INTERNATIONAL CIVIL AVIATION ORGANIZATION

THE MIDDLE EAST AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (MIDANPIRG)

REPORT OF THE THIRD MEETING OF THE AIR TRAFFIC MANAGEMENT PERFORMANCE MEASUREMENT TASK FORCE

APM TF/3

(Cairo, Egypt, 5 December 2016)

The views expressed in this Report should be taken as those of the MIDANPIRG Task Force and not of the Organization. This Report will, however, be submitted to the MIDANPIRG and any formal action taken will be published in due course as a Supplement to the Report.

Approved by the Meeting
and published by authority of the Secretary General

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PART I – HISTORY OF THE MEETING

1. PLACE AND DURATION

1.1 The Third meeting of the Air Traffic Management Performance Measurement Task Force (APM TF/3) was held at the ICAO Middle East Regional Office in Cairo, Egypt, 5 December 2016.

2. OPENING

2.1 The Meeting was opened by Mr. Mohamed Smaoui, Deputy Regional Director, ICAO Middle East Office, who extended a warm welcome to all participants to Cairo. Mr. Smaoui highlighted the Terms of Reference (TOR) and the main objective of the APM Task Force, in particular the development of the MID Region Air Navigation Environmental Report; which presents and records the environmental benefits accrued from the implemented operational improvements in the MID Region. He recalled that the First MID Region Air Navigation Environmental Report was developed by ATMM TF/1 and endorsed by MIDANPIRG/14, with the hope that the Second Report will be improved with more inputs from States and Users.

2.2 Mr. Smaoui mentioned that, despite the critical situation in several States in the Region, the MID Region has been witnessing significant developments resulting in more efficient ATM operations. However, these improvements are not recorded officially in a regional document highlighting the success stories and the amount of CO2 emission saved. He raised concerns that the second MID Air Navigation Environmental Report could not be developed for the second time due to low level of inputs from States.

2.3 Finally Mr. Smaoui wished the meeting every success in its deliberations.

3. ATTENDANCE

3.1 The meeting was attended by a total of fourteen (14) participants, including experts from six (6) States (Egypt, Kuwait, Lebanon, Saudi Arabia, Sudan and UAE) and three (3) International Organizations (CANSO, IATA and IFATCA). The list of participants is at **Attachment A.**

4. OFFICERS AND SECRETARIAT

4.1 In the absence of the APM Task Force Chairman, Mr. Dawood Al-Jarrah, Superintendent of Planning and Control Department, Directorate General of Civil Aviation, Kuwait, Mr. Ali El Chaar, Head of General Climatological Section, Directorate General of Civil Aviation, Lebanon was unanimously elected to chair the APM TF/3 meeting. Mr. Abbas Niknejad, Regional Officer AIM/ATM, acted as Secretary of the meeting, supported by Mr. Mohamed Smaoui, ICAO Deputy Regional Director.

5. LANGUAGE

5.1 Discussions were conducted in English and documentation was issued in English.

6. AGENDA

6.1 The following Agenda was adopted:

Agenda Item 1:	Adoption of the Provisional Agenda
Agenda Item 2:	Global and Regional developments related to Environment
Agenda Item 3:	Development of the Second MID Region Air Navigation Environmental Report
Agenda Item 4:	Future Work Programme
Agenda Item 5:	Any other business

7. CONCLUSIONS AND DECISIONS – DEFINITION

7.1 All MIDANPIRG Sub-Groups and Task Forces record their actions in the form of Conclusions and Decisions with the following significance:

a) **Conclusions** deal with the matters which, in accordance with the Group's terms of reference, merit directly the attention of States on which further action will be initiated by ICAO in accordance with established procedures; and

b) **Decisions** deal with matters of concern only to the MIDANPIRG and its contributory bodies.

8. LIST OF CONCLUSIONS AND DECISIONS

DRAFT DECISION 3/1:	*Dissolution of the ATM Performance Measurement Task Force*
DRAFT CONCLUSION 3/2:	*Environmental Protection*

PART II: REPORT ON AGENDA ITEMS

REPORT ON AGENDA ITEM 1: ADOPTION OF THE PROVISIONAL AGENDA

1.1 The meeting reviewed and adopted the Provisional Agenda as at Para 6 of the History of the Meeting.

REPORT ON AGENDA ITEM 2: GLOBAL AND REGIONAL DEVELOPMENTS RELATED TO ENVIRONMENT

2.1 The subject was addressed in WP/2 presented by the Secretariat. The meeting was apprised of the outcome of the 39th ICAO General Assembly, Montreal, Canada, 27 September – 6 October 2016, related to environment, in particular Assembly Resolution A39-1, A39-2 and A39-3 related to the Environmental Protection which superseded A38-17 and A38-18:

