Job Hazard Analysis

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| **University of Washington:** UW Seattle | | **Department:** Aeronautics and Astronautics | | |
| **Activity or Process:** UAV Operations – Flight Testing | | **Building/Room:** AERB 117   UW Carnation UAV Test Site (UWCUTS) | | |
| **Job Title:** Student Researcher | | **Supervisor:** Christopher Lum, Ph.D | | |
| **Prepared By:** Nicholas Price | | **Date: 2/14/2019** | | |
| ***This document is the certification of hazard assessment for PPE for the workplace.*** | | | | |
| **TASKS/STEPS** | **HAZARDS** | **CONTROLS (SAFEGUARDS)** | | **PHOTO** |
| 1 Test Card Proposal  Conditions to satisfy:   1. Aircraft is built to specifications with an accompanying preflight checklist, payload checklist (if necessary), and aircraft documentation (maintenance and construction log and aircraft manual) 2. Project has reached a milestone which requires in-flight data to proceed. 3. Project team can specify a flight plan for the aircraft. Operating altitude, flight modes, and payload-specific operations should be summarized. | * Software Failure: Flight testing crew rarely has a complete understanding of any one project’s underlying code or system….. * Time Crunch: * Click to add a hazard. * Click to add a hazard. | * UAV assembly JHA * Unit testing-computer science code breaking, simulation software test (parameter testing) * Awareness around 1 week advanced noticed to pre-task plan * Mission Document * Click to add a control. * Click to add a control. * Click to add a control. | |  |
| 2 Ground Checks and Flight Readiness Review | * Machinery and moving parts Motor check * Electrical shock if plane isn’t properly depowered * Open source software contains some unknowns and parameters that could change * Attendance | * Construction and maintenance log should assist identifying any outstanding issues * Firmware check * FAA requirements * Plane is shut down, zero energy, before troubleshooting * Flight Operations manual has roles * Excel pre-flight checklist * Known parameters are used to reference any changes made to ArduPilot * Click to add a control. | |  |
| 3 On site, preflight | * Weather * Software testing * Electrical connection: hook up battery * Machinery moving parts * Launch heavy load | * Setting geofence, if needed * Visual check of plane body * Wings of plane are head with plastic screws or rubber bands to keep them attached * Click to add a control. * Click to add a control. * Click to add a control. | |  |
| 4 Takeoff |  | * Visual Observer (VO) * PPE: Motorcycle helmet, chain mail glove, secondary gripping glove, long sleeve shirt, closed-toed shoes | |  |
| 5 During flight | * Technical issues with ArduPilot crashing -arm/disarm and mode * Other aircraft in the area * Pilot loses orientation of the aircraft * Tail heavy load * Servo gets stuck and causing crash | * Pilot transmitter has manual modes in case of software malfunction * Part 107 certified pilot in command * Visual Observer (VO) * Radio for means of communication to airport or other pilots in area * Communications between all roles with Bluetooth on conference call * Battery loaded in front to make it more nose heavy * Voice recording software to assist in identifying errors in field * Click to add a control. | |  |
| 6 Landing/UAV Recovery | * Click to add a hazard. * Click to add a hazard. * Click to add a hazard. * Click to add a hazard. | * Click to add a control. * Click to add a control. * Click to add a control. * Click to add a control. * Click to add a control. * Click to add a control. * Click to add a control. | |  |
| **Required Training** | | **Required PPE** | | |
| Click to add required training.  Click to add required training.  Click to add required training.  Click to add required training. | | Click to add eye and face protection.  Click to add head protection.  Click to add body (foot, leg, hand, or arm) protection.  Click to add hearing protection.  Click to add respiratory protection. | | |
| ***I have read and understand the contents of the job hazard analysis and the controls required to mitigate the risks from the idenitified hazards*** | | | | |
| **Name** | | | **Date** | |
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