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Minimum Operational Performance Standards (MOPS) for Airborne Supplemental Navigation Equipment Using Global Positioning System (GPS)

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FOREWORD

This document was prepared by RTCA Special Committee 159. It was approved by the RTCA Executive Committee on July 12, 1991.

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1.0 PURPOSE AND SCOPE

1.1 Introduction

This document contains minimum operational performance standards for airborne supplementary navigation equipment (2D and 3D) using GPS inputs. An airborne supplemental navigation system can be used as a primary navigation reference in an aircraft when an approved and operational sole means navigation system is available. Incorporated within these standards are equipment characteristics that should be useful to users, designers, manufacturers and installers of the equipment. This document defines performance, functions and features for a 2D system, which performs only lateral guidance, and a 3D system, which performs both lateral and vertical guidance. Equipment may be manufactured and tested to meet 2D or 3D requirements (or both) in the en route, terminal and approach modes or any combination thereof.

Section 1.0 of this document provides information and assumptions needed to understand the rationale for equipment characteristics and requirements stated in the remaining sections. It describes typical equipment applications and operational goals and forms the basis for the standards stated in Sections 2.0 through 4.0. Comments pertaining to VOR/DME have been included for explanatory and tutorial purposes. Definitions are provided in Appendix A.

Section 2.0 contains the minimum operational performance standards for the equipment. These standards define required performance under standard operating conditions and stressed physical environmental conditions. It also details the recommended bench test procedures necessary to demonstrate compliance.

Section 3.0 describes the performance required of the installed equipment. Tests for the installed equipment are included when performance cannot be adequately determined through bench testing.

Section 4.0 describes the operational characteristics for equipment installations and defines conditions that will assure the operator that operations can be conducted safely and reliably in the expected operational environment.

Compliance with these standards by manufacturers, installers and users is recommended as one means of assuring that the equipment will satisfactorily perform its intended function(s) under conditions normally encountered in routine aeronautical operations.

The word "equipment" as used in this document includes all components or units necessary (as determined by the equipment manufacturer or installer) for the equipment to perform properly its intended function. For example, the airborne area navigation "equipment" may include: sensor(s), a computer unit, an input-output unit that interfaces with existing aircraft displays/systems, a control unit, a display, shock mount(s), etc. In the case of this example, all of the foregoing components or units comprise the "equipment." It should not be inferred from this example, however, that every area navigation equipment will necessarily include all of the foregoing components or units. This will depend upon the design used by the equipment manufacturer.