Guidance for Initial Implementation of Cockpit Display of Traffic Information

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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 February 19, 1998.

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.

Table of Contents

APPENDICES

TABLE OF FIGURES

TABLE OF TABLES

1. Purpose and Scope

1.1 Introduction

Cockpit Display of Traffic Information (CDTI) is the function of presenting surveillance information about the surrounding traffic to the flight crew. The information presented includes the relative position of other aircraft in the vicinity with respect to own aircraft. Traffic information for the CDTI may be obtained from one or more sources, including, but not limited to, broadcast automatic dependent surveillance (ADS-B), traffic information service (TIS), and traffic alert and collision avoidance system (TCAS). To display traffic information, the CDTI may use a dedicated display device or a shared multi-function display (MFD) device. Even though a visual, graphical presentation of the traffic on a heads-down display will be most common in the near term, other types of presentation (e.g., aural, graphical head-up) are also possible, as long as information is conveyed effectively. The specific information presented may vary based on the intended operational use of the information.

Note: While general guidance is given herein concerning the format and content of the information to be presented on cockpit displays, specific requirements concerning placement, presentation and integration of CDTI data on multifunction displays are not addressed. In addition to this document, implementers are encouraged to use the display guidance and practices recommended by the Society of Automotive Engineers (SAE) Group 10 (GP-10) (See references, Appendix B.)

In the near term, the traffic display implemented as part of the present TCAS system may be enhanced by providing additional data, including identification of other aircraft. Aircraft that are not equipped with TCAS may be equipped with CDTI using ADS-B and/or TIS data.

Appendix A contains acronyms and the Bibliography is provided in Appendix B. Appendix C contains an evaluation summary for CDTI enhanced visual approaches. The definitions of terms used throughout this document conform to the definitions provided in the ADS-B MASPS.

1.2 Purpose and Scope

To implement CDTI features, manufacturers need an authoritative reference document. The CDTI MOPS, when completed, will fulfill this need. The CDTI MOPS is not expected to be developed and approved in time to satisfy near-term manufacturer needs in the design and development process. This document provides manufacturers a set of guidelines in the design and development of an initial set of CDTI features. This Guidance Document is advisory in nature and its contents are expected to be a subset of the final CDTI MOPS. More complete requirements for CDTI functions will be provided in the CDTI MOPS, and that MOPS, when published, will replace this document.

In order to comply with certification standards, manufacturers will be required to demonstrate that 1) CDTI meets it intended functions, and 2) CDTI does not interfere with any other aircraft systems. This interim guidance provides a description of the intended functions of CDTI and as such may aid the certification process.

The ADS-B MASPS defines a broad range of CDTI operational uses, applicable to all domains. Due to the variety of their complexity, applications may be developed at different times. This document provides guidance for the implementation of features for a limited set of early applications. It provides examples of potential display formats and provides high-level guidance on the integration of surveillance inputs from multiple sources for use by a CDTI. Future displays