



ASSEMBLY – 35TH SESSION

EXECUTIVE COMMITTEE

Agenda Item 15: Environmental protection

ENVIRONMENTAL BENEFITS FROM ATM PLANNING

[Presented by the International Air Transport Association (IATA)]

SUMMARY

The Intergovernmental Panel on Climate Change [IPCC], in its special report “Aviation and the Global Atmosphere - Summary for Policymakers”, made a number of statements in relation to the potential effect of implementation of operational improvements in ATM – and in particular those envisaged under the then CNS/ATM banner. It is critically important for ICAO, through CAEP and Regional Planning Groups, and States, through their ATS Providers, to assess the environmental impact of specific implementation plans and to make the necessary commitments to environmental consideration in ATM_cns systems implementation. This paper discusses this issue, and makes a number of recommendations.

1. INTRODUCTION

1.1 The Intergovernmental Panel on Climate Change [IPCC], in its special report “Aviation and the Global Atmosphere - Summary for Policymakers”, made the following statement in relation to the potential effect of implementation of operational improvements in ATM – and in particular those envisaged under the then CNS/ATM banner:

6.3: Operational Options: Improvements in air traffic management (ATM) and other operational procedures could reduce aviation fuel burn by between 8 and 18%. The large majority (6 to 12%) of these reductions comes from ATM improvements which it is anticipated will be fully implemented in the next 20 years. All engine emissions will be reduced as a consequence. In all aviation emission scenarios considered in this report the reductions from ATM improvements have already been taken into account. The rate of introduction of improved ATM will depend on the implementation of the essential institutional arrangements at an international level. Air traffic management systems are used for the guidance, separation, coordination, and control of aircraft movements. Existing national and international air traffic management systems have limitations which result, for example, in holding (aircraft flying in a fixed pattern waiting for

¹ All language versions provided by IATA

permission to land), inefficient routings, and sub-optimal flight profiles. These limitations result in excess fuel burn and consequently excess emissions. For the current aircraft fleet and operations, addressing the above-mentioned limitations in air traffic management systems could reduce fuel burned in the range of 6 to 12%. It is anticipated that the improvement needed for these fuel burn reductions will be fully implemented in the next 20 years, provided that the necessary institutional and regulatory arrangements have been put in place in time.

1.2 Studies carried out in the United States and Europe have determined that the predicted reductions in fuel burn are quite optimistic; nevertheless, it is clear that a focused effort to achieve an integrated and seamless global ATM system will generate measurable and consistent reductions in the impact of aviation on the environment.

2. AIRLINES AND SERVICE PROVIDERS

2.1 Airframe and engine manufacturers as well as aircraft operators have the ability to positively influence aircraft operating performance, through better design, better engine performance, and better overall fuel efficiency. There are demonstrable results and continuing efforts to improve operating efficiency, for instance through the application and dissemination of *good practices* and other voluntary measures. Manufacturers and operators are not, however, able to significantly influence airspace and air traffic management design, which can add significant inefficiencies to airline operations.

2.2 Airspace planning must take into account that adding just one additional track mile to the most optimum route, or adding just 1,000 feet to the most optimum fuel burn level, or Mach 0.01 to optimum speed, can have substantial consequential fuel burn effects, with commensurate additional emissions. As an example, and based on statistical data provided by service providers and airlines [refer UKNATS Monthly Performance Data], though 60% of users achieved an environmentally optimum trajectory across the North Atlantic in the period July 2002 to May 2004, almost 40% did not [refer Figure 1]. This translates to a minimum 10,000 additional tonnes of fuel carried and burnt across the North Atlantic alone. ATM capabilities in existence today can substantially reduce this environmental impact.

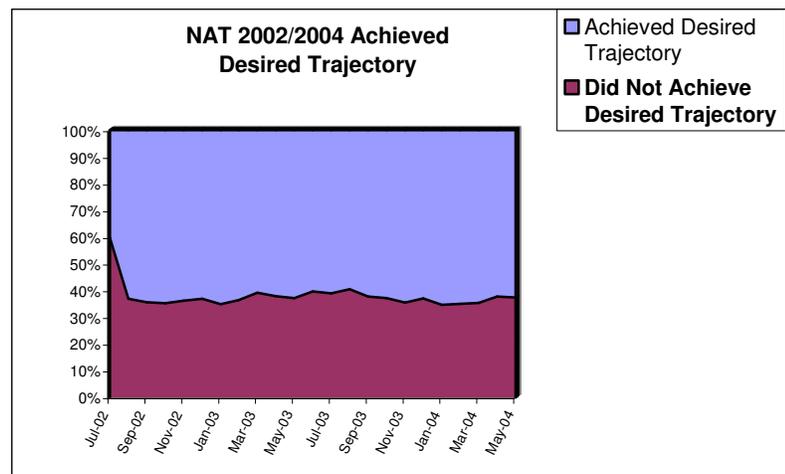


Figure 1

2.3 The following diagrams [Figure 2] show an actual recent flight profile. The plot on the left shows the filed flight path – the plot on the right shows the ATM delivered flight path. The ATM restriction, applied for 6 hours, resulted in the burning of an addition **5009 kg** of fuel!

