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Standards Development Activities for using Near Real-Time Aircraft-Derived Data in future applications

RTCA DO-360
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FOREWORD

This report was prepared by the Wake Vortex Tiger Team and submitted to the RTCA Program Management Committee (PMC) on September 22, 2015

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- 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 several advisory circulars.

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1. CHARTER OF THE RTCA TIGER TEAM AND INDUSTRY NEEDS SUMMARY

1.1 White Paper Purpose

The purpose of this Wake Vortex Tiger Team (WVTT) White Paper was to develop recommendations for standards setting activities to enable the implementation of applications described in RTCA DO-339, Aircraft Derived Meteorological Data via Data Link for Wake Vortex, Air Traffic Management and Weather Applications – Operational Services and Environmental Definition (OSED). The primary objective of the White Paper was that it be developed with sufficient consensus such that it was acceptable to the Federal Aviation Administration (FAA) and the RTCA Program Management Committee (PMC) to take forward into pre-identified and actionable performance-based standards activities.

The goal of wake vortex, Air Traffic Management (ATM), and weather applications is to safely increase capacity and/or enhance operational safety and efficiency in a cost-effective manner. The scope of applications envisioned includes situational awareness tools for pilots and Air Traffic Controllers as well as applications less directly aligned with aviation such as delivery of aircraft-derived[1] data enabling improved weather forecasts for aviation as well as for the general public.

1.2 Terms of Reference

The Wake Vortex Tiger Team was chartered to achieve consensus in identifying standards development activities necessary to move wake vortex, ATM, and weather applications forward for implementation in the current National Airspace System (NAS) and anticipated Next Generation of Air Traffic Control (NextGen) / Single European Sky ATM Research (SESAR) airspace. The WVTT was tasked to identify information needs and make recommendations about providing data currently not available (e.g. near real-time winds, Eddy Dissipation Rate). The focus is on reporting aircraft-derived weather data, initially to ground automation systems, and the use of this information to safely increase ATM system capacity. The Tiger Team considered the necessary performance of select meteorological (MET) services (e.g. winds aloft) and the latencies associated with candidate data link services.

It is important to note that the WVTT was not tasked with solving the problem of wake vortex, ATM, or weather applications, but was tasked with attempting to identify a way forward for getting MET information datalinked from an aircraft in near real-time (on the order of minutes from observation to use) and used by applications associated with the areas of wake vortex, ATM, and weather.

The WVTT assumes all commercially successful applications, whether ground-based or flight deck-based, will share some common characteristics. Each application will need to be supported by a safety case, positive business case, and path for integration with other Air Traffic Control (ATC) systems and procedures. The WVTT did not attempt to perform any safety case or business case assessments nor development of potential paths for integration of capabilities into the NAS. However, it should be noted that analyses have been performed by other organizations on some of the applications that show a positive safety case and return on investment. It must be noted that when / if specific recommendations called out in Section 4 of this white paper are acted upon, it

[1] Meteorological data collected using aircraft as sensor platforms is referred to by the World Meteorological Organization as Aircraft Based Observations (ABO)

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