A39-1 Consolidated statement of continuing ICAO policies and practices related to environmental protection – General provisions, noise and local air quality

A39-2 Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change

A39-3 Consolidated statement of continuing ICAO policies and practices related to environmental protection – Global Market-based Measure (MBM) Scheme

2.1 A provisional edition of the ICAO Assembly 39 Resolutions is available on the ICAO Website at:

http://www.icao.int/Meetings/a39/Pages/resolutions.aspx

Trends in Aircraft Fuel Burn and CO2 Emissions

2.2 The meeting noted that significant advances have been made in reducing the amount of noise and emissions produced by international civil aviation. For example, significant technological progress has resulted in aircraft produced today being approximately 75 per cent quieter and 80 per cent more fuel efficient per passenger kilometer than in the 1960s.

2.2 It was noted that the international aviation consumed approximately 142 million metric tons (Mt) of fuel in 2010. By 2040, it is expected that despite an anticipated increase of 4.2 times in international air traffic, fuel consumption is projected to increase by only 2.8 to 3.9 times over the same period.

Measures to reduce CO2 emissions from international civil aviation

2.3 The meeting was informed that five measures have been initiated by ICAO to reduce CO2 emissions from the international civil aviation, as follows:

A) Aeroplane CO2 Standard

2.4 Following six years of technical work by ICAO, during the CAEP/10 meeting, a recommendation was finalized on an aeroplane CO2 emissions certification Standard. This new Standard, as the first global Standard for CO2 emissions of any sector, will apply to new aeroplane type designs from 2020 and to aeroplane type designs that are already in-production in 2023. This means that if an in-production aeroplane design is changed after 2023, the aeroplane would be required to comply with the CO2 emissions Standard. In 2028, there is a production cut-off, meaning that in-production aeroplanes that do not meet the Standard from 2028 can no longer be produced, unless the designs are modified to comply with the Standard. The new CO2 emissions Standard is recommended for inclusion in a new Volume to Annex 16 (Annex 16, Volume III – *Aeroplane CO2 Emissions*). ICAO is currently progressing the new Standard through the SARP adoption process which will conclude in early 2017.

B) Global Market-Based Measures (MBM) Scheme for International Aviation

2.5 ICAO has been developing recommendations for technical design elements of a global MBM scheme, namely on monitoring, reporting and verification (MRV) system, emissions unit criteria (EUC) and registries. ICAO, in coordination with CAEP, has also undertaken technical analyses on various approaches for distribution of offsetting requirements under a global MBM scheme. The work of ICAO on future emissions trends and alternative fuels also supported the development of design elements for a global MBM scheme.

C) Operational Improvements

2.6 Recognizing that many of the improvements defined in the Global Air Navigation Plan (GANP) offer the potential to deliver fuel and CO2 emissions reductions, an analysis of environmental benefits from the implementation of the Aviation System Block Upgrade (ASBU) Block 0 was conducted, as at **Appendix 2A**. The analysis began with the identification of ASBU Block 0 modules that offer the potential to deliver fuel and CO_2 emissions savings and for which enough data and literature were available to quantify the benefits. These modules are not a comprehensive list of all Block 0 modules that will provide environmental benefits.

2.7 The analysis, which was conducted based on responses received from States representing more than 92% of global air traffic, showed that between 2013 and 2018, fuel burn savings of between 55 and 107 kg per flight on average across the all ICAO regions are possible from the implementation of the ASBU Block 0 modules that were identified. Based on the current and planned implementation of ASBU Block 0, this corresponds to a range of 2.48 to 4.87 Mt (0.62 to 1.31 per cent) in global annual fuel saving in 2018 compared to 2013 baseline. These fuel savings amount to global CO_2 emissions saving of between 7.8 and 15.4 Mt.

2.8 The meeting recalled that ICAO developed the Operational Opportunities to Reduce Fuel Burn and Emissions Manual (ICAO Doc 10013) and the Guidance on Environmental Assessment of Proposed Air Traffic Management Operational Changes Manual (ICAO Doc 10031).

