INTERNATIONAL CIVIL AVIATION ORGANIZATION
EASTERN AND SOUTHERN OFFICE

First Meeting of the AFI VSAT Networks Managers(AFI VSAT/1)
(Kwa-Zulu Natal, South Africa, 13 to 15 June 2011)

Agenda Item 2c: Operations: Aeronautical Mobile Services (AMS)

VHF COVERAGE EXTENSION

(Presented by ATNS)

SUMMARY
The working paper discusses the application of VSAT for VHF remote forward relay applications.
REFERENCE(S)

1. INTRODUCTION

1.1. The application of VSAT for VHF forward relay transceivers is a cost effective solution for VHF coverage extension.

1.2. High quality transmission of PTT requires a minimal and constant propagation delay to deliver the voice traffic to the VHF base stations at a remote location to be acceptable for Air Traffic Control mobile voice applications.

2. DISCUSSION

2.1. ATNS has successfully implemented a VHF forward relay network as part of its domestic VSAT network in South Africa.

2.2. The VSAT VHF network allows communication between aircraft and the Johannesburg and Cape Town Operational Centres through remote VHF radio stations located throughout South Africa. The air-ground VSAT forward relay voice communications do not degrade the voice quality and is free of echo, reverberation, whistle noises, crackling, etc. in both communication directions.

2.3. Communication is established with practically no delay, since the VSAT VHF circuits are permanently assigned.

2.4. To implement a VHF Forward Relay a 4 wire E & M port must be implemented in the existing VSAT terminal located at the ATC centre. An additional VSAT terminal with a 4 wire E & M port and

VHF radio equipment must be provided at the remote site. Similarly an asynchronous serial data circuit must be provided for Remote Control and Monitoring of the VHF facility if required.

2.5. Domestic VSAT VHF applications can be implemented with relative ease throughout the NAFISAT and SADC VSAT II regions to address deficiencies in VHF coverage.

2.6. Apart from the ease of implementation, other benefits for the use of VSAT for VHF Forward Relay applications are possible:

- In areas where no terrestrial communication infrastructure exist and which would be expensive to implement.

- Sites for VHF Forward Relay facilities are normally located on the highest ground (mountains) for maximum coverage, where again it would be costly to extend communication infrastructure.

3. CONCLUSION

3.1 The meeting is invited to:

a) Note the information provided in this working paper.
b) Take the information into account during discussions.

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