

International Civil Aviation Organization

ASBU/SIP/Lima/2012-WP/24E

Aviation System Block Upgrades Module N° B0-86/PIA-3

Improved Access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B

Workshop on preparations for ANConf/12 – ASBU methodology
(Lima, 16-20 April 2012)

Module N° B0-86
Improved Access to Optimum Flight Levels through Climb/Descent
Procedures using ADS-B


Summary	This ITP module enables an aircraft to reach a more satisfactory flight level for flight efficiency or to avoid turbulence for safety. The main benefit of ITP is significant fuel savings and the uplift of greater payloads														
Main Performance Impact	KPA-02 Capacity, KPA -04 Efficiency and KPA-05 Environment.														
Operating Environment/Phases of Flight	En-Route														
Applicability Considerations	This can be applied to routes in procedural airspaces,														
Global Concept Component(s)	CM, AUO, AOM														
Global Plan Initiatives (GPI)	GPI-9, GPI-7														
Pre-Requisites	NIL														
Global Readiness Checklist	<table style="width: 100%; border-collapse: collapse;"> <tr> <th></th><th style="text-align: right;">Status (ready now or estimated date).</th></tr> <tr> <td>Standards Readiness</td><td style="text-align: right;">✓</td></tr> <tr> <td>Avionics Availability</td><td style="text-align: right;">✓</td></tr> <tr> <td>Infrastructure Availability</td><td style="text-align: right;">✓</td></tr> <tr> <td>Ground Automation Availability</td><td style="text-align: right;">✓</td></tr> <tr> <td>Procedures Available</td><td style="text-align: right;">✓</td></tr> <tr> <td>Operations Approvals</td><td style="text-align: right;">✓</td></tr> </table>		Status (ready now or estimated date).	Standards Readiness	✓	Avionics Availability	✓	Infrastructure Availability	✓	Ground Automation Availability	✓	Procedures Available	✓	Operations Approvals	✓
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Module N° B0-86 - Baseline



- ITP using ADS-B is in operational use and hence can be considered to be a baseline.

Module N° B0-86 – Change Brought by the Module



- The introduction of ITP and ADS-B based separation minima enable aircraft to climb or descend through the altitude of other aircraft when the requirements for procedural separation cannot be met

Module N° B0-86 – Intended Performance Operational Improvement



Capacity	Improvement in capacity on a given air route
Efficiency	Increased efficiency on oceanic and potentially continental en-route.
Environment	Reduced emissions
Safety	A reduction of possible injuries for cabin crew and passengers
CBA	To be determined

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Module N° B0-86 – Necessary Procedures (Air & Ground)



- Procedures for ITP using ADS-B have been developed and a PANS-ATM Amendment is in progress.
- Additional information will be available in an ICAO circular – “Safety Assessment for the development of Separation Minima and Procedures for In-Trail Procedure (ITP) using Automatic Dependant Surveillance – Broadcast (ADS-B) Version 1.5.4”
- ITP requires the use of CPDLC as per PANS-ATM amendment for an applicability date of Nov 2013.

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Module N° B0-86 – Necessary System Capability



- **Avionics**
 - The aircraft performing the in-trail procedure will require an ADS-B IN capability compliant with DO-312/ED-159 or DO-317A/ED-194. The other aircraft involved in the procedure will require an ADS-B OUT capability compliant with AMC 20-24/DO-260A/DO-260B/ED-102A, or DO-317A/ED-194.
 - CPDLC compliant with DO-306 chg 1 / ED-122 chg 1 is required.
- **Ground Systems**
 - It is recommended that conflict probe logics be adapted to ITP separation minimum.

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Module N° B0-86 – Training and Qualification Requirements



- The flight crew needs to be trained and qualified to understand the limitations of the equipment and to ensure a correct usage of the In-Trail Procedure and supporting avionics.
- The controller needs to be trained and qualified to assume the tasks and to ensure a correct usage of the In-Trail Procedure and ground support tools.

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Module N° B0-86 – Regulatory/standardization needs and Approval Plan (Air and Ground)



- Regulatory/Standardization
 - Use current published criteria
- Approval Plans
 - To Be Determined.
 - Operational Approval guidance/criteria may be needed based upon regional application for ATSA.

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Module N° B0-86 – Reference Documents



- **Standards**
 - EUROCONTROL ATSAW Deployment Plan(draft)
 - EUROCAE ED-159 / RTCA DO-312 “Safety, Performance and Interoperability Requirements Document for the In-Trail Procedure in Oceanic Airspace (ATSA-ITP) Application”.
- **Procedures** - TBD
- **Guidance Material:** TBD
- **Approval Documents**
 - FAA AC 20-172a; and FAA TSO-C195a
 - FAA Memo; Interim Policy and Guidance Automatic Dependent Surveillance Broadcast (ADS-B) Aircraft Surveillance Systems Supporting Oceanic In-Trail Procedures (ITP). Dated: May 10, 2010;
 - DO-312/ED-159;
 - DO-317A/ED-194;
 - ICAO circular – “Safety Assessment for the development of Separation Minima and Procedures for In-Trail Procedure (ITP) using Automatic Dependant Surveillance – Broadcast (ADS-B) Version 1.5.4”.

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Module N° B0-86 Implementation
- Benefits and Elements



**Improved Access to Optimum Flight
Levels through Climb/Descent
Procedures using ADS-B**

- **Benefits: Capacity, Efficiency, Environment and Safety**
 - **Elements:**
 - **Avionics: ADS-B IN; ADSB OUT; and CPDLC**
 - **Ground: Conflict probe for ATC**
- To be reflected in ANRF**

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