depending on visibility, this is somewhere around 500-1000 feet.

400 feet above ground level (AGL)

FAA regulations state that all sUAV's operate no higher than 400ft above ground level.

Given the VLOS and AGL restrictions, and the overall measure of safety factors, it no longer matters “how far” or “how high” the UAV can go.



Speed and velocity

How fast can the drone go?

We love tracking fast-moving subjects—cars, boats, motorcycles, snowmobiles, ATV's, etc. That said, it's not about how fast the craft can go, rather what the shot requires, while factoring in things like wind speed, AGL, and VLOS limitations.

WEATHER

UAV's have sensitive electronics on board that will malfunction when wet. However, most of these electronics are at least partially protected, which allows for some flexibility in working around wet weather conditions. We've worked in many difficult conditions, and have had a lot of success in gathering great footage where we do quick flights in-between rainstorms, for example.

The biggest weather factor is usually wind speed. Typically we won't fly in wind speeds above 15mph. Recent innovations in GPS and stabilization technology allow for safe flying in speeds of 10-15mph, as well as capturing extremely stable footage. When on set, the pilot will always make the call if weather becomes a safety issue.

FLIGHT TIMES AND BATTERIES

Flight times with a full payload—such as with the Alexa Mini or RED Dragon—are typically somewhere between 8-12 minutes. The variability in these times is largely a result of elevation and temperature.

At higher elevations, where the air is less dense, the propellers need to work harder to create enough lift/thrust to maneuver the craft, and therefore consume energy from the batteries at a faster rate. Colder weather causes an effective loss in battery performance by slowing down the chemical reaction process, which results in a lower flight time.

We typically carry around 8 sets of craft batteries, and while this may not seem like much, they are one of the heaviest items in our travel kit.

These lithium polymer batteries require a special charging station, and to effectively re-charge these batteries in the field, we need at least a 1000 Watt generator. With an adequate power supply, we can continue to fly all day by keeping batteries on the charger and swapping them out.

STANDARD OPERATING PROCEDURES

Flight Checklists

Pre-Arrival Checklist

1. Verify location of incident using sectional and electronic aviation applications to confirm the flight operations will not be closer than 5 nm from any airport center.
2. Using electronic pilot applications, verify weather conditions are VFR and safe to fly.

Arrival Checklist

1. If daytime and operating out of back of vehicle, point vehicle into sun.
2. Remove case and place on level surface.
3. Verify distance to nearest airport and/or controlled airspace using smartphone or tablet app.
4. If required, use VHF aviation transceiver, to contact tower of field if required to inform tower / CTAF of UAS ops, location, and max height of flight.

Preflight Checklist

1. Remove transmitter.
2. Router - On
3. Transmitter - On
4. Toggle Switches - Up
5. Video Monitor - On
6. Case - Remove UAS
7. Inspect UAS for Inops - Check
8. Gimbal Lock & Lens Cap - Removed
9. Recording Device - Inserted or On
10. UAS Battery - Inserted
11. Launch and Recovery Location - Clear and Safe
13. Wifi Connection to Monitor - Verified
14. Flight Application - Loaded and Checked
15. Flight Application - Connect to Camera
16. Recording Medium - Format
17. Camera - Full Up

18. Satellite Connections - Verified
19. UAS Battery Charge Levels - Safe for Flight!
20. Video Recording - Start
21. Takeoff!

After Takeoff Checklist

1. Hover approximately ten feet above the ground to confirm UAS is under control.
2. All sticks operate correctly while in hover - Verified

Pre-Landing Checklist

1. Camera - Full Up
2. Video Recorder - Stop
3. Landing Zone - Clear / Safe

Post-Landing Checklist – Returning to Flight Immediately

1. Battery - Remove & Replace!
2. Wifi Connection to Monitor - Verified!
3. Flight Application - Connect to Camera!
4. Takeoff!

End of Ops Checklist

1. Battery - Off
2. Transmitter - Off
3. Router - Off
4. Notify Tower/CTAF - If Required, End of Ops

FREQUENTLY ASKED QUESTIONS (FAQ'S)

Can you operate from a moving vehicle?

Yes. Whether in the back of a pickup, or in the cab, we've flown many times from a moving vehicle. This is especially useful when tracking a fast moving subject, as visual line of sight limits the length of a shot when the pilot is stationary, and the subject is moving away.

Will you fly over crowds of people?

No. UAV's are not permitted to fly over public crowds, unless you have written permission on a closed set.

How long have you been in business?

We are in our 6th year of business as an LLC. Back in the early years, there were only a few aerial cinematography companies. With the recent surge in drone filming companies hitting the market, we find that there are still only a few companies that offer our level of professional experience.

Do you travel internationally?

Yes. We've filmed all over the world.

