# UC Center of Excellence on UAS Safety

Contact Information

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# Campus Designated Local Authority

\*\*Enter Campus Name\*\*

\*\*Enter Contact information for Campus Point of Contact\*\*

# Non-Participant Enters Flight Area

* **Maintain** visual contact with UAS
* **Communicate** the situation to the Flight Crew
* **Verify**
  + Check state of UAS (Status/Flight Mode)
  + Check location of UAS in flight area
* **Take Actions**
  + **Ground Crew** – Alert flight area, remove non-participant
  + **Visual Observer** – Monitor air traffic
  + **RPIC** – Pause flight operation and evaluate best course of action.
* **Issues**
  + If non-participant is unable to be removed:
    - Stop flight operation until issue is resolved:
  + If non-participant blocks landing location:
    - Locate suitable divert location
* **Post-Incident**
  + Document incident
  + Evaluate crowd control measures

# Hazardous Weather Conditions

* **Maintain** visual contact with UAS
* **Communicate** the situation to the Flight Crew
* **Verify**
  + Check state of UAS (Status/Flight Mode)
  + Check UAS location/altitude
* **Take Actions**
  + **Ground Crew** – Review weather forecast
  + **Visual Observer** – Monitor changing weather conditions
  + **RPIC** – Evaluate if conditions exceed safe operating requirements
* **Issues**
  + If weather conditions are changing rapidly:
    - Maneuver the UAS to a safe divert location
    - Land immediately
  + Err on the side of caution:
    - Maneuver the UAS closer to RPIC to evaluate conditions
* **Post-Incident**
  + Document incident

# Low Battery or Status Error

* **Maintain** visual contact with UAS
* **Communicate** the situation to the Flight Crew
* **Verify**
  + Check state of UAS (Status/Flight Mode)
  + Check location of UAS in flight area
* **Take Actions**
  + **Ground Crew** – Alert flight area
  + **Visual Observer** – Monitor air traffic and contact ATC if necessary
  + **RPIC** – Determine safest landing location. Land as soon as possible.
* **Issues**
  + If disoriented:
    - Use `Return to Home' to bring UAS back for landing
    - Regain visual contact with UAS as soon as possible
  + If strong winds prevent return flight:
    - Use camera to locate suitable divert location
* **Post-Incident**
  + Document incident
  + Recovery telemetry logs
  + Inspect UAS and battery for physical signs of damage

# Collision with Hazard

* **Maintain** visual contact with UAS
* **Communicate** the situation to the Flight Crew
* **Verify**
  + Check state of UAS (Status/Flight Mode)
  + Check UAS location/altitude
* **Take Actions**
  + **Ground Crew** – Alert and clear flight area, prepare safety equipment
  + **Visual Observer** – Guide RPIC around hazard
  + **RPIC** – Establish positive control and land immediately
* **Issues**
  + If the UAS regains stability and control:
    - Maneuver the UAS to a safe divert location
    - Land immediately
  + If the UAS does not regain stability:
    - Initiate manual motor shutdown
* **Post-Incident**
  + Document incident
  + Inspect UAS and battery for physical signs of damage

# Fly Away/Loss of GPS

* **Maintain** visual contact with UAS
* **Communicate** the situation to the Flight Crew
* **Verify**
  + Check state of UAS (Status/Flight Mode)
  + Check UAS location/altitude
  + Check transmitter/tablet status and control links
* **Take Actions**
  + **Ground Crew** – Alert and clear flight area, prepare safety equipment
  + **Visual Observer** – Monitor air traffic and contact ATC if necessary
  + **RPIC** – Follow UAS and attempt to re-establish connection/positive control
* **Issues**
  + If control is active, and UAS is drifting or moving incorrectly:
    - Lower altitude and attempt to keep UAS stationary
    - Try ‘Return to Home’ to bring UAS back for landing
    - Try switching control to ‘manual’ or attitude control
  + If control is active but UAS is not responding:
    - Try switching control to ‘manual’ or attitude control
  + If control is not active
    - Assist Ground Crew in alerting and clearing flight area
* **Post-Incident**
  + Document incident
  + Recovery telemetry logs
  + Inspect UAS and battery for physical signs of damage

