

Kittyhawk

UAS Fleet Management Platform

Workflow Training for (Template)

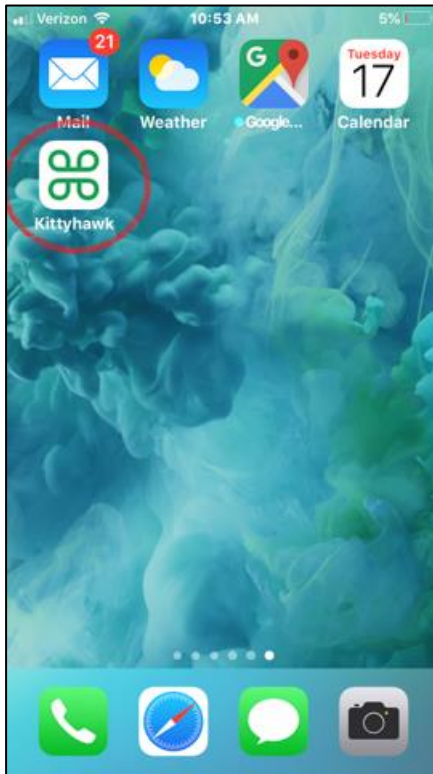
Overview

Kittyhawk can be utilized for consistency of operations and a single system of record to track safety and compliance information around UAS operations. This document will detail workflows for:

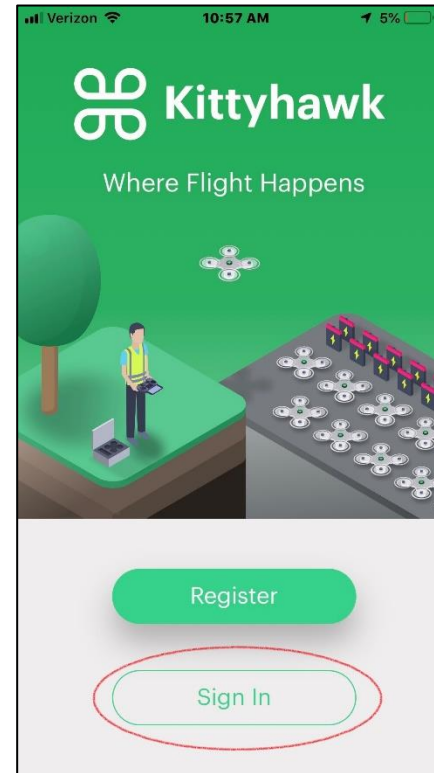
- Logging In
- Mission Creation
- Risk Assessment
- Preflight Checklists
- Safety Checklists
- LAANC Authorization
- Flight Logs
- Postflight Checklist
- DJI Geofencing & Unlock Codes

Logging in

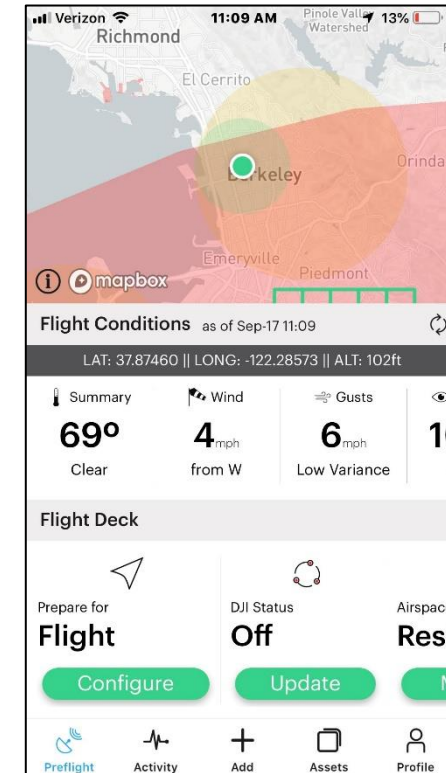
After downloading and installing Kittyhawk, you should have received an invitation or instructions from your program Admin to set up your account.



1. Select the Kittyhawk app on your iOS device

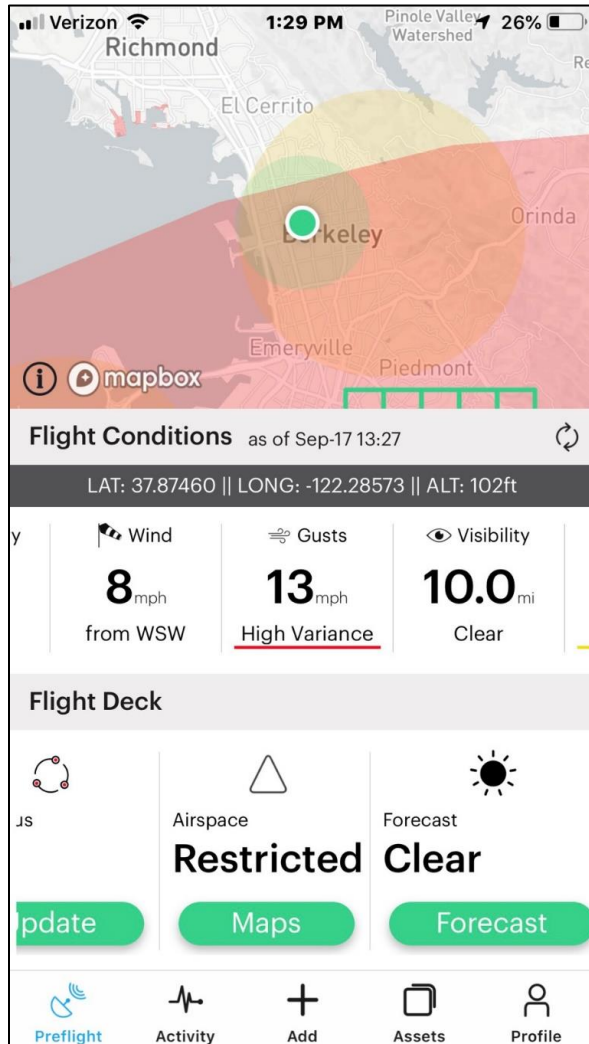


2. Sign in using your provided account info



3. This will lead you to the dashboard.

The Dashboard



The Dashboard is the main screen of the Kittyhawk app. It consists of two slide bars:

Flight Conditions

- Temperature
- Wind
- Gusts
- Visibility
- Humidity
- Cloud Cover
- Daylight
- Kp Index
- GPS Signal strength

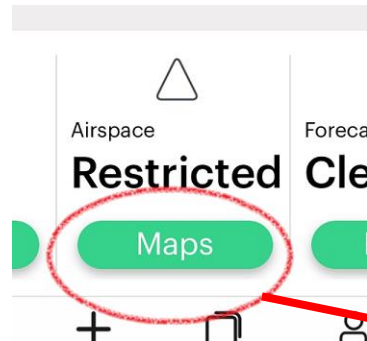
Flight Deck

- Prepare for Flight
- DJI Status
- Airspace Details
- Weather Forecast
- Air Traffic
- Mode
- Streaming

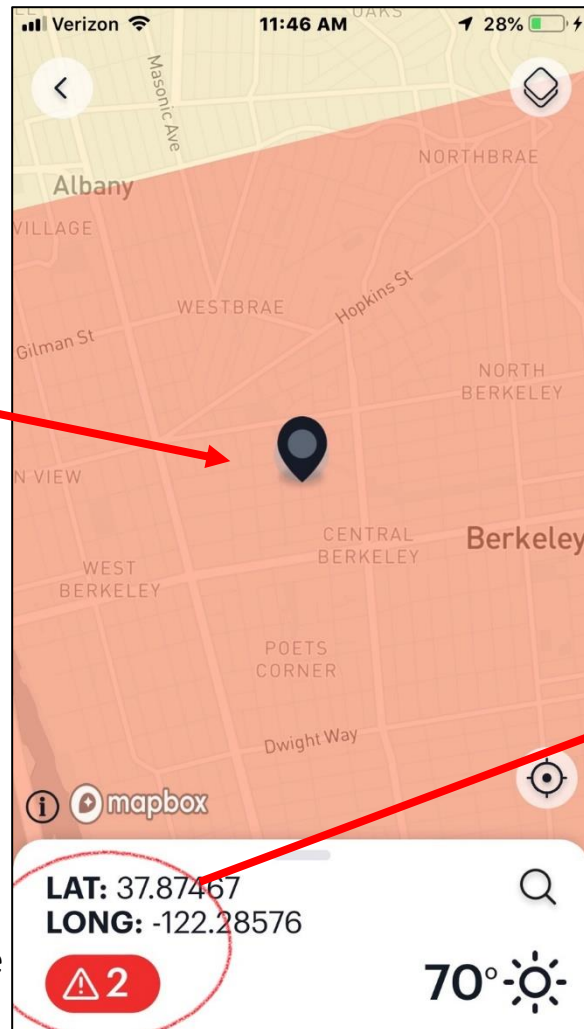
Please note, in this case Kittyhawk is providing two warnings: "Gusts" is highlighted in red because of high variance, and our Airspace is restricted in this model.

Restrictions may be clicked for further details (see next).

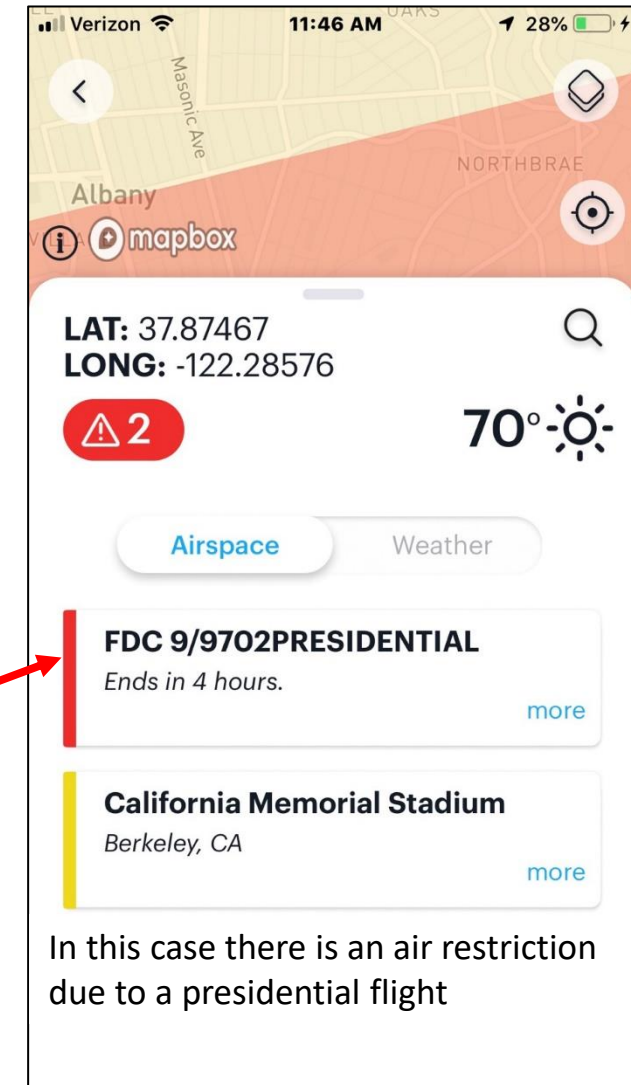
The Dashboard (Continued)



By clicking on the Maps button below Flight Deck category, you will access further details



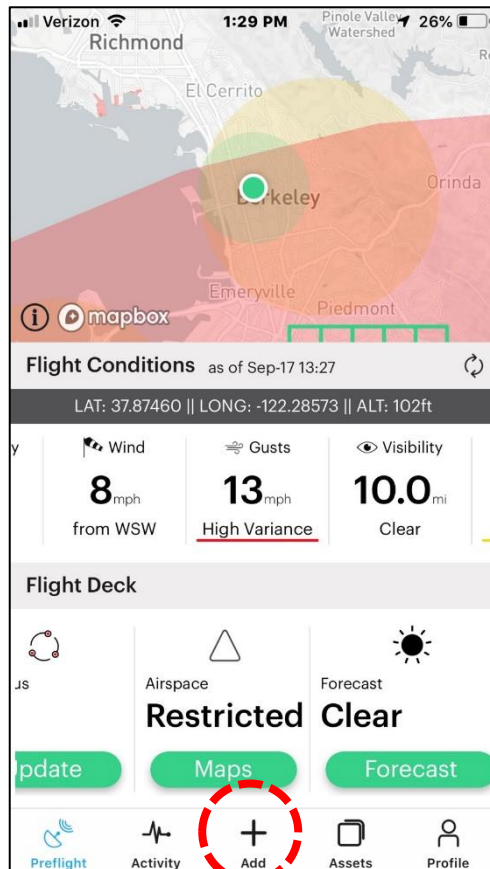
Clicking the warning icon will give further details



