
International Civil Aviation Organization


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

## Aviation System Block Upgrades

### Module N° B0-85/PIA-3

### Air Traffic Situational Awareness (ATSA)

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

Module N° B0-85  
Air Traffic Situational Awareness (ATSA)


<b>Summary</b>	Comprises two ATSA (Air Traffic Situational Awareness) applications which will enhance safety and efficiency by providing pilots with the means to achieve quicker visual acquisition of targets: <ul style="list-style-type: none"> <li>AIRB (Enhanced Traffic Situational Awareness during Flight Operations)</li> <li>VSA (Enhanced Visual Separation on Approach).</li> </ul>	
<b>Main Performance Impact</b>	KPA-04 – Efficiency; KPA-09 – Safety	
<b>Operating Environment/Phases of Flight</b>	En-route, Terminal and Approach.	
<b>Applicability Considerations</b>	These are cockpit based applications which do not require any support from the ground hence they can be used by any suitably equipped aircraft. This is dependent upon aircraft being equipped with ADS-B out.  Avionics availability at low enough costs for GA is not yet available.	
<b>Global Concept Component(s)</b>	CM – Conflict Management; TS – Traffic Synchronisation	
<b>Global Plan Initiatives (GPI)</b>	GPI-9 Situational Awareness; GPI-15 Match IMC and VMC operating capacity.	
<b>Pre-Requisites</b>	<b>Status</b>	
<b>CBA</b>	Standards Readiness	Ready
	Avionics Availability	Ready
	Infrastructure Availability	Ready
	Ground Automation Availability	N/A
	Procedures Available	Ready
	Operations Approvals	Est. AIRB 2011 / VSA 2012

## Module N° B0-85 - Baseline




- AIRB and VSA applications are available and this constitutes the baseline.

## Module N° B0-85 – Change Brought by the Module




- **Element 1 → ATSA-AIRB**
  - ATSA-AIRB applies to all phases of flight
  - Used in all types of airspaces: classes A to G
  - Provides traffic information on CDTI
  - Provides situational awareness beyond visual range
  - Independent of type of ATC surveillance and type of air traffic services provided
- **Element 2 → ATSA-VSA**
  - ATSA-VSA applies to the approach phase of flight
  - Visually acquire preceding aircraft
  - Mainly for air transport aircraft arriving into capacity-limited airport
  - Can be used by all suitably equipped aircraft during approach to any airports where own separation is used

Module N° B0-85 – Intended Performance Operational Improvement


<b>Efficiency</b>	Improve situational awareness to identify level change opportunities with current separation minima (AIRB) and improve visual acquisition and reduction of missed approaches (VSA)
<b>Safety</b>	Improve situational awareness (AIRB) and reduce the likelihood of wake turbulence encounters (VSA)
<b>CBA</b>	<p>The benefit is largely driven by higher flight efficiency and consequent savings in contingency fuel.</p> <p>The benefit analysis of the EUROCONTROL CRISTAL ITP project of the CASCADE Programme</p> <ul style="list-style-type: none"> <li>- saving 36 million Euro (50k Euro per aircraft) annually and</li> <li>- reducing carbon dioxide emissions by 160,000 tonnes annually.</li> </ul> <p>The majority of these benefits are attributed to AIRB.</p>

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Module N° B0-85 – Necessary Procedures (Air & Ground)


- The procedure for the use of ADS-B traffic display is being proposed for inclusion in the PANS OPS Doc8168) for applicability in Nov. 2013.

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## Module N° B0-85 – Necessary System Capability



- **Avionics**
  - ADS-B OUT compliant with AMC2024 / DO-260A/DO-260B /ED102 A is needed on the majority of the aircraft population. There is a potential need to certify ADS-B OUT data.
  - ADS-B IN compliant with DO-314 / ED160 or DO-317A / ED194 is required to support VSA
  - ADS-B IN compliant with DO-319 / ED164 or DO-317A / ED194 is required to support AIRB.
- **Ground Systems**
  - In some environments (e.g. USA) it is anticipated to modify ground infrastructure to provide ADS-R and TIS-B.

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## Module N° B0-85 – Training and Qualification Requirements



- Flight crews must be trained on the proper use of AIRB and VSA applications
- Special attention should be given to training for General Aviation (GA) flight crews regarding the appropriate uses of the AIRB and VSA applications.

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## Module N° B0-85 –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

## Module N° B0-85 – Reference Documents



- **Standards**
  - EUROCAE ED-160 / RTCA DO-314, Safety, Performance and Interoperability Requirements Document for Enhanced Visual Separation on Approach (ATSA-VSA)
  - EUROCAE ED-164 / RTCA DO-319, Safety, Performance and Interoperability Requirements Document for Enhanced Traffic Situational Awareness During Flight Operations (ATSA-AIRB)
- **Procedures**
  - The procedure for the use of ADS-B traffic display is being proposed for inclusion in the PANS OPS Doc8168) for applicability in Nov. 2013.
- **Guidance Material**
  - • EUROCONTROL Flight Crew Guidance on Enhanced Traffic Situational Awareness during Flight Operations;
  - • EUROCONTROL Flight Crew Guidance on Enhanced Visual Separation on Approach;
  - • EUROCONTROL ATSAW Deployment Plan (draft);
  - • Draft ICAO Manual on Airborne Surveillance Applications (Doc XXXX) available 2012.
- **Approval Documents**
  - • RTCA/EUROCAE ASA MOPS, DO-317A/ED-194;
  - • AC 20-172;
  - • TSO C195.

## Module N° B0-85 Implementation - Benefits and Elements



- **Air Traffic Situational Awareness (ATSA)**
- **Benefits: Efficiency and Safety**
- **Elements:**
  - ATSA-AIRB
  - ATSA-VSA

**To be reflected in ANRF**

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