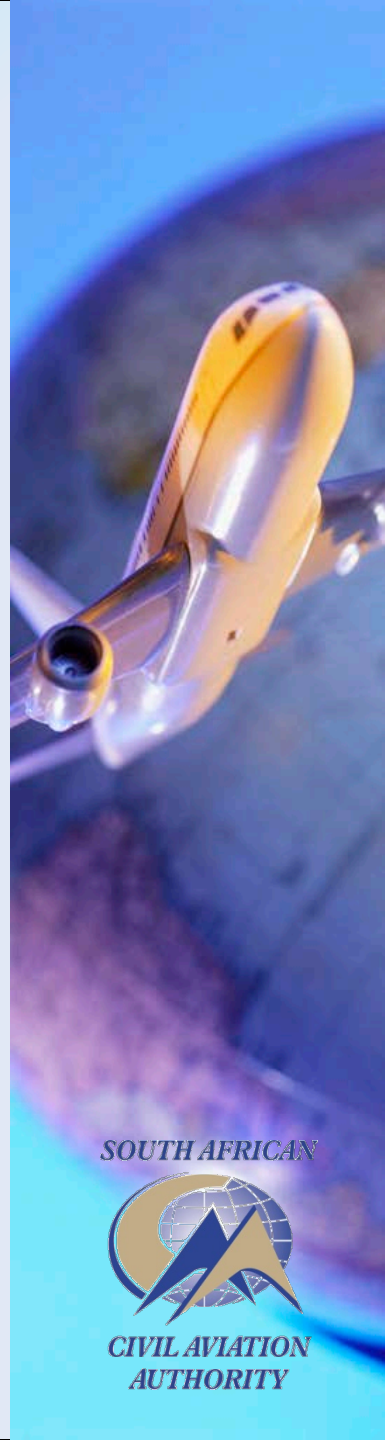


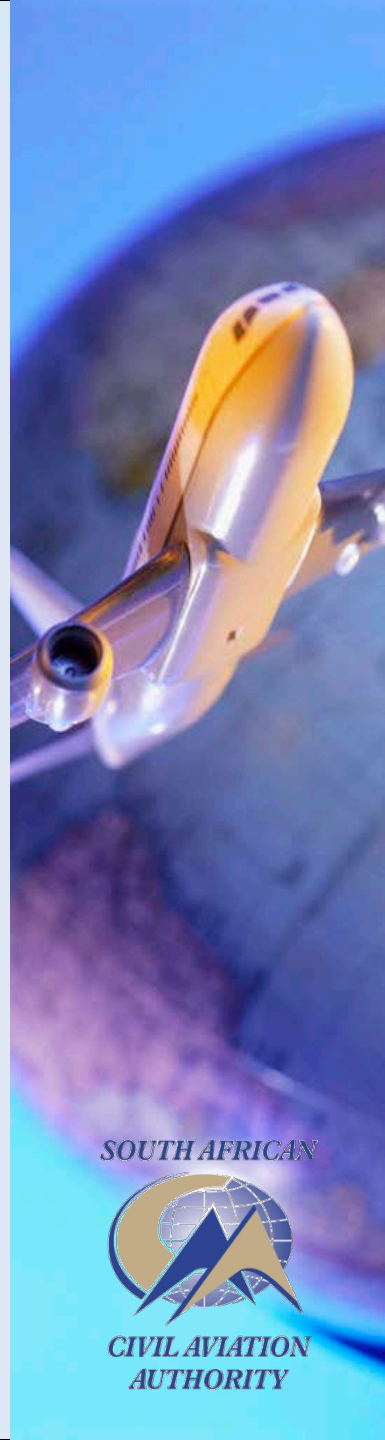
ASBU IMPLEMENTATION STATUS SOUTH AFRICA

17 - 19 November 2014
ASBU Seminar
Addis Ababa, Ethiopia



Outline

1. Background
2. Planning Phase
3. Current Status
4. Summary (Block-0 implementation)
5. Experiences during planning and implementation phase