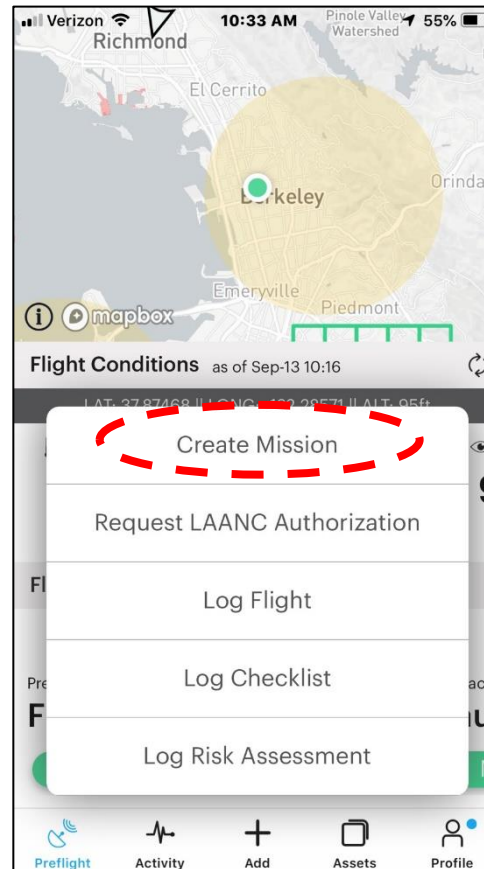
In this case there is an air restriction due to a presidential flight

Mission Creation

In accordance with UAS SOPs, flights will always require an associated mission. To create and request a mission:



1. Click the “Add” icon



2. Click “Create Mission”

A screenshot of the 'Create Mission' form. At the top, there are buttons for 'Close', 'Create Mission', and 'Save' (with a red arrow pointing to it). The form fields include: 'Mission Status' (Requested), 'Start Date' (2019-09-17 13:41), 'End Date' (2019-09-17 14:41), 'Mission Name' (Required), 'Lead Pilot' (text input), 'Location' (LAT: 37.87465 || LONG: -122.28574), 'Notes' (Optional), and 'Address' (text input). A red horizontal bar is visible on the left side of the form.

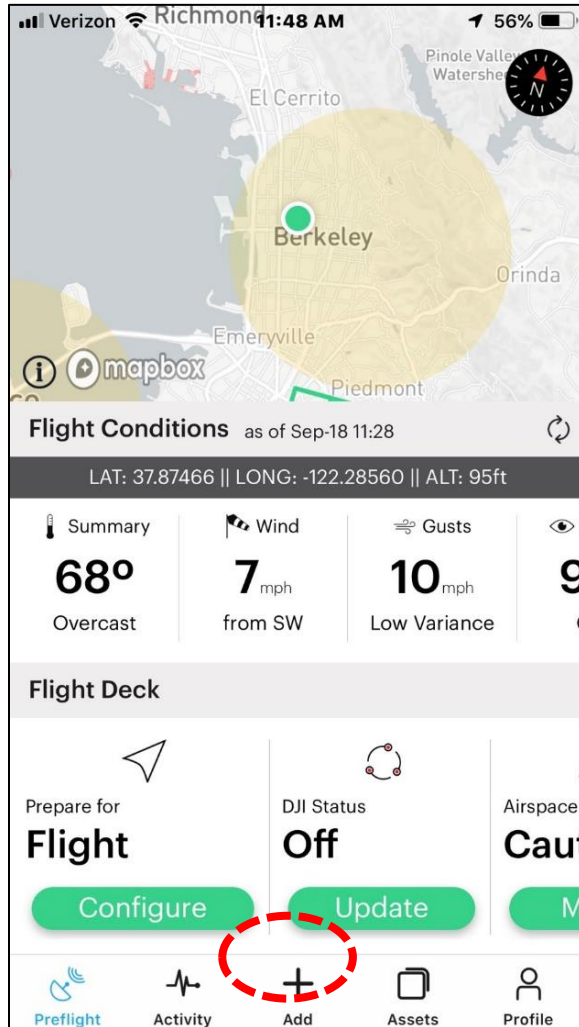
3. Enter mission name and any notes. Then click Save

Risk Assessment

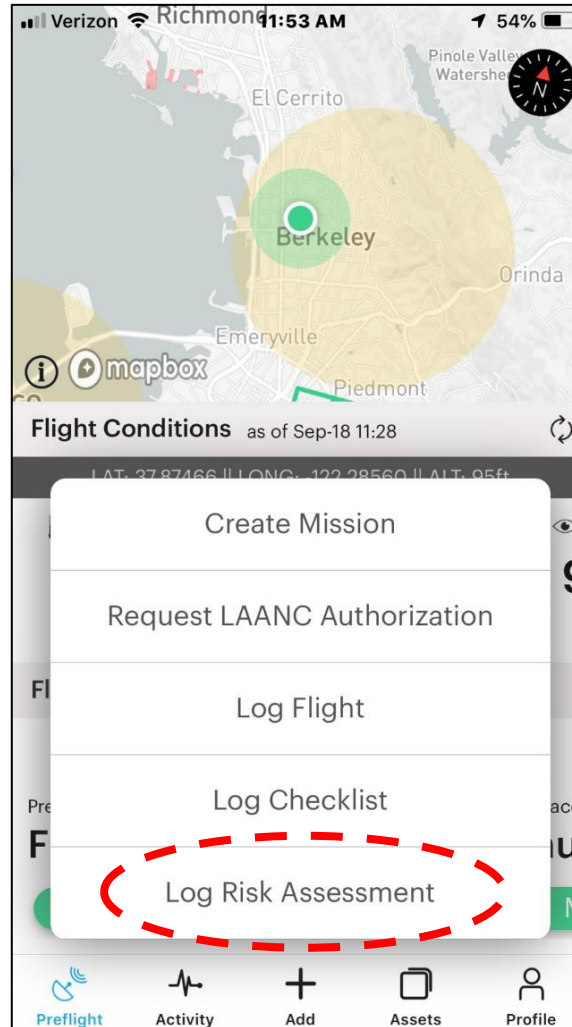
- An “Initial Risk Assessment” will be required at the start of work every day.
- There is a need to balance the risks with the potential benefits of leveraging UASs.
- The following risks may not be in the risk inventory as stand-alone items, but they do impact safety, environmental, and other risks that are listed in the inventory.
- All UAS flight operations will require the use of Kittyhawk to log their flights and supporting safety and compliance activity. Prior to flight, all operators must login and create a mission, then complete a preflight risk assessment within Kittyhawk.
- The Kittyhawk risk assessment considers pilot/operator state, flight plan hazard possibilities, and environmental/climate conditions. The following screenshots show examples of the preflight risk assessment creation and considerations.

Risk Assessment (Continued)

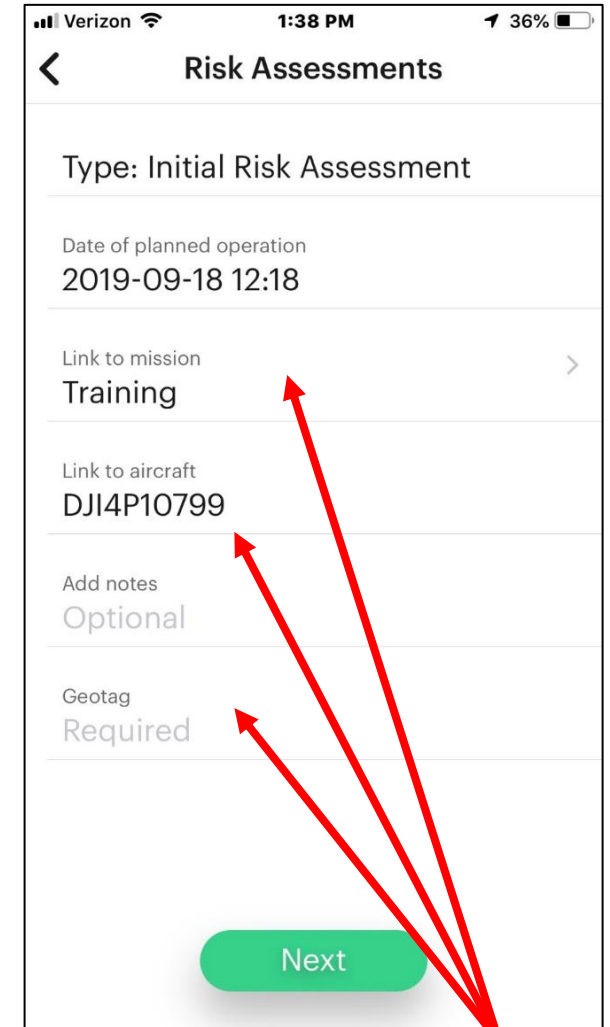
Risk assessment should be **logged daily** and attached to the mission.



1. Beginning an initial risk assessment: from the dashboard, click “Add”

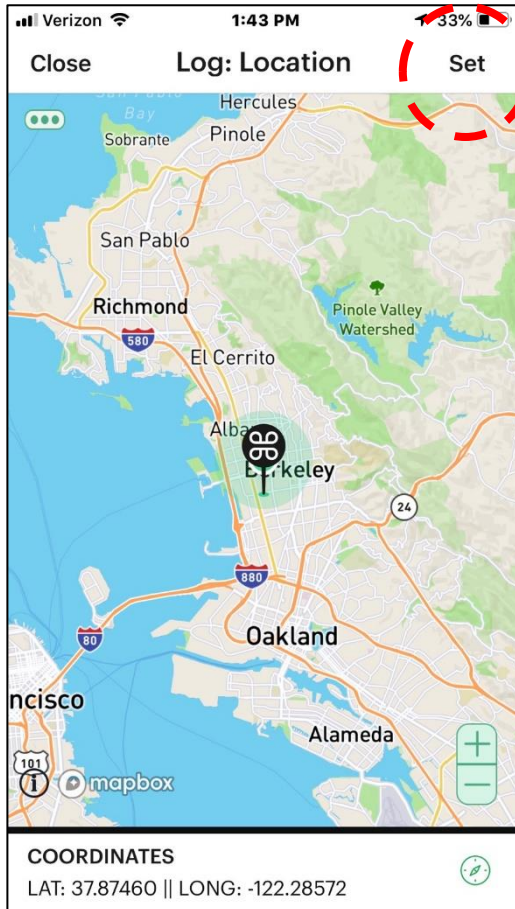


2. Click “Log Risk Assessment”

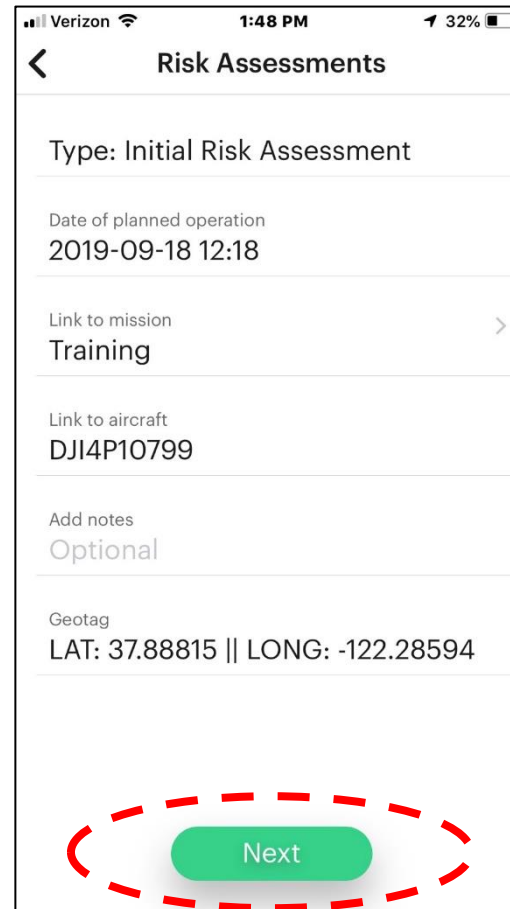


3. After selecting “Initial Risk Assessment”, link to a planned mission, an aircraft, and geotag.

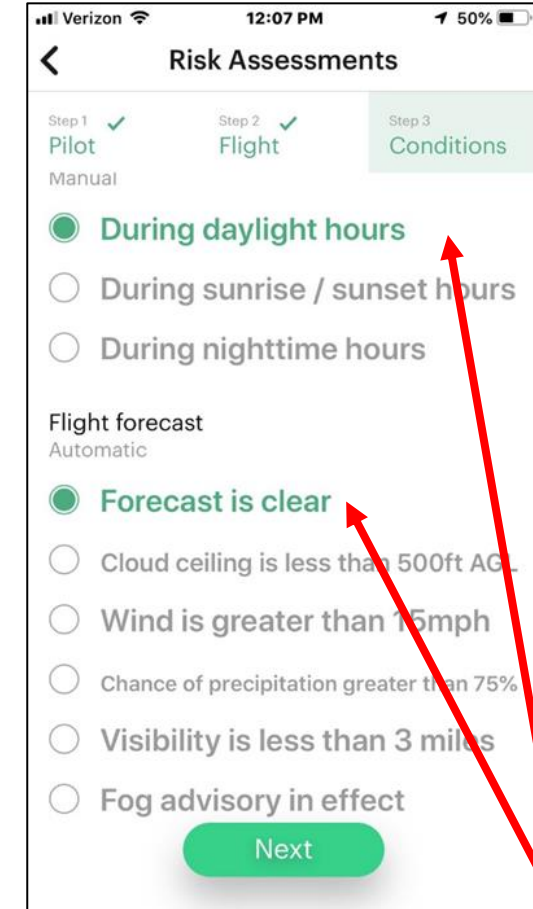
Risk Assessment (Continued)



