**June 30, 2016 – OSU UAS Flight Field**

UTC = local time + 5 hrs

Flights conducted at the OSU UAS Flite Field

Front

Back

Windsonde 733

Windsonde 740

Windsonde 742

Windsonde 737

All Windsondes located under the rotors and shielded by small PVC pipes (not in contact). See pictures below.

Flight 1 (Iris+)

Battery Number: 7

Windsondes: 740, 737, 733 & 742

Start Battery: 12.4 V

Start Direction: 100° E

Ascent Start: 10:44:52 UTC

Left 3m hover: 10:45:16 UTC

Reached 100m: 10:46:09 UTC

Reached 200m: 10:47:06 UTC

Reached 300m: 10:48:21 UTC

Started decent: 10:48:30 UTC

Landed: 10:53:53 UTC

End Battery: 11.3 V

Remarks: The flight plan is to fly to 300m. We will take off and hover at 3 meters to aspirate the sensors and stabilize readings. The mission to 300 meters had an ascent speed of 2.5 meters per second and a descent speed of 1.5 meters per second. We landed by activating the RTL once the copter had stabilized at 10 meters. The entire flight was flown autonomously.

Flight 2 (Iris+)

Battery Number: 8

Windsondes: 740, 737, 733 & 742

Start Battery: 12.4 V

Start Direction: 100° E

Ascent Start: 10:59:24 UTC

Left 3m hover: 10:59:48 UTC

Reached 100m: --------- UTC

Reached 200m: --------- UTC

Reached 300m: --------- UTC

Started decent: --------- UTC

Landed: 11:02:05 UTC

End Battery: 11.3 V

Remarks: The flight plan is to fly to 300 meters. We will take off and hover at 3 meters to aspirate the sensors and stabilize readings. The mission to 300 meters had an ascent speed of 2.5 meters per second and a descent speed of 1.5 meters per second. The entire flight was flown autonomously.

We had to abort the flight early because of a vibration error halting our ascent.

We will try to replace the dented prop to see if that resolves the issue.

Flight 3 (Iris+)

Battery Number: 9

Windsondes: 740, 737, 733 & 742

Start Battery: 12.4 V

Start Direction: 100° E

Ascent Start: 11:09:29 UTC

Left 3m hover: 11:09:54 UTC

Reached 100m: --------- UTC

Reached 200m: --------- UTC

Reached 300m: --------- UTC

Started decent: 11:10:37 UTC

Landed: 11:11:42 UTC

End Battery: 11.3 V

Remarks: The flight plan is to fly to 300 meters to see if replacing the prop resolved the vibration errors. We will take off and hover at 3 meters to aspirate the sensors and stabilize readings. The mission to 300 meters had an ascent speed of 2.5 meters per second and a descent speed of 1.5 meters per second. We landed by activating the RTL once the copter had stabilized at 10 meters. The entire flight was flown autonomously.

We had to abort the flight early on because of another vibration error. We attempted to fix it by duct taping the hatch closed.

Flight 4 (Iris+)

Battery Number: 9

Windsondes: 740, 737, 733 & 742

Start Battery: 12.4 V

Start Direction: 100° E

Ascent Start: 11:13:49 UTC

Landed: 11:15:25 UTC

End Battery: 11.3 V

Remarks: The flight plan was to fly to 20 meters to asses the integrity of our hot fix of the hatch. The repair did not solve the issue as we still encountered vibration errors while in flight

We will try to completely replace the hatch in order to resolve the issue.

Flight 5 (Iris+)

Battery Number: 1

Windsondes: 740, 737, 733 & 742

Start Battery: 12.4 V

Start Direction: 100° E

Ascent Start: 11:46:23 UTC

Left 5m hover: 11:46:48 UTC

Reached 100m: 11:47:40 UTC

Reached 200m: ---------- UTC

Reached 300m: ---------- UTC

Started decent: 11:48:47 UTC

Landed: 11:51:05 UTC

End Battery: 11.3 V

Remarks: The flight plan was to fly to 300 meters to see if replacing the hatch resolved the vibration errors. We will take off and hover at 5 meters to aspirate the sensors and stabilize readings. The mission to 300 meters had an ascent speed of 2.5 meters per second and a descent speed of 1.5 meters per second. The entire flight was flown autonomously.

