



**WORKING PAPER**

**TWELFTH AIR NAVIGATION CONFERENCE**

**Montréal, 19 to 30 November 2012**

**Agenda Item 5: Efficient flight paths – through trajectory based operations**

**5.2: Improved traffic synchronization through 4D trajectory-based operations (TBO)**

**ENVIRONMENT CASE**

(Presented by the International Federation of Air Traffic Controllers' Associations)

**SUMMARY**

This paper presents the position of IFATCA on environmentally driven procedures in ATM, and the need for an environment management system and an environment case.

**Action:** The Conference is invited to take note of the position of IFATCA on environmentally driven procedures, and to consider progressing an environment management system and an environment case up to a higher level.

**1. INTRODUCTION**

1.1 Environmental issues have become extremely important in the operation of civil air transport. The preservation of the environment is a subject that will continue to influence political and industrial agendas. Industrial pollution of the air (smog excepted) may have a lower priority for the general public than aircraft noise. Aircraft noise is an issue that people encounter personally from day to day, and therefore is something that has much influence on the public opinion. However, the need for reduction on emissions of greenhouse gasses has strengthened in recent years.

1.2 IFATCA considered it necessary to study the environmentally driven procedures in ATM to establish the interrelation of these procedures in regard to the individual environmental domains e.g. aircraft noise and aircraft emissions. A noise friendly procedure could easily result in an emission unfriendly procedure.

1.3 This paper intends to address the position of IFATCA, and to clarify some misconceptions on environmentally driven procedures. IFATCA would like to stimulate the ongoing debate and stress the urgent need for an environment management system, in conjunction with an environment case.

**2. BACKGROUND**

2.1 Environmentally driven procedures in ATM often have conflicting impact on the individual environmental interests e.g. aircraft noise versus aircraft emissions. A noise friendly procedure often results in an

emission unfriendly procedure. For example STARs and SIDs are often primarily developed, after considering operational factors like terrain, obstacles and airspace structures, to reduce the effect of aircraft noise. Furthermore, environmentally driven runway configurations are regularly selected mainly on the basis of noise abatement procedures, and therefore trading off with operational requirements like wind components, navigation- and landing aids.

2.2 ATM is expected to become more and more performance driven, which clearly influences ICAO's approach on the issue of guidelines, Standards and Recommended Practices. In Doc 9882 ICAO explains that a performance case could be considered in conjunction with a safety case, together with a human factor case and an environment case. A performance case could be conducted to address all issues within ATM. Depending on the issue (technical, procedural, legal, professional or environmental) a safety case, a human factor case, business case, an environment case, or all of the above could be part of a performance case.

2.3 Regarding the determination of priorities in ATM procedures, IFATCA has the following policy: *In the operation, maintenance and development of the ATM system when balancing the requirements of safety, efficiency and the environment, the level of safety shall always be maintained or improved. And regarding environmentally driven procedures: In case environmentally driven procedures are introduced in the ATM System, these must be introduced taking into consideration the increased complexity for the controller. This complexity must be managed at the appropriate, strategic, level. A trade-off between environment and capacity must be considered as part of this management of complexity, as safety is paramount.*

2.4 IFATCA is of the opinion that the concept of an environment case, mentioned in Doc 9882, should be taken up to the next level, and progressed into the development of a methodology through an environment management system with the environment case as an outcome. Content, form and outcome of an environment case should be developed. As it is very difficult to identify a "polluter pays principle" (e.g. the emission trading scheme for the users) for ATM, there is a need to reflect at the earliest possible opportunity on what could be elements composing an environment case. By introducing an environment management system it will be possible to identify the various relevant environmental factors within procedures, and thereby enable the appropriate authorities to establish priorities on a strategic level.

2.5 An environment management system, analogue to a safety management system, should address conflicting environmental constraints, and must be based on an independent assessment methodology to assess the various environmental factors. It should map the environmental impact including the interrelation of individual environmental aspects; this outcome is the environment case. This case should also measure the impact of the various aspects against an agreed environmental performance target.

2.6 The study of the individual aspects of environmental issues within an environment management system should make transparent what exactly the individual factors enhance. This puts the appropriate authorities and users in a better position to weigh the different aspects and to prioritize them. It should be clear that the appropriate authorities are the principals and the controllers are bound by the environmental constraints, therefore removing the controllers from making environmentally driven decisions on priorities on an operational and tactical level.

2.7 An environment case should be combined with the safety case, the human factor case and the capacity case into an overall performance case. The performance case addresses the entire system and should provide that certain procedures and solutions are not introduced without considering the individual environmental aspects. Nowadays a safety case will consider the operational impact of a system change mostly without considering the interrelation of the relevant environmental aspects. This limits a possible overview of the consequences of a certain change, while this could be covered with an overall ATM performance case. A performance case should make clear what consequences a change has on the total ATM system, including safety,

environmental and human factors. Furthermore, an environment case could improve (by measuring and managing) the performance-based approach.

2.8 An environment case should be a documented body of evidence that provides an argument that a certain procedure is optimized for individual environmental factors (e.g. noise, emission of greenhouse gases and visual pollution) as prioritized by the appropriate authorities. The environment case should provide sufficient argument to assist the appropriate authorities in prioritizing the individual environmental factors on a strategic level. It should document and make transparent what the actual produced amount of emissions and noise is due to certain environmentally driven procedures.

### 3. CONCLUSION

3.1 Transparency is required to highlight the consequences of environmentally driven procedures on the individual environmental aspects, and to enable national authorities and ANSPs to set the desired priorities between the individual environmental aspects. An adequate report of the actual amount and value of the various individual environmental factors is therefore crucial.

3.2 An environment management system should be the instrument to ensure, through an environment case, that all individual environmental aspects are addressed within an overall performance case. An environment case should also identify the interrelation between the individual environmental aspects of new procedures.

3.3 According to IFATCA, the provisions for an ATM environment management system, should comprise of at least the following requirements:

- a) ensure that the level of safety shall be maintained or improved when environmentally driven procedures are introduced;
- b) ensure that all individual environmental factors are identified and considered while establishing procedures;
- c) the actual values (noise levels, fuel consumption and the amount of emissions) of the various individual environmental contributors of new or existing procedures should be established in detail for transparency reasons; and
- d) the interrelation of the various individual environmental factors should be identified and addressed.

3.4 An environment case, should comprise of at least the following requirements:

- a) an environment case is a documented body of evidence that provides argument that a certain procedure is optimized for all individual environmental factors as prioritized by the appropriate authorities; and
- b) an environment case should provide a detailed overview to the appropriate authorities for the determination of priorities of the individual environmental factors on a strategic level.