4. Entering a geotag will lead to the above screen. When the appropriate location is selected, click “Set”

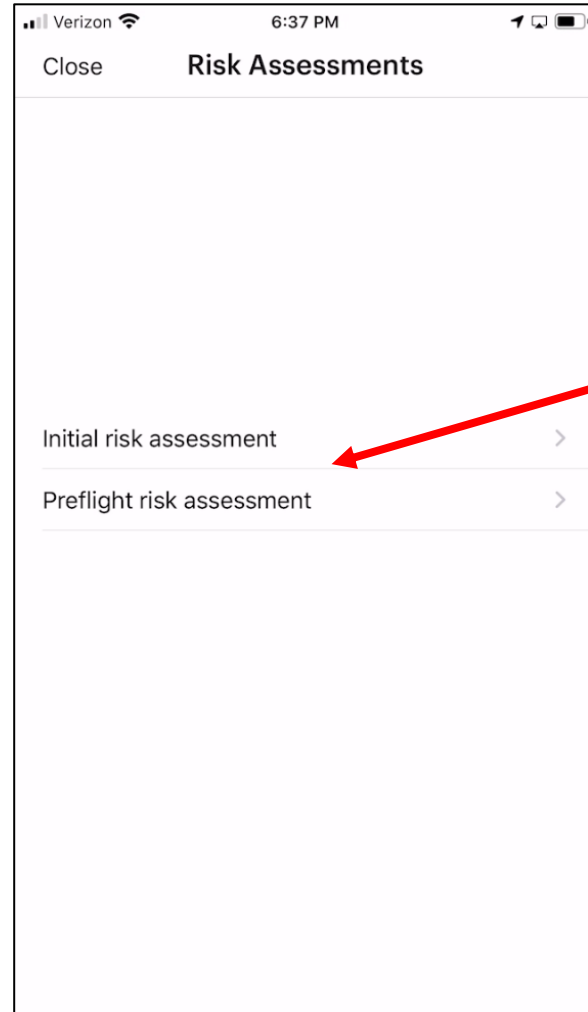


5. Review and click “Next”



6. Check off assessment options for pilot condition, flight considerations, and condition considerations– click “Next” after each assessment screen has been completed

Risk Assessment (Continued)

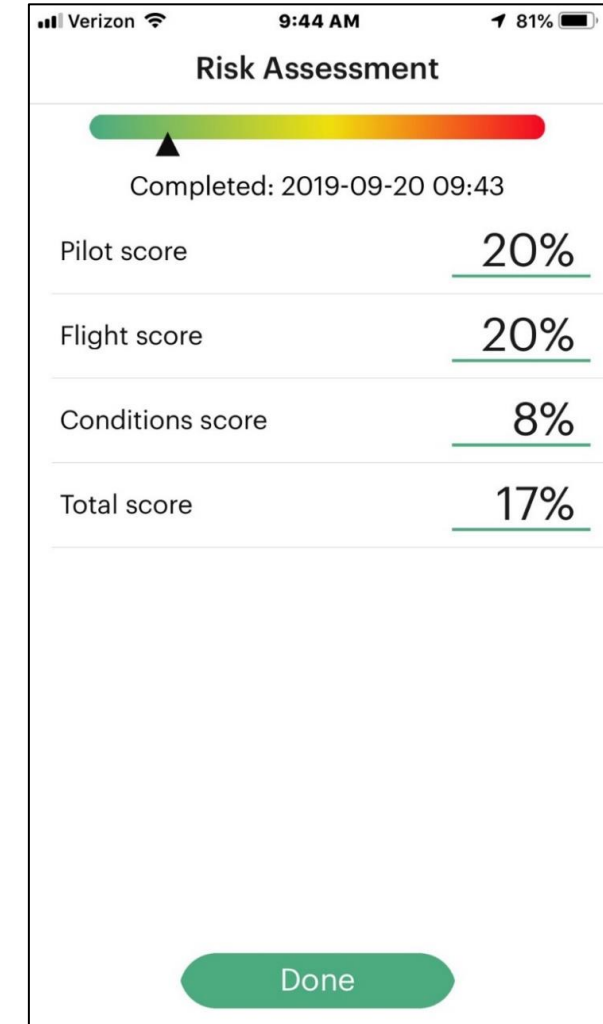


7. A completed initial risk assessment averages the 3 steps for the total score. Click "Done" to return to dashboard.

Note: There are two versions of the Risk Assessment. Initial and Preflight.

Initial is intended for use when planning a mission in advance and can be logged from a browser without being in the field.

The Preflight Risk Assessment is intended for the pilot to run at the time of flight, with the drone, at location.



Checklists

As stated in the UAS SOP document, a pre-flight UAS tailboard prior to the commencement of flight operations for every mission is required. The Preflight Safety Tailboard should be conducted before the Preflight Equipment Checklist.

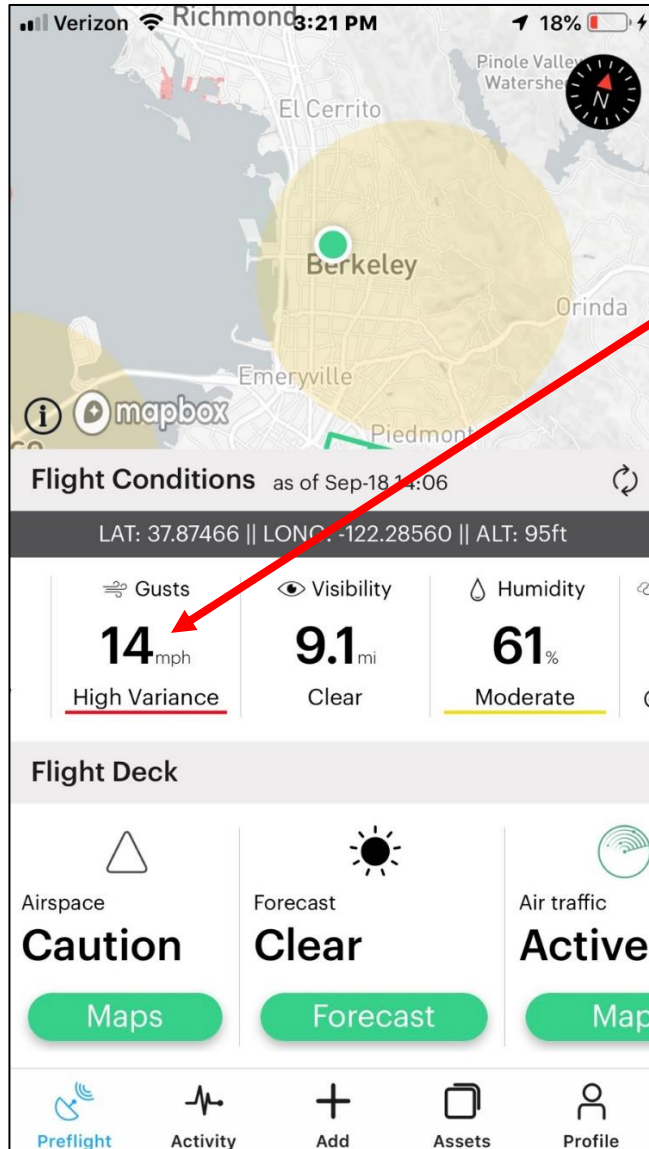
The tailboard consists of several parts but is not limited to:

- Compliance with stated Mission Description
- Non-normal procedures, system failures, and how they will be applied to the specific mission
- The roles and responsibilities of the remote pilot for the specific mission
- The communication plan
- The contingency plan
- Weather reports
- Proximity to potential air traffic
- Abort parameters in accordance with the manufacturer's manual
- Threats to current mission

Checklists (Continued)

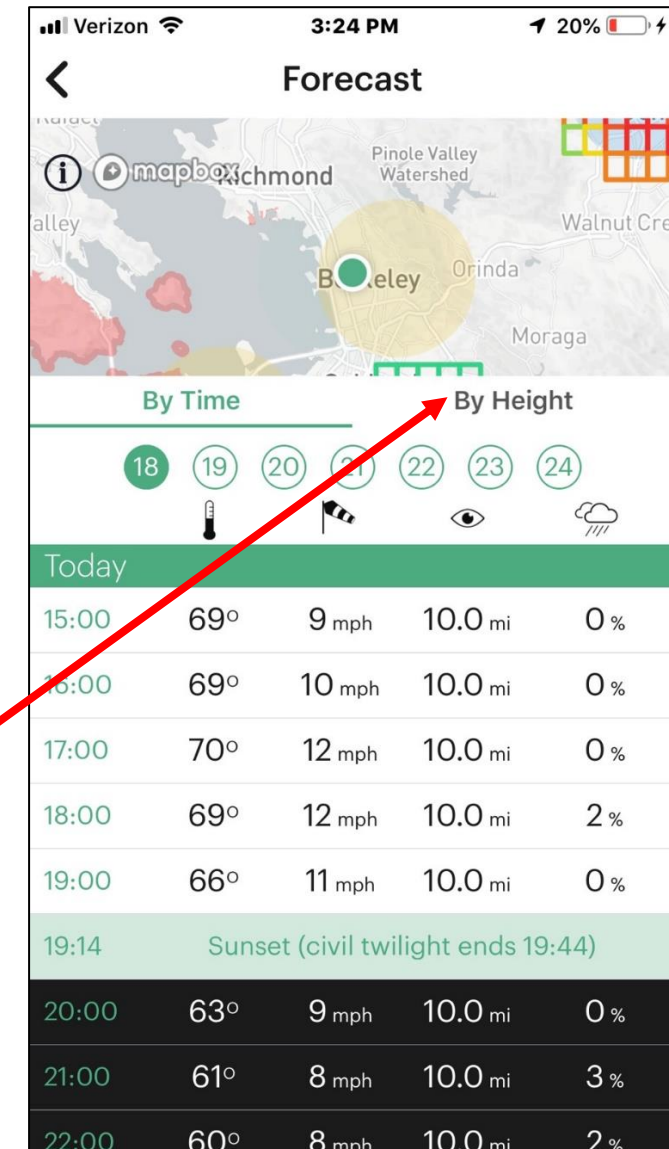
- All aspects of the UAS pre-mission checklists are detailed, accessible, and recorded in Kittyhawk.
- Many aspects of the pre-mission checklist will be recorded and entered in the **pre-flight risk assessment**; the remainder will be logged automatically by Kittyhawk during the flight.
- All aspects of the checklists should be known to the operator prior to take off.
- Information pertinent to the UAS pre-mission checklists may not necessarily be found in a single screen within Kittyhawk. It may be necessary for the pilot to reference several screens in the application throughout this process.

