Application Descriptions for Initial Cockpit Display of Traffic Information (CDTI) Applications

September 13, 2000
RTCA DO-259

Prepared by SC-186

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Foreword

This report was prepared by Special Committee 186 (SC-186) and approved by the RTCA Program Management Committee (PMC) on September 13, 2000.

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.

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1 Introduction

1.1 Purpose & scope

This document contains operational concepts for cockpit display of traffic information (CDTI) initial applications. The document will:

- Provide a preliminary description of four potential procedures utilizing a CDTI that may enhance current air traffic operations;
  1. Enhanced visual acquisition
  2. Enhanced visual approaches
  3. In-Trail (or lead) Climb and Descent in Non-Radar Airspace (Oceanic, En Route, and Remote)
  4. In-Trail (or lead) Climb and Descent to Co-Altitude in Non-Radar Airspace (Oceanic, En Route, and Remote)
- Describe the underlying pilot and controller tasks and responsibilities; and
- Derive required CDTI capabilities to enable the pilot to perform these tasks.

This document is intended for use by managers and staff at the Federal Aviation Administration (FAA), airlines, and avionics manufacturing companies involved with the planning, development, manufacturing, and certification of these capabilities and their authorization for use in the national airspace system (NAS). These application descriptions are an initial stage in the process of fully developing these applications and will need to be followed by other development and implementation activities as outlined in RTCA, 1999. As stated in that document, full participation throughout the process by all appropriate aviation organizations, including air traffic services; flight standards and aircraft certification offices; airlines, general aviation, military, and other users; avionics and airframe manufacturers; controller and pilot unions; and research and development organizations, is necessary for the accomplishment of the development and implementation process.

The intent of this document is to develop an initial definition of the procedures with sufficient detail to allow a specification of required CDTI capabilities, so that when the procedures are fully developed, tested and evaluated, and certified for use, the equipment may be capable of facilitating the implementation. The procedures described in this document would undoubtedly undergo considerably closer scrutiny and refinement prior to implementation. As of the writing of this document, the enhanced visual acquisition procedure is being coordinated and refined for operational implementation.

Potential procedural parameters (e.g., closure rate) are quoted for applications three and four. It is recognized that the magnitude of such parameters must be validated through safety analysis, which will also define surveillance system performance requirements in terms of accuracy, availability, continuity, integrity, and reliability. Where other procedures are described as background to the applications, no specific assumptions are made concerning the relative performance of existing systems supporting these procedures and the future systems to be used for CDTI applications.