



International Civil Aviation Organization

The 2nd Meeting of the Future Air Navigation Systems Interoperability Team-Asia (FIT-Asia/2)

Bangkok, Thailand, 28 – 29 March 2013

Agenda Item 3: Review of ADS/CPDLC Operations

UPDATE ON ADS/CPDLC OPERATIONS IN INDIAN FIRS

(Presented by Airports Authority of India)

SUMMARY

This information paper presents updates on Data Link Operations in the oceanic airspace of three Indian FIRs viz. Mumbai, Chennai and Kolkata over Bay of Bengal, Arabian Sea and Indian Ocean.

This paper relates to –

Strategic Objectives:

A: *Safety – Enhance global civil aviation safety*

C: *Environmental Protection and Sustainable Development of Air Transport – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment*

Global Plan Initiatives:

GPI-9 Situational awareness

GPI-17 Data link applications

GPI-22 Communication infrastructure

1. INTRODUCTION.

1.1 In accordance with regional planning agreements made under the auspices of International Civil Aviation Organization (ICAO) to enhance the safety and efficiency of air navigation, data-link capabilities have been installed in the Chennai, Delhi, Mumbai, and Kolkata Flight Information Regions (FIRs) within the jurisdiction of the State of India.

1.2 ADS/CPDLC services are available on H24 basis in Chennai, Kolkata and Mumbai FIRs in the oceanic airspace.

1.3 The ADS/CPDLC services have improved surveillance and communication capabilities in Oceanic region and enabled India to initiate measures for improving efficiency and safety.

2. DISCUSSION.

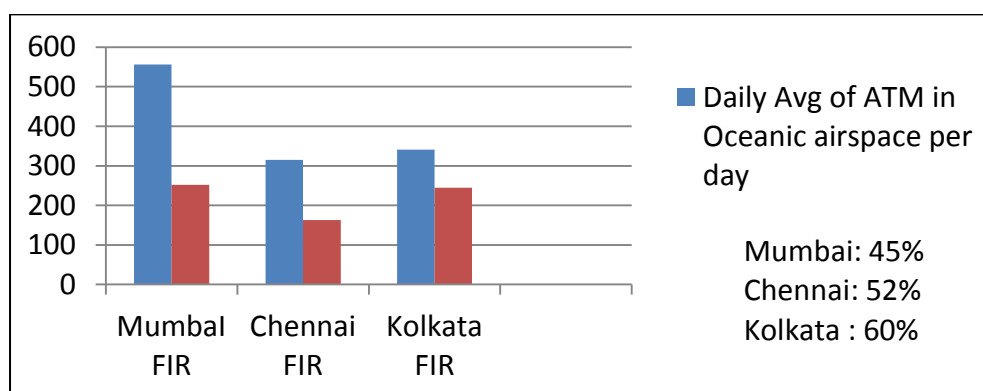
Operational Benefits Achieved

2.1 Significant operational benefits have been achieved due to ADS-C/CPDLC:

- a) Improved communication and surveillance.
- b) Implementation of 50 Nm longitudinal separation over RNP-10 routes
- c) User Preferred routes in southern portion of Arabian Sea and over Indian Ocean in collaboration with INSPIRE partners. More than One thousand and thirty one UPR flights have operated since July 2012 to Feb 2013 resulting in emission savings of more than 688 Tonnes.

Participation by Airlines

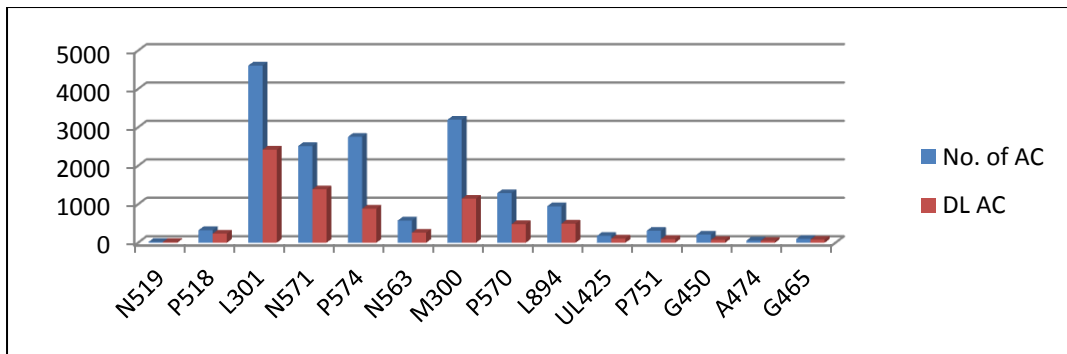
2.2 The number of airlines using ADS/CPDLC services in India is currently around 40. The percentage of aircrafts using ADS/CPDLC in Mumbai FIR is 45% and in Chennai FIR is 52% and in Kolkata FIR is 70%.