Checklists (Continued)



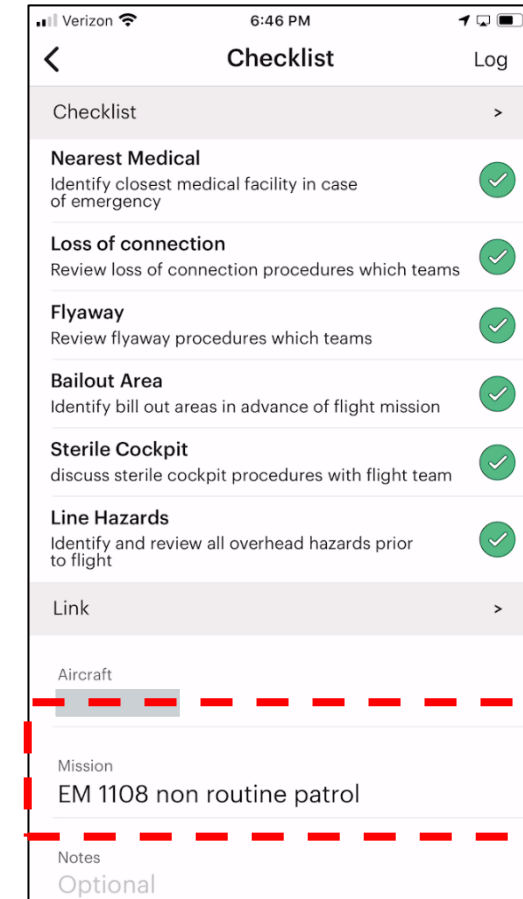
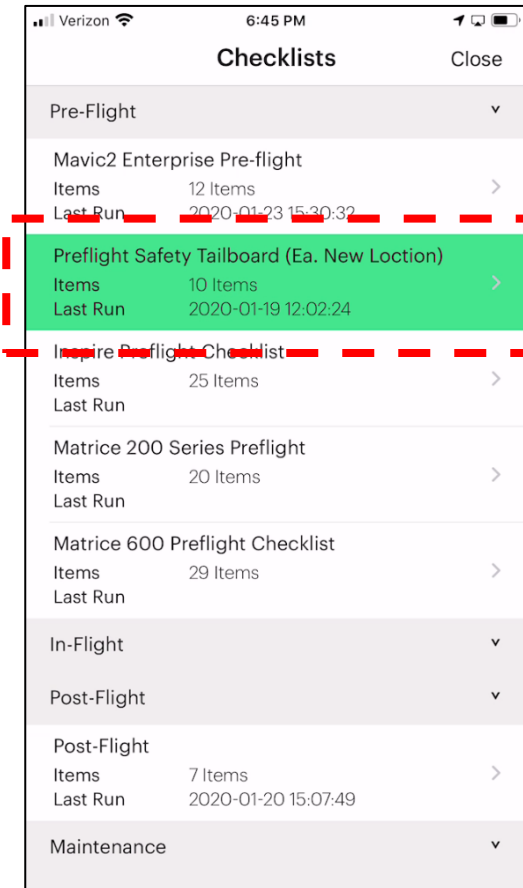
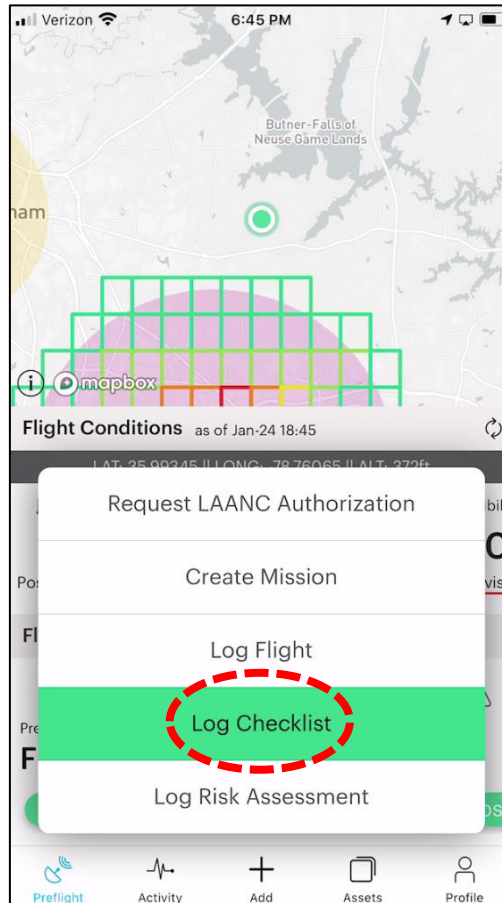
The dashboard presents many aspects of the pre-mission safety check.

Clicking on Flight Deck elements can provide further details.



Checklists (Pre-Mission)

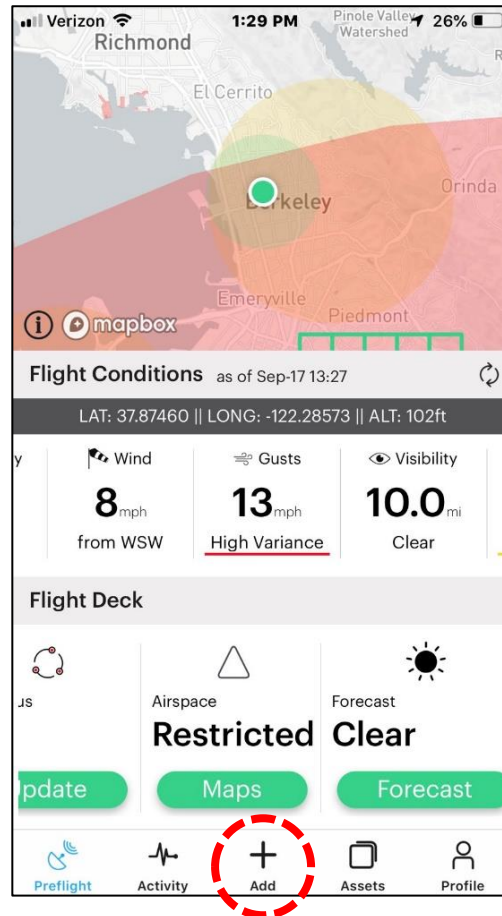
All internal UAS flights require a preflight safety tailboard checklist at each new location, which will be automatically stored in Kittyhawk.



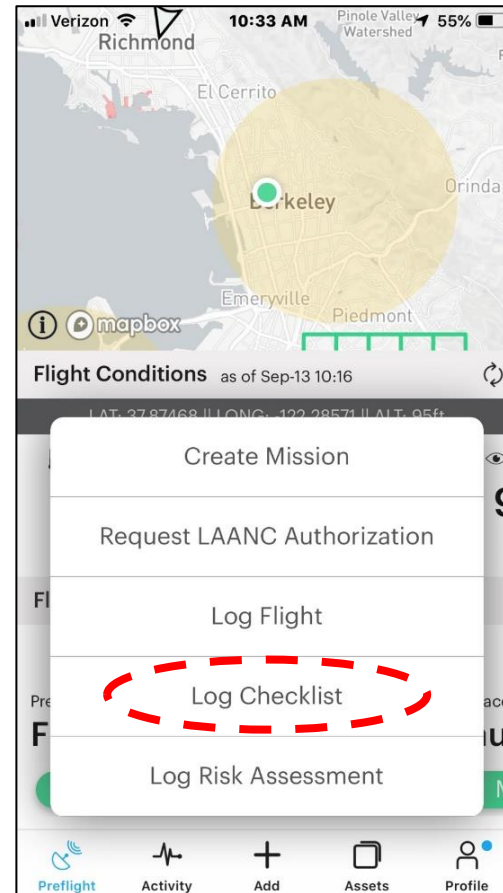
You may also enter the Aircraft in use as an asset, pair the checklist to the mission along with the risk assessment and add any additional notes in the preflight check.

Preflight Equipment Checklist (before each flight)

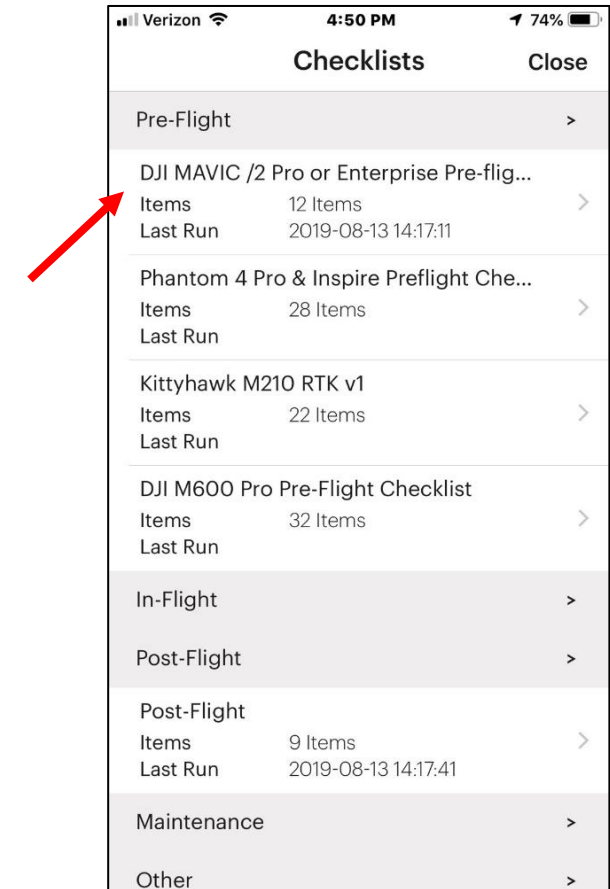
All UAS flights require a preflight checklist, which will be automatically stored in Kittyhawk.



1. To access the preflight checklist, click the “Add” icon



2. Click “Log Checklist”



3. Find and select the appropriate checklist, in this case the DJI MAVIC /2 Pro or Enterprise

Checklists (Preflight)

Verizon 6:07 PM 65%

Checklist Log

Checklist >

Check SD card
Verify SD card is installed and working correctly. Check physical installation and digitally through flight app prior to take-off. ✓

Streaming Video On/Off
Turn on or off streaming video as Mission requires. ✓

Sterile cockpit
Ensure that flight crew and on lookers are aware of sterile cockpit procedures. ✓

Clear Take-off / Landing Zone
Ensure takeoff and landing zone or identified and clear of personnel and obstructions prior to engaging motors. ✓

Link >

Aircraft
Optional

Mission
Optional

Notes
Optional

4. Review and check all entries accordingly. A green check mark will show item has been approved

5. Enter the appropriate aircraft. Clicking in the field will open a new menu. Select aircraft; in this case DJIM1P04GZ. Selecting an aircraft will automatically return to checklist.

Close Craft: Select +

DJIM1P04GZ
DJI (Mavic Pro)

TADS MAVIC 2 Zoom
DJI (Mavic2 Zoom)

Finnegan
DJI (Mavic 2 Pro)

6. Enter the appropriate mission. Clicking in the field will open a new menu. Select mission; in this case "Training." Selecting a mission will automatically return to checklist.

Close Log: Mission +

Training
Date 2019-09-17 14:41:10
Location 37.87465,-122.28574
Status Requested

Shell Pond - Video Capture
Date 2019-08-13 11:29:57
Location 38.03551,-121.94719
Status Completed

