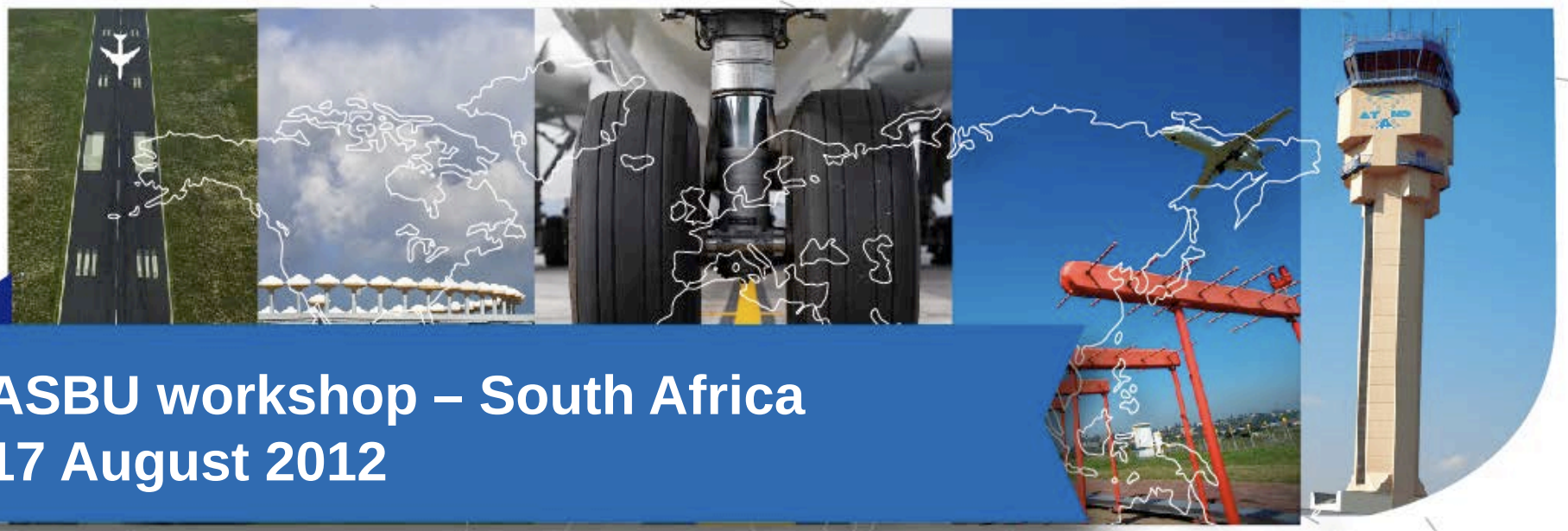
South African Civil Aviation Authority

AIR TRAFFIC & NAVIGATION SERVICES

ATNS



ASBU workshop – South Africa
17 August 2012

Participants

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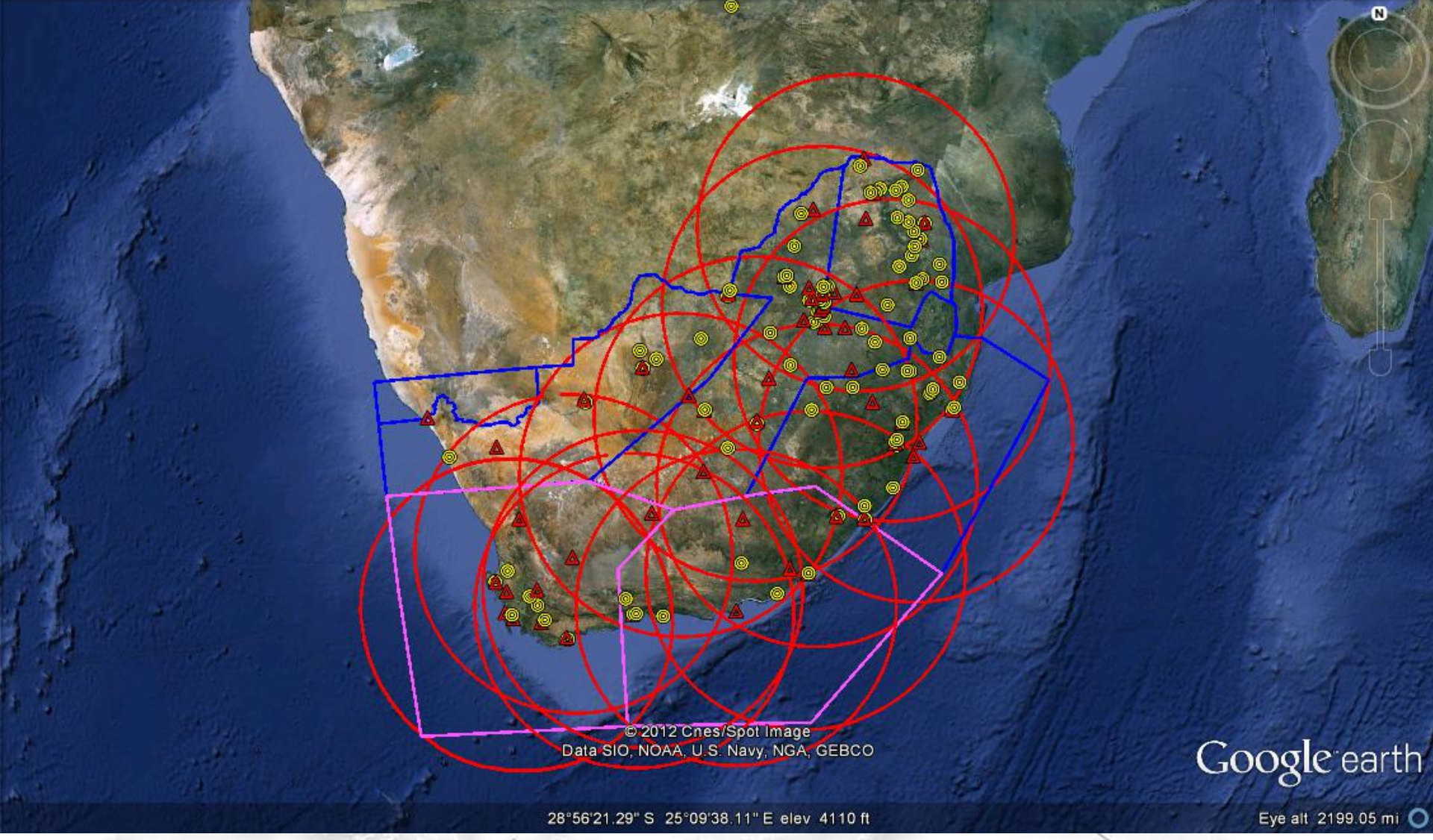
Presentation Outline

- Current Infrastructure
- Block 0 (2013-2018) module selection
- ANRF and Metrics for B-05, B0-80 and B0-10
- IFSET exercises
- Feedback

Current Infrastructure

- Airspace (2 FIR, 1 Oceanic FIR)
- EUROCAT-X display systems (2 ACC and several TCUs)
- Disaster recovery FACT/FAJS
- Communication (VHF, HF, D-ATIS, AFTN MOTSETA,VSAT,FIBRE, MPLS…)
- Navigation (VOR, DME,VDF, NDB,ILS)
- Surveillance (Primary and SSR radar)
- A-SMGCS using MLAT,SMR,ADS-B
- CAMU



Total ATM movements 2011 : 689,255 flights

Block 0 Module selection

Performance Improvement Areas	Module	Needs	Reasons
Airport Operations	**B0-15 Improved Runway Traffic Flow through Sequencing (AMAN/DMAN)** Time-based metering to sequence departing and arriving flights	Y	AMAN already operation DMAN deferred to Block one Currently using ATFM system for departure management
	B0-65 Optimization of Approach Procedures including Vertical Guidance This is the first step toward universal implementation of GNSS-based approaches	N	Feasibility study on-going (SBAS and/or GBAS)
	B0-70 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 (re-categorisation, CSPR and WIDAO)	N	Waiting for SARPS to be amended
	B0-75 Improved Runway Safety (A-SMGCS) Airport surface surveillance for ANSP	Y	L1 (L2 by 2013)
	B0-80 Improved Airport Operations through ACDM Airport operational improvements through the way operational partners at airports work together	Y	OPSCOM Airport Management Centre (AMC)

