Initial Apprentice Autonomous Waypoint Flight Test

DATE:

OBJECTIVE(S)
- A successful autonomous waypoint navigation of the Apprentice aircraft
- Verify that the Pixhawk 4 will be able to control flight surfaces effectively during flight without human intervention

SUCCESS CRITERIA
- A successful mission implies the apprentice autonomously executes the following mission successfully:
    - Aircraft maintains cruising speed set in QGroundControl
    - Aircraft reaches successfully changes to the set altitude between waypoints
    - Aircraft climbs to 50 feet as it reaches waypoint two
    - Aircraft holds for 10 seconds at waypoint 2
    - Aircraft climbs to 100 feet as it reaches waypoint 3
    - Aircraft loiters for 30 seconds at waypoints 3
    - Aircraft maintains altitude between 3 & 4
    - Upon reaching waypoint for, Aircraft immediately approaches planned home waypoint
    - Upon reaching planned home waypoint, aircraft loiters
- Craft completes mission within the estimated time of completion given in QGroundControl

SUPPLIES

- ❏ UAS
- ❏ Taranis (fully charged)
- ❏ Battery (fully charged, plus spare)
- ❏ Computer to run QGroundControl(fully charged, one spare)
- ❏ Cell phone with cellular data (fully charged, one spare)

- ❏ Receiver antenna for computer
- ❏ Tape
- ❏ zip-ties

LOCATION:	TEST SYSTEM: Apprentice	TEST CONDITIONS:

PROCEDURES

1. Complete Preflight Checklist
    - ❏ UAS is ready to fly
    - ❏ Team is briefed on safety concerns
    - ❏ Team is briefed on roles and objectives
    - ❏ Final Weather check
2. Complete Test-specific flight checklist
    - ❏ Create and upload mission plan to pixhawk (must be created on site)
3. Complete Electronics team pre-flight checklist
4. Complete Arming Procedure

5. Manually take off
6. Fly to waypoint one GPS location
   - ❏ Verify location via map view on QGroundControl
7. Flip the INSERT SWITCH HERE into INSERT SWITCH POSITION to switch the pixhawk into mission mode
8. Verify the UAS completes its' mission (See Mission plan and verification)
9. Once UAS has reached planned home, switch INSERT SWITCH HERE into INSERT SWITCH POSITION to switch the Pixhawk back into manual flight mode
10. Manually Land UAS
11. Disarm Pixhawk Via QGroundControl
12. Flip ESC disarm switch on the Left side of the plane near the cockpit
13. Disconnect Battery
14. Visually inspect for any electronics damage

15. After the last flight disconnect in the following order:
    - ❏ Disconnect the battery
    - ❏ Turn off Taranis
    - ❏ Disconnect from QGroundControl
    - ❏ Measure battery voltage
    - ❏ Assess aircraft for damage

TEST DATA

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DEBRIEF

- Total Flight Time: _____

- Battery level pre-test: _____ | - Battery level post-test: _____ | - Power Consumption: _____

- Objectives met:
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- Test items that went well:
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- Test Items that did not go well/need to be improved:
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