# Some Assembly Required Checklists
## Flight Ops

### One-Time Set-Up (Pre-Takeoff)

1. Weather check – METAR, 800.WxBrief
2. Crew Briefing (roles and goals, crew health, alternate landing sites)
3. Turn on ground station (GS) computer (laptop), check battery status
4. Start mission planner (MP), verify maps are pre-fetched/downloaded
5. Power on TX
   a. Verify battery charge > 4.8 V
   b. Verify correct AC (hold + to enter select mode)
   c. Set THROTTLE to minimum
6. Install Props on Aircraft (AC) - have separate person double-check
7. Install battery on AC (can be a Test battery)
8. Power up AC
9. Connect Mission Planner to AC
10. Set Geofence and upload to AC (if Geofence required)
11. Set minimum Altitude and verify voice warning is on (if required)
12. Remove camera cover, power on monitor, and confirm video and on-screen display (OSD) (reboot aircraft if needed)
13. Verify the video signal is good at the location/do a distance check (select a new channel if needed - press power to access menu, click M, up and down arrows, and then press Power to exit)
14. Disconnect video system until ready for take-off (to prevent overheating)
15. Perform compass and IMU calibration if required (new field location only)
16. Set BATT_LOW_VOLT (for warning only): **14.2V (4S)** or 10.8V (3S)
17. Set BATT_CRT_VOLT (for RTL): **13.8V (4S)**
18. Set Failsafe – Radio loss link to RTL (set in Initial Setup | Falsafe)
19. Reverse Tablecloth Magic Trick (RTMT) mechanism
    a. Check servo directions for open and close
    b. Verify RTMT locked in/cable grommets tight, screen open
    c. Verify velcro straps are in place

# Each Flight, Every Flight (Pre-Takeoff)

1. Verify Airspace Clear
2. Safety inspect aircraft (AC), e.g., check for missing legs, props for damage
3. Install fresh battery on AC
4. Power up AC
5. Connect Mission Planner to AC
6. Verify AC battery charge > 16V (4 x 4.2V for 4S batteries)
7. Verify camera cover off and lens clean
   (and pointed straight down if not fixed mount)
8. **Set payload mechanism (RTMT) to open (mission-specific)**
9. Verify GPS Lock (Sat count > 10, HDOP  <1.0)
10. **AUTONOMOUS FLIGHTS ONLY**
    a. On flight planner screen, enter Takeoff (**100 FT, hover 5 sec**) and RTL commands
    b. Set waypoints for the mission
    c. Upload waypoints for autonomous mission (select Write button)
    d. Simulate mission prior to flying (if time allows)
       i. Loiter (to ensure mode is not Auto and allow Arm)
       ii. Arm
       iii. Set Mode (Auto)
       iv. Mission_Start: Do Action
11. Plug in video system
12. Activate Hardware Safety Switch (on AC)
13. Arm the AC (on Jeff, left stick in and down)
14. Call: "**ALL EYES ON THE QUAD!**"

# Notes

- RTL Altitude - Full Parameter List, **RTL_ALT** (Height in cm 1 to 8000) Default is 15m (1500cm)
- RTL decent speed - **LAND_SPEED** (speed in cm/s 20 to 200)
- Set COM_DISARM_LAND and/or DISARM_DELAY as needed (?)

## When the aircraft Lands (Battery Swap)

1. **Disarm** the aircraft (press and hold hardware safety switch on AC until LED blinks)
2. **Swap** the battery
3. **Wait** 10 seconds and press hardware safety switch on AC
4. **Arm** the AC (on Jeff, left stick in and down)
5. **Call**: "**ALL EYES ON THE QUAD!**"

*Note: disconnect the video system if not immediately re-arming, and reconnect when ready to re-arm.*

# Day Before

1. Charge all flight batteries
2. Charge monitor
3. Fresh batteries in TX
4. Pre-fetch maps for flight location in MP
5. Verify MP laptop has no pending Windows updates, **turn off WiFi!**

# Packing

1. Quadcopter (Quadzilla and/or Jeff)
2. Flight Bag - TX, Mavlink TX, batteries, props
3. MP Laptop and charger
4. Small folding table and folding chairs
5. Flight Batteries and charger
6. Tool bag
7. Landing pad
8. Safety supplies
9. Spare parts box
10. Remind team to bring sunglasses (esp. pilot) and sunscreen
11. Extra team shirts and hats
12. Stand-alone fan for cooling video system while on ground

# PAVE Checklist

A high level of Situational Awareness (SA) is the key to quality decision making

- (P)ilot-in-Command - IMSAFE checklist
    - (I)llness
    - (M)edication
    - (S)tress
    - (A)lcohol
    - (F)atigue
    - (E)ating
- (A)ircraft - includes consideration for Temperature, Altitude, Density Altitude (DA)
- En(V)ironment - includes weather (current and predicted), terrain, airspace
- (E)xternal Pressures - stressors (including pride)