Clarence Hitchner - Standard Operating Procedures Manual Vol. I

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Mission Statement

"Our vision at The Cardinal Rule is to redefine the boundaries of aerial innovation, creating drone solutions that inspire and empower a safer, more connected world."

We aim to be the leader in drone technology, providing reliable and advanced systems that revolutionize industries, support sustainability, and enhance global security. By fostering a culture of excellence and creativity, we strive to be the cardinal standard for quality, safety, and efficiency in the drone industry.

The Cardinal Rule was founded by Clarence Hitchner, a family man and a proud veteran of the United States Coast Guard, where he served for 21 years. Clarence is a person who believes in being righteous, fair, hardworking, and always going above and beyond to make a positive impact. His enthusiastic smile and warm heart are at the core of our company's values. His dedication to serving others and commitment to excellence guide us as we aim to deliver unparalleled service and innovation in the drone industry."

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The Cardinal Rule Standard Operating Procedures Manual vol. 1

This handbook covers essential aspects such as Safety Management System (SMS), positive safety culture, AUVSI Trusted Operator Program, risk mitigation techniques, the role of system safety programs in sUAS integration, and key elements of sUAS maintenance programs

Table of Contents

1. Introduction

This Standard Operating Procedure (SOP) handbook is designed to guide the safe and efficient operation of Small Unmanned Aircraft Systems (sUAS) within our “The Cardinal Rule”. The handbook draws upon industry best practices and standards outlined in the following texts and sources:

- "Writing High-Quality Standard Operating Procedures" by Atul Mathur
- "Elevate Your Standards, Building an Operations Manual for your Uncrewed Aircraft Systems Company" by Desiree Ekstein
- Federal Aviation Administration Advisory Circular 120-92B (AC 120-92B) - Safety Management Systems for Aviation Service Providers
- AUVSI Trusted Operator Program Protocol Certification Manual
- CASA Safety Management Systems (SMS) Guidance for Organizations (CAP 795)

2. Safety Management System (SMS)

Definition of Safety Management System:

An SMS is a systematic approach to managing safety, including the necessary organizational structure, responsibilities, policies, and procedures. It aims to proactively identify and mitigate risks associated with sUAS operations.

The Four Pillars of an Aviation Safety Management System:

1. Safety Policy and Objectives
2. Safety Risk Management
3. Safety Assurance
4. Safety Promotion

Importance of SMS in sUAS Operations:

SMS ensures that safety is integrated into all aspects of our operations, from planning to execution. It helps in identifying hazards, assessing risks, implementing controls, and continuously improving safety performance.

3. Positive Safety Culture

Importance of Positive Safety Culture:

A positive safety culture fosters an environment where safety is prioritized by all employees. It encourages reporting of safety concerns, open communication, and continuous learning from incidents and near misses.

4. **Meeting Organizational Requirements and Stakeholder Expectations**

A positive safety culture not only ensures compliance with regulatory requirements but also enhances customer confidence and satisfaction.

5. **AVSI Trusted Operator Program**

The AUVSI Trusted Operator Program outlines standards for safe and professional sUAS operations, covering areas such as pilot training, equipment maintenance, and risk management.

Adhering to the AUVSI Trusted Operator Program promotes consistency, reliability, and professionalism in our operations, aligning with industry best practices.

6. **Risk Mitigation Techniques**

Definition and Importance:

Risk mitigation involves identifying potential hazards and implementing measures to reduce their likelihood or impact. It is essential for ensuring the safety of sUAS operations and minimizing liability.

Most Used Techniques:

Common risk mitigation techniques include conducting pre-flight inspections, maintaining equipment, implementing operational limitations, using safety checklists, and providing ongoing personnel training.

7. **System Safety Program in sUAS Integration**

System safety programs play a crucial role in the safe integration of sUAS into the National Airspace System (NAS). By identifying and addressing potential safety hazards, these programs contribute to the overall safety and efficiency of air traffic management.

8. **Key Elements of sUAS Maintenance Programs**

Our maintenance program incorporates **three** primary maintenance processes:

1. On-condition maintenance: Monitoring equipment condition and performing maintenance as needed based on established criteria.

2. Condition monitoring: Regularly assessing the condition of sUAS components through inspections and testing.

3. Hard time maintenance: Scheduled maintenance based on manufacturer recommendations or regulatory requirements to ensure continued airworthiness.

9. sUAS Fleet and Equipment Management

In this section, we provide detailed information on our sUAS fleet, including operational guidelines, maintenance schedules, and inventory management for specific drone models.

Our current fleet consists of the following drone models:

- ***DJI Mavic 2 Pro***: Known for its high-resolution camera and stability, ideal for photography and videography.
- ***DJI Mavic 3 Pro***: The latest model with enhanced camera capabilities and longer flight time, suitable for professional-grade work.
- ***DJI Avata 2***: A compact and agile drone, great for capturing action footage and confined space operations.
- ***DJI Inspire 3***: A high-end drone designed for advanced cinematography and commercial applications.

Operational Guidelines for Each Model

Each drone model has specific operational guidelines to ensure safety and efficiency:

- ***DJI Mavic 2 Pro***: Recommended for use in open areas with minimal obstacles. Conduct pre-flight checks, including camera calibration, gimbal checks, and battery levels. Follow all manufacturer safety protocols.
- **DJI Mavic 3 Pro**: Suitable for extended operations. Ensure GPS connectivity and satellite acquisition before takeoff. Monitor battery life and adhere to recommended flight durations.
- ***DJI Avata 2***: Ideal for indoor and close-quarters operations. Exercise caution due to its agility. Conduct propeller checks and ensure proper control system calibration.
- ***DJI Inspire 3***: For advanced operations and cinematography. Follow rigorous pre-flight and post-flight checklists. Ensure proper maintenance of complex components like gimbals and sensors.

Maintenance Schedule for each Specific Model

Each drone model has a unique maintenance schedule based on manufacturer recommendations and operational demands:

- ***DJI Mavic 2 Pro***: Conduct regular maintenance every 50 flight hours or as specified by the manufacturer. This includes firmware updates, battery inspections, and propeller replacement as needed.

- ***DJI Mavic 3 Pro***: Scheduled maintenance every 100 flight hours. Focus on critical components like the camera system, propellers, and battery health.

- ***DJI Avata 2***: Due to its compact design, maintenance should be performed every 30 flight hours. This includes frame inspection, motor lubrication, and propeller checks.

- ***DJI Inspire 3***: Scheduled maintenance every 150 flight hours, with attention to complex systems like the gimbal, GPS, and sensors.

Spare Parts and Inventory Management

To ensure operational continuity, maintain an adequate inventory of spare parts for each drone model:

- ***DJI Mavic 2 Pro***: Stock spare propellers, batteries, and gimbals.

- ***DJI Mavic 3 Pro***: Ensure a sufficient supply of propellers, batteries, and camera components.

- ***DJI Avata 2***: Keep a supply of propellers, motor brushes, and frame parts.

- ***DJI Inspire 3***: Stock up on high-wear components like propellers, gimbals, and batteries.

This SOP handbook serves as a comprehensive guide for all personnel involved in sUAS operations within “The Cardinal Rule”. By adhering to these procedures and standards, we prioritize safety, professionalism, and compliance with regulatory requirements.