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Universal Air-Ground Digital Communication System Standards

RTCA DO-136
March 7, 1968

Prepared by: SC-110/111

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FOREWORD

This report was prepared by Special Committee 110/111 of the Radio Technical Commission for Aeronautics. It was approved by RTCA on March 7, 1968.

RTCA is an association of aeronautical organizations of the United States from both government and industry. Dedicated to the advancement of aeronautics, RTCA seeks sound technical solutions to problems involving the application of electronics and telecommunications to aeronautical operations. Its objective is the resolution of such problems by mutual agreement of its member organizations.

The findings of RTCA are in the nature of recommendations to all organizations concerned. As RTCA is not an official agency of the government of the United States, its recommendations may not be regarded as statements of official government policy unless so enunciated by the government organization or agency having statutory jurisdiction over any matters to which the recommendations relate.

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INTRODUCTION

A. BACKGROUND

Under date of March 12, 1964, the Radio Technical Commission for Aeronautics published its Document 122 (DO-122) - "Universal Air-Ground Digital Communications Systems Standards." This document recognized the need for an air-ground digital communications system capable of world-wide implementation. Its objective was the development of a set of technical standards which will provide a common source from which specifications for a family of systems, with varying levels of functional capability, can be drawn with a guarantee of inter-system compatibility and inter-operation across a diverse and broad spectrum of user needs.

As a basic step to accomplish this objective, DO-122 recommended the adoption of the American Standards Association (ASA) 7-bit Information Code as a universal standard, with provisions for the use of an 8th bit for parity check. In general, however, DO-122 defined standards only to the degree necessary to attain a logical compatibility of the framework of the universal air-ground digital communications system with the ground communications environment. It did not, for example, resolve such questions as the order of bit transmission (low or high order first) or the use of odd or even parity, nor did it finalize standards relating to Frequency and Modulation, Message Structures and Error Detection and Correction. In this regard the following is quoted from RTCA Document 122 (Section VII, paragraph C5, page 28):

> "The task of studying or specifying the significations and structure of discrete messages was not undertaken. The effort was limited to providing the skeletal structure to which these functions may be later added. The magnitude of the task of developing Format and Canned messages susceptible to Universal application is not minimized. In full recognition of this, it is recommended that it be made the subject of a subsequent Special Committee of the RTCA, to begin its efforts at such time as there is acceptance of the Universal System proposals, and basing its work not solely upon