2.9 The meeting encouraged States and Users to use the guidelines provided in ICAO Doc 10013 and Doc 10031 for planning of the implementation of operational improvements and estimating the expected benefits for each of the measures/operational improvements

D) Sustainable Alternative Fuels for Aviation

2.10 The meeting noted that ICAO continued to support States and stakeholders in their effort to develop and deploy alternative fuels. This included regular updates to the Global Framework for Aviation Alternative Fuels (GFAAF). CAEP's work on alternative fuels Life Cycle Assessment (LCA) methodology supported the technical work on the monitoring, reporting, and verification (MRV) system of a global MBM scheme and the updated CO2 emissions trends.

E) Outreach

2.11 The meeting recalled that ICAO convened the Fueling Aviation with Green Technology Seminar and the Global Aviation Partnerships on Emissions Reductions (E-GAP) Seminar in September of 2014 and 2015, respectively. In addition, ICAO's fourth Environmental Report which focuses on the issue of aviation and climate change was published in July 2016 and it is available on the ICAO public website at: http://www.icao.int/environmental-protection/Pages/ENV2016.aspx

2.12 The meeting was apprised of the mitigation measures selected by States according to their action plans, as shown in Figure 1 below:

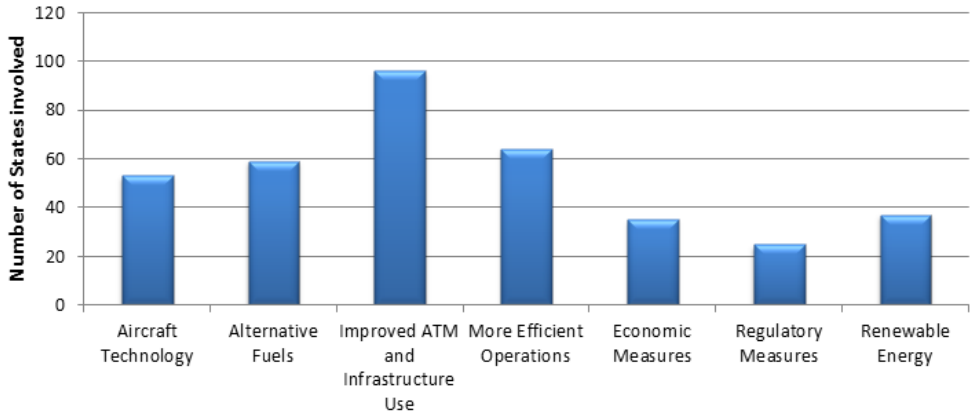

Figure 1. Mitigation measures selected by States according to their action plans

State's Action Plan on CO2 emission reduction

2.13 The subject was addressed in WP/3 presented by the Secretariat. The meeting noted that ICAO Assembly 39 encouraged States, through Assembly Resolution 39-1 *Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change*, to submit voluntary action plans outlining respective policies and actions, and annual reporting on international aviation CO2 emissions to ICAO. The meeting also noted that 104 States which represent 90.29% of global RTK have submitted their action plan on CO2 emission reduction.

2.14 The meeting recalled that the MIDANPIRG/14 meeting (Jeddah, Saudi Arabia, 15 - 19 December 2013) encouraged States to develop/update their Action Plans for CO2 emissions and submit them to ICAO through the APER website or the ICAO MID Regional Office.

2.15 The meeting noted with concern that only 6 States out of the 15 MID States (40%) have provided their Action Plan (Bahrain, Egypt, Iraq, Jordan, Sudan and UAE). Thirteen (13) States have nominated their State's action plan Focal Points. The APM TF/3 meeting reviewed and updated the list of State's action plan focal points, as at **Appendix 2B**.

2.16 The meeting recalled that the ICAO published Guidance on the Development of States' Action Plans on CO2 Emissions Reduction Activities (ICAO Doc 9988) in 2014 to provide guidance for States to help them prepare or update their action plans in accordance with the provisions of the ICAO Assembly.

2.17 DOC 9988 aims to:

a) Describe how to prepare or update an action plan by providing an overview of the action plan preparation process (i.e. tasks, activities and outputs);

b) Help States better understand the objectives and expected outcomes of the action plan preparation process;

c) Highlight the need for cooperation and collaboration between and among various stakeholders in the preparation of action plans; and

d) Assist States in considering the basket of measures from which they might select their actions.

2.18 The meeting was informed that ICAO has also developed a web interface (http://portal.icao.int, Action Plan on Emissions Reduction [APER] Group) to facilitate the preparation or update of action plans and their submission to ICAO. Chapter 2, Section 2.4, of Doc 9988 provides detailed instructions on how to obtain access to this web interface.