Mumbai FIR

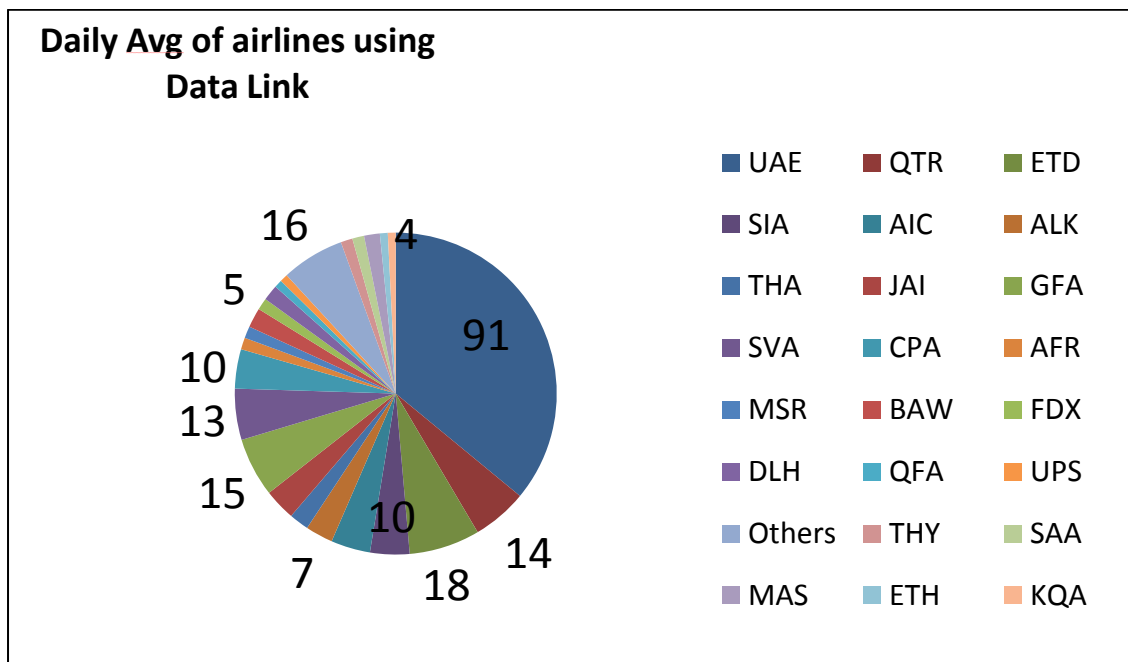
2.3 The data link services are provided on 16 international routes over Arabian Sea and Indian Ocean i.e. routes M638, P518, L301, N571, P574, N563, M300, P570, R456, G465, A451, A474, A214, B459, G450, and G424.

