

# senseFly Swinglet CAM INSPECTION AND LOG PROCEDURES FOR THE OHIO DEPARTMENT OF TRANSPORTATION



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Revised: 09/27/2012



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## **1 Introduction**

The purpose of this document is to provide detailed inspection and log procedures

## **2 Inspection**

The inspection procedures for the senseFly Swinglet CAM are as follows.

### **2.1 30 Day Inspection**

The following inspection shall be performed at least 30 days prior to the flight of the aircraft.

1. The airframe and ailerons will be inspected for any damage that will negatively affect the performance of the aircraft.
2. Verify that the winglets are solidly attached to the airframe.
3. The propeller will be inspected for any damage and replaced if needed.
4. The two rubber bands connecting the propeller to the electric motor will be checked for any cracks and replaced if needed.
5. Verify that the linkage between the servos and the control surfaces are not damaged and firmly attached at both ends.
6. Verify that the pitot probe is properly attached to the airframe and the two rubber tubes are well in place.

The inspection checklist is located in appendix 4.1

### **2.2 Preflight Inspection**

The following shall be performed prior to each flight of the aircraft.

1. Weather is checked to verify the conditions are favorable for a successful flight, on site and prior to launch.
2. Wind direction is noted for takeoff direction.



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3. Check the existing terrain; select a take-off location that has no obstacles (buildings, rocks, power lines, trees, etc.) within a radius of 130 feet around the take-off position.
4. The PIC and the observer will verify that all of the batteries are fully charged in the ground station laptop, remote control unit, camera and the UAV's main battery. If the batteries are not fully charged then the battery will be connected to the appropriate charger until it is fully charged as per manufacturer specs.
5. Connection to the UAV is checked and verified to be established between both the ground station computer and the remote control prior to launch.
6. The airframe and ailerons will be inspected for any damage that will negatively affect the performance of the aircraft. Verify that the winglets are solidly attached to the airframe. Any damage shall be repaired to the aircrafts factory specification prior to any flight operation. As per the *"senseFly Swinglet CAM INSPECTION AND LOG PROCEDURES FOR THE OHIO DEPARTMENT OF TRANSPORTATION"*.
7. The propeller will be inspected for any damage and replaced if needed.
8. The two rubber bands connecting the propeller to the electric motor will be checked for any cracks and replaced.
9. Verify that the linkage between the servos and the control surfaces are not damaged and firmly attached at both ends.
10. Verify that the pitot probe is properly attached to the airframe and the two rubber tubes are well in place.
11. Lay the UAV horizontally on the ground in the vicinity of the take-off position, with the top face up. It is important that the UAV is not inclined more than 10 degrees in order to start up properly.
12. Connect the battery to the UAV. Make sure that the colors of the cables match and insert the connectors firmly to the end in order to avoid undesired disconnection when in flight. Take care to keep the propeller area clear.



13. After the power is connected the UAV will perform its own internal systems check to insure proper operation. The onboard computer is checked for any error codes at this time. Error codes are diagnosed and dealt with as needed to insure proper operation.
14. Wait for the aileron motion and for the 'GO' indication on the autopilot LED display while the UAV performs self-checks and acquires GPS signal. This may last from a few seconds to several minutes in the case of poor GPS signal reception.
15. Make sure the camera is properly connected. To verify this connection, you can shake the UAV three time up and down (in approx. 3 seconds) while holding it horizontally. The camera should then turn on and the optics should extend below the UAV. Repeat the same movement to switch-off the camera.
16. Always make sure that the optics is retracted (camera switched off) before putting down the UAV.
17. For remote control check;
  - a. Flip the lever of the remote from auto to manual.
  - b. Move the aileron stick on the remote control to verify proper reception by the UAV and correct servo direction.
  - c. Move the thrust lever to the low position to prevent or stop the propeller from spinning.
  - d. Flip the lever from manual to auto.
18. Gently shake the UAV back and forth 3 times longitudinally (within approx. 3 seconds). This will switch the motor to full power. Note: Once this is done, do not hurry to launch it into the air. In case you want to return to idle mode, just repeat the back and forth three times movement and the motor will stop.
19. Orient the UAV against the wind, with approximately 30 degrees nose up and level wings. Make sure that the take-off direction is free of obstacles.
20. Release the UAV by gently accompanying it with two hands symmetrically placed on either side in a purely forward motion into the prevailing wind.