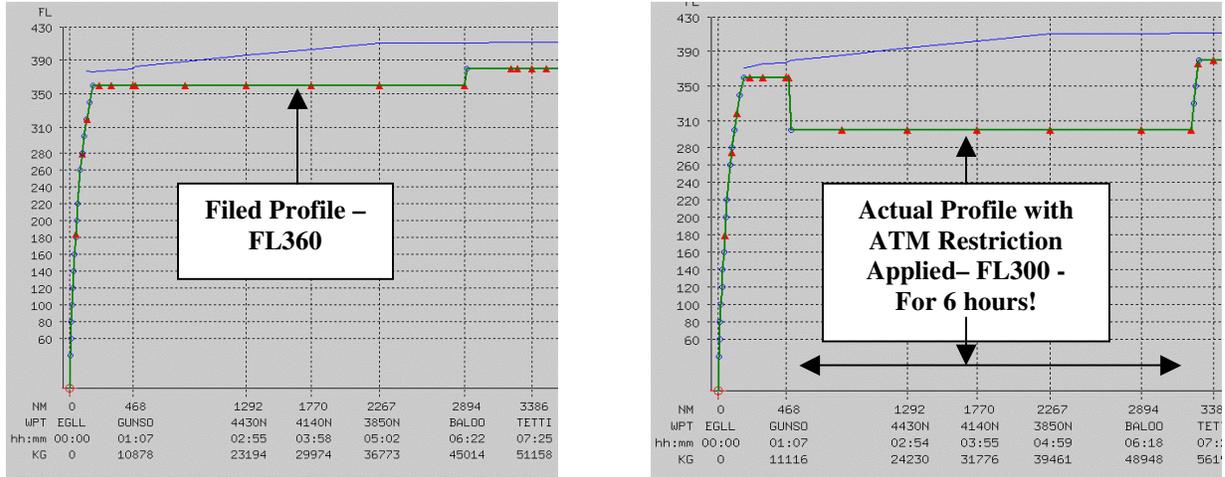


Figure 2

2.4 The ICAO 33rd General Assembly urged the Council to promote the use of operational measures as a means of limiting or reducing the environmental impact of aircraft engine emissions and to submit at each ordinary session of the Assembly for review a consolidated statement of continuing ICAO policies and practices related to environmental protection. The ICAO Committee on Aviation Environmental Protection (CAEP) has been addressing environment issues and has recently developed the Operational Opportunities to Minimize Fuel Use and Reduce Emissions (Circular 303/AN/176).

2.5 ALLPIRG/4 addressed environmental issues and concluded that “ICAO Regional Offices and PIRGs support ICAO/CAEP efforts to expand the methodology for the quantification of CNS/ATM environmental benefits to each region by collecting data” The Regional Planning Group’s (PIRG’s) terms of Reference require them to monitor implementation of air navigation facilities and services, taking into account environmental matters. It is clear that ICAO, PIRG’s and contracting States have a valuable role to play to address and minimize the use of fuel and its associated gaseous emissions.

2.6 There is significant room for improvement in the management of aircraft operations worldwide. Operational improvements that should be more vigorously pursued include for instance:

- Shortening air routes;
- Promoting flexible flight planning, and promoting cruise climbs and oceanic step climbs;
- Promoting RNAV and RNP over continental airspace, flex-tracks, DARP and UPRs in oceanic airspace, and RNAV/FMS procedures in TMAs;
- Pursuing reduced separation, including further expanding RVSM;
- Promoting the dynamic sharing of airspace between civil and military,
- Promoting Continuous Descent Approaches (which can save 200-400 kg fuel per flight), and
- Promoting Collaborative Decision Making to reduce ground delays and reroutes.

2.7 In order to promote awareness, ATM_cns environmental benefits must be properly documented. Where simple formulas or tables exist, environmental savings should be quantified per routes in air navigation plans, proposals to airspace planning fora and in report documentation. IATA will do its part in documenting environmental savings to its proposals. CAEP has been working successfully and for sometime on the assessment of the environmental benefits of CNS/ATM, but with focus on regional and global results. Complex models exist and continue to be improved for that assessment. It is important that CAEP expands its effort now to the development of benefit analysis tools to be applied at State level. CAEP could support the work of ICAO Regional Offices and PIRGs by providing standard.

2.8 In summary, it is important for ICAO, through CAEP and Regional Planning Groups, and States, through their ATS Providers, to assess and monitor the environmental impact of specific implementation plans and to make the necessary commitments to environmental consideration in ATM_cns systems implementation.

3. ACTION BY THE ASSEMBLY

3.1 The Assembly is invited to urge the Council to:

- a) Continue pursuing the development, through CAEP, of a simple and cost effective common methodology to assess and document environmental benefits to airspace and ATM_cns planning initiatives; and
- b) Promote the use of such methodology through PIRGs.

3.2 Further, urge States to Implement, as soon as practicable, the measures outlined in paragraph 2.6 above.

— END —