2.19 The meeting noted that ICAO is developing the Second Edition of Doc 9988 (a preliminary edition is available) which aims to more clearly describe the expectations for the information to be included in the action plan with a more straightforward approach to preparing the plan. The document has been reorganized to reflect the expected flow of information within each State, meaning that the action plan focal point can read this document in order and at the end of each chapter will have completed a section of the action plan. To this end, the Second Edition is a more concise document compared to the First Edition.

Action Plan Five Basic Elements (Minimum Requirements)

2.20 The meeting noted that an action plan should contain the following five elements:

1. **Contact information**. The focal point and any other person(s) responsible for the compilation and submission of the action plan should be identified;

2. **Baseline (without action) fuel consumption CO2 emissions and traffic (2010 or earlier to 2050)**. Annual historic fuel consumption and traffic from international aviation from 2010 or earlier should be submitted. In addition projected future fuel consumption and traffic to 2020 and if possible 2050 in the absence of action should be submitted. Although any available data would be welcome, in order to assess progress towards the global goals, data for the years 2010, 2020 and if possible 2050 should be provided;

3. **List of selected measures**. The measures being proposed to address CO2 emissions from international aviation, distinguishing between those that are already in place and those that are being considered for future implementation, should be listed;

4. **Expected results (fuel consumption, CO2 emissions and traffic with the actions in #3 being taken 2014 to 2050)**. Similar to element number 2, in order for ICAO to understand the global effect of the actions being proposed by States, projected fuel consumption and traffic for the same future years provided in element number 2 that quantifies the effect of the actions listed in #3 should be submitted; and

5. **Assistance needs**. A description of any specific needs (for example, financial, technological, capacity building) for the implementation of future actions should be described, if applicable.

Rules of Thumb

2.21 The meeting confirmed that quantification of expected results from the implementation of an action plan is an essential element. The Environmental Benefits Tool (EBT) has been developed by ICAO to assist States' Focal Points in order to generate the baseline, estimate the benefits from the selected mitigation measures using the Rules of Thumb. The EBT is available on the APER portal site (http://portal.icao.int, APER group).

2.22 Doc 9988 provides a description of the tools available along with a set of rules of thumb for estimating the expected benefits for each of the measures/improvements. These rules of thumb can be used in the event that the State does not have access to more detailed information about the expected results of a specific measure. These rules of thumb are provided into five categories:

- Aircraft-related Technology Development
- Alternative fuel
- Improved air traffic management and infrastructure use
- More efficient operations
- Airport Improvements

2.23 The meeting urged those States that have not yet done so, to develop/update their action plans outlining respective policies and actions on international aviation CO2 emissions using the guidelines of the ICAO Doc 9988; and submit to ICAO through the APER website.

2.24 The meeting was apprised of the IATA Fuel Reporting & Emission Database (FRED), presented by IATA. It was noted that FRED has 230 participating airlines (2016) globally of which 18 Airlines from Middle East. The Captured fuel consumption data is associated with 96.5% of total revenue tonne-kilometer (RTKs) operated by Middle Eastern Carriers on both domestic and international routes. Available Tonne Kilometres (ATK) is a measure of an airline's total capacity (both passenger and cargo).

IATA Update on the fuel efficiency initiatives

2.25 The subject was addressed in WP/6 presented by IATA. It was noted that IATA will continue its support to global, regional and national environmental initiatives. The meeting was informed that 18 Airlines from the Middle East participate in the IATA Fuel Reporting & Emission Database (FRED), which provides global environmental data.

Aircraft Noise

2.26 The meeting noted that the recommendations to amend Annex 16, Volume I - *Aircraft Noise* included general maintenance to keep the environmental SARPs up to date and relevant. It was noted that the amendments to Annex 16, Volume I through the Standards and Recommended Practices (SARPs) adoption process is in progress. In addition, the Environmental Technical Manual (ETM) on the use of Procedures in the Noise Certification of Aircraft (Doc 9501) was updated and will be published as an amendment to the current Doc 9501, Volume I.

2.27 The important work continued on monitoring noise technology and understanding the progress towards the ICAO noise goals. This is part of the continued effort to ensure that the latest available noise reduction technology is incorporated into aircraft designs. ICAO also continued its work on the development of a new supersonic noise Standard for future aircraft, and understanding the current state of sonic boom knowledge, research and supersonic aeroplane projects. It is anticipated that the certification of a supersonic aeroplane could occur in the 2020-2025 timeframe.

