

ELEVENTH AIR NAVIGATION CONFERENCE

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Agenda Item 7 Aeronautical air-ground and air-to-air communications

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AERONAUTICAL AIR — GROUND VOICE AND DATA COMMUNICATIONS INCLUDING VSAT CONTROLLED REMOTE CONTROLLED AIR-GROUND VHF IN INDIA

(Presented by India)

SUMMARY

This information paper provides the current status of the infrastructure available for air- ground voice and data communications in the Indian terrestrial airspace, as well as the oceanic airspace of the Bay of Bengal and Arabian Sea. It also briefly describes the current development plans and future plans for augmentation of the air-ground communications in India.

1. INTRODUCTION

1.1 Considering the increase in air traffic growth over Indian terrestrial airspace, the oceanic airspace of the Bay of Bengal and the Arabian Sea and advent of new technology and infrastructure in the data communication, Airports Authority of India (AAI) has drawn plans to improve air-ground communication infrastructure in accordance with regional communications, navigation, and surveillance/air traffic management (CNS/ATM) plan. Implementation of the plan is being carried out in phases.

1.2 Some of the air-ground communication is being implemented through Indian Geo stationary satellites.

2. ENHANCEMENT OF VHF COVERAGE OVER INDIAN AIRSPACE IN THE OCEANIC REGION

2.1 To enhance the very high frequency (VHF) coverage over Bay of Bengal from area control centres (ACC) at Kolkata and Chennai, Remote Control Air Ground (RCAG) VHF communication has been provided from Port Blair, Vishakhapatnam and Bhubaneswar using very small aperture terminal (VSAT) technology. Port Blair and Vishakhapatnam RCAG VHF are operated from Kolkata and Chennai ATCCs and Bhubaneswar RCAG VHF is operated from Kolkata ATCC.

2.2 To enhance the VHF coverage of Mumbai and Trivandrum ATCCs over Arabian Sea, VSAT/RCAG at Agatti (an island in the Arabian Sea) operated from Mumbai and Trivandrum ATCCs and VSAT/RCAG VHF at Porbandar operated from Mumbai ATCC have been installed and put in operation for users.

2.3 With the above measures taken by India, VHF coverage of ATCCs over Oceanic regions has been augmented to a great extent.

3. ENHANCEMENT OF VHF COVERAGE OVER INDIAN TERRESTRIAL AIRSPACE

3.1 As an immediate measure, VHF coverage of Delhi ATCC has been enhanced by installing VSAT/RCAG VHF at Khajuraho airport operated from Delhi ATCC.

3.2 As a long term measure, AAI has finalized plans to network all Indian airports, including some military aerodromes, using VSAT technology through dedicated satellite communication network (DSCN).

3.3 DSCN is proposed to upgrade all the land lines through Indian Geo-stationary satellite (INSAT) which will provide higher speed and more efficient service.

3.4 DSCN shall have the capability of serving RCAG VHF requirements also. This capability shall be used for enhancement of the VHF coverage over Indian terrestrial airspace.

3.5 The DSCN is planned to be implemented by December 2004.

4. AUTOMATIC DEPENDENT SURVEILLANCE (ADS)/ CONTROLLER PILOT DATA LINK COMMUNICATION (CPDLC)

4.1 ADS/CPDLC at Kolkata and Chennai ATCCs, using air-ground link through SITA network, is in operation for use by appropriately equipped aircraft.

4.2 ADS/CPDLC is planned to be introduced at Delhi and Mumbai ATCCs, integrated with flight data processing system (FDPS)/ radar data processing system (RDPS) of the ATC automation systems at

these ATCCs. The air-ground linkage for this application shall be provided through data link service provider. The target date for implementation is December 2004.

5. VHF DATA LINK

5.1 Old VHF transmitters and receivers are being replaced at major airports and ATC centres with new transmitters and receivers having capability of VDL Mode 2, upgradeable to VDL Mode 3 and Mode 4.

5.2 The new VHF transmitter and receiver which have already been ordered and are to be supplied by December 2003, shall be used for air-ground communication for voice communication in first instance and would also be used in due course for air-ground data communication using VDL mode.

5.3 The new VHF transmitters and receivers are capable for air ground data communication up to VDL Mode-4.

6. HF DATA LINK

6.1 The existing HF transmitters and receivers used for MWARA at Delhi/Mumbai/Kolkata/Chennai and Trivandrum ATCCs are being replaced with new HF transmitters/receivers having capability of HF data link. These equipments would be commissioned by December 2003.

6.2 HF data link shall be used as and when airline operators are ready with the compatible avionics.

7. MODE S

7.1 The monopulse secondary surveillance radar (MSSR) from M/s COSSER, UK installed at Delhi and Mumbai Airports has capability of Mode-S and data communication.

7.2 The MSSRs from M/s WESTING HOUSE, USA and M/s BEL India, installed at 10 other stations and ATC centres also have Mode-S capability for data communications.

8. 8.33 KHZ CHANNEL SPACING FOR VHF DSB-AM

8.1 VHF congestion has not been experienced in Indian airspace. Therefore, 50 KHz channel spacing in the VHF aviation band 118-137 MHz continues to be in use.

8.2 The installed ground equipment is capable of tuning up to three decimal places. The infrastructure is, therefore, capable to meet the demand for 8.33 KHz channel spacing.

8.3 As and when the situation justifies the introduction of 8.33 KHz channel spacing for VHF due congestion of the channels, 8.33 KHz channel spacing will be introduced in coordination with airline operators and ICAO Asia-Pac Region.

9. CONCLUSION

9.1 Airports Authority of India, as the air navigation service provider in the Indian airspace, ensures readiness and availability of aeronautical air-ground communications infrastructure to meet the requirements of air traffic, not only over Indian terrestrial airspace but also over oceanic region of Bay of Bengal and Arabian Sea.

9.2 The installed equipment is upgradeable to the updated technology as per users' requirements.

9.3 The future equipment installation is planned as per the regional CNS/ATM plan, as well as the current and future compatibility with technological developments.

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