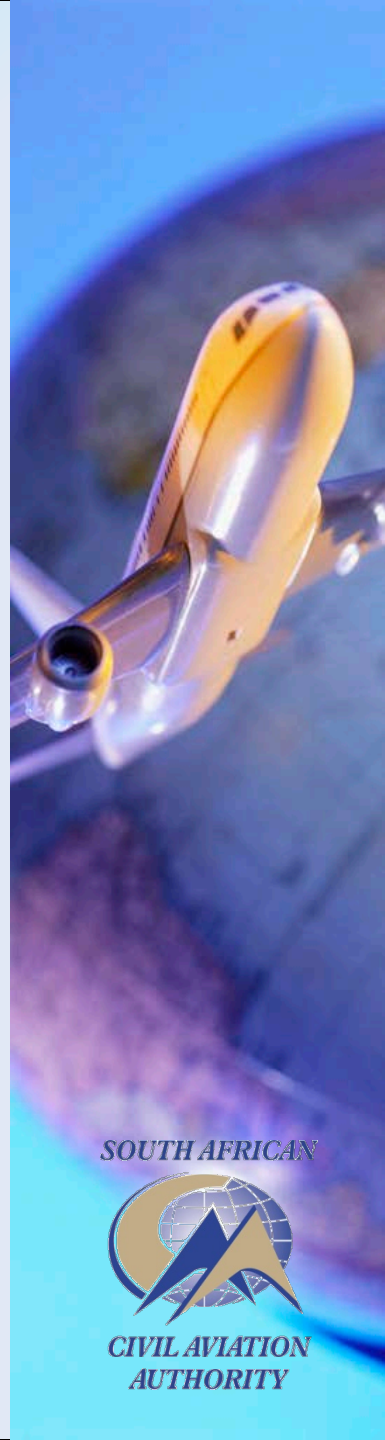
Planning Phase

- ACSA and ATNS accountable to 2 Regulators – SACAA (Safety Regulation) and Economic Regulator
- The Economic Regulator sets up criteria for permission documents for infrastructure investments
- ATNS and ACSA then formulated a permission document that drives Infrastructure Investment which includes ASBU modules
- Document is used for industry consultation on modules to be implemented
- South Africa agreed to implement all ICAO ASBU Block 0 and Block 1 modules where operational requirements necessitates
- Tariffs (approach, landing, parking charges etc.) were then agreed on for 5 years allowing for adjustments every 2 years

Current Status

Performance Improvement Area 1: Airport Operation

- **B0-65 APTA:** Optimization of Approach Procedures including vertical guidance
- **Operational improvements:**
 - a) PBN approaches : Radius to fix
 - b) Reduced missed approaches and diversions due to lowered approach minima



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Current Status

B0-65 APTA: Optimization of Approach Procedures including vertical guidance

| | | Current | 2018 |
|---|---|--|--|
| 1 | Airports with implementation of radius to fix final approach | FALA | FAOR (22% of total arrivals estimated to fly this procedure) |
| 2 | Airports with PBN final approaches implementation in order to provide improved access through improved minima | FALA; FAPM | FAOR; FAPE; FAGG (approx 51% of total arrivals estimated to benefit) |
| 3 | Commercial services airports without any ILS installed | 3 out of 22 (these account for 4.9% of total arrivals) | |

Note: Total arrivals based on 22 airports

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B0-70 WAKE: Increased Runway Throughput through Optimized Wake Turbulence Separation

Operational Improvements:

- a) Wake vortex separation standard re-categorisation (RECAT)
- b) Reduced wake vortex separation for closely spaced parallel runways (CSPRs)

| | | |
|---|---|--------------------------|
| 1 | Airports where RECAT will be implemented | As per ICAO requirements |
| 2 | Airports with closely spaced parallel runways (CSPRs) with a non-aligned departure zone | None |