REPORT ON AGENDA ITEM 3: DEVELOPMENT OF THE SECOND MID REGION AIR NAVIGATION ENVIRONMENTAL REPORT

3.1 The subject was addressed in WP/4 presented by the Secretariat. The meeting recalled that the MIDANPIRG/14 endorsed the following Conclusion:

CONCLUSION 14/29: ESTIMATING AND REPORTING ENVIRONMENTAL BENEFITS

That, in order to follow-up the implementation of the ATM operational improvements and estimate the accrued fuel savings and associated CO_2 emission reduction from the corresponding improvements on regional basis:

a) States be encouraged to develop/update their Action Plans for CO_2 emissions and submit them to ICAO through the APER website on the ICAO Portal or the ICAO MID Regional Office;

b) States be urged to:

i) identify the operational improvements which have been implemented within their FIR and/or international aerodromes;

ii) collect necessary data for the estimation of the environmental benefits accrued from the identified operational improvements;

iii) use IFSET to estimate the environmental benefits accrued from operational improvements; and

iv) send the IFSET reports/the accrued environmental benefits to ICAO on bi-annual basis; and

c) IATA to:

i) encourage users to support the APM TF in the development of the MID Region Air Navigation Environmental Reports; and

ii) consolidate users' inputs and report the accrued environmental benefits to the ICAO MID Regional Office on bi-annual basis.

3.2 The meeting recalled that the First MID Region Air Navigation Environmental Report was endorsed by MIDANPIRG/14 meeting (Jeddah, Saudi Arabia, 15 - 19 December 2013).

3.3 The meeting recalled that the MIDANPIRG/15 meeting (Bahrain, 8-11 June 2015) noted with concern that the provisions of the MIDANPIRG/14 Conclusion 14/29 have not been implemented, despite the follow-up actions undertaken by the ICAO MID Regional Office in order to collect data related to the environmental benefits accrued from the implementation of operational improvements, for the development of the Second MID Air Navigation Environmental Report, which was supposed to be finalized by the APM TF/2 meeting. However, the second MID Air Navigation Environmental report could not be developed due to low level of inputs from States and Users.

3.4 It was also recalled that the MIDANPIRG/15 meeting emphasized that the contribution of States and Users to the work programme of the APM TF is essential in particular for the development of the Air Navigation Environmental Report; and urged Sates and Users to support the

Task Force and ensure the implementation of the provisions of the MIDANPIRG/14 Conclusion 14/29. Accordingly, the meeting agreed that the Second MID Region Air Navigation Environmental Report should be developed by the APM TF/3 meeting.

3.5 The meeting noted that the ICAO MID Regional Office issued State Letter Ref.: EN 1/1-16/230 dated 17 August 2016 urging States to provide inputs (estimation of the environmental benefits accrued from the identified operational improvements) to the Second MID Region Air Navigation Environmental Report, before 31 October 2016.

3.6 The meeting noted with concern that no response/input was received from States to the State Letter and consequently the second MID Air Navigation Environmental Report could not be developed.

3.7 The meeting agreed that States are facing the following challenges with regard to the environmental issues:

a) low or no priority for the aviation environmental issues at the State level;

b) lack of a dedicated structure (e.g. Department, Section, etc.) within the Civil Aviation Authorities dealing with aviation environmental issues;

c) lack of sufficient resources (human and financial) allocated to aviation environmental issues;

d) lack of or low level of internal coordination/communication between all involved parties at the State level (Regulator, ANSPs, Airport Operators, Airlines, etc); and

e) geopolitical issues.

3.8 Based on all of the above, the meeting agreed that the APM TF should be dissolved and proposed that the environment-related tasks should be handled by the Air Navigation Systems Implementation Group (ANSIG). The meeting urged States that have not yet done so, to establish a dedicated structure dealing with aviation environmental issues, within their Civil Aviation Authorities (e.g. Department, Section, etc.). Accordingly, the meeting agreed to the following Draft Decision and Conclusion:

DRAFT DECISION 3/1: DISSOLUTION OF THE ATM PERFORMANCE MEASUREMENT TASK FORCE

That,

a) the APM TF is dissolved; and

b) the MIDANPIRG Organizational Structure contained in the MIDANPIRG Procedural Handbook (MID Doc 001) be amended accordingly.