The preflight checklist is located in appendix 4.2

### **2.3 Post-flight Inspection**



The following shall be performed after each flight of the aircraft.

1. The main battery is disconnected and removed.
2. The Camera is removed.
3. The Camera's memory card is removed.
4. The UAV and all components of the UAS are stored in its box as per manufacturer specifications.

The post-flight checklist is located in appendix 4.2

### **3 Logs**

#### **3.1 Inspection Logs**

All inspections shall be recorded in the inspection log. The following shall be recorded in the inspection log.

- a) An inspection number shall be given to and recorded on the form.
- b) The date of the inspection shall be recorded.
- c) The name of person conducting the maintenance shall be recorded.

The inspection log is located in appendix 4.3

#### **3.2 Flight Logs**

All flights shall be recorded in the flight log. The following shall be recorded in the flight log.

- a) The name of the aircraft shall be recorded.
- b) The location of the flight shall be recorded.
- c) The name of the pilot shall be recorded.
- d) The name of the observer shall be recorded.
- e) A flight number shall be given to and recorded on the form.



- f) The page number will be recorded on the form.
- g) The date of the flight shall be recorded on the form.
- h) The duration of the flight shall be recorded on the form.

The flight log is located in appendix 4.4

### **3.3 Maintenance Logs**

All maintenance that is performed on the aircraft shall be recorded in the maintenance log. The following shall be recorded for each part that undergoes maintenance.

- a) The name of the aircraft shall be recorded on the form.
- b) The name of the person conducting the maintenance shall be recorded on the form.
- c) A maintenance number shall be given to and recorded on the form.
- d) The page number shall be recorded on the form.
- e) The date of the completion of the maintenance shall be recorded on the form.
- f) The parts related to the maintenance shall be recorded.
- g) Detailed notes shall be taken of the maintenance that was performed. When possible, pictures shall be attached to the form showing the process of the maintenance.

The maintenance log is located in appendix 4.5

### **3.4 Battery Logs**

Each battery used in any kind of flight operation shall have a battery log. The following shall be recorded for each battery and flight.

- a) The date the battery was used shall be recorded.
- b) The flight number shall be recorded.
- c) The flight time shall be recorded.
- d) The voltages of each battery contained on board the aircraft shall be recorded prior to and



after the completion of each flight in each battery log.

e) The number of mAh put into the battery when charged shall be recorded  
The battery log is located in appendix 4.6

## **4 Appendices**

4.1 Inspection Checklist

4.2 Flight Checklist

4.3 Inspection Log

4.4 Flight Log

4.5 Maintenance Log

4.6 Battery Log





#### 4.1 *Inspection checklist*

### senseFly Swinglet CAM Inspection Checklist

☐

The airframe and ailerons will be inspected for any damage that will negatively affect the performance of the aircraft.

☐

Verify that the winglets are solidly attached to the airframe.

☐

The propeller will be inspected for any damage and replaced if needed.

☐

The two rubber bands connecting the propeller to the electric motor will be checked for any cracks and replaced if needed.

☐

Verify that the linkage between the servos and the control surfaces are not damaged and firmly attached at both ends.

☐

Verify that the pitot probe is properly attached to the airframe and the two rubber tubes are well in place.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



#### 4.2 *Flight Checklist*

### senseFly Swinglet CAM Flight Checklists

☐

Weather is checked to verify the conditions are favorable for a successful flight, on site and prior to launch.

☐

Wind direction is noted for takeoff direction.

☐

Check the existing terrain; select a take-off location that has no obstacles (buildings, rocks, power lines, trees, etc.) within a radius of 130 feet around the take-off position.