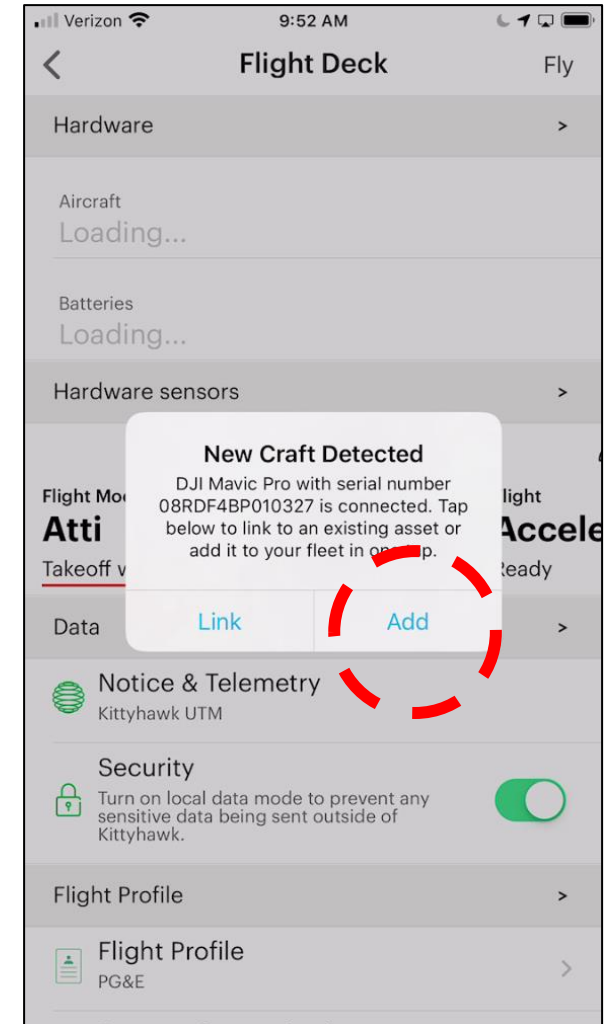
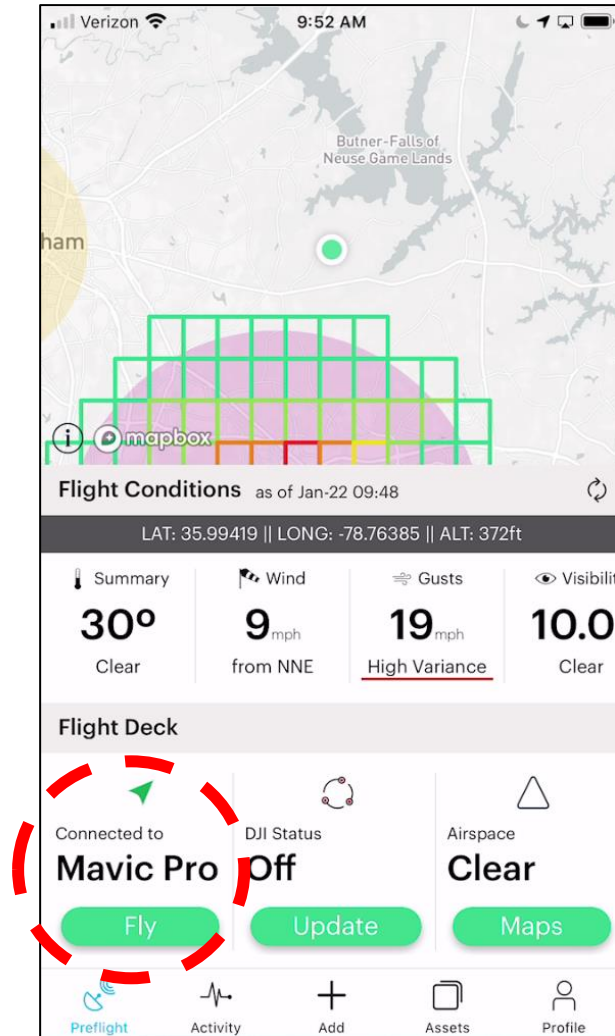
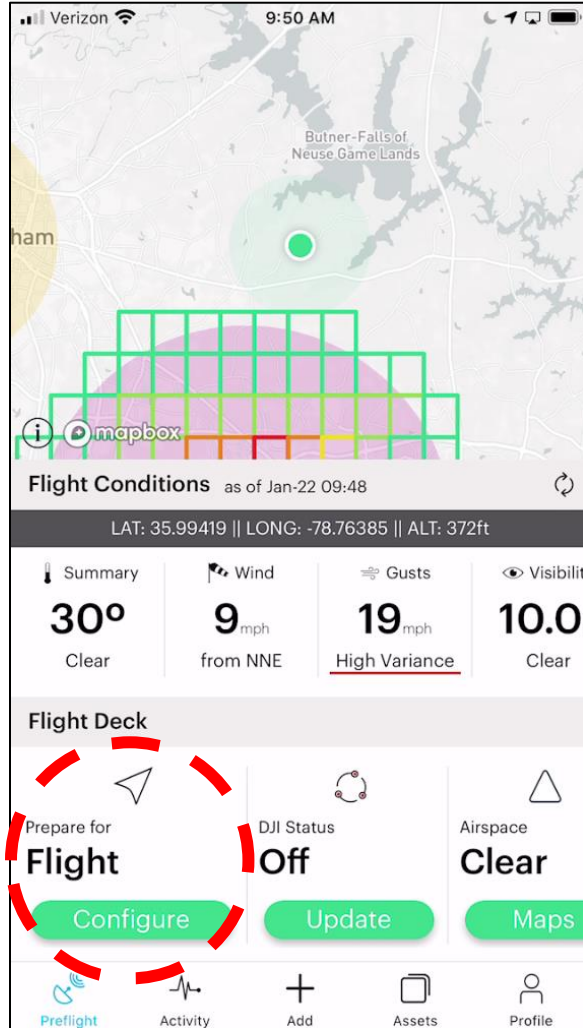
Lumen Electric
Date 2019-07-27 10:00:00
Location 38.78107,-104.85934
Status Completed

7. Finalize the preflight checklist by clicking "Log" in the upper-right corner of the screen. This will automatically record the checklist and return to the dashboard.

Flight Logging

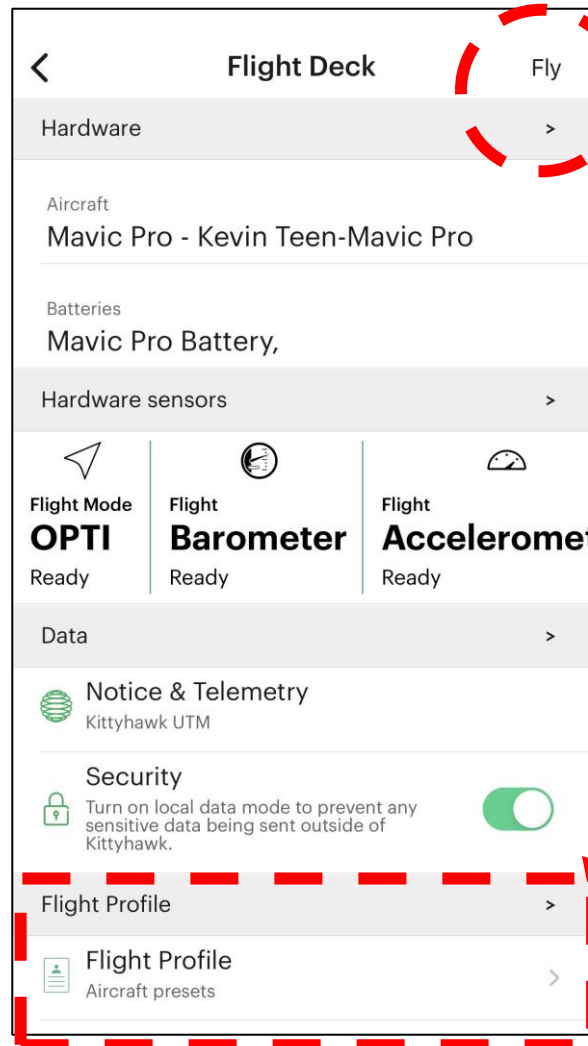
- A flight log is a complete record of a flight, normally showing flight planning information together with actual data recorded during the flight. **We are requiring all UAS flights be logged through Kittyhawk.**
- While the Kittyhawk records all flight info in real time, it is mandatory that all flight operators link their mission, aircraft, battery, etc. for every flight.
- The following instructions detail how to log a flight using Kittyhawk.

Flight Logging

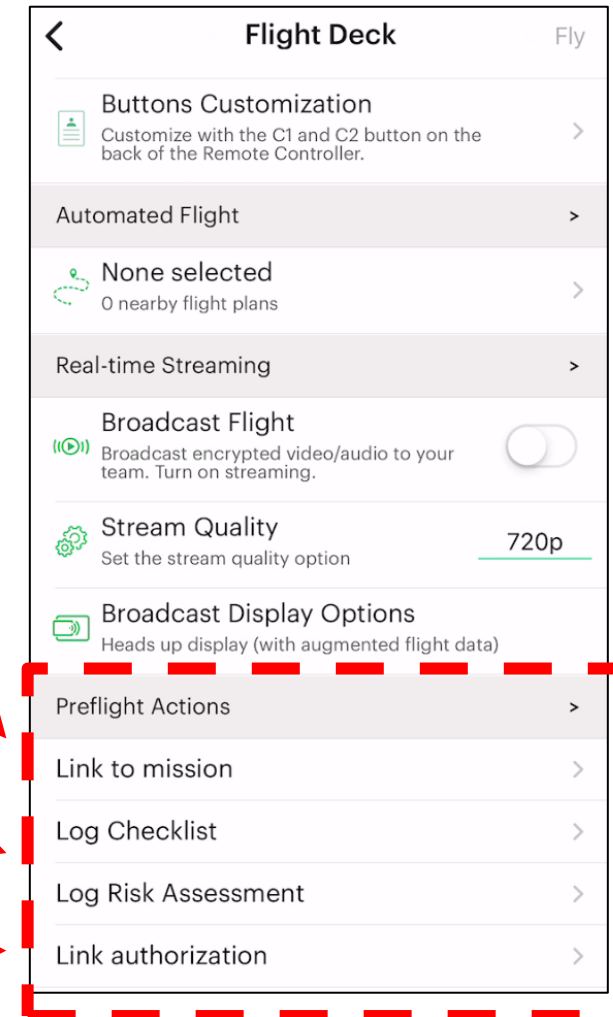


The first flight may prompt you to add your aircraft as an asset ([video](#)). Operators are encouraged to do so. Once connected, the “Configure” button with switch to “Fly.” On the next screen, follow the prompts to automatically add your aircraft and batteries.

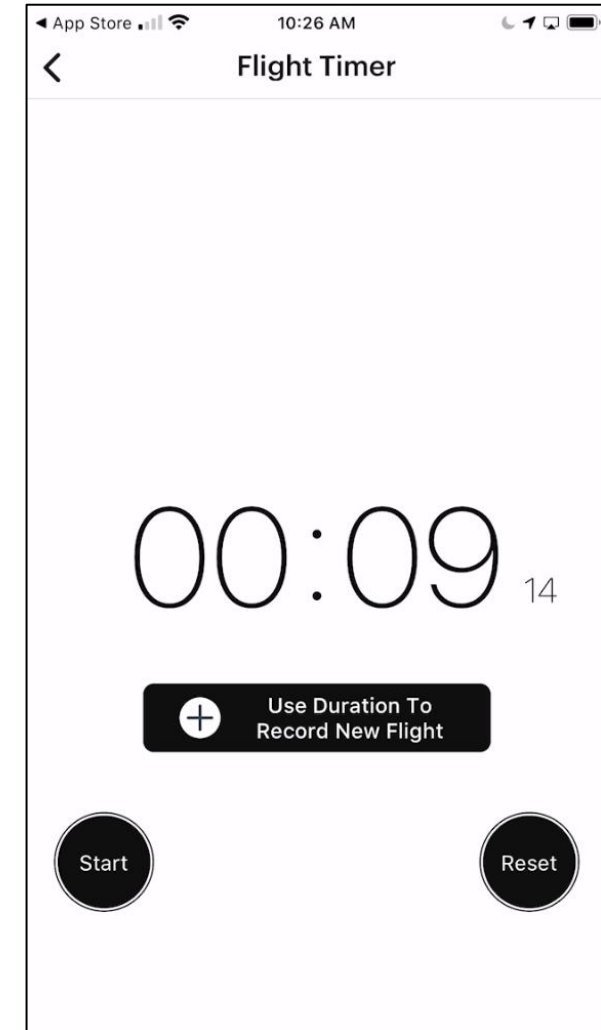
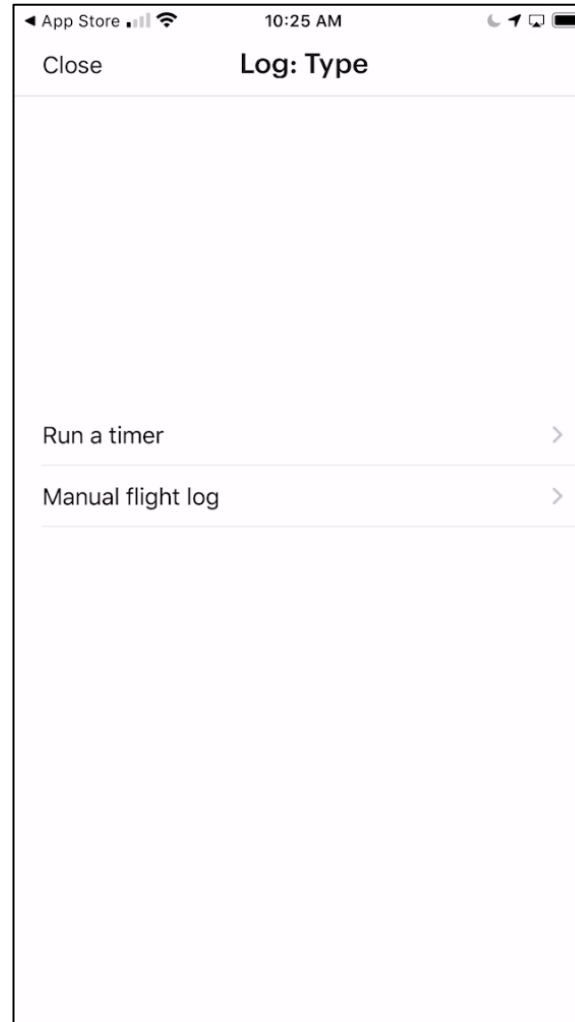
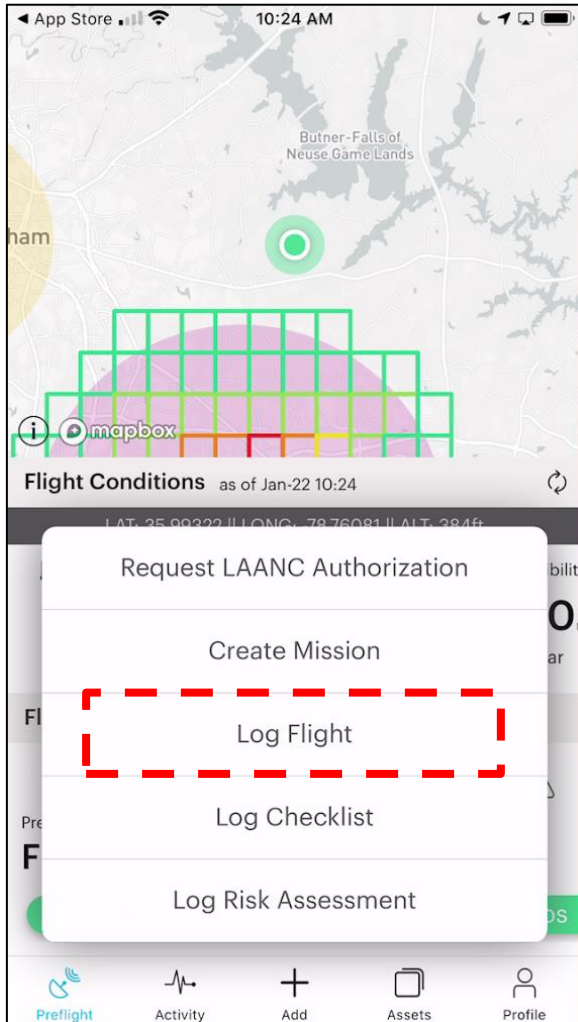
Flight Logging (Continued)



