



International Civil Aviation Organization

**Third Meeting of the Bay of Bengal Reduced Horizontal Separation
Implementation Task Force (BOB-RHS/TF/3)**

Singapore, 18 – 21 May 2010

Agenda Item 3: Operational Issues

**VOLUME ANALYSIS REPORT ON RNAV ROUTES N571, P628, L510 AND
CONSEQUENTIAL ACTIONS**

(Presented by Malaysia)

SUMMARY

This working paper presents a report of the volume analysis on the RNAV route N571 and P628/L510 during 0000-2359UTC from 15 March – 15 April 2010 for the implementation of reduced longitudinal separation. The working paper also highlights to the meeting the ongoing work of Malaysia in preparation for Data Link services by the Kuala Lumpur ACC and other suggestions to ensure a smooth trial period in the introduction of 50 NM longitudinal separation proposed early next year.

1. INTRODUCTION

1.1 Based on a decision agreed to at the BOB-RHS/TF/2 meeting held in Bangkok, Thailand from 22nd - 26th February 2010, Malaysia has conducted a survey and data collection during 0000-2359UTC 15 March – 15 April 2010 on the three proposed RNAV routes for implementation of reduced longitudinal separation where applicable to 50 NM. The data collection concentrated on RNAV route N571, P628 and L510 within Kuala Lumpur FIR.

1.2 The meeting is invited to note that the software updates and upgrading process for the ADS/CPDLC system in the KL ATCC was completed on the 7th May 2010.

1.3 A joint system test with Boeing Lab and Chennai OCC was carried out on the 29th April 2010 and a system test with live aircraft was done with Malaysia Airlines on 27th and 29th April 2010. The ADS/CPDLC system is now working satisfactorily as expected and the limited time trial has now been resumed, according to the plan previously mentioned.

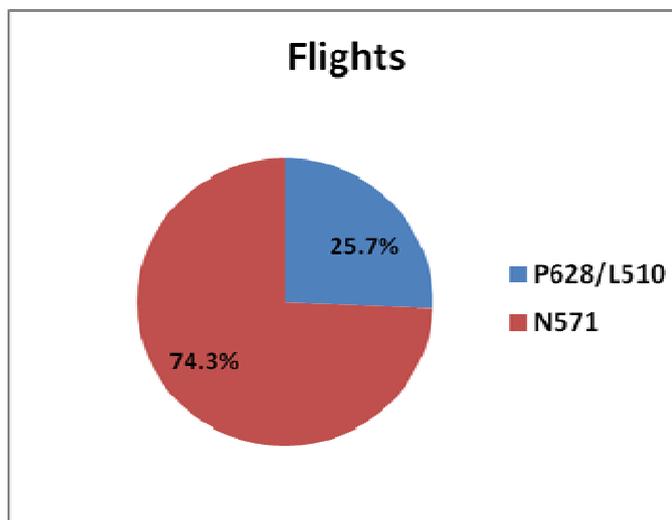
1.4 The meeting is also advised that the ADS/CPDLC Training course for new ATCOs and necessary refresher courses are progressing as scheduled. The target date for H24 data link services in October 2010 remains as planned.

2. DISCUSSION

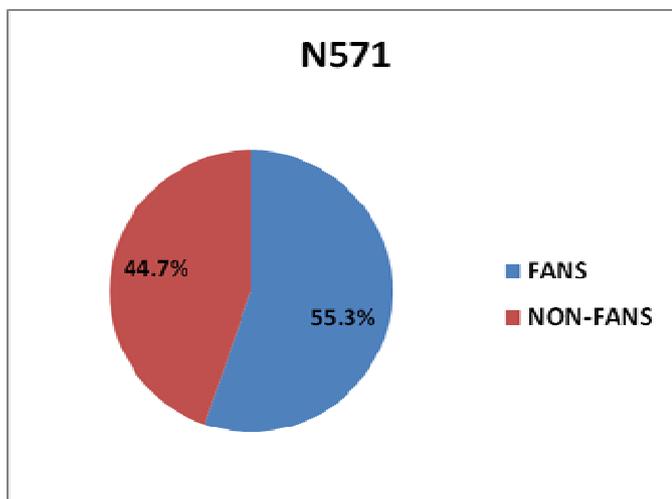
Volume analysis on the RNAV route N571 and P628/L510:

2.1 A data collection was undertaken from 15 March – 15 April 2010 on L571 and P628/L510 which are the planned routes to be used in the trial for implementation of reduced longitudinal separation.