Block 0 Module selection

Performance Improvement Areas	Module	Needs	Reasons
Globally Interoperable Systems and Data	**B0-25 Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration** Supports the coordination of ground-ground data communication between ATSU based on ATS Inter-facility Data Communication (AIDC) defined by ICO Document 9694	Y	Already implemented
	B0-105 – Meteorological information supporting enhanced operational efficiency and safety This module includes meteorological information supporting automated decision processes or aids such as meteorological information translation, ATM decision support. This module enables the reliable identification of applicable ATM solutions when meteorological conditions are impacting (observed) or expected to impact (forecast) aerodromes or airspace	Y	
	B0-30 Service Improvement through Digital Aeronautical Information Management Initial introduction of digital processing and management of information, by the implementation of AIS/AIM making use of AIXM, moving to electronic AIP and better quality and availability of data	Y	

Block 0 Module selection

Performance Improvement Areas	Module	Needs	Reasons
Optimum Capacity and Flexible Flights	**B0-10: 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	Y	PBN (2012) FUA(current) Oceanic Flex tracks
	B0-35: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.	Y	
	B0-101 ACAS Improvements This addresses short term improvements to the performance of the existing airborne collision avoidance systems (ACAS).	Y	Legislation must be inline with ICAO timelines (2014-2017)
	B0-85: Air Traffic Situational Awareness (ATSA) ATSA provides a cockpit display of a graphical depiction of traffic to assist the pilot in out-the-window visual acquisition of traffic:	N	Subject to Feasibility study Deferred block1

Block 0 Module selection

Performance Improvement Areas	Module	Needs	Reasons
Optimum Capacity and Flexible Flights	**B0-86: Improved access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B** The use of In Trail Procedure (ITP) facilitates en-route climb or descent to enable better use of optimal flight levels in environments where a lack of ATC surveillance and/or the large separation minima currently implemented is a limiting factor.	N	Subject to Feasibility study Envisaged Block 1
	B0-84 – Initial surveillance capability ADS-B Out, MLAT Ground surveillance supported by ADS-B OUT and/or wide areamultilateration systems will improve safety, especially search and rescue and capacity through separation reductions.	Y	Safety Case done (waiting implementation)
	B0-102 – Baseline Ground-based Safety Nets To monitor the operational environment during airborne phases of flight, the alerts such as Short Term Conflict Alert, Area Proximity Warnings and Minimum Safe Altitude Warnings are proposed in this module. Ground-based safety nets make an essential contribution to safety and remain required as long as the operational concept remains human-centred.	Y	

