

# Summary Flight Procedure: Gwaihira - Page 1

---

## Initial set up

1. Mount batteries
2. Check that the CG is centered, or *very slightly* shifted toward nose (nose-heavy)

## Batteries

3. Install “screamers” on batteries
4. Install GoPro Cameras
5. Plug IMU into computer (white USB connector)
6. Plug Lidar into computer (black Ethernet connector)
7. Check: USB drive plugged into **upper right** USB slot
8. TX switches forward
9. TX throttle all the way down
10. TX aileron centered
11. Turn on **transmitter (NOT craft!)**
12. Check model: TX is “Heavy Lift Helicopter”
13. Throttle hold ‘on’ (“SG switch should be **up, toward you**)

## Power plug in Sequence

14. Ensure throttle hold is **on**
15. Top right battery (1) to plug into input with flight controller power lead (1)
16. WAIT TEN SECONDS for IMU gyros to stabilize
17. Top left battery (2) into input at bottom left *Listen for arming tone from ESC*
18. WAIT ANOTHER TEN SECONDS for IMU gyros
19. **Arming tone should produce 12 tones, corresponding to a 12 cell battery**
20. *Unusual tone: ESC log is full. Download and start over*
21. Connect final two batteries.

## Transmitter input check

22. Check throttle hold is **on**
23. Right stick (elevator) forward: check that swash tilts forward

24. Right stick (elevator backward: check that swash tilts backward
25. Right stick to right (aileron): check that swash tilts right
26. Left stick to right (aileron): check that swash tilts left
27. Again **check that throttle hold is on**
28. Left stick (throttle/pitch) up: check that swash plate move **up** shaft
29. Return left stick to lowest position
30. Left stick (yaw) left: check that tail blades are blowing air to **left side** of aircraft
31. Left stick (yaw) right: check that tail blades are blowing air to **right side** of aircraft

## Gyro Check

32. Check that throttle hold is still **on**
33. Tilt nose down: swash should tilt **back** to compensate
34. Tilt nose up: swash should tilt **forward** to compensate
35. Tilt craft left: swash should tilt **right**
36. Tilt craft right: swash should tilt **left**
37. Pull craft toward you: air should *hypothetically* blow toward you to oppose the pull
38. Push away from you: air should *hypothetically* blow away from you to oppose push

## Auto Pilot Check

39. Throttle **down** and throttle hold still **on**
40. Start with switch fully forward
41. Full forward to GPS: two green lights should be flashing on GPS antenna
42. Switch to center position: two purple flashes should be seen on GPS antenna
43. Switch to full manual mode: no lights should be flashing on the GPS antenna
44. Return to full forward (GPS mode): 2 green flashing lights again

# Summary Flight Procedure: Gwaihir - Page 2

---

45. IMPORTANT: if lights flash **red**. This is a NO GO for flight
46. All switches forward EXCEPT THROTTLE HOLD
47. Throttle position still fully back
48. Toggle switch F (rate mode switch) from forward to back, then to forward again  
*-this centers the tail rotor for takeoff*

*position*

## **Payload Start up**

49. Turn on Cameras
50. Plug in payload battery: check to make sure Lidar is spinning
51. Throttle hold forward. Throttle hold **off**.
52. Increase throttle/pitch to 2<sup>nd</sup> position ind. Bar  
*-this initiates ESC governor; ramps up*

*RPM to operating speed*

53. Wait for ESC to spool up to RPM

## **Take off**

54. Increase throttle/pitch to stick just above 5<sup>th</sup> position
55. Climb to altitude. Reduce throttle to just below 4<sup>th</sup> position to **hover**

## **Ground station transfer**

56. Click '**go**' on pre-planned mission
57. Toggle Mode Switch (TSE) forward and back to set to GPS cruise

## **Landing**

58. Return to hover in GPS mode over landing location
59. Decrease throttle to just below 4<sup>th</sup> position to initiate **slow** descent

NEVER LOWER BELOW 3<sup>RD</sup> POSITION DURING LANDING

## **When skids touch ground**

60. Lower throttle to 3<sup>rd</sup> indicator position
61. Switch throttle hold indicator backward (hold **on**)
62. Look for (red-blue-flash white) GPS light indicator

63. WAIT 8-10 seconds for throttle to turn off
64. Put throttle position at its lowest indicator position