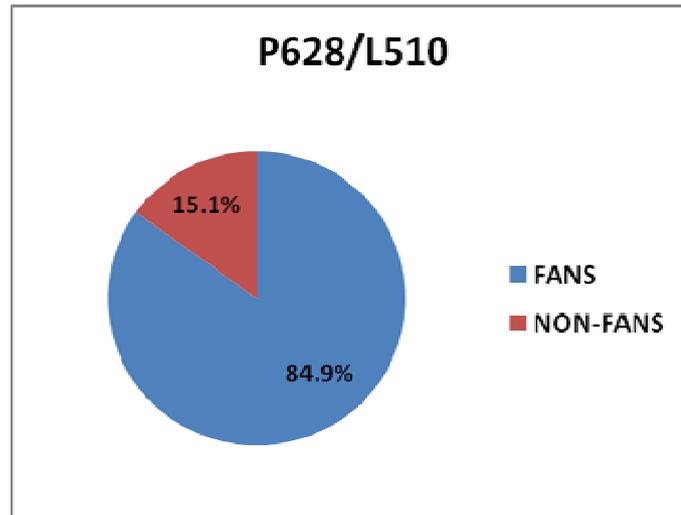
2.2 A total of 2245 aircraft were recorded using these routes during the one month period. From the analysis result shown in the chart below, 74.3% of traffic eastbound and westbound are using N571 whereas only 25.7% are operating on P628/L510 (uni-directional routes).



2.3 The meeting is advised that, from the 74.3% traffic eastbound and westbound using N571 shown in the chart above, 55.3% were data link equipped aircraft in comparison to 44.7% of the aircraft who did not register data link equipment onboard.



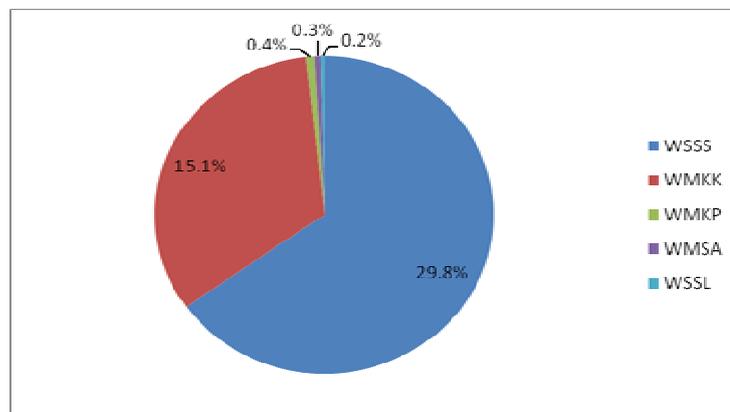
2.4 With regard to RNAV routes P628/L510 (uni-directional), 84.9% of aircraft were data link equipped aircraft with 15.1% without data link operational equipment.



Studies on mix separation environment in Kuala Lumpur FIR.

2.5 During this data collection process, it came to Malaysia attention that there may be additional workload for ATC in the Bay of Bengal sector/area when using a mix of horizontal separation between data link and non data link aircraft. They include:

- a) *Increase of ATC workload and possible delay* – westbound traffic movement are from several airports located nearby as shown in the chart below. 29.8% westbound traffic departed from Singapore (WSSS), 15.1% westbound traffic departed from Kuala Lumpur (WMKK) and another 9% from other airports;



- b) 10mins (80nm) longitudinal separation is needed between Non-FANs equipped aircraft and between non data link and data link equipped aircraft. Meanwhile 7mins (50nm) longitudinal separation is needed between data link equipped aircraft in the Non-RADAR area within Bay of Bengal.
- c) *Unable to climb to a higher level* - Most of the westbound non data link aircraft are short range and able to climb directly to a higher level whereas most of the westbound data link equipped aircraft are long range and too heavy to climb to a higher preferred level in the initial stage of the flight as shown by the chart in *fig. 1* and *fig. 2* below.

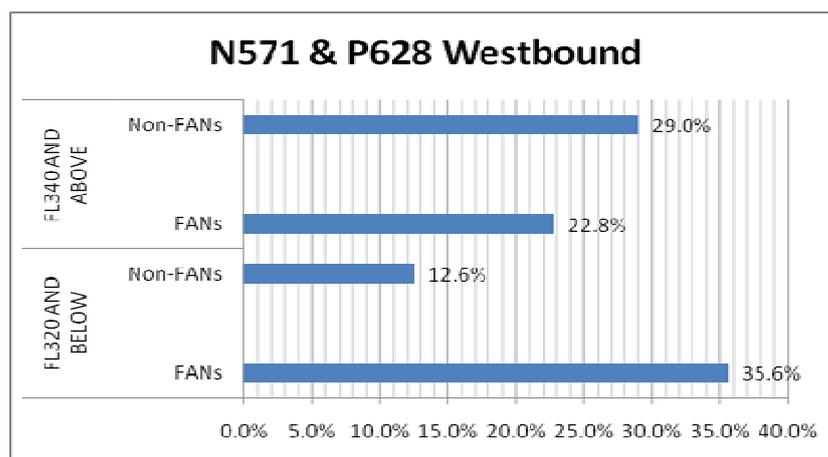


Fig. 1 – the majority of data link aircraft were at lower levels in the initial stage of flight whereas most of non data link were at higher levels