Block 0 Module selection

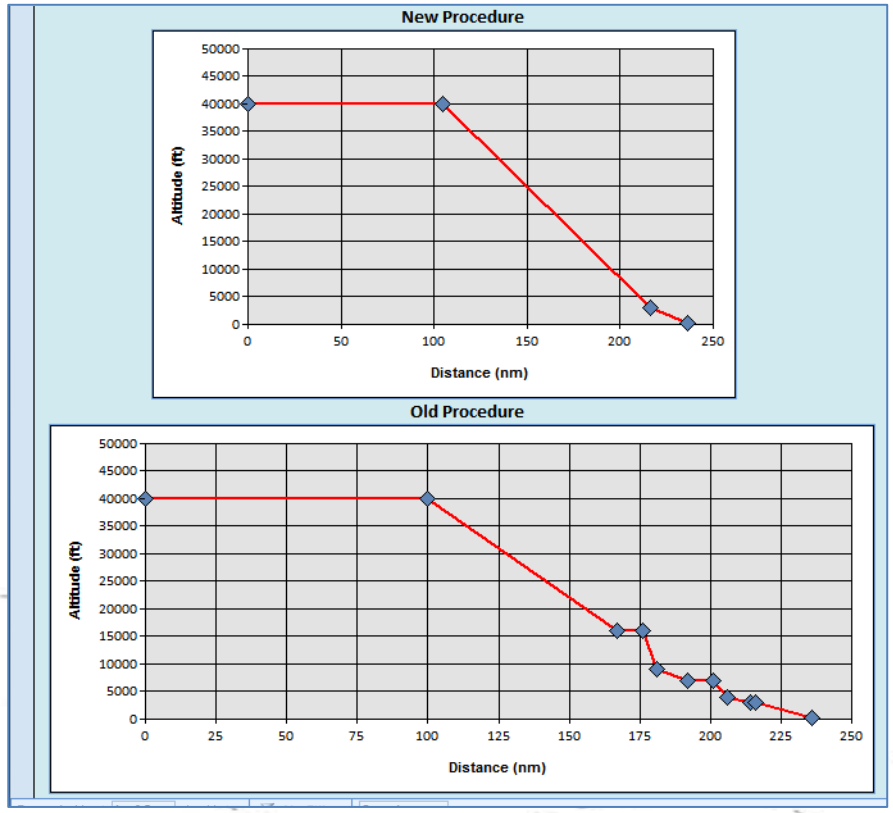
Performance Improvement Areas	Module	Needs	Reasons
Efficient Flight Path	**B0-05 Improved Flexibility and Efficiency in Descent Profiles (CDOs)** Deployment of performance-based airspace and arrival procedures that allow the aircraft to fly their optimum aircraft profile taking account of airspace and traffic complexity with continuous descent operations (CDOs)	Y	Subject to PBN STARs implementation
	B0-20 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)	Y	Subject to PBN SIDs implementation
	B0-40 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	Y	Oceanic implemented. Continental (envisaged block 1)

ANRF and Metrics

- ANRF presentations for B0-05 (and operational example), B0-80 and B0-10
- Based on WP32A ANRF template

Module B0-05 CDO example (1/2)

Module B0-05 CDO example (2/2)



Estimated Fuel Savings Report

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Scenario	Old Fuel Consumption (Kg)	New Fuel Consumption (Kg)	Savings (Kg)	Savings (%)
SAA317	3800	3400	-400	-10.5

