



## Small Unmanned Aerial Systems (sUAS): Safety and Risk Management for Drone Pilots

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Small Unmanned Aerial Systems (sUAS), known as drones, are transforming various industries. In the area of Civil Air Patrol (CAP) emergency services, sUAS can be valuable in search and rescue (SAR) operations locating missing persons, assisting, and assessing disaster-affected areas. Ensuring the safe and responsible operation of sUAS, drone pilots must understand and review potential risks and adopt risk management strategies. Battery safety is a crucial element due to the need for reliable power sources and volatility of these power packs.

### Understanding the Risks

It's central to review the potential risks. These risks can be categorized as follows:

1. **Collision Hazards** with obstacles, other aircraft, or even individuals on the ground.
2. **Privacy Concerns** as airborne cameras can raise privacy concerns, particularly in CAP missions.
3. **Environmental Impact** disrupting wildlife and damage to the environment.
4. **Regulatory Violations** of FAA and CAP can have legal consequences and impede mission success. CAP procedures add a higher level of demand for operational performance.
5. **Data Security** as sUAS often collects sensitive data, and a data breach could compromise the mission, property, and the privacy and safety of individuals involved in the mission and public.
6. **Battery Risks** with Lithium-polymer (LiPo) batteries include fire and explosion if not inspected regularly, handled respectfully, and maintained correctly.

### The Importance of Risk Management

Here's why risk management is vital for drone pilots:

1. **Safety** is the primary goal of risk management in sUAS operations. Identifying and mitigating risks can reduce the chance of accidents, injuries, and property damage.
2. **Regulatory Compliance** requires strict adherence to all rules and regulations. Complying with rules ensures that you operate within legal boundaries and safety standards.
3. **Public Perception** fosters trust and acceptance in the community, impacting positive perception.
4. **Insurance Coverage** as sUAS operations involve high stakes. Risk management assures protecting current coverage, and eligibility for other insurances with reduced premium costs.

### Practical Risk Management for sUAS Pilots, Including SAR Operations and Battery Safety

Here are some practical strategies that pilots can employ:

1. **Education and Training** for CAP sUAS pilot and the Mission Pilot (UASMP) ratings are based on an excellent syllabus and detailed evaluation. Learn battery and emergency response protocols.
2. **Checklists** must be used! All checklists should include battery checks and usage tracking. Ensure batteries are in good condition, without any abnormalities, and sufficiently charged.

3. **Battery Safety** must be well understood. Store them in fire-resistant containers, charge with approved chargers, and avoid overcharging or discharging too much. Prevent fire hazards by learning battery safety. Know how to manage a fire. Study your battery's recommendations.
4. **Risk Assessment** must be done before operations. CAP's Operational Risk Management (CAPF 70-4R) and Deliberate Risk Assessment (CAPF 160) worksheets are required for CAP missions.
5. **Adherence to Regulations** from the FAA and CAP are paramount and must be strictly adhered to. CAP regulation 70-4 has specific rules you must follow.
6. **Insurance Coverage** is crucial given the heightened risks of sUAS operations, having insurance coverage is non-negotiable. Review CAP's insurance coverage to assure they cover uses while on missions. It's advisable to obtain insurance coverage for your personal or compensated flying. There are firms that can be located online to assist you in finding coverage.
7. **Emergency Procedures** should be developed and practiced including those related to battery failure. Be prepared to switch to backups or manually land if a battery issue arises during flight. Regularly practice emergency procedures and always have safety briefings with the team before flight.
8. **Cooperation with Authorities** including law enforcement and emergency services as needed. Pilots should coordinate with the Incident Commander. When acting outside of CAP ensure that you have the necessary permits and permissions for operations and adhere to safety directives.
9. **Environmental Awareness** in a natural disaster or wilderness SAR missions requires you to be conscious of the environment. Avoid impacting the area with waste or hazardous materials.
10. **Data Security** for data collected on missions. Utilize CAP's web mission information and reporting system (WMIRS) as directed. Encryption and secure data practices prevent unauthorized access.

## Conclusion

Drones have become indispensable tools in various industries, including emergencies. However, pilots must prioritize safety, risk management, and battery care. Education, training, adherence to regulations, and effective risk mitigation strategies are essential. By following practical risk management guidelines presented in this article, sUAS pilots can conduct essential missions safely and responsibly, contributing to the safety and well-being of those in need. When human lives are at stake, safety, and effective risk management must be the utmost priority.