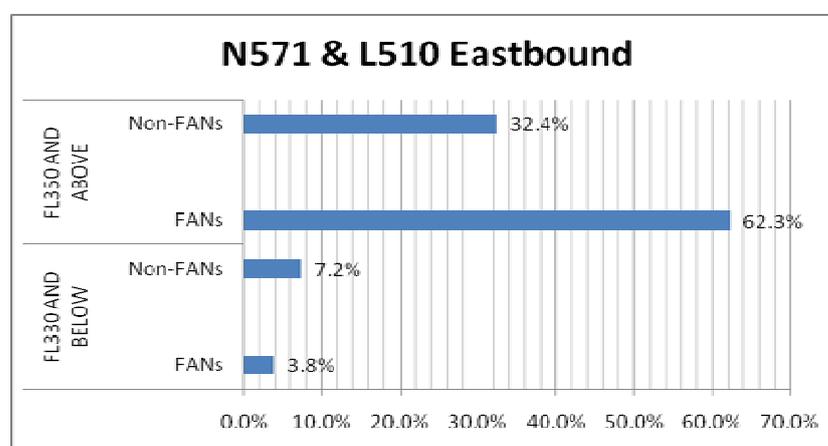
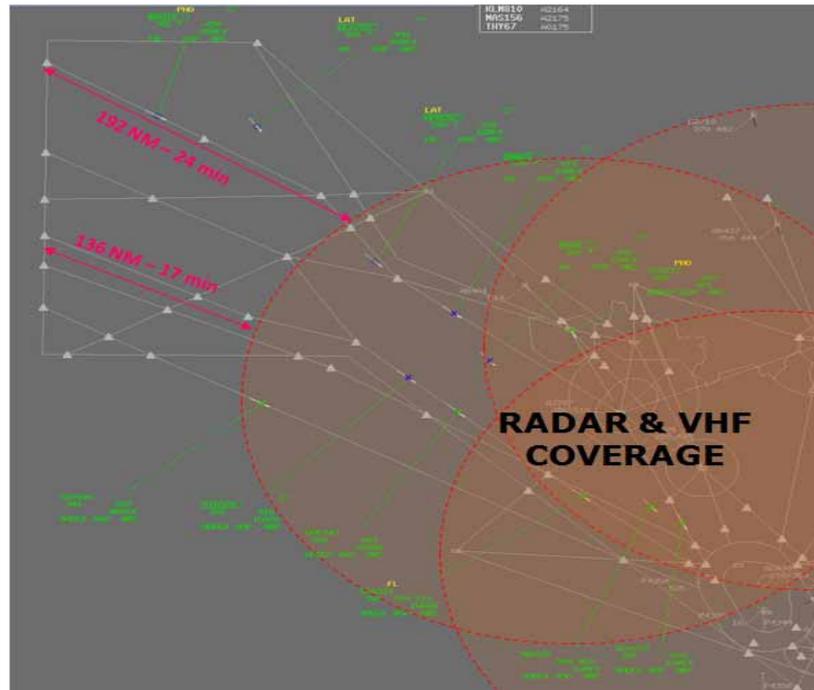


Fig. 2 – Most of data link aircraft were at higher while most of non data link aircraft were at lower levels.

- d) With the different occupancy of flight levels for data link and non data link aircraft flying westbound and eastbound, the same level band allocation may penalize aircraft if both RNAV route (N571 and P628/L510) were to be selected for the implementation trial.
- e) The westbound data link aircraft usually will climb to a higher level outside RADAR and VHF coverage area in which 24mins (192nm) for P628 and L510 and 17mins (136nm) for N571 as shown in the picture below.



- f) Should priority be considered for data link equipped aircraft using the trial routes? With no specific levels allocated to these aircraft, what advantage do they have over non data link aircraft.

2.6 In summary, this environment may discourage airlines with non data link equipped aircraft to install the data link equipment to their fleet. This in turn could reduce the effectiveness of having reduced longitudinal separation on the trial route.

Proposal for the Trial Implementation of RHS in BOB area.

2.7 Based on the analysis result and studies and discussions on this subject at the TF 2 meeting, Malaysia would like to propose to the meeting the following:

- a) **ATS routes** - Only one route either RNAV routes N571 or P628/L510 (uni-directional). Higher support on choosing RNAV route P628/L510 as the statistic shows the volume of data link equipped aircraft is higher than N571.
- b) **Altitudes** – Exclusive all levels.
- c) **Aircraft and airlines** – all appropriate data link equipped and approved aircraft
- d) **Time of operation** – 24 hours.

3. ACTION BY THE MEETING

3.1 The meeting is invited to discuss and finalize the proposed plan for Reduced Longitudinal Separation Implementation.

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