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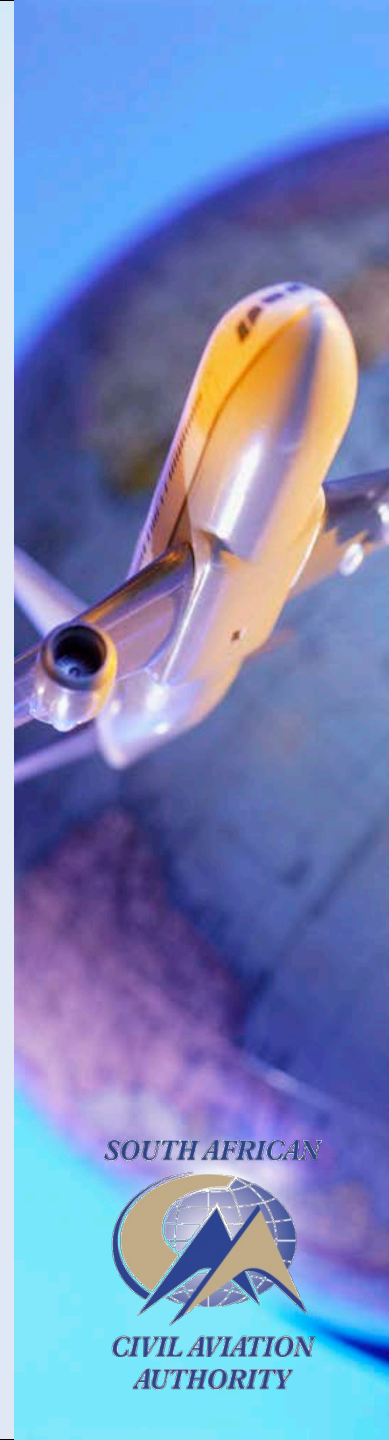


B0-15 RSEQ: Improved Runway Traffic Flow through Sequencing (AMAN/DMAN)

Operational Improvements:

- a) Arrival manager (AMAN)
- b) Departure Manager (DMAN)

| | | Current | 2018 |
|---|----------------------------|------------|------------------|
| 1 | Airports operating an AMAN | FAOR; FACT | FALE |
| 2 | Airports operating a DMAN | None | FAOR; FACT; FALE |



B0-75 SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)

Operational Improvement:

- a) Advanced Surface Movement Guidance Control Systems (A-SMGCS) Level 1 and 2

| | | Current | 2018 |
|---|---|---------------------|------|
| 1 | Airports with A-SMGCS level 1 and 2 | FAOR; FACT | None |
| 2 | Estimate of aircraft movements which are operating with A-SMGCS | 311 357 / 1 079 001 | N/A |

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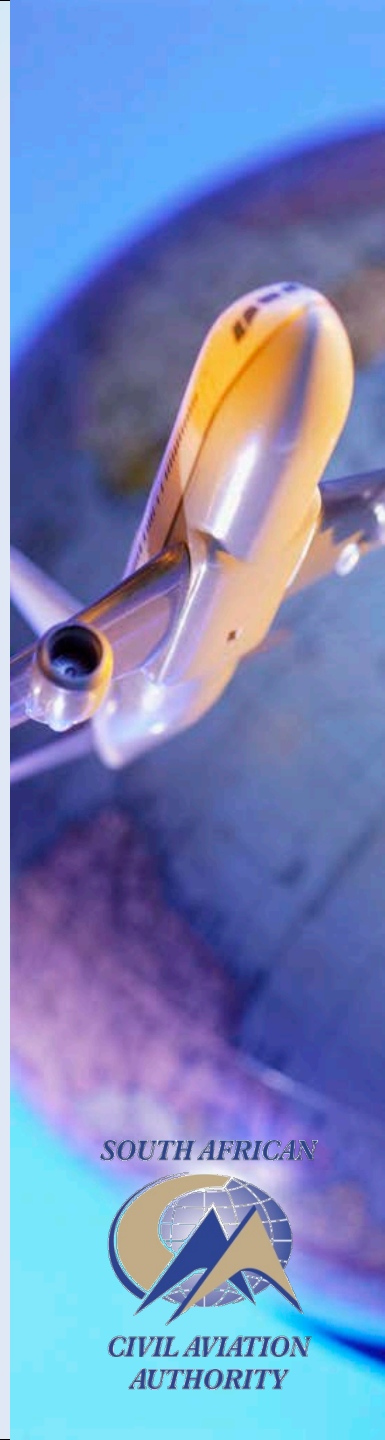


B0-80 ACDM: Improved Airport Operations through Airport-CDM

Operational Improvement:

a) Airport Collaborative Decision Making

| | | Current | 2018 |
|---|---------------------|---|--|
| 1 | Airports with A-CDM | 22 (FABE; FABL; FACT; FAEL; FAGC; FAGG; FAGM; FAKM; FAKN; FALA; FALE; FAMM; FAOR; FAPE; FAPM; FAPN; FAPP; FARB; FAUP; FAUT; FAVG; FAWB) | No current plans for additional airports |



