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Standard Practice for Operational Risk Assessment of Small Unmanned Aircraft Systems (sUAS)¹

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INTRODUCTION

An operational risk assessment (ORA) offers to an applicant of small unmanned aircraft systems (sUAS) a standardized approach to examine their operations for potential hazards and assess those hazards for risk. The ORA is then used to mitigate or avoid risks associated with those hazards to achieve acceptable levels of safety. ORA is a key component of operational risk management (ORM), which seeks to identify hazards endemic to an operation, assign risks to those hazards based on quantitative and qualitative analysis, and mitigate unacceptable levels of risk. The main functions of the ORM are to: (1) Minimize risk to acceptable levels while providing a method to manage resources effectively; (2) Enhance decision-making skills based on systematic, reasoned, and repeatable processes; (3) Provide systematic structure to perform risk assessments; (4) Provide an adaptive process for continuous feedback through planning, preparation, and execution; and (5) Identify feasible and effective control measures, particularly where specific standards do not exist.

Through a risk-based approach to operations, design, and airworthiness, an applicant can quickly understand the operational environment and threats to the operation. The ORA offers a methodology to identify system and operational hazards, apply quantitative and qualitative analysis to those hazards, analyze the outputs of the ORA, and then apply appropriate mitigations to satisfy safety of flight requirements.

The ORA is an integral component of any sUAS application and is an important tool for gaining access to the national airspace, or especially into increasingly higher risk environments, such as controlled airspace where other manned aircraft are likely to be present.

1. Scope

1.1 This practice focuses on preparing operational risk assessments (ORAs) to be used for supporting small unmanned aircraft systems (sUAS) (aircraft under 55 lb (25 kg)) design, airworthiness, and subsequent operational applications to the civil aviation authority (CAA).

1.2 It is expected that manufacturers and developers of larger/higher energy sUAS designs, intended to operate in controlled airspace over populated areas, will adopt many of the existing manned aircraft standards in use. These include standards such as SAE ARP4754A and ARP4761, which prescribe a “design for safety” top-down design approach to ensure the sUAS designs can reasonably meet more stringent

qualitative and quantitative safety requirements. The ORA, however, remains the same for all risk profiles and will be a part of any sUAS operation.

1.3 In mitigating and preventing incidents and accidents, it is understood that people generally do not seek to cause damage or injure others, and therefore, malicious acts are beyond the scope of this practice.

1.4 As part of the ORA, the applicant should clearly understand and be able to articulate their intended mission for purposes of assessing safety and providing information to regulators. This documentation of a sUAS operation (mission, or set of missions) is what many refer to as a concept of operations (CONOPS).

1.5 This practice is intended primarily for sUAS applicants seeking approval or certification for airworthiness or operations from their respective CAA, though sUAS manufacturers may consider this practice, along with other system safety

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