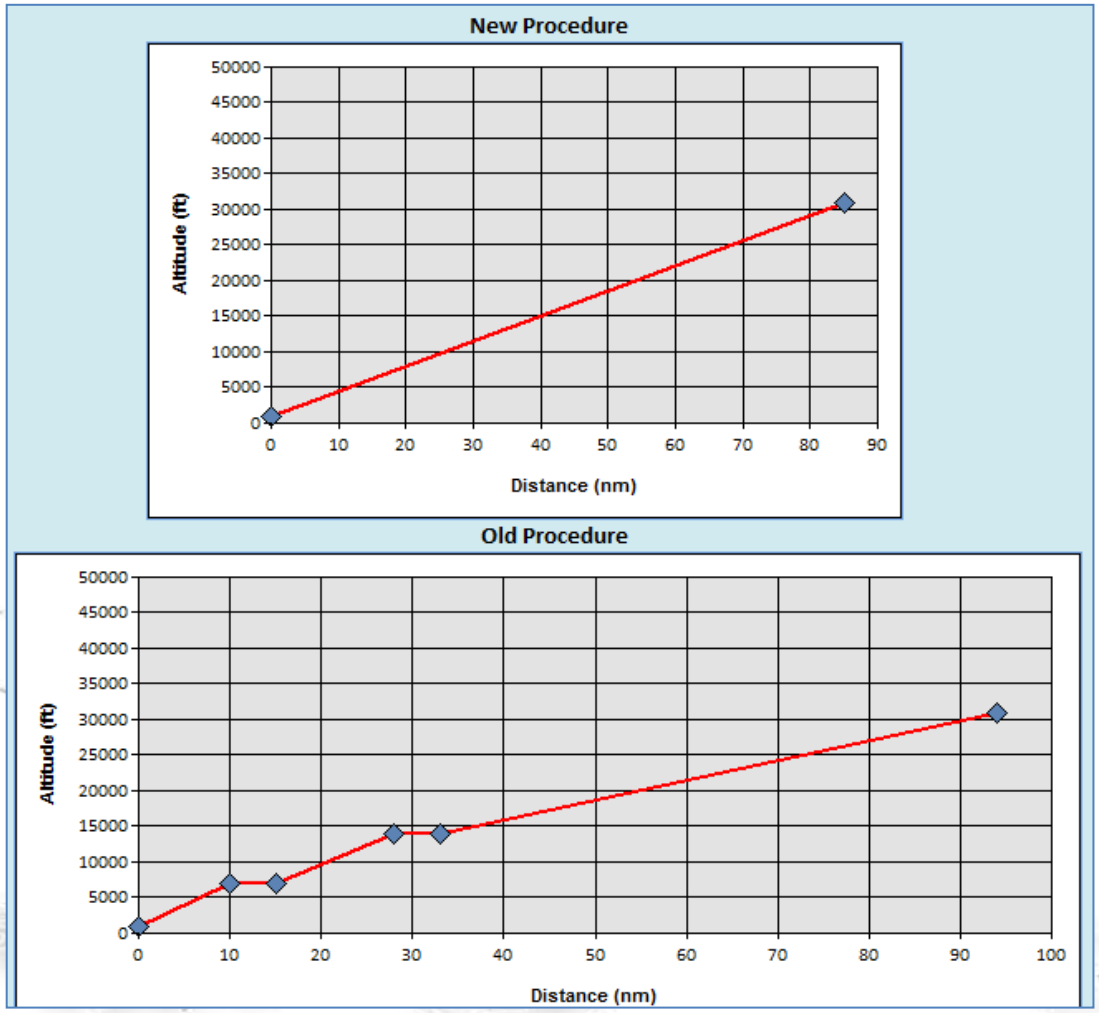
IFSET exercises

Estimated Fuel Savings Report

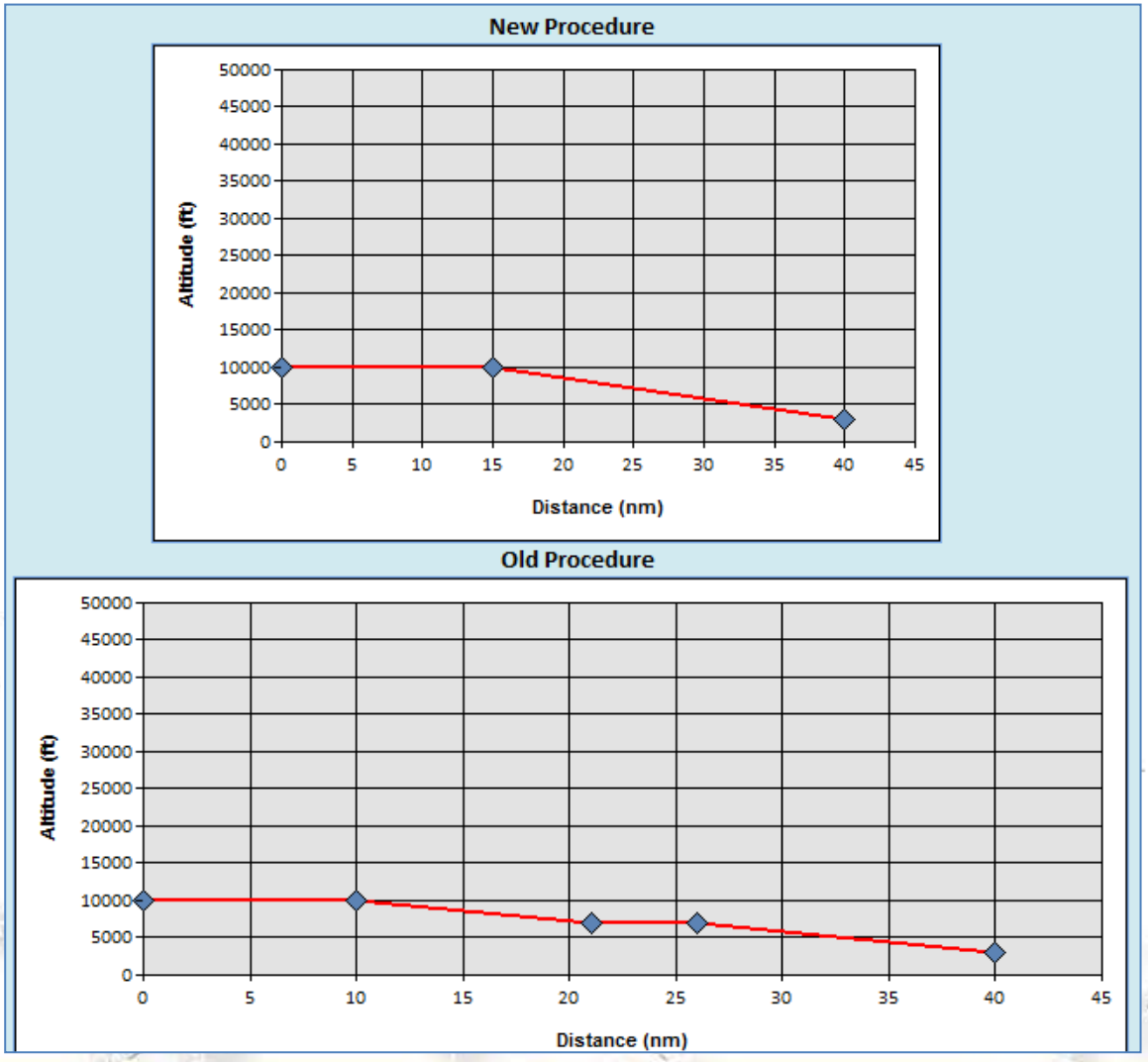
© ICAO 2011

Scenario	Old Fuel Consumption (Kg)	New Fuel Consumption (Kg)	Savings (Kg)	Savings (%)
AAAA	276300	259500	-16800	-6.1
BBBB	47300	40300	-7000	-14.8
CCCC	694900	476200	-218700	-31.5
CCCC-RJ	87500	74500	-13000	-14.9

