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Minimum Operational Performance Standards (MOPS) for Airborne Weather Radar with Forward-Looking Windshear Capability

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FOREWORD

This document was prepared by Special Committee 173 (SC-173). It was approved by RTCA Technical Management Committee on September 21, 1993.

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 Federal Advisory Committee 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.

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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1.0 PURPOSE AND SCOPE

1.1 Introduction

This document sets forth Minimum Operational Performance Standards (MOPS) for Airborne Doppler Weather Radar with Forward-Looking Windshear Detection capability. In addition to updating and expanding the scope of RTCA/DO-173 *Minimum Operational Performance Standards for Airborne Weather and Ground Mapping Pulsed Radars*, it incorporates new radar technology and serves as a standard for both air carrier and general aviation aircraft. It considers those requirements and technologies pertinent to general aviation, where limitations on space and/or weight may apply.

Compliance with these standards by manufacturers, installers and users is recommended as one means of assuring the equipment will perform its intended function under conditions normally encountered in routine aeronautical operations. It is recognized that any regulatory application of these standards is the responsibility of appropriate governmental agencies.

The word "equipment" as used herein includes all components or units necessary (as determined by the manufacturer or installer) for the equipment to properly perform its function. For example, the airborne radar "equipment" may include a radome, an antenna, antenna mounting, transmission line, a receiver/transmitter unit, a control/display unit, shock mounts, etc. In this illustrative example, all these components or units comprise the "equipment." It should not be inferred from this example that every equipment configuration will necessarily include (or be limited to) all these components or units. This will depend on the design chosen by the equipment manufacturer and the techniques of the installer.

Some system designs may not include a dedicated radar display unit. They may instead share the display medium with TCAS and/or ACARS. They may also share a multipurpose display such as an EFIS (Electronic Flight Instrument System). For airborne radar systems with this architecture, the shared display device, when used for displaying radar information, must meet the display requirements as set forth in this document.

1.2 Operational Goals

There are three primary operational goals that must be satisfied by the equipment described in this document. These are forward-looking windshear detection, weather detection and ground mapping.

1.2.1 Windshear Detection

For windshear detection, the airborne radar equipment must detect areas containing windshear activity. It will be capable of correlating and generating appropriate