1. Tapping “Fly” will take you to the in-flight screen to launch the aircraft.
2. The flight profile is automatically set to “aircraft presets.” These settings are adjustable as needed (RTH Altitude, distance limits, etc.) by first selecting Custom and then Viewing the profile to make any changes. Make sure to tap save!
3. There are links at the bottom to pre-link to the mission, and attach a LAANC authorization, waiver, etc.
4. There are also shortcuts to log checklists and risk assessments from this screen.
5. Attach any related authorization here. This could be a LAANC, COA, or even an internal document.

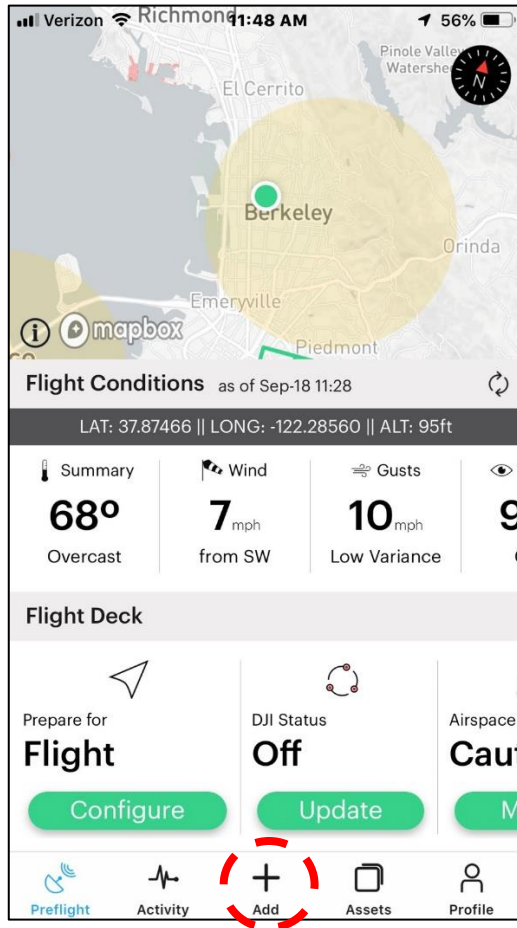


Manual Flight Logging

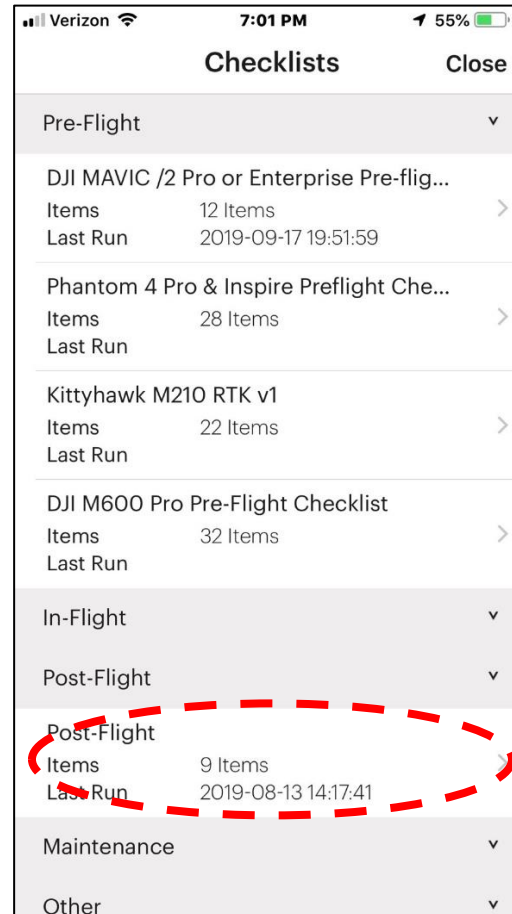


Post Flight Checklist (every landing)

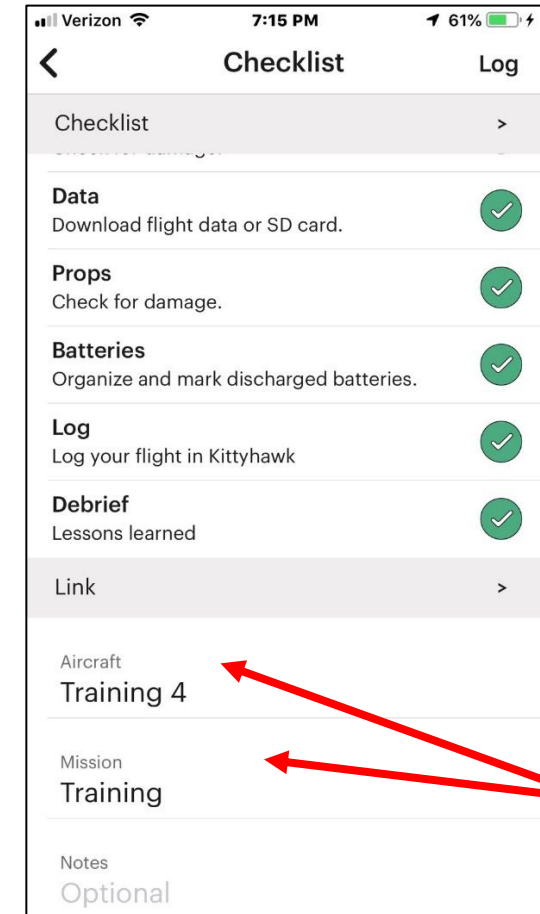
As a last step, all UAS flights also require a post flight checklist; the following steps describe how to record one in Kittyhawk.



1. Click “Add” from the dashboard and select “Log Checklist”



2. Select “Post Flight”



3. Review and check off all items. Be sure to link an aircraft and mission to the checklist. Click “Log”

LAANC Authorization

LAANC is the **Low Altitude Authorization and Notification Capability**, a collaboration between FAA and Industry. It directly supports UAS integration into the airspace. It provides access to controlled airspace near airports through near real-time processing of airspace authorizations below approved altitudes in controlled airspace.

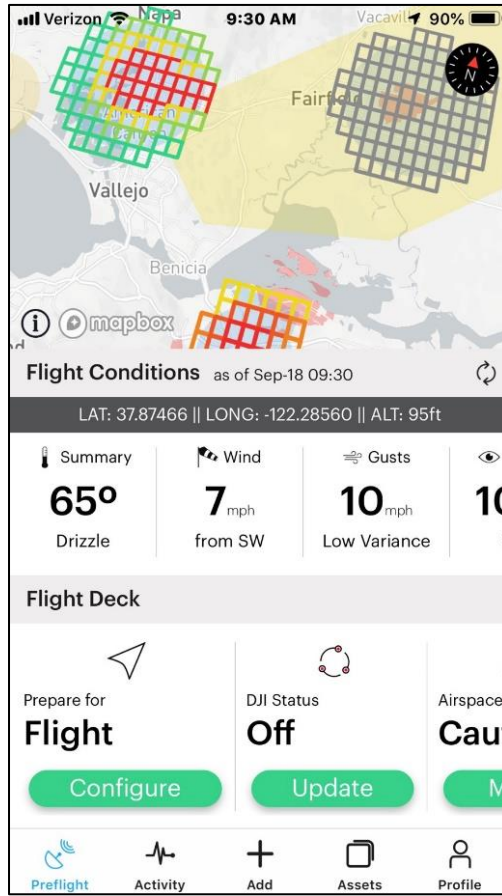
Through **LAANC** on Kittyhawk, pilots can:

- Apply to receive a near real-time authorization for operations under 400 feet in controlled airspace around airports.
- Request to fly above the designated altitude ceiling in a UAS Facility Map, up to 400 feet.
- Apply up to 90 days in advance of a flight and the approval is coordinated manually through the applicable airspace owners.

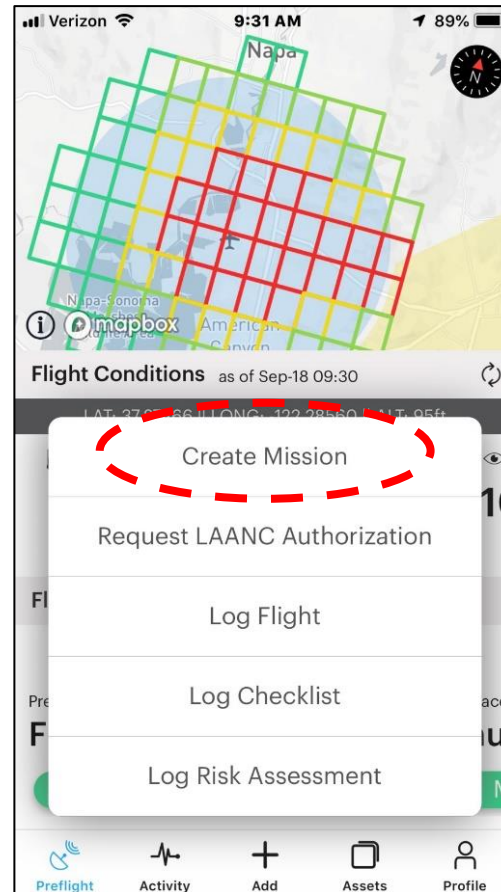
It is important to note, **not every flight needs LAANC authorization**. If flight in controlled airspace is required and LAANC is available, follow the instructions on the following slides prior to takeoff.

LAANC Authorization (Continued)

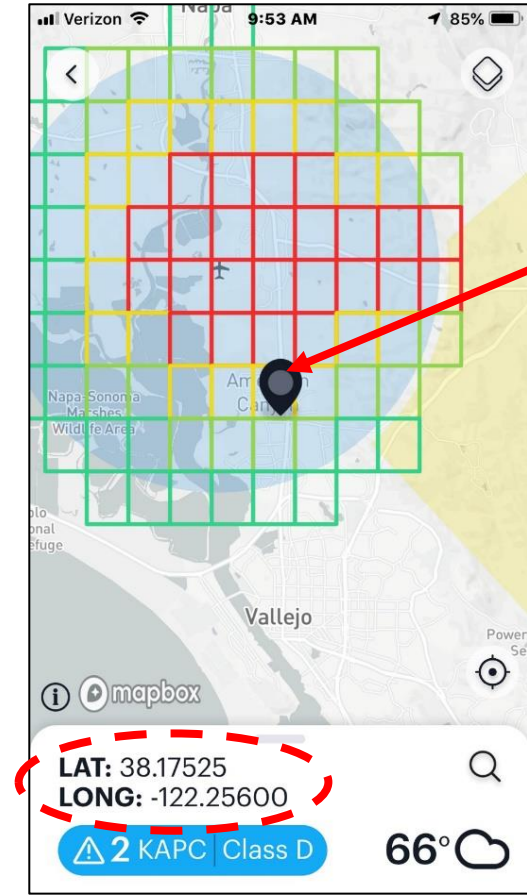
Kittyhawk is an FAA approved LAANC UAS service supplier and will let operators know when LAANC authorization is needed and enables near instantaneous approval.



