

UxV/35 sUAS Final ATP Checklist



Date: _____ Tester Initials: _____ S/N: _____ sUAS Model: _____

1. _____ Labeling

- Telemetry radio
 - On aircraft body
 - Telemetry module
 - Pelican case lid
- SBUS radio
 - On aircraft body
 - Telemetry module
 - Pelican case lid
- Prop Direction
 - Each prop(4x)
 - Each wing of the aircraft(4x)
 - Pelican case lid

2. _____ Drone is fully assembled.

3. _____ Test frame assembled on associated pelican case.

4. _____ Pelican case is closed and latched.

5. _____ Battery is installed and drone is turned on.

6. _____ Taranis is in disarmed state, switches are unarmed, in stabilize mode and connected to drone.

7. _____ Perform a ESC calibration on the drone.

8. _____ Restart the drone.

9. _____ Drone is connected through telemetry radio to Mission Planner laptop

10. _____ **UxV/35 Sturnus** – Static flight test performed on pelican test stand and performs as expected:

- Connect telemetry radio and verify drone data and barometer does not fluctuate.
- Pitch axis input is correct (Drone tilts forwards when right stick is moved up and backwards when right stick is moved down)
- Throttle input is correct (Drone attempts to lift off case with increased throttle)
- Roll axis input is correct (Drone tilts forward when right stick is moved left, tilts back when right stick is moved right)
- Return throttle (left stick) to zero and switch to alt hold.
- Verify mission planner shows change in flight mode.
- Verify that Drone throttle does not increase/change.
- Switch to loiter mode and see that drone has entered loiter mode.
- Arm and fire first dropper bay and verify pin retracts correctly and rearms.
- Arm and first second dropper bay and verify pin retracts correctly and rearms.

11. _____ **STURNUS ONLY:**

- Place the Drone on the dropper stand and load each dropper bay with tennis balls.

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- arm and fire first dropper bay and verify bay has successfully dropped the tennis balls. Rearm pin and reload dropper.
 - arm and fire second dropper bay and verify bay has successfully dropped the tennis balls. Rearm pin and reload dropper.
12. _____ Verify Warden is with matching Warden and confirm that Warden E-stop command kills power to the Drone
- Warden ID: _____
 - Warden ID: _____
 - Verify that safety loop back is removed.
 - Send E-Stop command and verify drone shuts off.
 - Rearm drone with loopback and remove, send E-stop command and verify drone shuts off at 100 meters.
 - Reinstall safety loop back.
 - Remove the safety loop back after drone initializes.
 - Walk 100 meters and remove antenna, cover antenna mount on warden.
 - Verify drone shuts off, reinstall loop back.
13. _____ **UxV/35 SFF** – Leg test performed in Flight Basket and performs as expected:
- Pitch axis input is correct (Drone tilts forwards when right stick is moved up and backwards when right stick is moved down)
 - Throttle input is correct (Drone attempts to lift from legs with increased throttle)
 - Roll axis input is correct (Drone tilts forward when right stick is moved left, tilts back when right stick is moved right)
14. _____ GPS 3DFIX is obtained with an HDOP of less than 1 and a HACC of less than 2.4
15. _____ Drone is able to switch between **Stabilize**, **Altitude Hold**, and **Loiter** through the Taranis hand transmitter. Verify through telemetry screen on Mission Planner.
16. _____ Drone is able to be armed in **Loiter** through both Taranis controller and Mission Planner.
17. _____ Perform manual flight test in **Stabilize**. The drone responds to all movement axis (Pitch, Roll, and Yaw) as expected. If one axis does not behave as expected, make note for repair.
18. _____ Change mode to **Altitude Hold**. With throttle at 50%, the drone should hold its altitude, throttle less than 50% should lower altitude, throttle higher than 50% should raise altitude.
19. _____ Change mode to **Loiter**. Mode changed successfully and confirmed through Mission Planner. The drone should relatively hold its position in all axis of movement without pilot input. The better the HDOP and HACC, the more accurate the holding of position.
20. _____ Land the drone safely.

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21. _____ Plan, write, and read a autonomous mission to the Sturnus with the following commands:

- Takeoff
- Waypoint
- Drop both bays
 - Do set servo 7 to 2000
 - Delay for 1 second
 - Do set servo 5 to 2000
 - Delay for 1 second
 - Do set servo 6 to 2000
 - Delay for 1 second
 - Do set servo 5 to 1000
 - Do set servo 6 to 1000
- Return to launch

22. _____ Verify Sturnus completes mission successfully, rearm fabric dropper, and stow away the drone with test stand back into dropper pelican case.

_____ **Place TAOK and all other labels where necessary**

Notes:

Date	Issue	Fix
7/19/2024	Dropper test update	3-point dropper test in doc. Automated mission section was added to document.
7/23/2024	Labeling	Labeling section was added. Correct data management of radios Id's and prop orientation.

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