DRAFT CONCLUSION 3/2: ENVIRONMENTAL PROTECTION

That, States that have not yet done so, be invited to:

a) provide the ICAO MID Regional Office with updated contact details of their State's CO2 Action Plan/Environment Focal Points;

b) develop/update their State Action Plans on CO2 emission reduction, using the guidelines contained in the ICAO Doc 9988; and submit them to ICAO through

the APER website or the ICAO MID Regional Office; and

c) take necessary actions for the implementation of the mitigation measures included in their Action Plan, commensurate with the establishment of a dedicated structure (e.g. Department, Section, etc.) within the Civil Aviation Authorities dealing with aviation environmental issues.

3.9 The meeting agreed that ANSIG consider the addition of a new Section in the MID Air Navigation Report related to environmental protection, to reflect the measures implemented/planned to be implemented by States and Users as well as some success stories with regard to the implementation of operational improvements which contributed to the reduction of CO2 emission.

REPORT ON AGENDA ITEM 4: FUTURE WORK PROGRAMME

4.1 This Agenda was addressed in Agenda Item 3, since it was agreed to dissolve the Task Force.

REPORT ON AGENDA ITEM 5: ANY OTHER BUSINESS

5.1 Nothing has been discussed under this Agenda Item.

APPENDICES

APPENDIX 2A

ASBU Block 0 Modules' Environmental Benefits

Module	Description	Benefits
Block 0-CDO: Continuous Descent Operations *Improved Flexibility and Efficiency* *in Descent Profiles(CDOs)*	Deployment of performance-based airspace and arrival procedures that allow the aircraft to fly their optimum aircraft profile taking account of airspace and traffic complexity with continuous descent operations (CDOs)	Reduced fuel burn on arrival
Block 0-FRTO: Free Route Operations *Improved operations through enhanced* *en-route trajectories*	Implementation of performance-based navigation (PBN concept) and flex tracking to avoid significant weather and to offer greater fuel efficiency, flexible use of airspace (FUA) through special activity airspace allocation, airspace planning and time-based metering, and collaborative decision-making (CDM) for en-route airspace with increased information exchange among ATM stakeholders	Reduced in-flight fuel burn
Block 0-RSEQ: Runway Sequencing *Improved Runway Traffic Flow through Sequencing (AMAN/DMAN)*	Time-based metering to sequence departing and arriving flights	Reduced airborne holding and taxi-out time
Block 0-CCO: Continuous Climb Operations *Improved Flexibility and efficiency in Departure Profiles*	Deployment of departure procedures that allow the aircraft to fly their optimum aircraft profile taking account of airspace and traffic complexity with continuous climb operations (CCOs)	Reduced fuel burn during climb
Block 0-NOPS: Network operation *Improved Flow Performance through Planning based on a Network-Wide view*	Collaborative ATFM measure to regulate peak flows involving departure slots, managed rate of entry into a given piece of airspace for traffic along a certain axis, requested time at a waypoint or an FIR/sector boundary along the flight, use of miles-in-trail to smooth flows along a certain traffic axis and re-routing of traffic to avoid saturated areas	Reduced fuel burn in all phases of the flight including taxi
Block 0-TBO: Trajectory Based Operations *Improved Safety and Efficiency through the initial application of Data Link En-Route*	Implementation of an initial set of data link applications for surveillance and communications in ATC	Reduced in-flight fuel burn
Block 0-WAKE: Wake Turbulence Separation *Increased Runway Throughput through Wake Turbulence Separation*	Improved throughput on departure and arrival runways through the revision of current ICAO wake vortex separation minima and procedures.	Reduced taxi-out time and reduced in-flight fuel burn

Module	Description	Benefits
Block 0-ACDM: Airport Collaborative Decision Making *Improved Airport Operations through Airport-CDM*	Airport operational improvements through the way operational partners at airports work together	Reduced Taxi-out time
Block 0-ASUR: Alternative Surveillance *Initial capability for ground surveillance (ADS-B and MLAT)*	This module provides initial capability for lower cost ground surveillance supported by new technologies such as ADS-B OUT and wide area multilateration (MLAT) systems. This capability will be expressed in various ATM services, e.g. traffic information, search and rescue and separation provision.	Reduced in flight fuel burn
Block 0-OPFL: Optimum Flight Level *Improved access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B*	The aim of this module is to prevent flights to be trapped at an unsatisfactory altitude for a prolonged period of time. The In Trail Procedure (ITP) uses ADS-B based separation minima to enable an aircraft to climb or descend through the altitude of other aircraft when the requirements for procedural separation cannot be met.	Reduced in flight fuel burn

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APPENDIX 2B

MID REGION ENVIRONMENT/CO2 ACTION PLAN FOCAL POINT PERSON(S)

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