

**INTERNATIONAL CIVIL AVIATION ORGANIZATION****TWENTY-SECOND MEETING OF THE
ASIA/PACIFIC AIR NAVIGATION PLANNING AND
IMPLEMENTATION REGIONAL GROUP (APANPIRG/22)***Bangkok, Thailand, 5-9 September 2011***Agenda Item 3: Performance Framework for Regional Air Navigation Planning
and Implementation****3.5 Other Air Navigation Matters****MEASUREMENT OF ENVIRONMENT BENEFITS
FROM OPERATIONAL IMPROVEMENTS***(Presented by the Secretariat)***SUMMARY**

Different initiatives are in place to improve the efficiency of the ATM system. One of the results of the ongoing improvements is the reduction in fuel consumption by aircraft capable of using the new procedures, concepts of operations or technologies. This paper addresses the need to measure the benefits accrued from operational improvements, and proposes the terms of reference to a dedicated group for this task as well as a form to report the benefits.

This working paper relates to Strategic Objective C- *Environmental Protection and Sustainable Development of Air transport*.

Action by APANPIRG/22 is in paragraph 4.

1. BACKGROUND

1.1 The *Global Air Traffic Management Operational Concept* (Doc 9854), endorsed by the 11th Air Navigation Conference (2003) describes the expectations of the ATM community in 11 key performance areas. One of them is environment, and the endorsed vision is that the ATM system should be environmentally sustainable.

1.2 At the 37th Assembly (2010), resolution A37-19 calls upon the States to develop and implement procedures to reduce aviation emissions.

1.3 Several operational improvements are being planned and implemented at global, regional or local levels. According to the guidance provided by the *Manual on Global Performance of the Air Navigation System* (Doc 9883), to correct manage the implementation, measurement mechanisms should be put in place.

1.4 The purpose of this paper is to propose a mechanism to estimate and report the environment benefits accrued from operational improvements aligned with the Assembly Resolutions in force and also to propose an annual environmental report outlining the operational improvement benefits as an indication of positive environmental stewardship.

2. INTRODUCTION

2.1 It is a generally accepted fact that climate change can pose threats to life on our planet. The aviation world has long recognized this reality as well as the benefits that air transportation brings to world development.

2.2 The aviation industry's wish to grow in a sustainable manner coupled with the global desire to reduce the impact of aviation on climate change has triggered several actions by the ATM community, such as investing in new technologies and applying new concepts to reduce emissions from aviation.

2.3 Article 44 of the Convention on International Civil Aviation (Chicago 1944) calls for support to ensure the safe and orderly growth of international civil aviation throughout the world and meet the needs of the peoples of the world for safe, regular, efficient and economical air transport.

2.4 The experience of the ATM community in applying Standards and Recommended Practices as well as Procedures for Air Navigation Services has already set in motion several plans to respond the aviation impact on climate change.

2.5 Bearing in mind that the aviation sector is responsible for the movement of billions of people and millions of tonnes of goods per year while providing employment for millions of people, it is evident that flight operations today are much more efficient than they were 40 years ago. However, the improvements have not stopped the ATM community from continuing to study and apply new concepts and procedures to reduce the impact of aviation green house gas emissions on the global climate. Clear progress is being achieved in the provisions of well-structured services that improve efficiency and impact directly on the reduction of fuel consumption and gas emissions.

3. DISCUSSION

3.1 Against a background of increasing concern regarding the impact of aircraft engine emissions on the environment, ICAO has been considering what steps could be taken by the international aviation community to control and measure emissions.

3.2 Implementation of operational improvements will generally have benefits in areas such as improved airport and airspace capacity, shorter cruise, climb and descend times through the use of more optimized routes, and an increase of unimpeded taxi times. These improvements have the potential to reduce fuel burn and lower levels of pollutants.

3.3 Calculation of aviation emissions is dependent on several different factors including the number and type of aircraft operations, the type and efficiency of the aircraft engines, the type of fuel used, the length of flight, the power setting, the time spent at each stage of flight, and the location (altitude) at which exhaust gases are emitted.

3.4 Specifically for operational improvements benefit analyses, it is necessary to have data that can reflect the operational changes. Depending on the need, there are different levels of

analysis possible: order of magnitude, simple consideration of CO₂ based on fuel burn, detailed modelling of all emissions parameters, and variations in between.

3.5 The main purpose of this paper is to request the estimation and reporting of fuel savings resulting from national or regional operational improvements through the use of a simple but globally endorsed tool (ICAO Fuel Savings Estimation Tool -IFSET) specifically designed for this purpose, which does not require any specific user skills.

3.6 The tool is not intended to replace the use of detailed measurement or modelling of fuel savings, where those capabilities exist. Rather, it is provided to assist those States or ANSPs without such facilities to estimate the benefits from operational improvements. Details on the tool are provided in another working paper to this meeting.

3.7 To estimate and report fuel savings from operational improvements it is proposed the creation or identification of a group dedicated to the measurement process with proposed terms of reference detailed in the Appendix A to this working paper.

3.8 It is also proposed that all States/ANSPs in the region start reporting the benefits as they plan or implement any type of operational improvement. After the estimation, it is proposed that the results are sent to the Regional Office quarterly using the form proposed in Appendix B to be compiled in a single document.

3.9 The data collected will be used to produce an annual global environmental report by the ICAO HQ outlining the operational improvement benefits as an indication of positive environmental stewardship.

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

- a) note the information provided in this paper;
- b) agree with the creation of a measurement working group or the identification of a suitable existing group to carry out the measurement tasks;
- c) review and agree with the proposed terms of reference in Appendix A to this paper; and
- d) review and agree with the proposed form in Appendix B to this paper for reporting benefits.

APPENDIX A

AIR TRAFFIC MANAGEMENT MEASUREMENTS WORKING GROUP

1. Terms of reference

- a) To follow-up the implementation of the ATM operational improvements in the Regional Air Navigation Plan (ANP) or in national plans and to place special emphasis on identifying and estimating the fuel savings accrued from the corresponding improvements.
- b) To carry out permanent coordination with various PIRGs contributory bodies in order to ensure appropriate integration of all tasks contributing to the estimation of environment benefits related to the implementation of the ANP or national operational improvements.
- c) To harmonize, at a regional level, the estimation of the environment benefits from operational improvements in order to reach consistent results.
- d) Taking into consideration the material prepared by ICAO, develop proposals to keep and upgrade the ICAO Fuel Savings Estimation Tool (IFSET) if deemed necessary.

2. Work programme

TASK NUMBER	TASK DESCRIPTION	PRIORITY	DATE	
			START	END
M1	To identify operational improvements to be measured	A	TBD	TBD
M2	To establish the baseline for comparison	A	TBD	TBD
M3	To define the future scenario for environment benefits estimation	A	TBD	TBD
M4	To estimate the environment benefits accrued from the identified operational improvements	A	TBD	TBD
M5	To inform the estimated benefits to the Regional Office	A	TBD	TBD

3. Priority

- A** High priority tasks, on which work should be speeded up.
- B** Medium priority tasks, on which work should commence as soon as possible, but without detriment to priority **A** tasks.
- C** Tasks of lesser priority, on which work should commence as time and resources allow, but without detriment to Priority **A** and **B** tasks.