1. Flights performed in the gridded areas require LAANC approval

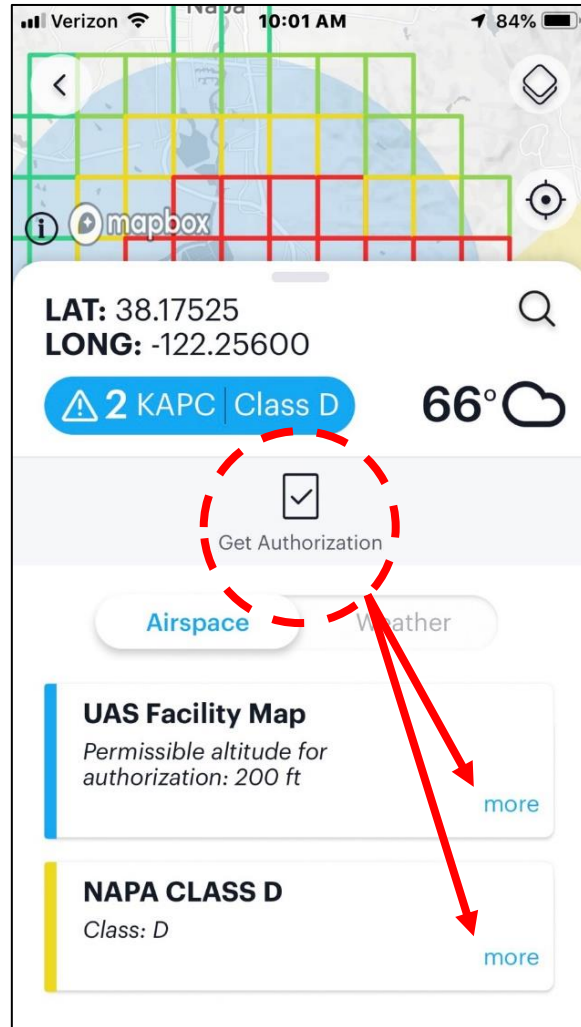


2. Click "Request LAANC Authorization"

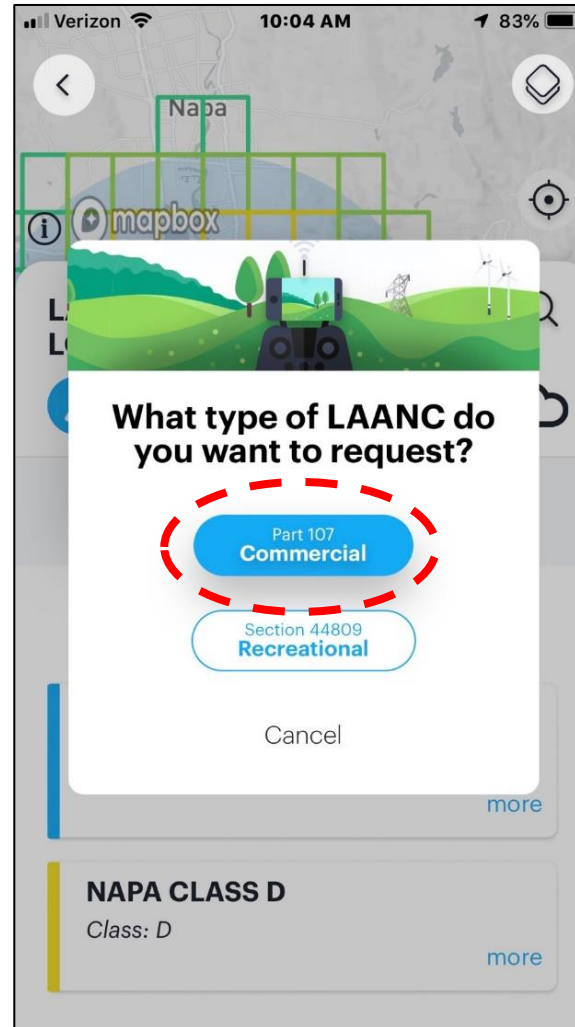


3. Place pin where flight will occur and click the LAANC warning icon.

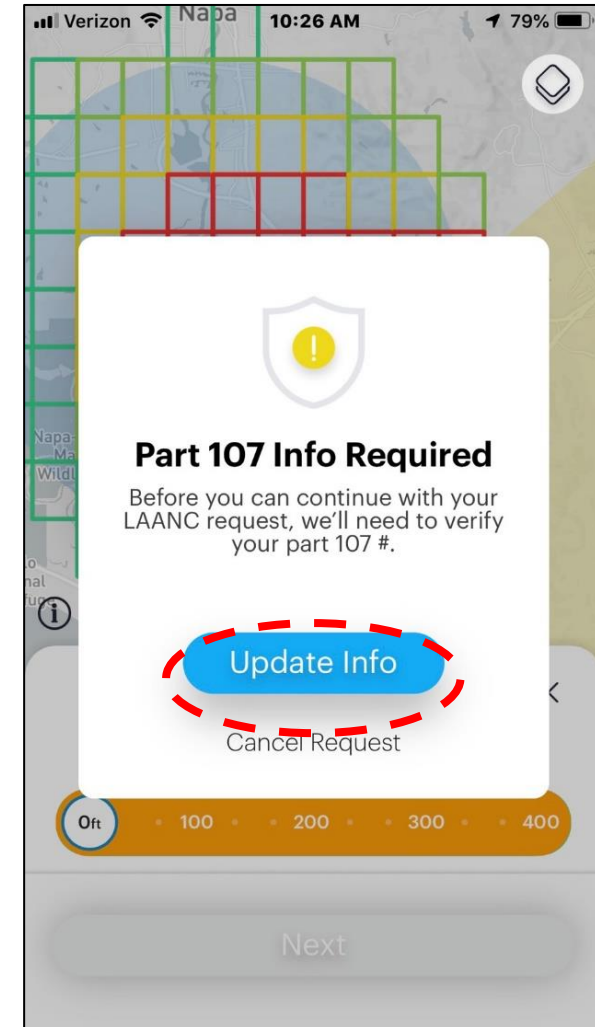
LAANC Authorization (Continued)



4. User can click on “more” for further detail. Click “Get Authorization”



5. Click “Part 107 Commercial”

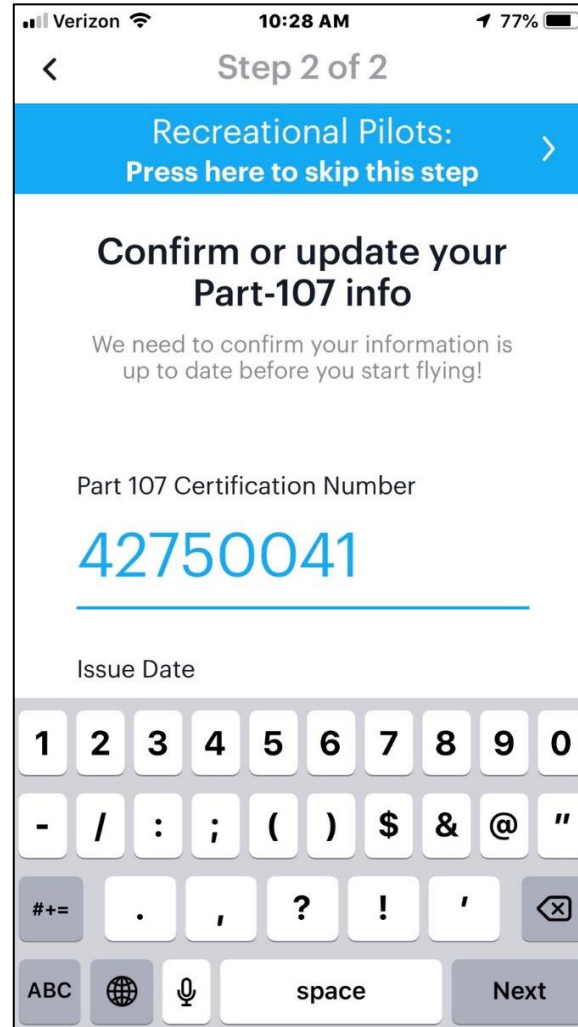


6. 107 information may be required. Click “Update Info”

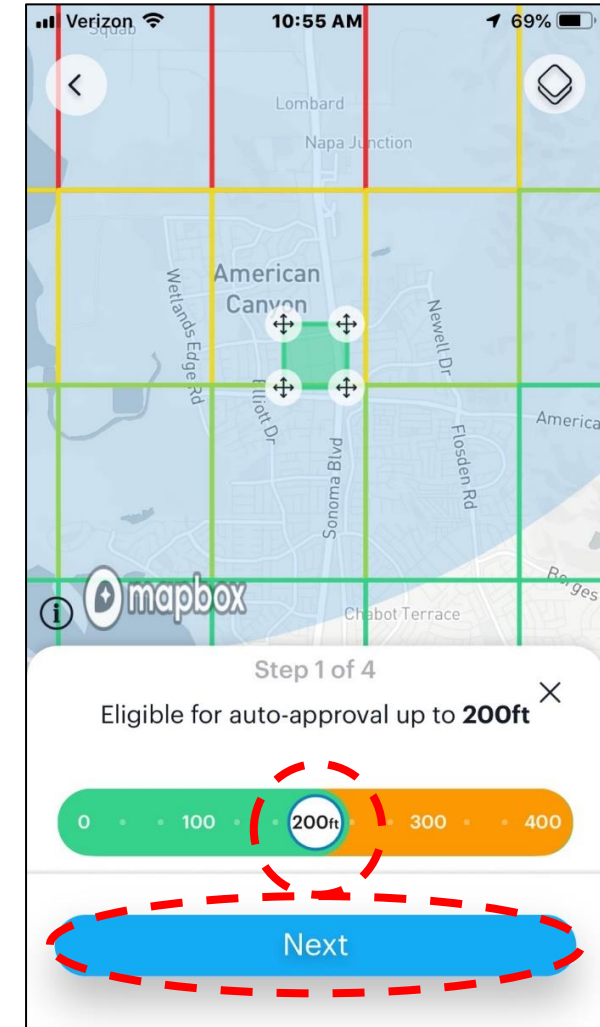
LAANC Authorization (Continued)



7. Click "Continue"



8. Enter all 107 certification information (number and date issued). Click "Continue"



9. Enter flight height limits (in this case 200 ft. is max for auto-approval), and click "Next"

LAANC Authorization (Continued)

Step 2 of 4

When & how long?

Date and Time: 09/20/19 10:55 AM

Duration: 00h 15m

Note:
LAANC authorizations are currently not available for:

- Operations more than 90 days in advance.
- Operations beyond Civil Twilight (30 min. before sunrise and after sunset).
- Simultaneous flights in the same area or multi-drone swarms.

Back Next

Red arrows point from the date and duration fields to the 'Next' button. The 'Next' button is circled with a red dashed line.

