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International Civil Aviation Organization
South American Regional Office

SECOND WORKSHOP/MEETING OF THE SAM IMPLEMENTATION GROUP (SAM/IG/2)
REGIONAL PROJECT RLA/06/901

Lima, Peru, 3 to 7 November 2008

Agenda Item 2: Implementation of performance-based navigation (PBN) in the SAM Region

Managing the Environmental Issues of Air Transportation

(Presented by IATA)

SUMMARY

This paper highlights the increased importance of CNS/ATM activities in the management of aviation's environmental impacts. Against the background of the ICAO goal of limiting or reducing the impact of aviation emissions on the global climate, it discusses responsibility in environmental matters. Air Navigation Service Providers need to consider environmental benefits when defining systems for air traffic services, including the environmental savings of new routes, terminal procedures and ground movements.

This paper calls for all stakeholders to take a more proactive approach to environmental management and pursue the use of operational measures that can limit or reduce the environmental impact of aircraft engine emissions.

1. INTRODUCTION

1.1 Scientific research, political activity and media attention have familiarised the world with the issue of climate change and its apparent cause and effect. Consequently aviation continues to be questioned and criticised of its contribution to greenhouse gas emissions. Currently, aviation contributes about 2% to total CO2 emissions worldwide – as compared to:

- 18% for road transport
- 35% for electricity/heating, and about
- 23% for industry.

1.2 Aviation is one of the most efficient means of mass transportation. Modern aircraft transport passengers at about 3.5 litres per 100 kilometres, and as an industry aviation has improved its fuel efficiency performance by about 70% over the last 40 years.

2.0 DISCUSSION

2.1 The ICAO 36th General Assembly requested the Council to encourage Contracting States to improve air traffic efficiency, which leads to emissions savings, to report on progress in this area, and requests the States to accelerate the development and implementation of fuel efficient routings and procedures to reduce aviation emissions..

2.2 The ICAO Committee on Aviation Environmental Protection (CAEP) developed the Operational Opportunities to Minimize Fuel Use and Reduce Emissions (Circular 303/AN/176).

2.3 The fourth meeting of the ALLPIRG/Advisory Group (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"

2.4 The March 2006 meeting of ALLPIRG/5 adopted the following Conclusions related to Environmental Benefits:

Conclusion 5/7 — Environmental benefits of CNS/ATM systems.
That PIRGs and States:

a) use the Committee on Aviation Environmental Protection (CAEP) provided CO2 conversion factor in the analysis of environmental benefits of implementing CNS/ATM systems;

b) prioritize the implementation of voluntary, operationally-based improvements in their air traffic management systems, with emphasis on fuel savings, emissions reductions and noise benefits, and also to mitigate costs to the industry;

c) provide feedback to ICAO on studies conducted on the environmental benefits of implementing CNS/ATM systems; and

d) share air traffic data to improve future CAEP assessments, in line with State letter AN 1/17-03/86.

Conclusion 5/8 — Globally coordinated air traffic services (ATS) routes.
That PIRGs:

a) establish a global consolidated, prioritized list of routes and terminal area (TMA) improvements in close coordination with airspace users; and

b) work with neighbouring PIRGs/States/air navigation service providers (ANSPs) to accelerate international route improvements

Conclusion 5/9 — Terminal area (TMA) structure and area navigation.
That States:

a) employ area navigation in all TMAs, including appropriate arrival and departure procedures, to improve efficiency and reduce emissions in the vicinity of airports; and that, in special cases where there are particularly challenging obstacles and where air traffic density is very high and additional approach paths are possible, the more precise and contained required navigation performance (RNP) procedures be employed; and

b) review operations, procedures and training of controllers to ensure the optimum management of air traffic services

2.5 The ICAO air navigation planning and implementation regional groups (PIRGs) are tasked to monitor implementation of air navigation facilities and services, taking into account environmental matters. It is clear that ICAO, the formal and informal airspace planning groups, international organisations and contracting States have a valuable role to play to address and minimise the use of fuel and its associated gaseous emissions.

2.6 Therefore, it is important that States and Air Navigation Service Providers (ANSP) take on a proactive role on implementation programmes that are "pro-environment". The ICAO airspace planning forums need to aggressively promote awareness of environment issues, pursue environmental saving initiatives, document environment benefits, promote environmental saving programmes and implement measures to reduce emissions.

2.7 Although much has been done, there is room for significant improvement in the management of aircraft operations. The UN Intergovernmental Panel on Climate Change (IPCC) estimates 6-12% inefficiency in the management of air traffic by air traffic control (ATC). Operational improvements that should be more vigorously pursued include:

a) Shortening air routes,
b) Promoting flexible flight planning,
c) Promoting RNAV and RNP over continental airspace,
d) Complete expansion of RVSM,
e) Pursuing reduced separation minimums,
f) Promote dynamic sharing of airspace between civil and military (when not being used by military),
g) Promoting flex-tracks, dynamic reroutes and user preferred routes (UPRs) in oceanic airspace
h) Promoting RNAV and RNP procedures in TMAs,
i) Promoting Continuous Descent Arrivals (which can save 50-200 kg fuel per flight),
j) Promoting Collaborative Decision Making to reduce ground delays and reroutes,
k) Promoting cruise climbs and oceanic step climbs.

2.8 In order to promote awareness, environmental savings of CNS/ATM should be addressed and environmental benefits documented. Where simple formulas or tables exist, environmental savings should be quantified to routes in the air navigation plan, proposals to airspace planning forums and in report documentation. IATA will do its part in documenting environmental savings to its proposals. Common methodology and standardisation of benefit analysis is important and the determination of environment benefits should not be a costly exercise but to the greatest extent possible it should be a simple and cost effective methodology to assess environmental benefits.

2.9 In summary, it is important for the ICAO Regional Offices, States, ANSP, the airspace planning forums and other associated bodies assess the environmental impact of specific implementation plans and promote those benefits to the government policy makers faced with making the necessary commitments to CNS/ATM systems implementation.

3. ACTION BY THE MEETING

3.1 The meeting is requested to:

a) Recognise the mandate for ICAO to address the adverse environmental impacts that may be related to civil aviation activity and acknowledges its responsibility and that of its Contracting States to achieve maximum compatibility between the safe and orderly development of civil aviation and the quality of the environment

b) Recognise the mandate for PIRG's to address environmental matters, and therefore the need to consider the environmental issues when defining CNS/ATM systems, including the environment savings of new routes, terminal procedures and ground movements

c) note the need to establish and maintain a simple and cost effective common methodology to assess and document environmental benefits to airspace and CNS/ATM planning initiatives

d) commit to a proactive approach by promoting the use of operational measures that can limit or reduce the environmental impact of aircraft engine emissions.

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