Brigham Young University

AUVSI Capstone Team (Team 45)

Preflight Checklist v0.1

ID	Rev.	Date	Description	Author	Checked By
PF-001	0.1	11-3-2018	Wrote checklist based on google sheet and research	Andrew Torgesen	Brandon McBride

1 Purpose

The purpose of this artifact is to keep an up-to-date, standard protocol for ensuring safety and good performance for test flights in hardware. It is important that all test flights are run systematically, and according to the procedures and timelines outlined in this document.

2 Checklist

Day Before

- ☐ Check that the launch file does what it needs to with the plane grounded
- ☐ Ensure that the ROSbag records the data you want
- ☐ Charge airplane LiPo(s)
- ☐ Charge RC transmitter battery
- ☐ Parameter check
- ☐ Check WiFi config
- ☐ Check disk space on Odroid

Hardware Packing List

- ☐ Plane
- ☐ Wings w/ bolt attached
- ☐ Airplane batteries
- ☐ RC transmitter
- ☐ RC transmitter batteries
- ☐ 2+ sets of props
- ☐ Fiber tape
- ☐ Launch gloves
- ☐ Wrench for props
- ☐ Hex driver for wings

- ☐ Battery monitor
- ☐ Safety glasses
- ☐ Screwdriger
- ☐ Table (optional)
- ☐ Targets (optional)

Comms Packing List

- ☐ Router + power cable
- ☐ Litebeam + 2 ethernet cables
- ☐ A/C POE adapter
- ☐ Extra ethernet cable
- ☐ Car power adapter
- ☐ 3-plug extension cable
- ☐ UART cable

Flight Checklist: *Before Launching*

Before Powering Motor:

- ☐ Start network
- ☐ Attach wings and check bolt tightness
- ☐ Attach props and check tightness
- ☐ Strap down battery
- ☐ Connect battery monitor
- ☐ Check plane CG
- ☐ Connect battery
- ☐ Ensure network connection
- ☐ Launch ROS (through *screen*, if possible)
- ☐ Ensure GPS Fix ($\geq$ 3 satellites)

- ☐ Calibrate Sensors
  - ☐ IMU: rosservice call */calibrate_imu*
  - ☐ Airspeed: rosservice call */calibrate_airspeed*
  - ☐ Barometer: rosservice call */calibrate_baro*
  - ☐ Check attitude estimation (if wrong, update ins offset)
  - ☐ Check airspeed
  - ☐ Check GPS
- ☐ Check RC
  - ☐ Ensure RC transmitter is emitting enough power ($> 10mW$)
  - ☐ Wire wiggle test
  - ☐ Check control surface direction
    - ☐ Ailerons
    - ☐ Elevators
    - ☐ Rudder

After Powering Motor:

- ☐ Check arm/disarm
- ☐ Check prop direction
- ☐ Check RC override
- ☐ RC Range Test (100ft)

FLY

Flight Checklist: *After Landing*

- ☐ Kill ROS
- ☐ Backup ROSbag
- ☐ Clean shutdown
- ☐ Unplug battery

- ☐ Gather all items

Post-flight

- ☐ Set battery to storage voltage