Performance Improvement Area 2: Global Interoperable Systems and Data

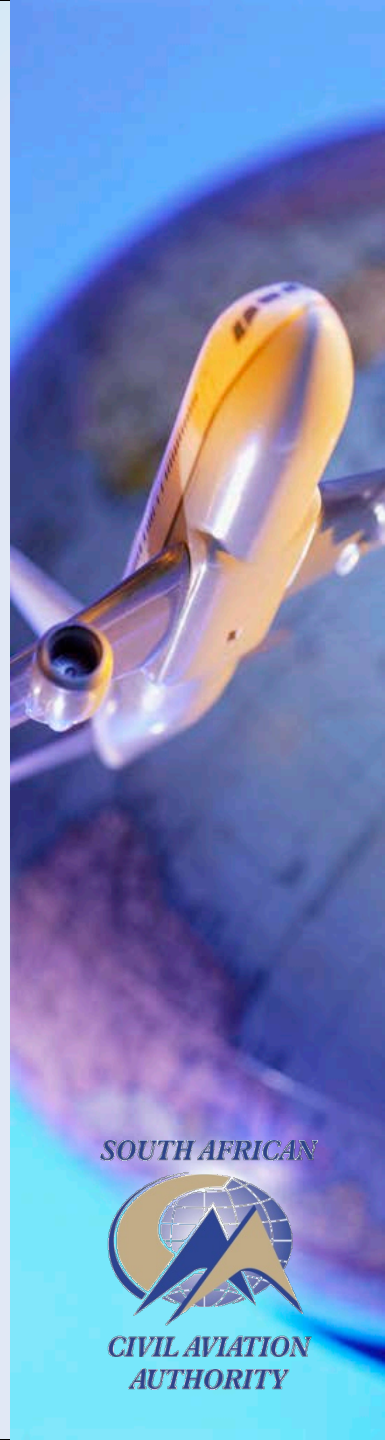
Block 0-25 FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

Operational Improvement:

- a) ATS inter-facility data communication (AIDC)

Description:

This module is to improve coordination between air traffic service units (ATSUs) by using ATS inter-facility data communication (AIDC). The transfer of communication in a data link environment improves the efficiency of this process particularly for oceanic ATSUs.



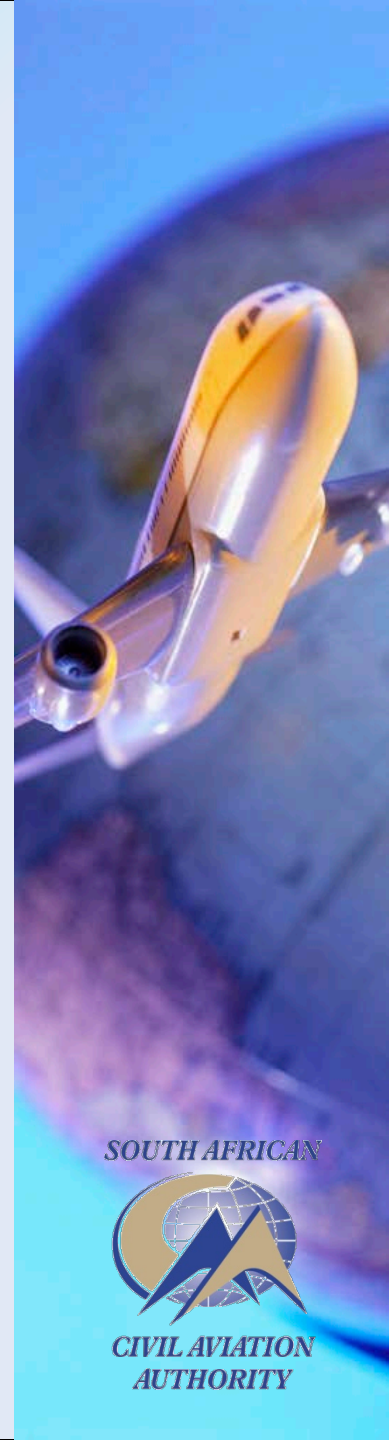
Block 0-25 FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

| | | Current | 2018 |
|---|--|-------------|--|
| 1 | Implementation of FICE module (AIDC) prior to 2018 | Implemented | |
| 2 | Benefits of AIDC implementation | | Reduced separation standards that can be applied between Air Traffic Service Units |
| | | | More efficient flight levels offered to aircraft |