10. Enter flight date and duration, then click "Next"

Step 3 of 4

Pre-Check Results

✓ Eligible for Auto-Approval

Authorizing Airport: APC	Airspace Class: D
Start Date & Time: Sep. 20, 2019 @ 10:55AM PDT	End Date & Time: Sep. 20, 2019 @ 11:10AM PDT
Duration: 15min	

LAANC authorizations are for operations in controlled airspace. Your flight plan covers

Back Next

11. Pre-Check results will be given if auto-approve eligibility is met

Step 4 of 4

Review Info & Submit to FAA

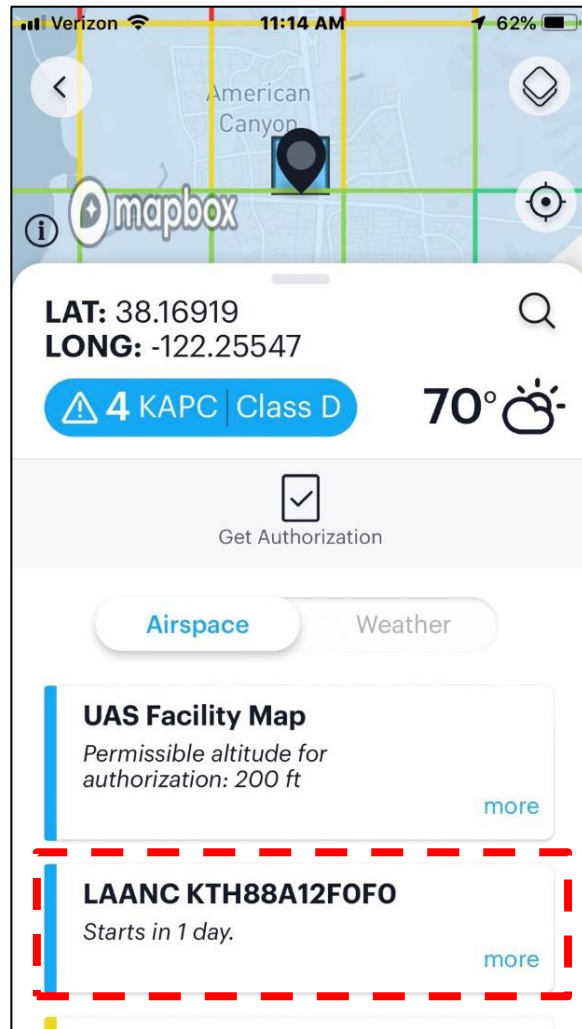
- ✓ Airspace (SUAs): <https://sua.faa.gov>
- ✓ Altitude limits are absolute values above ground level (AGL) which shall not be added to the height of any structures.
- ✓ This authorization does not constitute a waiver of any State law or local
- ✓ Each authorization corresponds to a single operator controlling at most one aircraft at a time.
- ✓ Contacting ATC by phone for LAANC status information may result in the request being rejected by the FAA.

Back Agree & Submit

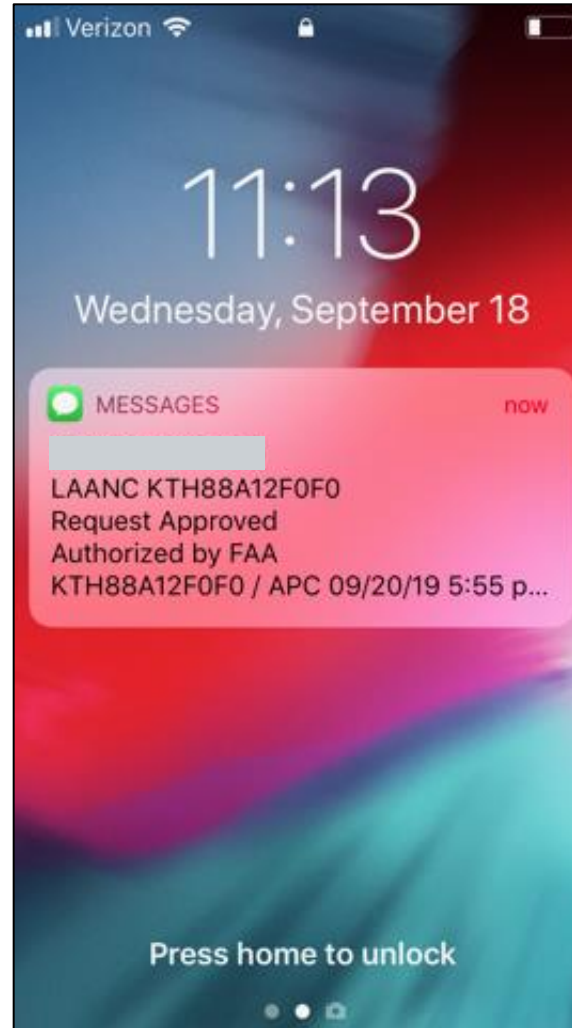
A red arrow points to the first checkmark. The 'Agree & Submit' button is circled with a red dashed line.

12. Review information and click "Submit". Note: all boxes must be checked to continue

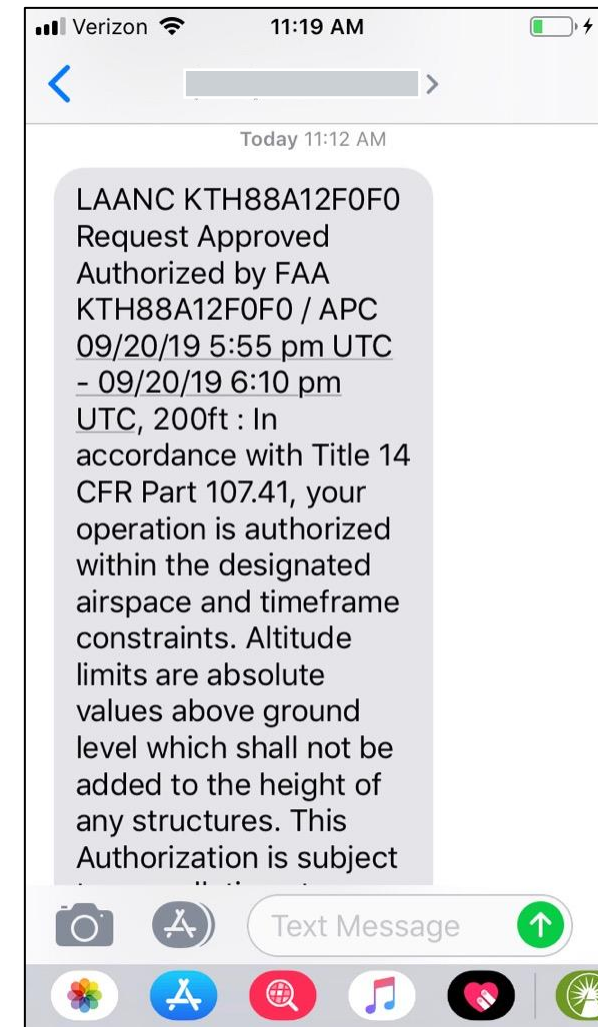
LAANC Authorization (Continued)



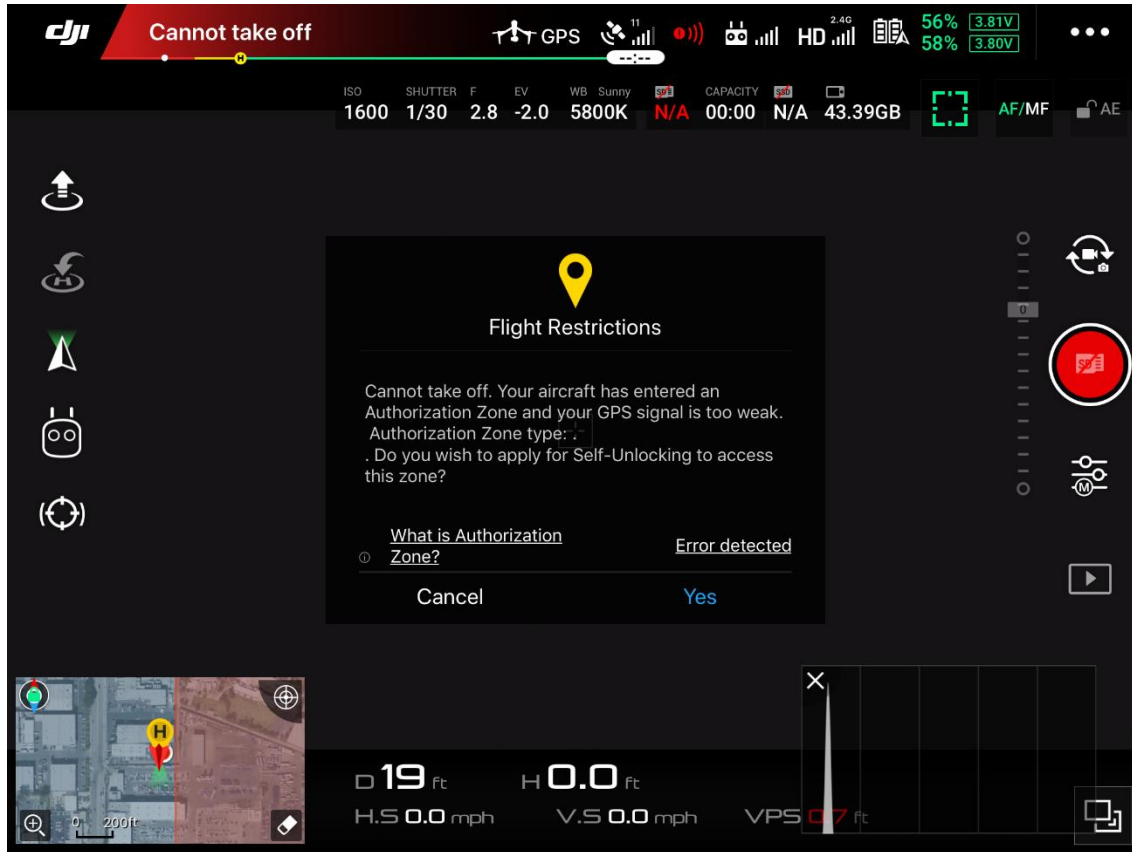
14. Kittyhawk will return to the request screen. Notice the approved flights



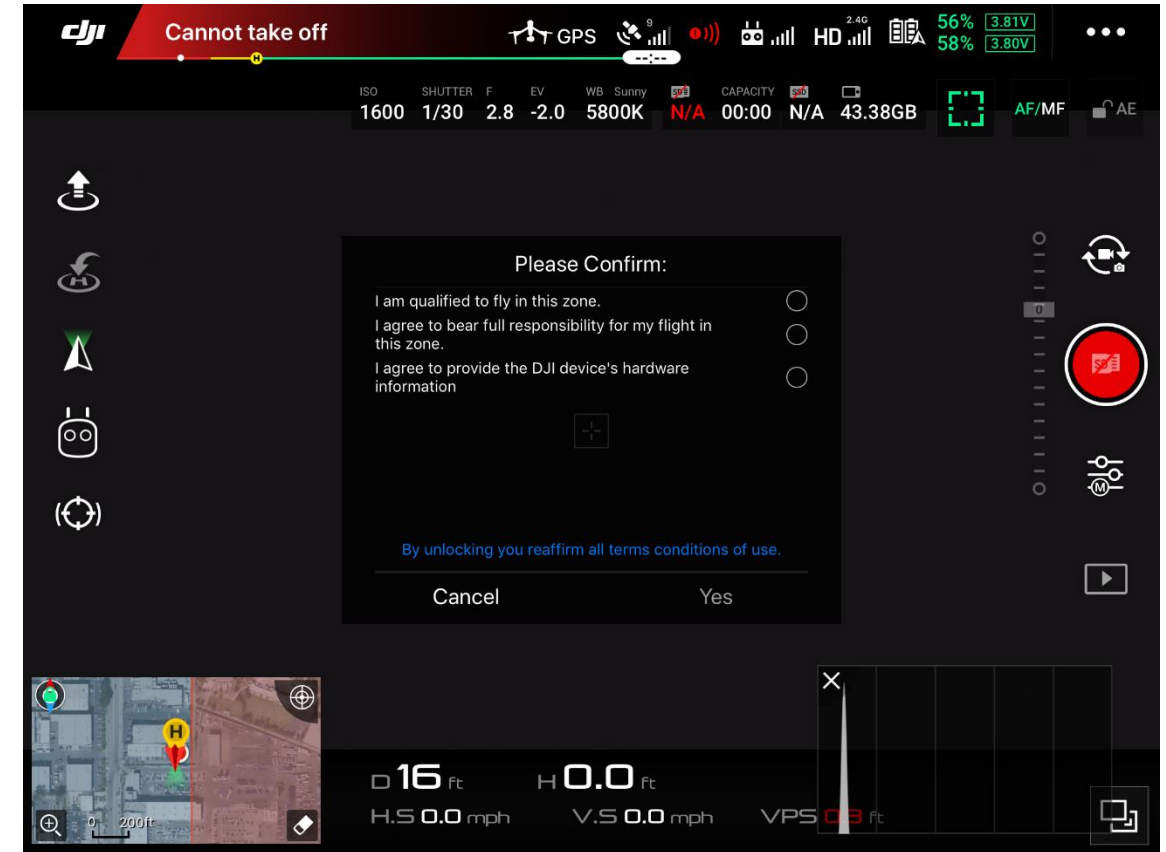
15. A text will also be sent confirming LAANC approval ([Video](#) for generic pilot workflow example, and [video](#) for LAANC process).



DJI Geofence System & Unlock Codes



16. You made need to unlock an Authorization Zone using the appropriate DJI App for the aircraft.



17. Check the 3 circles and click YES for Authorization ([video](#) on DJI Unlock process)