International Civil Aviation Organization

Fifteenth Meeting of the APANPIRG ATM/AIS/SAR Sub-Group (ATM/AIS/SAR/SG/15)

Bangkok, Thailand, 25 – 29 July 2005

Agenda Item 4: Consider problems and make specific recommendations concerning the provision of ATM/AIS/SAR in the Asia/Pacific Region

THE FUEL CRISIS AND THE URGENT NEED TO IMPLEMENT FUEL SAVING MEASURES

(Presented by IATA)

SUMMARY

In spite of international passenger and cargo traffic growth exceeding expectations, the extraordinarily high level of oil prices threatens the industry with yet another year of airline losses. In addition, the high cost of fuel has spotlighted the existing inefficiencies in the air traffic services infrastructure. This paper highlights areas were State ATS Providers could assist in driving fuel inefficiencies out of their systems.

1. INTRODUCTION

1.1 In spite of the rising numbers of flights and passengers, airlines are suffering. The multiple crises of previous years - 11 September, the war in Afghanistan, the war in Iraq, the war on terrorism, and SARS, now coupled with the raising cost of oil that has reached levels above 50 USD per barrel in 2004, have airlines looking at all possible avenues to save fuel and increase overall efficiency of aircraft operations. By comparison, 1998 saw oil prices at about 11 USD per barrel. In 2002 the price had risen to about 25 USD and the 2004 price averaged about 40 USD. Consequently the total cost of fuel has risen from about 10% of the total operational cost to about 18-20% by end of 2004. If oil continues at a yearly average of 40 USD per barrel for 2005 the industry as a whole could loose in excess of 5 billion USD. Therefore the current prices are a very serious threat to airlines finances and marketing plans. For those airlines with cash reserves or appropriate credit, there had been a temporary solution of fuel hedging but many of those contracts are no more. Many other airlines have implemented fuel surcharges. However, these measures are not universally available options for every airline.

1.2 The fuel efficiency of aircraft is influenced by many factors, not all of which are under the airlines direct control. Many areas, such as route structure, air traffic control and airport capacity and layout are beyond airlines’ control but directly impacts their fuel consumption.

1.3 IATA urgently launched a Fuel Savings Action group that reviewed every aspect of airline operations and identified best practices of aircraft operations as well as areas that urgently need to be addressed with State ATS Providers. IATA then wrote every Civil Aviation Authority in the world with an urgent plea to review specific areas that could bring fuel savings to airlines and asked for feedback on actions that could be considered by States. Regrettably, the response from States has been less than satisfactory.

2. DISCUSSION

2.1 The core of the IATA's request to States on fuel conservation measures hinges in the following areas:

a) Airspace and air route design

b) ATC techniques that take advantage of aircraft navigation capabilities rather than vectoring or assigned speed restrictions

c) Review of Noise Abatement Procedures

d) Closer coordination and cooperation with military authorities to facilitate transit of military restricted airspace

e) Reviewing opportunities that would allow aircraft to operate closer to preferred flight levels

f) Discussing fuel conservation with local airlines and seek their assistance in better understanding fuel conversation target areas

2.2 Attachment A describes how these areas can be applied in the Asia Pacific Region.

Policy and culture on safety and efficiency of the air traffic system

2.3 While airlines and air traffic service providers invest in safety with their safety management systems and departments that are devoted to the safety culture of the workforce, many airlines have a similar investment in fuel efficiency as well and employ a full time Fuel Programme Manager who is responsible for monitoring the airline's fuel use as well as ensuring that procedures and practices are in place for maximizing fuel efficiency. If Civil Aviation Authorities were to have a policy or programme that reviews system efficiency and a department responsible for maintaining and promoting the efficiency of the air traffic system, significant efficiency gains could be realized in the air traffic system.

3. ACTION BY MEETING

3.1 Considering the critical nature of the fuel crisis, the meeting is asked to urgently consider areas in their respective airspace and ATS operations where fuel efficiencies can be gained. No matter how small they are, if implemented quickly, these changes can have a significant effect on airline fuel consumption.

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Attachment A

The following areas are specific examples where fuel savings can be achieved in the Asia Pacific Region.

1. Airspace and air route design. This area alone has multi-million USD per annum potential for fuel savings in Asia Pacific. Some examples include:

a) New or straighter routes. Routes defined by navigating from navaid to navaid are usually the most inefficient means of navigation. Area navigation (RNAV) and RNP represent greater savings in a fixed route environment. In areas of low-density traffic flexible tracks and user preferred tracks represent the most in fuel savings.

b) RNAV SIDs and STARs. Routes on climb out and descent are a critical phase of flight in terms of fuel consumption. Consequently SIDs and STARs that are designed based on aircraft operational performance and ATC separation criteria offer significant fuel savings.

c) Continuous descent profiles for arrivals and approaches offer significant fuel savings, quieter operations, as well as safety benefits. A Continuous Descent Approach can save 450-900 lbs fuel per flight. In terms of regional savings, assuming 4000 approaches were flown daily in Asia Pacific, the annual savings would be approximately 985,500,000 lbs of fuel.

