

# PUMA-AE LOST COMM PROCEDURE

## 1. Loss Of Downlink

Loss of downlink is indicated by a loss of video, accompanied by a clock symbol in place of the Link Status Bar, with GPS and other data elements flashing. It is possible to have a progressive deterioration in video quality as the only indication of lost downlink. Loss of downlink may be a temporary condition caused by signal interference or the result of equipment malfunction. This condition may be independent of uplink condition.

### WARNING

When location and/or control of Air Vehicle is in doubt, perform appropriate procedures to notify Airspace Control Authority and/or manned aircraft in the vicinity. Report last known location, heading, altitude and estimated flight time remaining on current battery power.

### CAUTION

DO NOT try to fly back within reception range by commanding Home, or make inadvertent inputs to verify resulting action. Without downlink, there is no way to verify that the Air Vehicle has received this instruction. If unable to restore downlink promptly, delay in turning off transmitter in order to force LOL En Route Rally increases uncertainty of Air Vehicle position and flight status.

### NOTE

Operate with an RVT whenever possible to provide an independent source of downlink.

1. **Switch to directional antenna, if required.**
2. **Check orientation of downlink antenna.**
3. **Command turn and climb** - if video or LSB return, continue mission as required.
4. **Turn off transmitter** - to force LOL Rally mode.
5. If video returns, turn ON radio transmitter, take control of Air Vehicle and continue mission as required.
6. If link does not return, MO:
  - a. Ensure AVTracker is recording
  - b. Monitor Air Vehicle Location - note position, heading and altitude
  - c. Record GPS coordinates when Autoland message is received.

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### 2. Loss of Uplink

Loss of uplink is indicated by a clock symbol in place of the Link Status Bar (LSB), with no items flashing. It is characterized by a lack of Air Vehicle response to GCS control inputs. After the Link Timeout setting expires, Air Vehicle will execute selected LOL mode. For 'Go To Rally' this will be indicated by "En Route Rally" displayed on the Hand Controller and "En Route Rally" also displayed flashing red in the upper left corner of FalconView on the GCS Laptop. LOL is also indicated by the camera moving to a forward-look position (30°down). The payload will automatically stow when Air Vehicle reaches waypoint E en route to L and is less than 150 ft. AGL.

<b>CAUTION</b>
When location and/or control of Air Vehicle is in doubt, perform appropriate procedures to notify Airspace Control Authority and/or manned aircraft in the vicinity. Report last known MGRS location, heading, altitude, and flight time remaining on current battery power.

1. Monitor LSB. If link is restored, enter flight mode, take control of Air Vehicle and continue mission as required.
2. If link is not restored, MO:
  - a. Ensure AVTracker is recording
  - b. Monitor Air Vehicle Location - note position, heading and altitude
  - c. Record GPS coordinates when Autoland message is received.

### 3. GPS Failure

Loss of GPS is indicated by flashing data in all GPS related fields. It is distinguished from Loss of Downlink by good video and accurate display of non-GPS related fields on the GCS. MAN and ALT flight modes will continue to function normally. NAV, LOIT, and HOME modes are NOT functional with a GPS failure. In addition, the gimbaled payload locks to either front or side view when the Air Vehicle experiences a GPS failure.

The Air Vehicle must have functioning uplink and/or GPS to operate. The Air Vehicle can be guided in MAN or ALT mode without GPS, provided that the uplink is still functioning.

If GPS has been lost for greater than the GPS default setting and the Air Vehicle is already in LOL mode, or enters LOL mode then the Air Vehicle will automatically command AutoLand.

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<b>CAUTION</b>
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Do not force LOL during GPS failure. This will cause the Air Vehicle to AutoLand when GPS has been lost for greater than the GPS default setting (30 seconds).
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<b>CAUTION</b>
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Conducting a mission without GPS is a high-risk operation and is not recommended.
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1. **Select ALT/MAN Mode.**
2. **Set CMD ALT/throttle to safe altitude.**
3. **Turn Air Vehicle toward GCS** - use back azimuth of last known Air Vehicle bearing or terrain association to fly toward landing site.
4. If GPS returns, continue mission as required.
5. Use GCS downlink patch antenna to estimate bearing to Air Vehicle.
6. If unable to execute Step 3., select suitable landing site and command AutoLand.
7. MO -
  - a. Ensure AVTracker is recording
  - b. Monitor Air Vehicle Location - note heading and altitude
8. Recover Air Vehicle.