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B0-30 DAIM: Service Improvement through Digital Aeronautical Information Management

Operational Improvement:

a) Digital NOTAM (Not approved by ICAO yet – not used in South Africa)

| | | |
|---|---|----------------|
| 1 | Aeronautical information, based on paper publications and NOTAMs, which have moved from traditional provision of paper to electronic support | All except AIP |
| 2 | Aeronautical information, based on paper publications and NOTAMs, estimated to be moved from traditional provision of paper to electronic AIP by 2018 | All |

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B0-10 FRTTO: Improved Operations through Enhanced En-Route Trajectories

Operational Improvement:

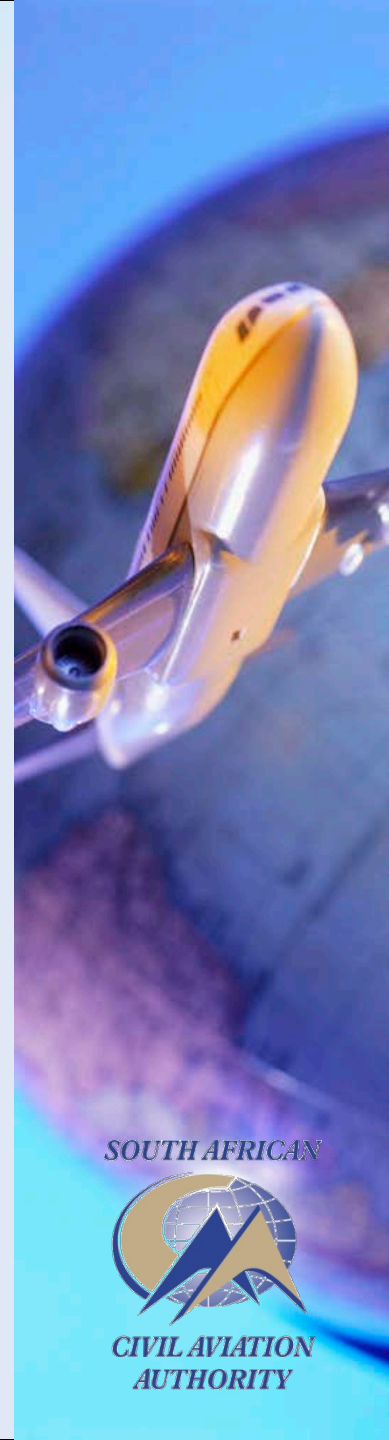
- a) Flexible Use of Airspace (FUA)
- b) Flexible Routes

| 1 | Implementation of FUA | Fully implemented (FAJA and FAJO) |
|---|---|---|
| 2 | track miles annually do you currently save as a result of FUA implementation or changes to validity periods for restricted airspace? What percentage of operations does this represent annually | 0.31 min per flight for FAOR. FAOR traffic represents 19.44% of 1 079 001. (note: savings are only estimated in time not track miles by CAMU) |
| 3 | FIRs where flex routes (non-fixed) are currently used | FAJO |

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B0-35 NOPS: Improved Flow Performance through Planning based on a Network-Wide view

Operational Improvement:

a) Air Traffic Flow management (ATFM)

| 1 | Strategic traffic flow management currently used to manage runway/airspace slot allocation | All international (FAOR; FACT; FALE) |
|---|--|--|
| 2 | Number of flights subject to the ATFM process | 369 080/ 1 079 001 (100% by 2018) |
| 3 | En-route delay saved by the ATFM measures in 2013 | 0.20 min per delayed flight for domestic flights only |
| 4 | Airport arrival delay saved by the ATFM measures in 2013 | 0.20 min per delayed flight for domestic flights only |
| 5 | Strategic traffic flow management is used to manage runway/airspace slot allocation | Yes, 22 manned airports (FABE; FABL; FACT; FAEL; FAGC; FAGG; FAGM; FAKM; FAKN; FALA; FALE; FAMM; FAOR; FAPE; FAPM; FAPN; FAPP; FARB; FAUP; FAUT; FAVG; FAWB) |

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Block 0-84 ASUR: ADS-B Ground-Based and Satellite-Based Surveillance and MLAT