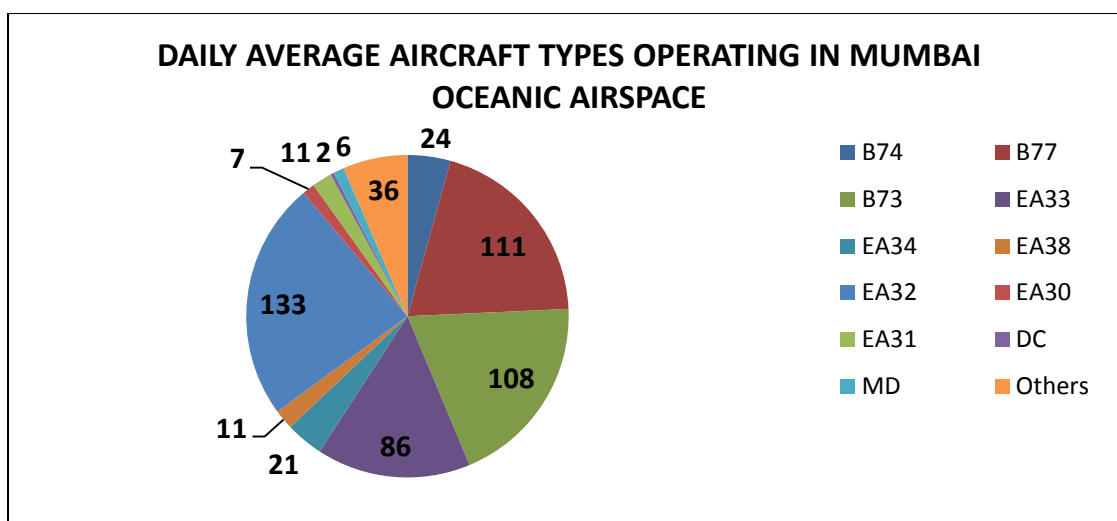
2.4 Approximately 556 flights operate per day in the oceanic airspace of Mumbai FIR. About 252 of these flights are data link capable. Thus about forty five percent of the flights operating in Mumbai FIR are provided with data link services. The chart below shows the route wise distribution of traffic along with no. of data link capable aircraft in the month of Dec2012.



2.5 The SATCOM telephone services have been provided in Mumbai FIR for communication between pilots and air traffic controllers enhancing the communication services and thereby enhancing surveillance, safety and efficiency. The SATCOM services have been notified via NOTAM A0397/12.

2.6 The Pie Chart shows the share of various Airlines that use ADS/CPDLC services in Mumbai FIR. Emirates airline have the largest share, followed by Etihad and Qatar airways.





Chennai FIR

2.7 The data link services are provided on 14 international routes, Over the Bay of Bengal i.e. routes N877, L510, P628, L759, N571, N563, P762, P574, L896, N564, P761, L645, W111 & W112.

2.8 Approximately 315 flights operate per day in the oceanic airspace of Chennai FIR. About 163 of these flights are data link capable. On an average about 10% of these flights do not log on to the ADS/CPDLC system. Thus about fifty two percent of the flights operating in Chennai FIR are provided with data link services.

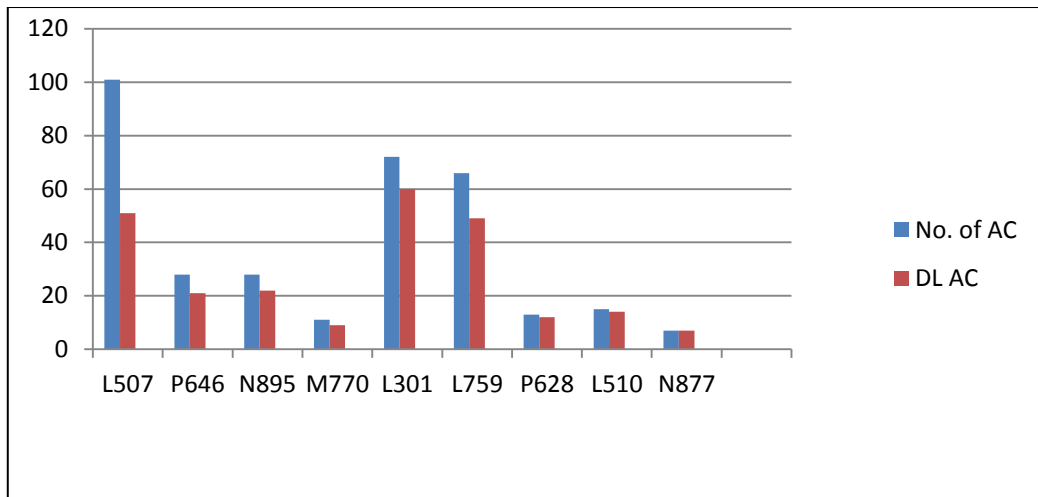
2.9 The two major routes in Chennai oceanic airspace N571 and P574 however have a higher percentage i.e about 60% datalink capable aircraft operations.

2.10 RCAG VHF 126.15 MHz is working satisfactorily as primary back up frequency for CPDLC on routes P762 (between LULDA and BIKEN), N571 (between LAGOG and BIKEN), P628 (between IGREX and VATLA) and N877 (Between LAGOG and ORARA). Primary and secondary HF frequencies shall continue to be backup communication for the entire airspace however, fading occurs frequently.

