International Civil Aviation Organization

Middle East Air Navigation Planning and Implementation Regional Group

Sixteenth Meeting (MIDANPIRG/16)
(Kuwait, 13 – 16 February 2017)

Agenda Item 5.2.2:   Specific air navigation issues

CROSS BORDER ARRIVAL MANAGEMENT

(Presented by United Arab Emirates)

SUMMARY

This paper presents information on Cross Border Arrival Management (XMAN) procedure used across the borders of different states to improve and optimise arrival management operations for major airports.

Action by meeting is in paragraph 3.

1.   INTRODUCTION

1.1   Cross Border Arrival Management (XMAN) is a new operational procedure utilised by Air Traffic Service Units of multiple states that aims to improve and optimise arrival management operations for major airports.

2.   DISCUSSION

2.1   The demand surpasses the capacity of major airports during peak periods. This surge in air traffic results in delays. Currently this is dealt with in the most safe and efficient way, i.e. holding them in stacks and gradually descending them to proceed with the approach for landing.

2.2   To reduce the drawbacks of pro-longed holding in stacks such as fuel burn, CO_2 emissions and noise, the quest for optimisation continued and went on trying to reap the next bit of efficiency by spreading the time spent in stacks evenly in the en-route phase of the flight. This is the concept behind XMAN procedure.

2.3   In XMAN procedure the holding time of an aircraft is cut by reducing their cruising speed during the final en-route phase of flight, several hundred miles away from the airport. This procedure increases flight efficiency by reducing the overall fuel burn and CO_2 emissions as a result of less airborne congestion in terminal areas. It also contributes to the improvement of operational safety by reducing pilot and controller workload.

2.4   In XMAN procedures, the downstream ATSU issues advisories to upstream ATSU in a different centre/state to support an earlier pre-sequencing of aircraft by instructing pilots to adjust the aircraft speed along the descent or even before top-of-descent, thus reducing the need for holding and decreasing fuel consumption.

2.5   The XMAN procedure is successfully implemented in London Heathrow airport since November 2015. In this procedure the arrival information for aircraft landing at Heathrow is shared with ATSU Partners. This enables controllers in the UK, France, Ireland and the Netherlands to slow aircraft down up to 350 nautical miles away from London in order to minimise holding times on arrival. Since April 2014, when the XMAN Trial commenced, NATS has recorded a reduction of up to a minute in holding times for those aircraft influenced by the XMAN activity. This equates to annual savings of 15,000 tonnes of CO_2, 4,700 tonnes of fuel, or €4m (based on 2014 fuel prices), as well as a reduction in noise for communities beneath the holding stacks. (Source of data - European Commission Mobility and Transport Website - www.ec.europa.eu).
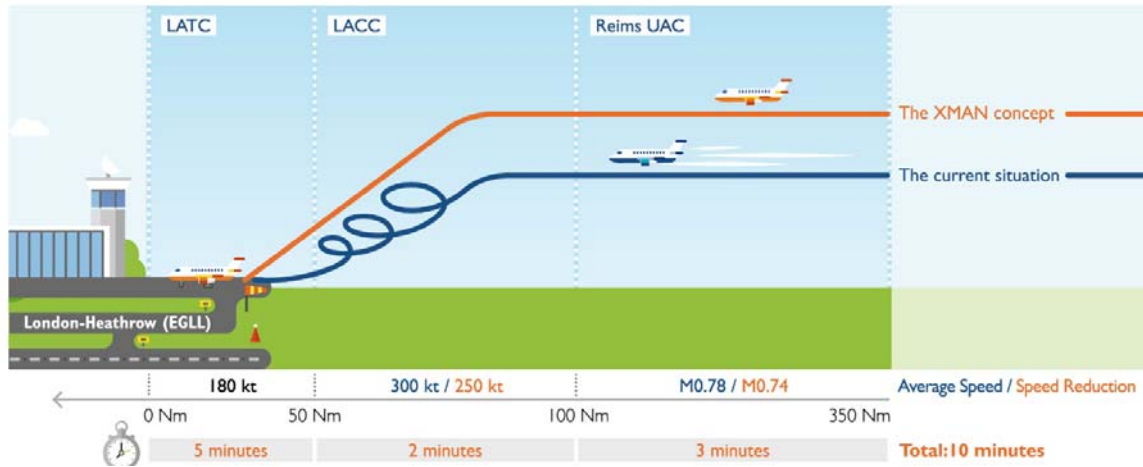

Figure 1 - Illustration of XMAN concept – Source: European Commission Mobility and Transport Website - www.ec.europa.eu

2.6   The implementation of AMAN for the arrivals to Dubai International Airport has reduced the average holding time by 2 minutes for flights subject to AMAN.

Count of flight in Hold	Minutes saving	Fuel Burn/Minute	Fuel Savings	CO2 Savings
3727	7454 minutes	253 KG	554 MT	1744 MT

Table 1 - Fuel and CO2 savings - October 2016

2.7   This saving is expected to increase at least by another two minutes in average per flight by the introduction of XMAN procedures because of the nature of long haul operations by the Airlines inbound to the UAE. Additional benefits projected from XMAN implementation are approximately 550 MT of fuel savings resulting in 1750 MT of CO2 savings per month.

3.   ACTION BY THE MEETING

3.1   The meeting is invited to:

   a. note the improved efficiency and resulting gains brought forward by the implementation of XMAN procedure; and
   b. urge states to support the XMAN initiative in the region and implement it wherever it is possible

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