Operational Improvement:

- a) Ground and Satellite-based surveillance through ADS-B leading to improved access to optimal flight levels

| | | |
|---|---|---|
| 1 | Surveillance of en-route aircraft with ground-based ADS-B in the FIR | Currently being tested |
| 2 | Implementation of surveillance of en-route aircraft with ground-based ADS-B planned by 2018 | FAJS (West Sector) where an estimate of 20% FAJA FIR operations projected 2018 will operate |
| 3 | MLAT | FAOR; FACT |

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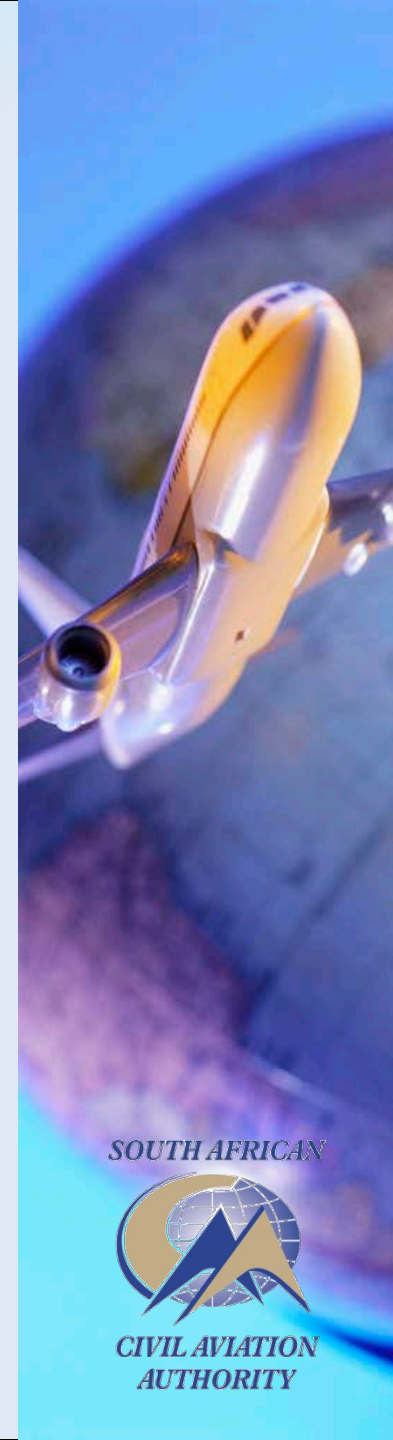


B0-05 CDO: Improved Flexibility and Efficiency in Descent Profiles (CDOs)

Operational Improvements:

- a) Continuous Descent Operations (CDO)
- b) PBN standard terminal arrival routes (STARs) – were implemented to achieve reduced track miles, increase capacity and reduce CO2 emissions

| | | Current | 2018 |
|---|--|----------------------|--|
| 1 | Aerodromes with published CDO procedures OR have CDO procedures tactically applied | None | 6 (FAOR; FACT; FALE; FAPE; FABL; FAGG) |
| 2 | Airports with PBN STARs | 3 (FAGG; FAOR; FACT) | 6 (FAGG; FAOR; FACT; FAPE; FALE; FABL) |



B0-40 TBO: Improved Safety and Efficiency through the initial application of Data Link En-Route

Operational Improvements:

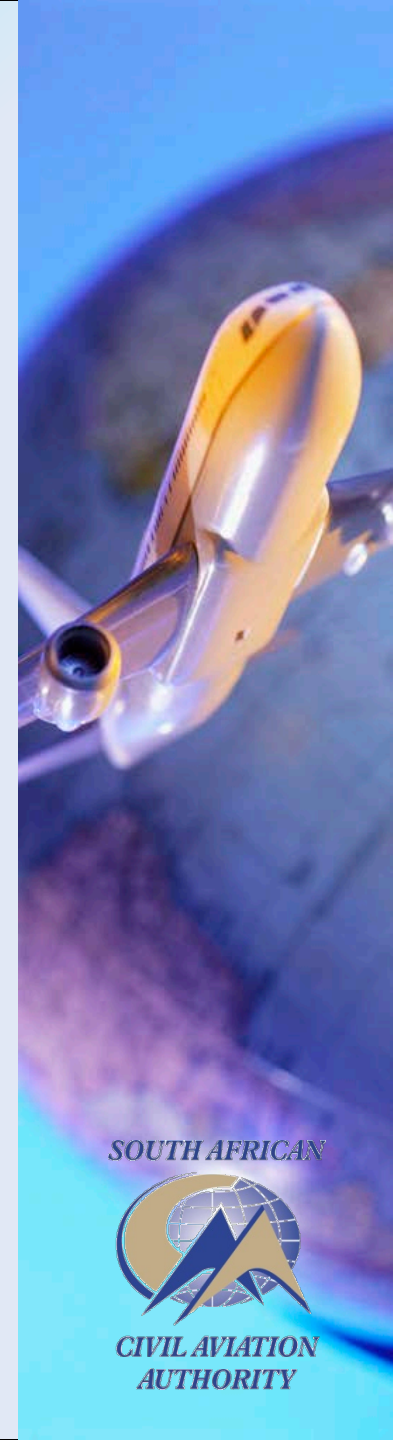
a) En-route application of Data link

| | | Current | 2018 |
|---|---|--|--|
| 1 | Proportion of airspace procedurally controlled – uses data link | 94.4% of Oceanic and 1.6% FAJS West Sector | Reduced Horizontal Separation Minima planned |

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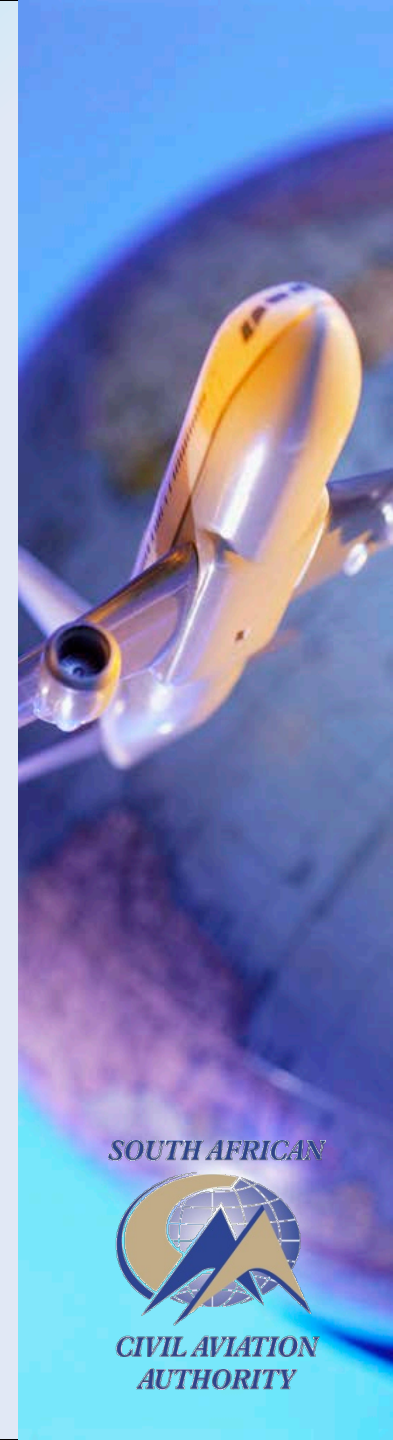


B0-20 CCO: Improved Flexibility and Efficiency in Departure Profiles

Operational Improvements:

- a) Continuous Climb Operations (CCO)
- b) PBN standard instrument departures (SIDs)

| | | Current | 2018 |
|---|---|-------------------------|---|
| 1 | Airports with published CCO procedures OR CCO procedures tactically applied (i.e. have an uninterrupted climb profile from take-off to the top of climb) | None | 6 (FAOR; FACT; FALE; FAPE; FABL; FAGG) |
| 2 | Airports with PBN SIDs | 3 (FAGG; FAOR; FACT) | 6 (FAOR; FACT; FALE; FAPE; FABL; FAGG) |



