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Operational Services and Environment Definition (OSED) for Counter-UAS in Controlled Airspace

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FOREWORD

This document was prepared by Special Committee 238 (SC-238) jointly with EUROCAE WG-115 and approved by the RTCA Program Management Committee (PMC) and the EUROCAE Council on March 18, 2021.

RTCA, Incorporated is a not-for-profit corporation formed to advance the art and science of aviation and aviation electronic systems for the benefit of the public. The organization functions as a Standards Development Organization and develops consensus-based recommendations on contemporary aviation issues. RTCA's objectives include but are not limited to:

- coalescing aviation system user and provider technical requirements in a manner that helps government and industry meet their mutual objectives and responsibilities;

- analyzing and recommending solutions to the system technical issues that aviation faces as it continues to pursue increased safety, system capacity and efficiency;

- developing consensus on the application of pertinent technology to fulfill user and provider requirements, including development of minimum operational performance standards for electronic systems and equipment that support aviation; and

- assisting in developing the appropriate technical material upon which positions for the International Civil Aviation Organization and the International Telecommunication Union and other appropriate international organizations can be based.

The organization's recommendations are often used as the basis for government and private sector decisions as well as the foundation for many Federal Aviation Administration Technical Standard Orders and advisory circulars.

Since RTCA is not an official agency of the United States Government, its recommendations may not be regarded as statements of official government policy unless so enunciated by the U.S. government organization or agency having statutory jurisdiction over any matters to which the recommendations relate.

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TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

1 PURPOSE AND SCOPE

1.1 INTRODUCTION

For many years, nations have recognized the many positive use cases for drones - or unmanned aircraft[1] - and their potential to make many aviation activities safer, greener and quieter. However, there is also a potential for drones to be used carelessly or for malicious purposes, including terrorist and other criminal acts.

Drone sightings, perceived to be hazardous or threatening near airports, have impacted airport and flight operations. In addition, close encounters during takeoff, approach and landing have been reported[2], with an impact on flight safety. These occurrences have led to the suspension of flight operations with significant impact on the airport, airlines and the public.

During the busy 2018 Christmas travel season, Gatwick Airport near London grounded operations for 33 hours due to recurring drone sightings near the runway. The event resulted in the cancellation of almost 1,000 flights and stranded an estimated 140,000 passengers. The interruption cost the airport nearly £15 million in lost revenue, with the airlines losing as much as £70 million. Local police incurred expenses exceeding £459,000. To date, no suspects have been found. Just 17 months earlier, a drone flying near Gatwick resulted in operations being suspended for a period of 14 minutes. The interruption resulted in flight diversions and delays throughout the night, with some as long as three hours. These incidents serve as a wakeup call to airports - a failure to proactively protect aviation operations from rogue drones could end up being a costly decision.

To prevent such disruptions, the airspace around an airport needs to be protected and unauthorized Unmanned Aircraft System (UAS) activities need to be detected and reported at the earliest possible stage to flight crews, Air Traffic Control, airports and responsible authorities. In accordance with national regulations, neutralization[3] of the UAS, through the Unmanned Aircraft (UA), the Command & Control Datalink (C2 Link), the Remote Pilot Station (RPS) or even the Remote Pilot (RP), could be considered as part of a risk-based response.

In the past, the aviation system has relied mainly on flight crews or airport personnel to detect and report unauthorized UAS activities. This often meant that detection of these operations occurred after they had created a safety hazard. Today, there are only a few technical solutions available for detection of small UAS. There are currently no performance or interface requirements for those technologies.

In addition to the lack of mature detection tools and reporting processes, there is a lack of information to support rapid operational responses to threats or to identify the UAS operator for law enforcement purposes.

[1] In the context of this document, the words “drone” and “unmanned aircraft” are equivalent. They both refer to the airborne component of a UAS.

[2] Example: https://www.faa.gov/uas/resources/public_records/uas_sightings_report

[3] In the context of this document, the words “neutralization” and “mitigation” are equivalent. They both refer to the use of technical capabilities to disrupt, disable, seize control of, or destroy a suspect UAS. Further details in following chapters.

