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AN AERONAUTICAL AND MARITIME SATELLITE TECHNOLOGY BIBLIOGRAPHY

W. I. Thompson, III

MARCH 1976
FINAL REPORT

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U.S DEPARTMENT OF TRANSPORTATION
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16. Abstract

Material used and generated over the past five years on the aeronautical and maritime satellite programs has been reviewed and organized in this report. Emphasis has been placed on advanced electronic technology and its application to the satellite surveillance, ranging and communication problems.

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PREFACE

This bibliography arose from work conducted by the Satellite Programs Office of the Transportation Systems Center during the period 1970-1975.

The support offered by Mr. Joseph M. Gutwein of the Transportation Systems Center is gratefully acknowledged.

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LIST OF ABBREVIATIONS*

AEROSAT	aeronautical satellite
AFAL	Air Force Avionics Laboratory
AGARD	Advisory Group for Aerospace Research & Development
AII	Applied Information Industries
ASET	Aeronautical Services Earth Terminal
ASTRA	Application of Space Techniques Relating to Aviation
ASTRO-DABS	astro-discrete address beacon system
ATC	air traffic control
ATS	Application Technology Satellite (NASA)
Bull.	bulletin
Conf.	conference
Cont.	contract
COMSAT	Communications Satellite Corp.
CONUS	continental United States
CW	continuous wave
C.C.I.R.	International Radio Consultative Committee
DDC	Defense Documentation Center
DFC	dual frequency calibration
DOC	U.S. Department of Commerce
DOD	U.S. Department of Defense
DOT	U.S. Department of Transportation
DPSK	differential phase-shift keyed
DRSS	Data Relay Satellite System (NASA)

*All state abbreviations with two letters are defined in a Zip code directory.

LIST OF ABBREVIATIONS (CONTINUED)

DR&A	data reduction and analysis
ed.	editor
EIRP	effective isotropic radiated power
EMC	electromagnetic compatibility
ERC	Electronics Research Center
ESRO	European Space Research Organization
ESTEC	European Space Technology Centre
FAA	Federal Aviation Administration
GDOP	geometric dilution-of-precision
Int.	international
IAA	International Aerospace Abstracts
ICAO	International Civil Aviation Organization
IEE	Institution of Electrical Engineers
IEEE	Institute of Electrical and Electronics Engineers
INTELSAT	International Telecommunications Satellite Consortium
ITS	International Telemetering Society
ITU	International Telecommunications Union
JTAC	Joint Technical Advisory Council
MIT	Massachusetts Institute of Technology
No.	number
NASA	National Aeronautics & Space Administration
NATO	North Atlantic Treaty Organization
NRL	Naval Research Laboratory

LIST OF ABBREVIATIONS (CONTINUED)

NTIS	National Technical Information Service
OST	Office of the Secretary of Transportation
OT	Office of Telecommunications
Proc.	proceeding
Pub.	publication
PLACE	position location and aircraft communication experiment
Rpt.	report
RF	radio frequency
RFI	radio frequency interference
RTCA	Radio Technical Commission for Aeronautics
SAMSO	Space and Missile Systems Organization
SHF	super high frequencies
SOD	Superintendent of Documents (U.S. Government Printing Office)
SST	supersonic transport
STAR	Scientific & Technical Aerospace Reports (NASA)
TSC	Transportation Systems Center
UHF	ultra high frequencies
UN	United Nations
USAF	United States Air Force
USCG	United States Coast Guard
VHF	very high frequencies

1. INTRODUCTION

1.1 SCOPE

This bibliography arose from the work undertaken by the Satellite Programs Office of the Transportation Systems Center on the Aeronautical and Maritime Satellite Programs over the period 1970 through 1975. Military and civilian communication satellites such as INTELSAT have not been included.

The bibliography is broken into two main categories: (1) aeronautical satellites and (2) maritime satellites. The aeronautical satellite area covers such areas as the proposed multinational AEROSAT system and various technology areas related to such. The maritime area covers such areas as antennas, propagation and their effects on future systems such as search-and-rescue operations.

1.2 C.C.I.R. DOCUMENTATION

The International Telecommunication Union (ITU), a division of the United Nations (UN), through its International Radio Consultative Committee (C.C.I.R.), holds periodic plenary assemblies. The most recent being the 13th in Geneva, Switzerland in 1974. The proceedings of these meetings is published in a 13-volume set (See C.C.I.R., 1975). Table 1 lists the reports dealing with aeronautical and maritime satellites. The C.C.I.R. reports are a source of digested information and usually contain some theory, representative data and associated references.

1.3 SOURCE OF DOCUMENTS

Most of the documents listed in this bibliography have a document identification number such as listed in Table 2. Table 2 also relates the document identification numbers to the appropriate document handling centers. A discussion of public availability of documents is given in the Introduction to any Scientific and Technical Aerospace Reports which is published by the National Aeronautics and Space Administration.