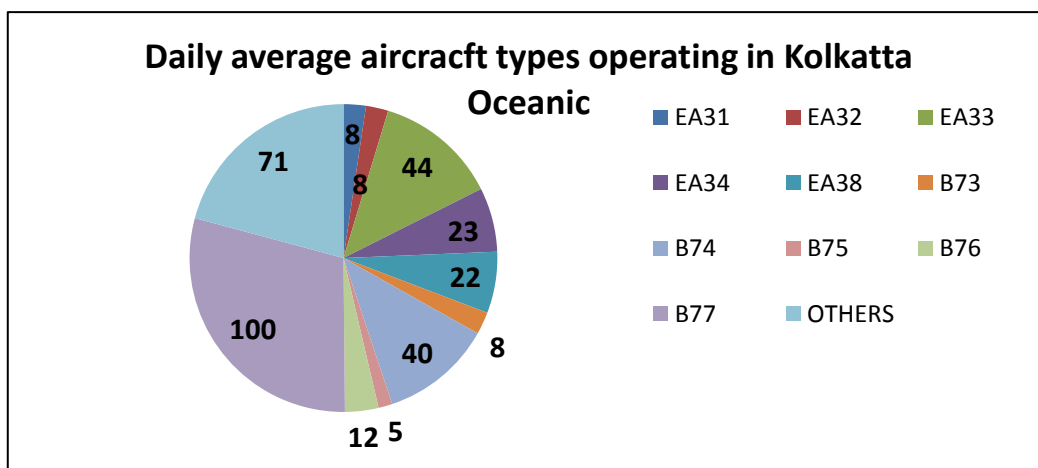
Kolkata FIR

2.11 The data link services are provided over the Bay of Bengal oceanic airspace and in particular on ATS Routes N877, L510, P628, L759, P646, L507, N895, L301, and M770/770A (9 international routes).

2.12 Approximately 341 flights operate per day in the Oceanic Airspace of Kolkata FIR. About 245 of these flights are data link capable and are provided with data link services. Thus about seventy percent of the flights are provided with data link services. The chart below shows the route wise distribution of daily traffic.



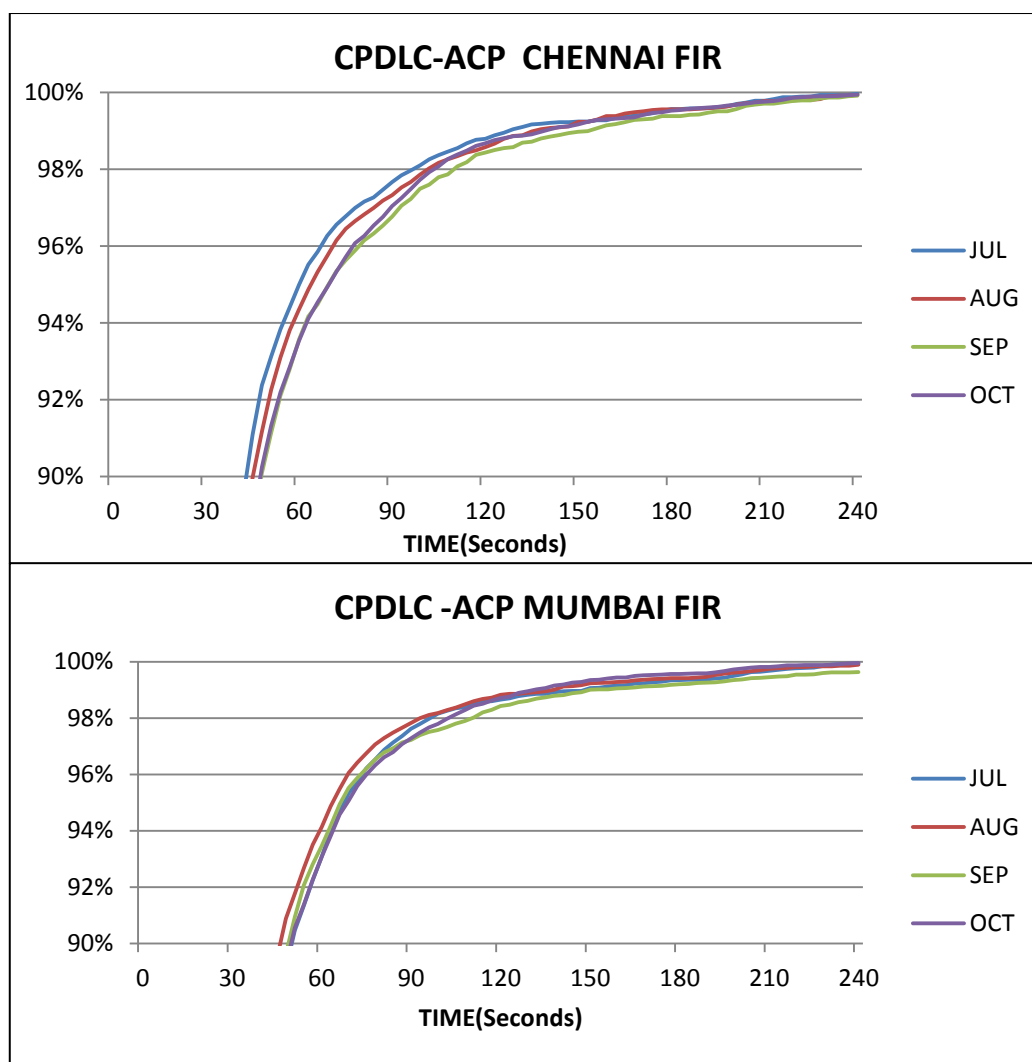
2.13 The Pie Chart shows the share of various Airlines that use ADS/CPDLC services in Kolkata FIR. Thai airlines have the largest share, followed by Singapore and Emirate airlines.



