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RESPONSE TO THE REPORT OF THE RTCA CHAIRMAN'S COMMITTEE ON NEXCOM

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FOREWORD

This report was prepared by Special Committee 198 (SC-198) and approved by the RTCA Program Management Committee (PMC) on October 12, 2001.

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.

EXECUTIVE SUMMARY

This document has been prepared by RTCA SC-198 and provides a response to the *Report of the RTCA Chairman's Committee on NEXCOM*. It addresses each of the recommendations contained in the Chairman's report and identifies which of these recommendations are being addressed by SC-198, and which are expected to be addressed by the NEXCOM Aviation Rulemaking Committee (NARC). Of the 22 actions recommended by the Chairman's Committee, eight are being addressed by SC-198, three have been addressed by the NARC and eleven have been addressed by the FAA.

The document provides responses to each of the committee recommendations in the same order as they appear in the Chairman's report.

An analysis of frequency spectrum needs concludes with items under consideration by the agency in light of the fact that limited VHF spectrum remains for future systems, services or expansions in the NAS.

Agency plans for refurbishing the NAS, working in concert with the user community, depend on NARC recommendations and the subsequent agency decision. Future work of this committee will require a collaborative process to address the transformation of operational concept, transition architecture, certification, implementation and safety aspects of a future Air/Ground Communication System for voice and data. The RTCA Program Management Committee approved terms of reference that began this work on March 27, 2001.

NEXCOM parameter and milestone definition is being addressed in collaboration with users (all classes, e.g. general aviation, air carriers, business aviation, military,) by SC-198.

Certification and Flight Standards coordination regarding level of protection needed for Air Traffic Services (ATS) data link messages has been initiated.

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1 INTRODUCTION

This document is in response to the *Report of the RTCA Chairman's Committee on NEXCOM* dated August 9, 2000.

1.1 Purpose

The purpose of the Response to the *Report of the RTCA Chairman's Committee on NEXCOM* is to identify how recommendations from the RTCA Chairman's Committee on NEXCOM (attached as appendix B) are or will be addressed.

1.2 Background

In the Fall of 1999, the FAA asked the RTCA Program Management Committee (PMC) to form a subgroup of Special Committee 194, Air Traffic Management Data Link Implementation, for the purpose of addressing the operational, regulatory, cost and schedule considerations attendant with NEXCOM. The PMC determined that there was "… broad support for a government/industry activity in this area but that the significance of the program dictated the need for a higher level review than could be provided by the PMC." The RTCA Policy Board subsequently concurred in forming an Ad Hoc government/industry group, known as the RTCA Chairman's Committee on NEXCOM, to frame the pertinent NEXCOM issues and to develop at least a starting point for the ensuing debate. The Chairman's Committee was not asked to offer solutions.

For the purposes of the committee's deliberations, the term NEXCOM is used in its broadest connotation and embraces all aspects of transitioning Air Traffic Control (ATC) communications from an analog voice communication system to a digital voice and data communication system. NEXCOM transcends just the acquisition of new air-ground ATC radios and includes all spectrum, policy, procedure, equipment acquisition, certification, training, facility and maintenance issues / considerations attendant with the transition.

The RTCA Chairman's Report structured an FAA Industry Day sponsored by MITRE and held on September 18, 2000. Attendance at this meeting by key individuals of the aviation industry highlighted the significance of spectrum depletion and other program risks. As a result of this, FAA formed the NEXCOM Aviation Rulemaking Committee (NARC) in December 2000 to address a solution set that was acceptable to industry.

The NARC was asked to review the current FAA NEXCOM program, with respect to user impact, and make recommendations to the FAA Administrator. Where the RTCA Chairman's Committee recommendations allude to an area addressed by the NARC for subsequent FAA decision, the response indicates that is the case.

Specific recommendations made by the RTCA Chairman's Committee and SC-198 responses follow.

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2 RTCA CHAIRMAN'S COMMITTEE RECOMMENDATIONS AND SC-198 RESPONSES

2.1 Frequency Spectrum

FAA should lead an analysis of frequency spectrum needs, use and availability for ATC voice communications.

2.1.1 Scope of Spectrum Problem

RTCA Report Recommendation:

Focus on the nature and magnitude of the current spectrum problem, attendant to geographic and airspace impacts and changes that are expected to occur as a function of time.

SC-198 Response:

As the result of an FAA frequency spectrum analysis conducted in 1998[1], the FAA concluded that NAS-wide requirements could potentially approach a need for 3400 additional air traffic control assignments by 2015. This translates to about 50% growth in demand for new radio frequencies. In addition, aging infrastructure mandated impending replacement for Air/Ground radios which were no longer logistically supportable. In conjunction with earlier FAA and ICAO studies, this provided a strong incentive for development of a Next Generation Communications system. Simultaneously, international consensus on a worldwide standard for digital communications was being finalized. The ICAO standard which resulted, relied on a technology known as Time Division Multiple Access (TDMA).

The spectrum analysis focused mainly on five areas:

1. the projected spectrum demand for new services/systems/air traffic control,
2. the trends in air traffic control (ATC) sectorization and management of airspace,
3. spectrum capacity,
4. FAA mitigation strategies to meet demands, and
5. the impact of not satisfying spectrum requirements in the near future.

The study was performed in essentially four geographical areas of the NAS that were at, or near, their limits in spectrum capacity.

Several drivers for spectrum demand were looked at by the FAA. These included requirements for additional data link applications, GPS approaches, precision runway monitors to support simultaneous parallel approaches, and AWOS/ASOS. Also, evolving trends in air traffic control toward dynamic re-sectorization and management of airspace were assessed.

Since this analysis was performed, an assessment, that Cleveland Center and the Chicago TRACON were particularly short on voice frequencies, has been validated. In 2000, at Cleveland Center, for the first time a request for a new frequency could not be satisfied. In addition, distinct air traffic requirements have driven airspace managers into creating the Choke Point Program, which had the side effect of increasing the demand for additional radio frequencies.

2.1.2 Basis for Refurbishment of Voice Infrastructure

RTCA Report Recommendation:

Results should provide a basis for FAA refurbishment of the current voice communications infrastructure.

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[1] NEXCOM Spectrum Requirements Report, Final, April 29th, 1998, Analysis of Current and Projected Demand for VHF Frequency Circuit Assignments for ATC Air/Ground Communication, dated April 29, 1998

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