Vibration error forced us to abort early again. We will try to make sure all of the screws are on tight.

Flight 6 (Iris+)

Battery Number: 1

Windsondes: 740, 737, 733 & 742

Start Battery: 12.4 V

Start Direction: 10° N

Ascent Start: 11:59:33 UTC

Left 5m hover: 12:00:02 UTC

Reached 100m: ---------- UTC

Reached 200m: ---------- UTC

Reached 300m: ---------- UTC

Max Height: 70m

Started decent: 12:01:27 UTC

Landed: 12:02:04 UTC

End Battery: 11.3 V

Remarks: The flight plan is to fly to 300 meters to see if our repairs fixed the problem. We will take off and hover at 5 meters to aspirate the sensors and stabilize readings. The mission to 300 meters had an ascent speed of 2.5m/s and a descent speed of 1.5m/s. The entire flight was flown autonomously.

Vibration error forced us to abort early again. We will try to remove the sensors completely to see if that is causing the vibration errors.

Flight 7 (Iris+)

Battery Number: 2

Start Battery: 12.0 V

Start Direction: 100° E

Ascent Start: 12:16:13 UTC

Max Height: 195 m

Landed: 12:21:05 UTC

End Battery: 11.7 V

Remarks: The flight plan was to fly to 50 meters to see if removing the sensors helped fix the vibration issue. However, it did not resolve the problem.

We will try to secure the broken leg more and see if that helps correct the vibration errors.

Flight 8 (Iris+)

Battery Number: 2

Start Battery: 11.7 V

Start Direction: 100° E

Ascent Start: 12:45:40 UTC

Max Height: 185 m

Landed: 12:49:34 UTC

End Battery: 11.3 V

Remarks: The flight plan was to fly to 50 meters to see if securing the once broken leg would solve any issues. However, it did not resolve the vibration error.

We will try to put the shorter legs on the copter to see if that helps. The long legs might be causing the vibration errors.

Flight 9 (Solo)

Battery Number: 1

Start Battery: 86%

Start Direction: 100° E

Ascent 1 Start: 12:59:24 UTC

Max Height: 13:00:33 UTC

Landed: 13:01:41 UTC

Ascent 2 Start: 13:01:51 UTC

Max Height: 13:03:00 UTC

Landed: 13:04:11 UTC

Ascent 3 Start: 13:04:22 UTC

Max Height: 13:05:31 UTC

Landed: 13:06:41 UTC

Ascent 4 Start: 13:06:50 UTC

Max Height: 13:07:58 UTC

Landed: 13:09:09 UTC

End Battery: 33%

Remarks: The flight plan is to fly to 120 meters and down. We will fly to 120 meters at full throttle and come down by hitting the RTL button. We will do this four times.

Flight 10 (Solo)

Battery Number: 2

Start Battery: 86%

Start Direction: 100° E

Ascent 1 Start: 13:14:05 UTC

Max Height: 13:15:10

Landed: 13:16:22 UTC

Ascent 2 Start: 13:16:30 UTC

Max Height: 13:17: 38 UTC

Landed: 13:18:50 UTC

Ascent 3 Start: 13:18:59 UTC

Max Height: 13:20:07 UTC

Landed: 13:21:16 UTC

Ascent 4 Start: 13:21:27 UTC

Max Height: 13:22:35 UTC

Landed: 13:23:46 UTC

End Battery: 33%

Remarks: Plan is to fly to 120 meters and down. We will fly to 120 meters at full throttle and come down by hitting the RTL button. We will do this four times.

Flight 11 (Iris+)

Battery Number: 3

Start Battery: 12.4 V

Start Direction: 100° E

Ascent Start: 13:43:21 UTC

Max Height: 195 m

Landed: 13:43:51 UTC

End Battery: 11.7 V

Remarks: The flight plan was to fly to 100 meters with short peg legs to see if the long legs were causing vibration and EKF issues. Conclusion: We still have issues; this will require more investigation. A possible reason for the vibration errors could be pixhawk connections being loose.