2.14 The Kolkata ground system is being upgraded from a basic stand alone system to modern ATM automation system with advanced capabilities like conflict detection and alerts. The new system would be operational by this year end.

Actual Communication Performance

2.15 The Actual Communication performance for CPDLC against the Required Communication Performance at 95% and 99% level of RCP 240 for Mumbai and Chennai for the period 1st July 2012 to 30th October 2012 is depicted below.



2.16 A sample data for Kolkata CPDLC (U/L & D/L timings) from 1/2/2013 to 15/02/2013 is given below.

Date	≤30	>30≤60	>60≤90	>90≤120	>120≤180	>180	RT<120
1-Feb,2013	195	17	09	03	01	07	224
2-Feb,2013	193	16	10	04	01	06	223
3-Feb,2013	192	17	09	03	02	05	221
4-Feb,2013	194	17	10	03	01	06	224
5-Feb,2013	196	16	08	04	02	06	224
6-Feb,2013	195	15	09	03	01	07	223
7-Feb,2013	198	14	08	02	01	06	222
8-Feb,2013	197	15	09	02	01	06	223
9-Feb,2013	195	16	10	02	02	07	223
10-Feb,2013	194	17	11	03	01	05	225
11-Feb,2013	195	17	09	05	01	05	226
12-Feb,2013	195	16	10	04	01	06	225
13-Feb,2013	193	15	11	02	00	05	221
14-Feb,2013	196	15	09	03	01	04	223
15-Feb,2013	197	16	10	02	02	03	225

Future Steps

2.17 India has proposed in its WP15 to SAIOACG3 to consider implementation of 30 NM longitudinal separation on four routes viz M300, P574, P570 and N571.

2.18 Airports Authority of India has issued a NOTAM G0409/12 wherein it has been notified that in line with best equipped best served policy priority of level allocation will be accorded to ADS/CPDLC equipped aircraft in oceanic airspace on ATS routes UL425, M300, N571, P570 AND P574.

2.19 In continuation with the AAIs efforts to bring operational benefits to the ADS/CPDLC equipped flights AAI requested for a mandate to SAIOACG on 30 NM longitudinal separation, as proposed. The proposal, and the States' prerogative to mandate equipage requirements, was discussed by the meeting. The SAIOCG task list requires that all States investigate capability and timeline to implement 30NM separation.

Conclusion

2.20 ADS/CPDLC trials commenced in India in 1998 and have been fully operationalised since 2006. However, the number of participating airlines and the number of aircraft using ADS/CPDLC has not increased significantly. Even though there is marginal improvement. Participation of more and more airlines and aircraft would result in operational advantage in terms of operational efficiency, capacity and safety.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the success of ADS/CPDLC implementation programme and commitment of AAI to deliver operational efficiencies;
- b) discuss the 30 NM longitudinal separation as proposed by AAI in SAIOACG; and
- c) discuss any other relevant matters as appropriate.

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