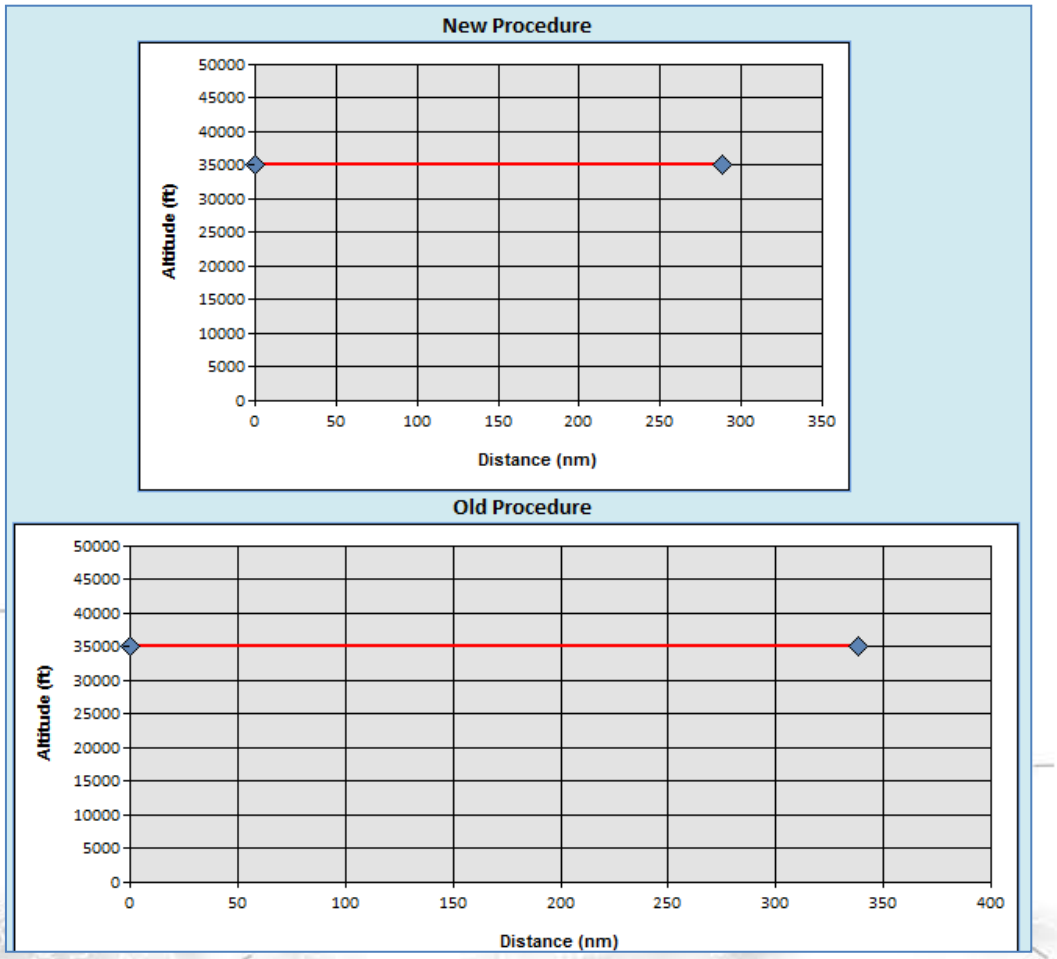
IFSET exercise AAAA



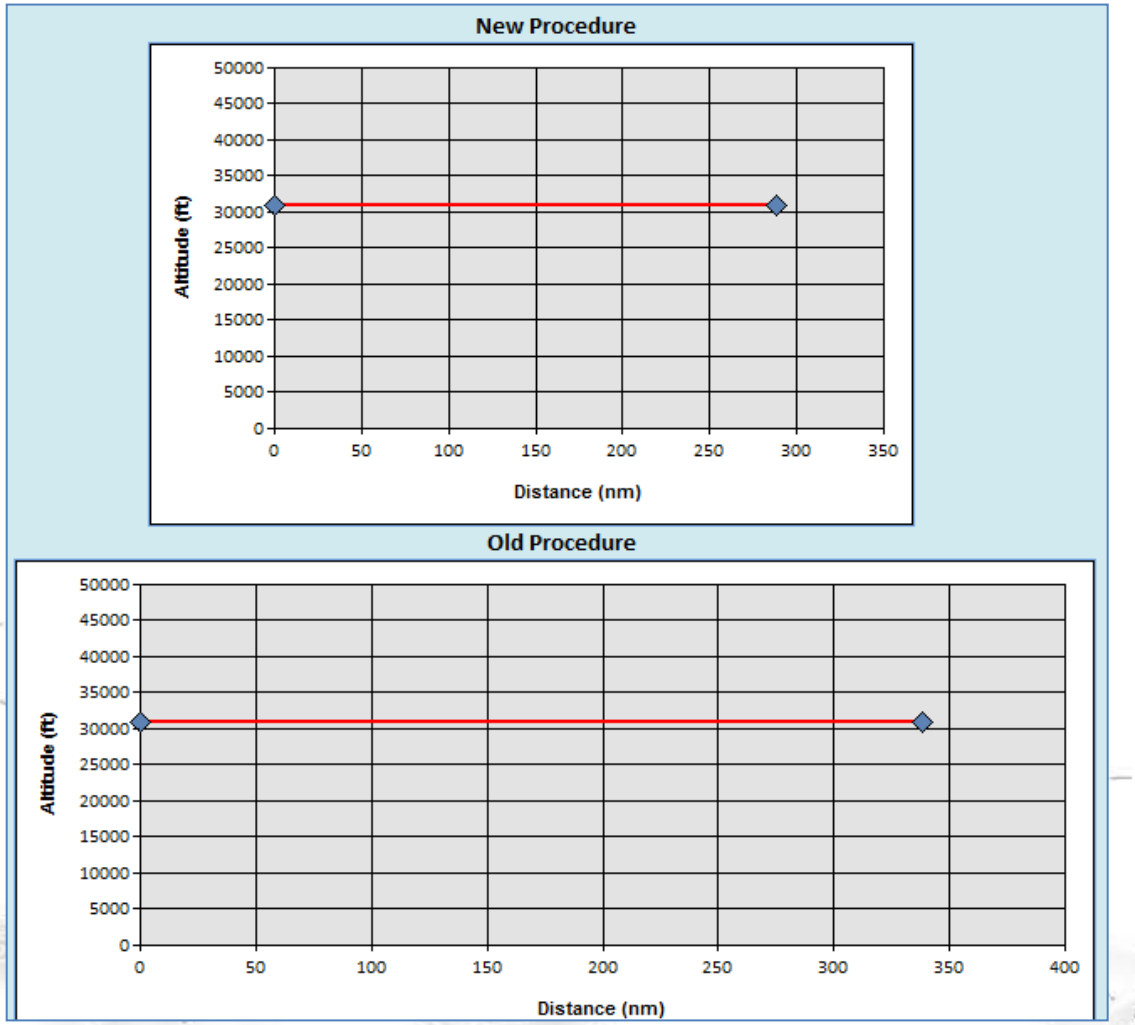
IFSET exercise BBBB



IFSET exercise CCCC



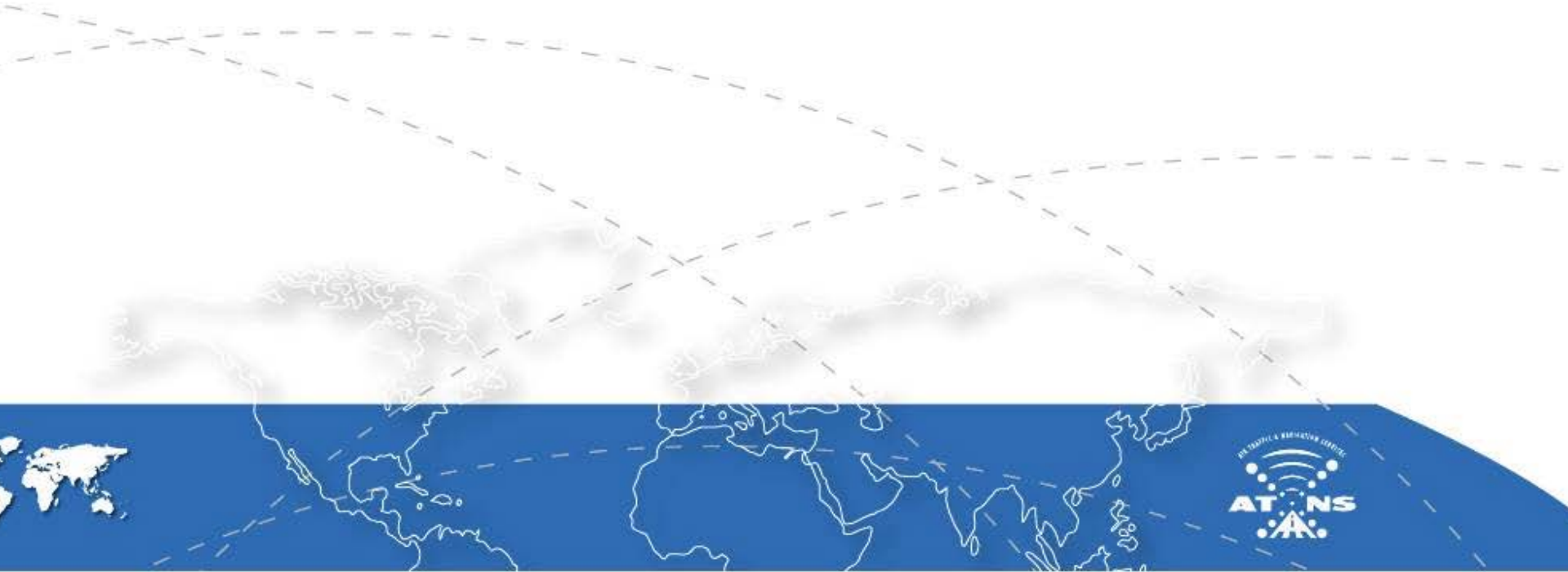
IFSET exercise CCCC-RJ



GIS – Current Status of the percentage of airports for which CCOs and CDOs are implemented

0-50% Red
50-75% Orange
75-100% Green

Feedback

- Block upgrade implementation still need to undergo a CBA.
- IFSET Benefits : Large scale exercise is planned to calculate the total C02 emission for RSA
- Through CDM process with all stakeholders, the South African National Airspace Master Plan will be re-aligned with ASBU methodology.
- Review CNS roadmap to align it to AFI roadmap and ASBU methodology.

Thank You