

LOST LINK/MISSION PROCEDURES

Summary: These procedures outline actions to be taken in the event the UAV loses the radio control link communications with the PIC.

Range Check to avoid Loss of Link

Description:

Before each flight, the aircraft radio control system will undergo a range check. This involves collapsing the transmitter antenna to transmit a low power signal from the transmitter. To pass this range check, the aircraft must maintain control with the PIC and transmitter up to 100 ft away (manufacturer's recommendations).

Procedure in case of Loss of Link During Flight

Description:

If, even though the UAV and radio control system passed the range check, the R/C link should fail in flight, a preset Fail Safe mode in the UAV receiver will cause the aircraft to stay within the AO. This feature is NOT an autopilot and the UAC is NOT capable of autonomous flight. The Fail Safe mode is programmed into the receiver by the R/C transmitter. If the transmitter is turned off or loses power, or the link is broken, the receiver sets the servos in the pre-programmed positions (elevons 25% left, throttle 10%).

A **loss of link during Flight** would be if the radio link failed or was obstructed, temporarily or totally, while the UAV was being flown by the PIC under radio control.

Action:

The Futaba 7CAP radio control system uses pulse coded modulation (PCM). The system contains a Fail Safe feature that enables the operator to pre-program actions that will automatically occur should the R/C link be temporarily or totally lost. The UAV is programmed in this way:

1. throttle is cut to 10% to slow down but maintain safe flight.
2. the elevons (combined and mixed ailerons and elevator) will put the aircraft into a gentle left turn.
3. in the left turn, the UAV will begin to circle around the PIC. If range is the cause of the problem, the UAV will fly back into range and the PIC may regain control and land the aircraft. Note that at the time of this application, there has not been a total failure recorded of the R/C link with the Futaba 7CAP systems used by GTRI.

Homing Beacon will be used

Description:

A Walston Retrieval System homing beacon will be carried on board the DragonEye UAV and will facilitate its recovery should the aircraft land in a wooded or otherwise difficult area.

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