

EMERGENCY PROCEDURES

Summary: These procedures outline actions to be taken in the event of an emergency.

Emergency 1. Intruding Aircraft Enters Area of UAV Operation

Description:

This Emergency would be if another aircraft entered the area in which the UAV was flying, and there was danger of a possible collision.

Action:

In the event of another aircraft entering the area, the PIC and spotter will take these actions:

1. PIC, assistant, and spotter(s) will communicate the intruding aircraft description, altitude, and heading and decide if the UAV poses a danger of collision. If the danger DOES exist then:
2. PIC will use GCS to communicate the “return to origin” command to the UAV or:
3. PIC will turn off autopilot, taking manual control, then descend and fly the UAV away from the intruding aircraft.
4. PIC will land the UAV.

Emergency 2. Loss of Link During Autonomous Flight

Description:

A **loss of link during Autonomous Flight** would be if the radio link failed or was obstructed, temporarily or totally, while the UAV was flying its pre-programmed route.

Action:

The UAV does not require the RF link while flying autonomously. The link is used by the UAV to transmit position and airframe data to the GCS, and by the GCS to the UAV for in-flight changes to its pre-programmed flight. If the link is lost, the UAV will end its flight in the return-to-origin mode and auto-land.

In the short-distance flights planned (furthest distance from UAV to GCS would be less than one mile), communications will be line-of-sight. It is unlikely that if the RF link would be lost. If it was lost and it was necessary to recall or reposition the UAV in an emergency (e.g. manned aircraft entered UAV flight area), then:

1. PIC and/or assistant would immediately switch from the omni-directional vertical antenna to the high-gain, directional yagi antenna. This antenna has an additional 13 dB gain, and would provide 200X more RF signal between the UAV and GCS, re-establishing the RF link. If this did not restore the link, then:
2. PIC and/or assistant will immediately contact ATC and Barwick Lafayette airport towers, notifying them of the problem. In addition:
3. PIC will attempt to contact the intruding aircraft on Guard frequency or Unicom.

Emergency 3. UAV Autopilot Fails in Flight

Description:

If the UAV autopilot should fail to follow the pre-programmed flight path and strays from the area of operation, it poses a hazard to other Aircraft.

Action:

In the event that the UAV deviates significantly from its pre-programmed flight and it is determined that the autopilot is unable to keep the UAV inside its operation area, the PIC and spotter will take these actions:

1. PIC will send the “return to origin” command via the GCS. Spotter(s) will report results via radio. If this is not successful, then:
2. PIC will use R/C switch to disable autopilot, and assume manual R/C control of the UAV. PIC will then return UAV to launch site and land. If this is not successful, then:
3. PIC or assistant will immediately contact ATC and Barwick Lafayette airport towers, notifying them of the problem. UAV altitude, direction, description, and estimate of remaining endurance will be provided, in order to evaluate level of hazard.
4. PIC and spotter(s) will follow UAV flight—using vehicles if necessary—and maintain communication with airport authorities.
5. After recovery of UAV, a report will be provided to the appropriate authorities.

Emergency 4. Any Other Emergency

Description:

Other emergency situations may be possible that are not foreseen based on normal operations of this UAV or other aircraft.

Action:

In the event that some other emergency may arise that causes the UAV to be a danger to personnel, aircraft, or property, the UAV will be landed immediately.