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Minimum Operational Performance Standards for Traffic Information Service (TIS) Data Link Communications

RTCA DO-239
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Prepared by:
SC-169

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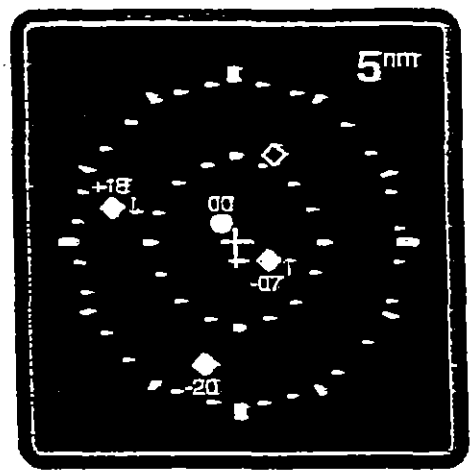
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MINIMUM OPERATIONAL PERFORMANCE STANDARDS FOR TRAFFIC INFORMATION SERVICE (TIS) DATA LINK COMMUNICATIONS

Page 16, Section 2, Paragraph 2.2.3.2, first line of text:

Change "GICB register 30...." to read "GICB register 29...."

Page 20, Section 2, Paragraph 2.2.5.3, second line: Insert "figure below"...



Page 21, Section 2, Paragraph 2.2.5.6, end of paragraph, add the following:

If the onboard source of own-aircraft heading is currently being used to adjust the orientation of the TIS display and a failure is detected that renders the onboard estimate of own-aircraft heading unusable, TIS shall immediately revert to using uncorrected, sensor-supplied ground-track heading for orientation of the TIS display. An indication of this failure mode shall be displayed to the pilot.

Page 27, Section 2, Paragraph 2.4.2.6:

Second line – Change "(GICB register 31)...." to read "(GICB register 29)...."

Fourth line – Change "Bit 1...." to read "Bit 2...."

Seventh line – Change "Bit 1..." to read "Bit 2..."

Foreword

This report was prepared by Special Committee 169 (SC-169) and approved by the RTCA Technical Management Committee (TMC) on April 2, 1997.

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- 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

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1.0 PURPOSE AND SCOPE

1.1 Introduction

This document contains Minimum Operational Performance Standards (MOPS) for aircraft equipment required for Traffic Information Service Data Link (TISDL) communications. TISDL communications are one element of Air Traffic Services Communications (ATSC). Figure 1-1 depicts the general hierarchy for the communication services which make up the ATSC. TISDL communications allow a pilot (and/or aircraft avionics) to request and receive TIS services from ground TIS systems.

Note: This document only presents requirements for the aircraft equipment associated with TISDL communications.

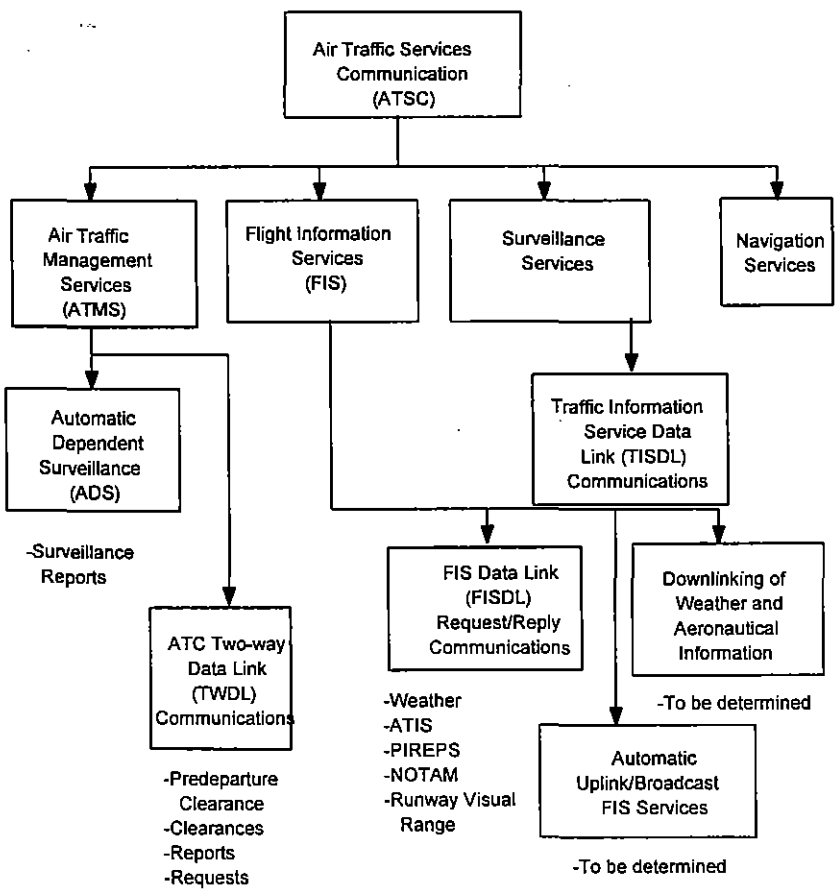


Figure 1-1 ATSC General Hierarchy

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Compliance with these standards is recommended as one means of assuring that the equipment will perform its intended functions satisfactorily under all conditions normally encountered in routine aeronautical operations. Any regulatory application of this document is the sole responsibility of the appropriate governmental agencies.

Section 1 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 establishes the basis for the standards stated in section 2 through section 3. Definitions and assumptions essential to proper understanding of this document are also provided in this section.

Section 2 contains the minimum performance standards for the equipment. These standards specify the required performance under standard operating and environmental conditions. Also included are recommended bench test procedures necessary to demonstrate equipment compliance with the stated minimum requirements.

Section 3 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 describes the operational performance characteristics for equipment installations and defines conditions that will assure the equipment user that operations can be conducted safely and reliably in the expected operational environment.

1.2 TISDL System Overview

The Traffic Information Service (TIS) data link function is intended to improve the safety and efficiency of "see and avoid" flight by providing automatic display to the pilot of nearby traffic and warnings of any potentially threatening conditions. The source of TIS information is the file of aircraft tracks maintained by the ground Mode S sensor providing coverage for a region of airspace. While TIS can provide traffic information alerts to only those Mode S equipped aircraft under surveillance track, TIS has knowledge of all ATCRBS aircraft in coverage (and, potentially, of non-transponder-equipped aircraft when a primary radar's coverage is integrated with the Mode S sensor). TIS generates alerts for any traffic aircraft in Mode S coverage that carry a transponder (ATCRBS or Mode S). TIS provides traffic advisories similar to those of TCAS-I, but does not provide resolution advisories. By utilizing the surveillance database maintained by Mode S ground interrogators and the data link, TIS can provide airborne traffic alerting with modest airborne equipage. The TIS service is provided without any ground controller involvement.

1.2.1 How TIS Differs From TCAS

The major functional difference between TIS and TCAS is the source of surveillance data. TCAS uses an airborne interrogator with a one second update rate, while TIS uses the terminal Mode S ground interrogator and its data link to provide about a five-second update rate. The range accuracy of TIS and TCAS are similar. TCAS angular accuracy is limited to a few degrees of azimuth measured with respect to the aircraft, while TIS angular accuracy is that of Mode S (about 1 milliradian) measured with respect to the ground

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