☐

The PIC and the observer will verify that all of the batteries are fully charged in the ground station laptop, remote control unit, camera and the UAV's main battery. If the batteries are not fully charged, the battery will be connected to the appropriate charger until it is fully charged as per manufacturer specs.

☐

Connection to the UAV is checked and verified to be established between both the ground station computer and the remote control prior to launch.

☐

The airframe and ailerons will be inspected for any damage that will negatively affect the performance of the aircraft. Verify that the winglets are solidly attached to the airframe. Any damage shall be repaired to the aircrafts factory specification prior to any flight operation. As per the “*senseFly Swinglet CAM INSPECTION AND LOG PROCEDURES FOR THE OHIO DEPARTMENT OF TRANSPORTATION*”.

☐

The propeller will be inspected for any damage and replaced if needed.

☐

The two rubber bands connecting the propeller to the electric motor will be checked for any cracks and replaced if needed.



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- ☐ Verify that the linkage between the servos and the control surfaces are not damaged and firmly attached at both ends.
- ☐ Verify that the pitot probe is properly attached to the airframe and the two rubber tubes are well in place.
- ☐ Lay the UAV horizontally on the ground in the vicinity of the take-off position, with the top face up. It is important that the UAV is not inclined more than 10 degrees in order to start up properly.
- ☐ Connect the battery to the UAV. Make sure that the colors of the cables match and insert the connectors firmly to the end in order to avoid undesired disconnection when in flight. Take care to keep the propeller area clear.
- ☐ After the power is connected the UAV will perform its own internal systems check to insure proper operation. The onboard computer is checked for any error codes at this time. Error codes are diagnosed and dealt with as needed to insure proper operation.
- ☐ Wait for the aileron motion and for the 'GO' indication on the autopilot LED display while the UAV performs self-checks and acquires GPS signal. This may last from a few seconds to several minutes in the case of poor GPS signal reception.
- ☐ Make sure the camera is properly connected. To verify this connection, you can shake the UAV three time up and down (in approx. 3 seconds) while holding it horizontally. The camera should then turn on and the optics should extend below the UAV. Repeat the same movement to switch-off the camera.
- ☐ Make sure that the optics is retracted (camera switched off) before putting down the UAV.
- ☐ Remote control check;
  - a. Flip the lever of the remote from auto to manual.



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- b. Move the aileron stick on the remote control to verify proper reception by the UAV and correct servo direction.
- c. Move the thrust lever to the low position to prevent or stop the propeller from spinning.
- d. Flip the lever from manual to auto.

☐

Gently shake the UAV back and forth 3 times longitudinally (within approx. 3 seconds). This will switch the motor to full power. Note: Once this is done, do not hurry to launch it into the air. If case you want to return to idle mode, just repeat the back and forth three times movement and the motor will stop.

☐

Orient the UAV against the wind, with approximately 30 degrees nose up and level wings. Make sure that the take-off direction is free of obstacles.

☐

Release the UAV by gently accompanying it with two hands symmetrically placed on either side in a purely forward motion into the prevailing wind.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_





#### 4.4 Flight Log

## Flight Log

Aircraft: \_\_\_\_\_

Flight Number: \_\_\_\_\_

Location of Flight: \_\_\_\_\_

Page: \_\_\_\_\_

Name of Pilot: \_\_\_\_\_

Date: \_\_\_\_\_

Name of Observer: \_\_\_\_\_

Flight Time: \_\_\_\_\_

\_\_\_ First Session of Flight Checklist Complete

\_\_\_ Preflight Checklists Completed

\_\_\_ Post-flight Checklist Completed

Battery ID Number:	Voltage Prior to Flight	Voltage After Flight

Notes:

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



#### **4.5 Maintenance Log**

## Maintenance Log

Aircraft: \_\_\_\_\_

Maintenance Number: \_\_\_\_\_

Person conducting maintenance: \_\_\_\_\_

Page: \_\_\_\_\_

Date: \_\_\_\_\_

Related Parts:

Notes:

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