# Lost Link

* **Maintain** visual contact with UAS
* **Communicate** the situation to the Flight Crew
* **Verify**
  + Check state of UAS (Status/Flight Mode)
  + Check UAS location/altitude
  + Check transmitter/tablet status and control links
* **Take Actions**
  + **Ground Crew** – Alert and clear flight area, prepare safety equipment
  + **Visual Observer** – Monitor air traffic and contact ATC if necessary
  + **RPIC** – Follow UAS and attempt to re-establish connection/positive control
* **Issues**
  + If telemetry is active, but video feed has failed:
    - Lower altitude and attempt to keep UAS stationary
    - Try ‘Return to Home’ to bring UAS back for landing
    - Try switching control to ‘manual’ or attitude control
  + If telemetry/control is not active
    - Try restarting controller/tablet
    - Adjust antennas and attempt to improve connection while following UAS
    - Assist Ground Crew in alerting and clearing flight area
* **Post-Incident**
  + Document incident
  + Recovery telemetry logs
  + Inspect UAS and battery for physical signs of damage

# In-Flight or Post-Flight Fire

* **Maintain** visual contact with UAS
* **Communicate** the situation to the Flight Crew
* **Verify**
  + Check state of UAS (Status/Flight Mode)
  + Check UAS location/altitude
  + Check transmitter/tablet status and control links
* **Take Actions**
  + **Ground Crew** – Alert and clear flight area, prepare safety equipment
  + **Visual Observer** – Be prepared to call emergency services
  + **RPIC** – Immediately terminate flight
* **Issues**
  + If UAS sparks a ground fire:
    - Secure site and attempt to extinguish the fire with Ground Crew
  + If unable to extinguish fire:
    - Call emergency services
    - Stop all fire suppression efforts and begin minimizing potential damage by clearing the area and removing other potential fire hazards
  + DO NOT COMPROMISE YOUR SAFETY
* **Post-Incident**
  + Document incident
  + Contact PI and Designated Local Authority

# Pilot Incapacitation

* **Ensure the RPIC is IMMEDIATELY attended to**
  + Typically, the VO will be the closest person to the RPIC
* **Communicate** the situation to the Flight Crew
* **Take Actions**
  + VO to pause or stop flight operation, then resume attending to RPIC
  + Ground Crew must be prepared to call emergency services
  + Check transmitter/tablet status and control links
* **Issues**
  + **Call emergency services if there is a possibility that they may be needed**
  + If flight operation cannot be paused or stopped, initiate a manual termination, unless an alternative operator is available.
  + RESPONSE PRIORITIES:
    - Avoid delaying emergency services to RPIC
    - Ensure UAS will not place additional persons at risk
    - Prevent the UAS from causing property damage
    - If able, land the UAS safely
* **Post-Incident**
  + Document incident
  + Contact PI and Designated Local Authority

# Airspace Encroachment

* **Maintain** visual contact with UAS
* **Communicate** the situation to the Flight Crew
* **Verify**
  + Check state of UAS (Status/Flight Mode)
  + Check location of UAS in flight area
* **Take Actions**
  + **Ground Crew** – Alert flight area, prepare for landing
  + **Visual Observer** – Monitor air traffic and provide
  + **RPIC** – Evaluate best course of action
* **Issues**
  + If a collision is imminent:
    - RPIC must take immediate evasive action
  + If a collision is a strong possibility:
    - RPIC must land or terminate the flight at the nearest divert or safe location
  + If the encroachment is unsafe but not likely to result in a collision:
    - RPIC must pause flight, reduce flight altitude and monitor the situation.
    - RPIC may only resume flight operation when the hazard has passed
  + If the encroachment is noticeable, but not likely to cause a safety issue:
    - RPIC may continue flight operations
* **Post-Incident**
  + Document incident
  + Review See & Avoid procedures