TABLE 1. C.C.I.R. REPORTS DEALING WITH AERONAUTICAL AND MARITIME SATELLITE SYSTEMS

C.C.I.R. Report	Title/Subtitle
	Technical Characteristics of Systems Providing Communication and/or Radio-Determination using Satellite Techniques for Aircraft and/or Ships
216-2	Use of satellites for terrestrial radiodetermination
504-1	Propagation, antennae and noise as factors affecting the choice of frequency for telecommunications between an aircraft/ship and a satellite
505-1	Multipath effects in aircraft-to-satellite communication and radio-determination links
507-1	Technical feasibility of systems employing space communication techniques jointly for communication and radiodetermination purposes
508	Factors affecting the choice of performance objectives in the maritime mobile communication satellite service
513-1	Technical feasibility of systems employing space communication techniques jointly for communication and radiodetermination purposes in the VHF mobile communication bands
515-1	Use of geostationary satellite for radiodetermination by distance-measuring techniques
591	Noise as a factor affecting the choice of frequency for telecommunications between an aircraft/ship and a satellite
592	Some factors affecting the planning and designing of a satellite system to be used in the maritime mobile services

TABLE 1. C.C.I.R. REPORTS DEALING WITH AERONAUTICAL AND MARITIME SATELLITE SYSTEMS (CONTINUED)

C.C.I.R. Report	Title/Subtitle
594	Antennae for aircraft and ships
597	A theoretical comparison of voice communication techniques for aeronautical and maritime applications
598	Maritime tests in band 9 (UHF)
599	Aeronautical tests in band 9 (UHF)
600	Aeronautical and maritime satellite tests in band 8 (VHF)
601	Consideration of possible technical characteristics for a maritime satellite system for public correspondence
602	Possible maritime distress systems using satellites
603	A method of eliminating multipath fading using an omnidirectional antenna diversity system for reception of satellite signals in the maritime mobile satellite service
506	Technical Characteristics of Communication Satellite Services to Aircraft and Ships Satellite orbits for systems providing communication and radio-determination for stations in the mobile service
394-1	Feasibility of Frequency Sharing Between the Radiodetermination Satellite Service and the Terrestrial Services
509-1	Signal Quality and Modulation Techniques for Radiocommunication and Radiodetermination Satellite Services for Aircraft and Ships

TABLE 1. C.C.I.R. REPORTS DEALING WITH AERONAUTICAL AND MARITIME SATELLITE SYSTEMS (CONTINUED)

C.C.I.R. Report	Title/Subtitle
510-1	The Effects of Carrier-to-Intermodulation Ratio Upon Radio-frequency Channel Selection and Satellite Transponder Design for Aeronautical and Maritime Services
511	Feasibility for Stations in the Aeronautical and Maritime Mobile Services to Share the Same Frequency Bands when Using Space Communication Techniques Preliminary operational and economic considerations
512	Feasibility of Systems Employing Space Communication Techniques for Aircraft to Share the same Frequency Band by Interleaving with the Conventional VHF Terrestrial Aeronautical Service
593	Feasibility of Sharing Between the Maritime Mobile Satellite Service and the (Terrestrial) Maritime Mobile Service
595	Systems Providing Radiocommunication and/or Radiodetermination Using Satellite Techniques for Aircraft and/or Ships Operational aspects
596	Systems Providing Radiocommunication and/or Radiodetermination Using Satellite Techniques for Aircraft and/or Ships Methods of access to communication channels in the maritime mobile satellite service.

*From Documents of the C.C.I.R. XIIIth Plenary Assembly, Geneva 1974, International Telecommunication Union, Geneva (1975).

TABLE 2. SELECTED SOURCES OF TECHNICAL INFORMATION WITH THEIR ACCESSION NUMBER SYMBOL

SYMBOL	SOURCE
AXX-XXXXX	International Aerospace Abstracts (IAA) published semimonthly by the American Institute of Aeronautics & Astronautics, 750 Third Ave., New York, NY 10017.
AD-XXXXXX	Defense Documentation Center (DDC), Cameron Station, Alexandria, VA 22314.
NXX-XXXXX	Scientific & Technical Aerospace Reports (STAR), Published semi-monthly by: NASA Scientific & Technical Information Facility P.O. Box 33, College Park, MD 20740.
PB-XXXXXX	National Technical Information Service (NTIS), Springfield, VA 22161.
Univ. Micro-films	University Microfilms, 300 N. Zeeb Road, Ann Arbor, MI 48106.

1.4 ABSTRACTS OF TSC SPONSORED OR GENERATED DOCUMENTS

The abstracts of all TSC sponsored or generated technical reports up to June 1975 are contained in McDonough (1975).

1.5 REFERENCES

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