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Next Generation Air/Ground Communications (NEXCOM) VDL Mode 3 Interoperability

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Prepared by SC-198
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FOREWORD

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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

- 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.

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1 INTRODUCTION

This document will identify Next Generations Air/Ground Communications (NEXCOM) Very High Frequency (VFH) Digital Link (VDL) Mode 3 interoperability requirements for air traffic services supported by digital voice and data communications in the U.S. National Airspace System (NAS). It is prepared in accordance with the guidance as described in applicable portions of RTCA DO-264, *Guidelines for Approval of the Provision and Use of Air Traffic Services supported by Data Communications.* The document applies material being developed by RTCA SC-189 in Initial Continental Safety and Performance Requirements.

This interoperability document presents technical and functional requirements that provide the basis for ensuring compatibility among the various elements of the Communications Navigation Surveillance/Air Traffic Management (CNS/ATM) system using digital voice and data services. These digital voice and data services are outlined in RTCA DO-279*, NEXCOM Principles of Operation VDL Mode 3 Operational Services and Environmental Definition (OSED) Section 3.7.6*, and described in RTCA DO-284, *NEXCOM System Safety and Performance Requirements (SPR).*

1.1 Purpose

The purpose of this document is to provide the interoperability requirements for Air Traffic Services (ATS) supported by NEXCOM VDL Mode 3.

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 CNS/ATM elements comprise the aircraft system, the ATS Provider system, and the operator's provisions to use the air traffic services. The ATS provider system and the operator's provisions may include third party or contracted communication services.

This document is compliant with the Aeronautical Telecommunications Network (ATN) Standards and Recommended Practices (SARPs), henceforth referred to as the ATN SARPs, as defined in published versions of the International Civil Aviation Organisation (ICAO) *Manual of Technical Provisions for the ATN* (ICAO Doc.9705-AN/956) and the ICAO *Manual Of ATS Datalink Applications* (ICAO Doc.9694-AN/955).

This document:

1. Defines interoperability requirements for the communication services indicated in Table 1-1.
2. Defines interoperability requirements of the VDL Mode 3 subnetwork for the ATS applications; and
3. Allocates the interoperability requirements to communications elements of the CNS/ATM system.

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1.2 Document Organization

Section 1 defines the purpose and scope of the document and its role in developing and sustaining communications services. Section 1 also provides the document organization and lists the reference documents pertaining to the interoperability requirements for the communication services and ATS applications.

Section 2 is a brief system description of the NEXCOM VDL Mode 3 system as envisioned by the FAA.

Section 3 defines the interoperability requirements for the communication services.

Section 4 defines the interoperability requirements for the applications of voice and data. Guidance material is provided and introduces features that are beyond the scope of the SARPs, e.g., the relationship between ATS applications and aircraft navigation systems.

Section 5 defines the dynamic aspects of the ATS applications and the sequences of operations required for correct operation of the air traffic services supported by NEXCOM VDL Mode 3.

Section 6 describes the allocation of the interoperability requirements to either air or ground subsystems.

Section 7 identifies the unique characteristics of the NEXCOM system.

Appendix A lists committee members who have worked on this document.

1.3 Scope

The scope of this document includes interoperability requirements for ATS communications services operating over the VDL Mode 3 subnetwork that support the air traffic services shown in Table 1-1.

The Minimum Aviation System Performance Standards (MASPS) are considered controlling. Any exceptions to the MASPS are addressed in Section 7.

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