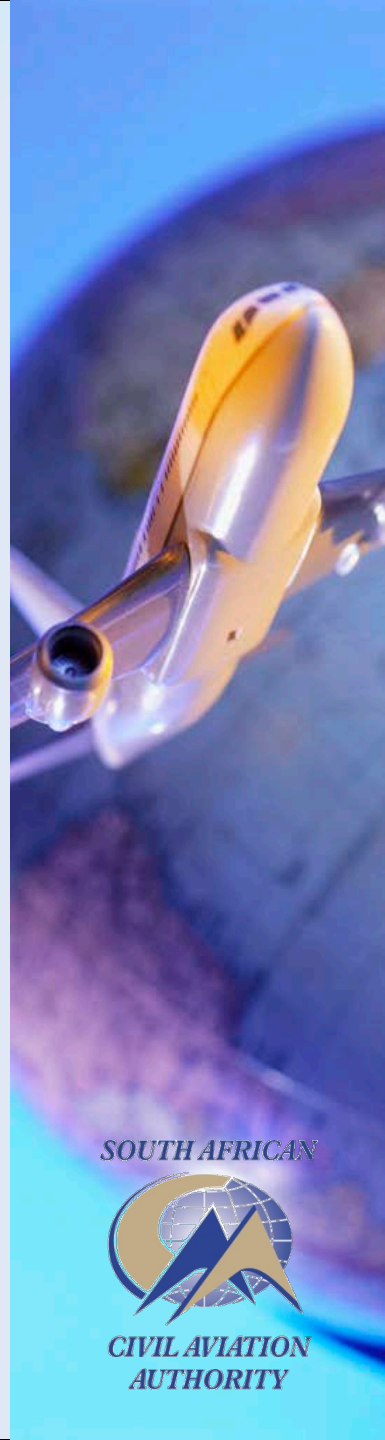
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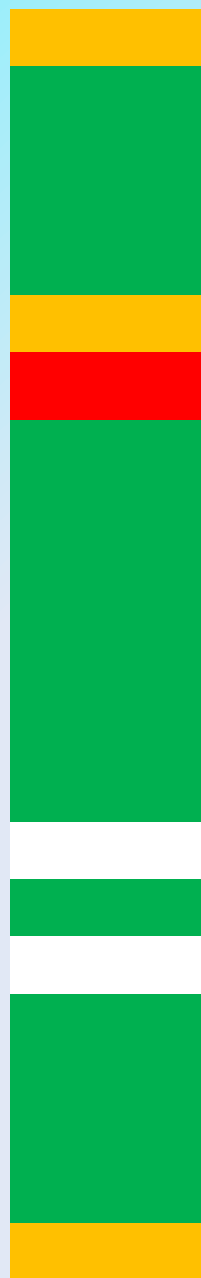
Planning and Implementation experiences

- Experiences are expected to be clearer when the permission is implemented in April 2015
- South Africa in the form of DOT, SACAA and ATNS collaboratively assist the non-ACSA airports with ASBU implementation
- This is done through:
 - ASBU workshops and introductory courses
 - Procedure design
 - Procedure validation
 - Monitoring of performance by DOT
- FALA, FAUT and FAPM are examples of non-ACSA airports that have implemented PBN (GNSS approaches)



Block-0 Summary -South Africa

| | | |
|-----|------|---------------------------------------|
| 65 | APTA | Airport Accessibility |
| 70 | WAKE | Wake Turbulence Separation |
| 15 | RSEQ | Runway Sequencing |
| 75 | SURF | Surface Operations |
| 80 | ACDM | Airport Collaborative Decision Making |
| 81 | RATS | Remote Air Traffic Services |
| 25 | FICE | FF/ICE |
| 30 | DATM | Digital Aeronautical Management |
| 31 | SWIM | System Wide Information Management |
| 105 | AMET | Advanced Meteorological Information |
| 10 | FRT0 | Free Route Operations |
| 35 | NOPS | Network Operations |
| 84 | ASUR | Alternative Surveillance |
| 85 | ASEP | Airborne Separation |
| 86 | OPFL | Optimum Flight Levels |
| 101 | ACAS | Airborne Collision Avoidance Systems |
| 102 | SNET | Ground-Based Safety Nets |
| 5 | CDO | Continuous Descent Operations |
| 40 | TBO | Trajectory-Based Operations |
| 20 | CCO | Continuous Climb Operations |
| 90 | RPAS | Remotely Piloted Aircraft Systems |



Clear: Aircraft applications

Green: Completed or on track for Dec 2017

Orange: Collaboration on-going

Red: N/A Block 1

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The End

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