d) Collaborative Decision Making (CDM). Collaborative Decision Making for route and departure times can significantly reduce ground delays, congestion at bottlenecks and unanticipated reroutes. Allowing CDM for airlines to see the big air traffic picture and self manage slots is a simple program to both the airline and ATS Provider. IATA has identified a desperate need for CDM that is faced by airlines and ATS Authorities during the peak period traffic flows from Asia to Europe and has asked the Bay of Bengal States to urgently consider such a programme. While savings of such a programme is obvious, it is also difficult to measure. However, as example, the first 8 months of operations in 2004 from two airlines alone resulted in 35 reroutes to circumnavigate Afghanistan. Because this was so devastating to their operations, one of these airlines adopted a policy of taking off 4 tonnes of payload cargo and in its place was adding an additional 3 tonnes of contingency fuel for every flight that is flight planned to fly over Afghanistan during the midnight rush to Europe– which is about 10 flights per evening for that particular airline.

2. ATC techniques that take advantage of aircraft navigation capabilities rather than vectoring or assigned speed restrictions. Some examples include:

a) Asking RNAV equipped aircraft to fly parallel offsets to routes in lieu of radar vectors if traffic is a factor on a fix track

b) Assigning a time based crossing restriction to aircraft as far in advance as possible in lieu of assigning a speed restriction

c) Allowing an aircraft to fly a visual approach in lieu of executing an instrument approach in VMC conditions

d) Reduced separation minimums increase the opportunities to save fuel. An example would be applying the 50 nm minimum longitudinal separation rule on RNP-10 oceanic tracks for climbs or cruise climbs.

3. Review of Noise Abatement and Departure Procedures. Noise abatement procedures were first developed in the late 60's during the era of noisy aircraft engine performance. Since then there has been considerable reduction in noise due to modern engine design. The noise footprint of a modern jet is significantly less than that of the earlier jet aircraft it replaces.

3.1 Noise abatement procedures come at the expense of excess fuel burned. The ICAO Standard for noise abatement is Annex 16, Vol 1, Part V and clearly states that "a*ircraft operating procedures for noise abatement shall not be introduced unless the regulatory authority, based on appropriate studies and consultation, determines that a noise problem exists*". The recommendation that follows states that "a*ircraft operating procedures for noise abatement should be developed in consultation with the operators which use the aerodrome concerned*". IATA requests that the State of the airport and the airport authorities that have noise abatement procedures to review the conditions dictating such a procedure and if practical either:

a) Discontinue noise abatement procedures where they are not justified, if for example the climb out occurs over water and there is no community below

b) Allow airlines to choose runways and SIDs that support the direction of flight towards its destination airport,

c) Publish information identifying the noise sensitive areas and allow airlines to choose between the most appropriate of the two ICAO recommended noise abatement departure procedures (NADP). The difference between NADP 1 and NADP 2 could equate to 100-200 kg fuel saving per departure, and

d) Allowing clean airspeed on departures where noise is not an issue, i.e. departures that immediately route the aircraft over water. The rule of thumb for clean airspeed is V2 + 10-20 kts below 3,000 ft and V2 + 100 kts in the continuing climb to 10,000 ft.

3.3 Engage in closer coordination and cooperation with military authorities to facilitate transit of military restricted airspace. In domestic airspace and even near international airports it is difficult to navigate off a fix track without infringing upon military airspace. In addition there are military restricted areas over international waters that prohibit more efficient flight paths. Significant fuel savings could be achieved if ATC were allowed to clear aircraft on more direct routings during the times when military airspace is not being used for military activities.

3.4 Reviewing opportunities that would allow aircraft to operate closer to preferred flight levels. In particular, unrestricted climbs and descents carry significant fuel savings. Also, providing options to pilots, such as offering a small departure delay or alternate routing as an alternative to a penalising en route altitude provides significant savings, especially to long haul flights that may be stuck for hours at an unfavourable cruising altitude. In the en route environment, RVSM provides greater opportunities to operate at fuel saving altitudes.

3.5 Discussing fuel conservation with local airlines and seek their assistance in better understanding fuel conversation target areas. Areas that could be explored includes:

a) Programmes that allow minimum use of APU's and maximum use of Ground Support equipment. For example, a B747-400 APU burns 6 times as much fuel per hour as mobile ground support equipment.

b) Allowing departures in direction of flight. Airborne fuel flow is 6 times higher than ground idle, i.e. 18 minutes taxi equals 3 minutes of airborne operation.

c) Allowing visual separation in approach controlled airspace and visual approaches

d) Allowing early arriving flights to slow down to prevent gate holds and ramp congestion

e) Providing opportunities for rolling take offs

f) Allowing cruise climbs or step climbs in oceanic and remote airspace

g) Allowing flexible flight planning so that airlines can flight plan routes and entry/exit points based on the best operational conditions, such as upper wind conditions.