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Interoperability Requirements for ATS Applications Using ARINC 622 Data Communications (FANS 1/A Interop Standard)

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FOREWORD

This guidance document was jointly prepared by Special Committee 189 (SC-189) and the European Organization for Civil Aviation Equipment (EUROCAE) Working Group 53 (WG-53) and approved by the RTCA Program Management Committee (PMC) on April 7, 2005.

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 on recommendations on contemporary aviation issues. RTCA's objectives include, but are not limited to:

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- 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 Telecommunications 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

This document provides the interoperability requirements (INTEROP) standard for the implementation of the ATS applications using ARINC 622 data communication, henceforth referred to as FANS-1/A (Version 1) systems.

This document was developed in accordance with the criteria for INTEROP standards set forth in RTCA DO-264/EUROCAE ED-78A, "Guidelines for Approval of the Provision and Use of Air Traffic Services Supported by Data Communications." This document represents the minimum set of interoperability requirements and allocations necessary to provide adequate assurance that the elements of the communication, navigation, and surveillance/ air traffic management (CNS/ATM) system are compatible with each other and when operating together will perform their intended function. These elements comprise the aircraft system, the air traffic service provider (ATSP) system, and the operator's provisions to use the air traffic services. The ATSP system and the operator's provisions may include third party or contracted communication services. The communications services include ACARS-compliant subnetworks and the ACARS communications service.

1.1 Purpose

The purpose of this document is to define the set of requirements for the interoperability aspects of FANS-1/A (Version 1) systems. It is intended for use in conjunction with a consistent safety and performance requirement standard, other INTEROP standards, and the guidelines described in DO-264/ED-78A for each approval type associated with the elements of the CNS/ATM system.

Note 1: Based on ED-78A/DO-264, INTEROP and SPR standards provide recommendations intended for government organizations, conference of governments, or agencies having statutory jurisdiction over the use and provision of air traffic services supported by data communications. These recommendations are for use by such government organizations to enunciate official policy, related to such matters, in aeronautical information publications (AIPs), notices to airmen (NOTAMs), airplane flight manuals (AFMs), and operator specifications.

Interoperability requirements are the minimum technical and functional requirements that provide the basis for ensuring compatibility among the various elements of the CNS/ATM system using a specific technology. These elements comprise the distributed communication services and ATS applications in the aircraft system, the communication service providers' system and the ATS Provider system.

Note 2: This document is not intended to provide requirements to standardize operational procedures in the use of this technology. Refer to appropriate safety and performance (SPR) standards.

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This document will:

a) Define interoperability requirements for the communication services;

b) Define interoperability requirements for the ATS applications;

c) Allocate the interoperability requirements to stakeholders.

1.2 Scope

This document covers:

a) The ATS Facilities Notification (AFN) application;

b) The Automatic Dependent Surveillance (ADS) application;

c) The Controller Pilot Data Link Communication (CPDLC) application;

d) The ARINC 622 data communication.

Following elements are out of scope of this document:

- Ground-ground data communications between ATS Providers or between an ATS Provider and an Airline Operational Control (AOC) facility;
- Air-ground data communications between an aircraft and an AOC facility;
- Performance of the communication services and the ATS applications;
- User interfaces of the ATS applications within the aircraft and the ATS Provider facility.

1.3 Relationships to other documents

Industry has recognized that the development of the FANS-1/A systems required significant standards development. The interoperability requirements of this document supersede those of the RTCA/DO-212 and RTCA/DO-219. This document makes reference to existing standards wherever possible.

This INTEROP standard is based upon the guidance of ED-78A/DO-264. Specifically for FANS-1/A (version 1) systems, this INTEROP standard can be used as evidence of the interoperability assessment, which is part of the coordinated requirements determination process. This evidence provides the basis for qualifying the interoperability aspects of elements of the CNS/ATM system. Additional criteria for qualifying the interoperability aspects of an element of the CNS/ATM system to the INTEROP standard can be found in DO-264/ED-78A.

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