WORLDWIDE SYMPOSIUM ON PERFORMANCE OF AIR NAVIGATION SYSTEM

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ADS/CPDLC IMPLEMENTATION STATUS AND OPERATIONS IN THE BAY OF BENGAL AND ARABIAN SEA AIRSPACE IN INDIAN FIRs

(Submitted by India)

SUMMARY

This paper provides an update on the ADS/CPDLC implementation and operations in Bay of Bengal and Arabian Sea airspace in Indian FIRs. This paper also brings out the typical problem reports, their analysis and resolutions.

1.   INTRODUCTION

1.1   Beyond a distances of about 220NM from the East Coast line of India there is no radar coverage as the airspace extend into Bay of Bengal oceanic area in Chennai and Kolkata FIRs. Even though it is a huge stretch of oceanic airspace with little scope for complete VHF coverage throughout the area. , lndia has established RCAG stations at Vizag and Port Blair to enable Kolkata ACC and Chennai ACC to provide the area control service, with HF communication support. Considering the need for enhanced surveillance and communication in the Bay of Bengal airspace of Chennai and Kolkatta FIRs; India has implemented ADS/CPDLC and commenced operational trials at both these centres from 19th February 2004. Data link services are being provided by SITA.

1.2   Arabian Sea airspace in Mumbai FIR is one of the busiest airspace connecting the South East Asia and Gulf countries in the west. As many as eight parallel ATS routes and four crossing routes transit through this airspace. There are about 30 conflicting points. Due to the inherent limitations of HF radio, provision of air traffic control service was a serious

challenge to the Air Traffic Controllers at Mumbai FIR. Airports Authority of India, therefore, implemented ADS/CPDLC in the year 2006 to enhance survei1la11ce and communication capabilities and commenced operational trials in July 2006 in Mumbai FIR to cover the Arabian sea airspace. Data link services are being provided by SITA. The ground system provides an integrated display of tracks (Radar, ADS and FPL tracks in the order of priority) on the controller's display.

2.   CURRENT STATUS

2.1   Aircraft Logon - Arabian sea airspace

2.1.1 There has been progressive improvements in the number aircraft participating in the trials which has been an encouraging factor from the beginning of the trials.

2.1.2 The following is the route wise statistics of aircraft logging on to the system:

ROUTE	NOVEMBER 2006		DECEMBER 2006	
	TOTAL	LOGGED ON	TOTAL	LOGGED ON
L301	2868	890	3261	912
P574	2169	403	2652	397
N571	1582	610	1641	588
P570/R456	1200	379	1426	515
M300	1248	370	1258	390
M638/PS18	473	141	539	130
N563	230	084	453	089

2.1.3 It would be observed from the Table that on an average 30 to 40 % of aircraft normally logs on to ADS/CPDLC.

2.1.4 Following is the list of major participating airlines:

1.   Emirates   -45 to 60%
2.   Qatar Airways   - 11-12%
3.   Singapore Airlines - 10%
4.   Ethihad   - 6%
5.   Thai Airways   - 6%

2.1.5 Some of the other participating international airlines are Cathay. Pacific, Lufthansa, Srilankan Airlines, Saudi Airways, Kuwaiti Airways, Air

France, Yemini Airlines and National carrier Jet Airways.

2.1.6 Consequent to the commencement of operational trials" there has been marked improvement in the communication and surveillance in the Arabian Sea airspace resulting in more efficient air traffic management.

2.2   Aircraft Logon: Bay of Bengal airspace

2.2.1 Initially very few aircraft of few airline operators participated in the trial operations and there is now a steady increase in the participation of airlines. However the number of aircraft currently participating in the trials have increased to almost 90% of the data link equipped aircraft operating in Bay of Bengal. In the month of Dec 2006, out 3372 ADS equipped aircraft, 2999 aircraft have logged on to Chennai. The trial operations in this area cover the Indian airspace including adjoining high seas.

3.   Data link messages handled - Status
        Sampling data collected during December 2006 indicates that the daily number of uplink/downlink messages at Chennai varied between 2000 to 2500 per day and 1000 to 1500 at Kolkata. CPDLC messages averaged around 250 per day.

4.   Problem Reports

4.1   Mumbai

4.1.1 The system is in operation for almost 17 hours per day. No serious problems have been encountered so far. The mechanism for sending the problem reports, if any, to M/s Boeing company is already in place.

4.1.2 SITA is providing regular updates on unexpected service interruptions as well as planned outage. This is another positive approach towards provision of better services.

4.2   Chennai/Kolkata

4.2.1 The number of problems encountered has reduced considerably. The problem regarding log on failures w.r.t A330 series was discussed in the previous meeting and the inputs given by Boeing and SITA were useful in identifying and rectifying the system problem both at Chennai and Kokatta

FIRs.

4.2.2 The problem reports, however, at present are mostly repetitive in nature and related to CPDLC connectivity, time delays in the round trip delivery of messages (ranging from 50 seconds to high as 7 minutes) were observed. Unexpected avionics responses, unexpected ground system errors were also encountered. With the implementation of suitable updates in the ground system, the errors are observed to be minimizing.

4.2.3 At present 'Time lag' problems still exist in the system. The relevant data are being collected for analysis by CRA.

4.2.4 CPDLC connectivity problems with certain aircraft types like A334 and B772 series still continues in Chennai and Kolkatta systems. This also needs to be analysed. However there is no problem with ADS connectivity.

5.   Problem Analysis and resolution

5.1   Out of 83 Problem reports. 40 are related to avionics, 20 are related to SITA link connectivity and 23 related to ground systems.

5.2   AU problem reports are being forwarded to CRA (bradly.d.cornell@boeing.com) for record and analysis.

5.3   Ground system related problems have been analyzed with the system developer. Most of the problem relates to non-transfer of ADS data to FDPS track when aircraft is on a deviated track. The system developer has been requested to resolve the problem and also provide track conformance monitoring in the next software upgrade.

5.4   SITA is providing regular updates on unexpected service interruptions as well as planned outage. This is another positive approach towards provision of better services.

6.   Action by the meeting:

       The meeting is requested to take note:

6.1   On the update on the ADS/CPDLC implementation and operational trials in the Bay of Bengal and Arabian Sea airspace of Indian FIRs; and

6.2   Request IATA to impress upon its member airlines to participate in

the trials in larger numbers so as to achieve optimum benefits of the systems.

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