



Botswana Air Navigation Plan

HANDS-ON EXERCISE: PFF

EXPLANATION FOR EFFICIENCY

1. Characteristics of the industry

Enumerate the current and projected growth of Air Traffic in your state and also identify, if any, the efficiency challenges in your State.

Current Communication:

- VHF (Air to Air)
- VSAT (Ground to Ground ATS/DS & Data)
- AFTN (Ground to Ground Data)

Current Navigation:

- NDBs
- DVOR/DMEs
- ILS
- PBN (RNP 10 & 5)

Current Surveillance

- PSR/MSSR
-

Current ATM:

- Airspace Class A (FL150 and above)
- Airspace Class C (FL145 and below)

Current traffic statistic:

- Over-flights: 250/day
- Landings/take-offs: 1110/day including Military

Projected Growth:

- Landing/take-offs: 4.5% for 2010/2011

Challenges:

- Lack of funds
- Skilled manpower
- Environmental issues (Noise and pollution)
- WGS 84
- PBN in TMAs and arrivals

2. The air navigation service provider

Describe briefly the organization providing the air navigation services in your State including its institutional format, capital structure, principal shareholders and the management.

ANSP: Civil Aviation Authority of Botswana-A non-profit parastatal body corporate responsible for Regulatory and Service provision.

Institutional Format: Established by an Act of Parliament with the responsibility for all civil aviation activities except accident and incident investigation; for which there is a Board.

Capital Structure: The authority should meet its expenses from its revenue. Currently the Government funds all the fixed projects i.e.4 ANS facilities & equipment while operations are met from the revenue and loans. As a body corporate, the authority can borrow from commercial banks.

Principal Shareholders: -Botswana Government).

Management: -Board of Directors

3. Major stakeholders/partners

Identify the major stakeholders/partners such as the air navigation service providers, the airspace users (the commercial airlines using the airspace, business aviation, general aviation, military, etc.) and the potential funding sources.

Stakeholders/Partners: Botswana Government, BDF, Police Air-Wing

Airspace Users: Air Botswana, Kenya Airways, British Airways, etc.
KASAC, Air Okavango, Air Shakawe, Moremi Air, etc..

Potential Funding Sources: Enroute charges, Landing, Parking and other non-aeronautical services such as concessionary charges and Government support.

4. Problem definition

The current conventional air navigation systems might have several limitations, which would depend on the State or the region concerned. List such limitations in your State.

Limitations: Lack of skill in mapping, flight procedures, WGS-84, PBN Implementation,

Systems Incompatibility of the New Flight Plan
i.e. FDPS and RDPS,

Lack of Surveillance Coverage in the Western and
Eastern sectors of our airspace

Lack of voice communication at lower airspace

5. Performance based National Air Navigation Plan

Define the geographical scope of the National Air Navigation Plan and determine the major traffic flows. Explain briefly the vision of your State for achieving a seamless Global ATM system. Specifically, establish national performance objectives for the air navigation infrastructure, list current air navigation systems and through gap analysis define near and medium term operational improvements.

Geographical Scope of our National Air Navigation Plan: To provide safe and secure Air Navigation systems.

- WGS-84 Compliance
- Upgrading of CNS systems
- Upgrading of Airports
- Upgrading of MET and AIM services

Major Traffic Flows:

- North-South
- Tourist Attraction Areas i.e. Central Botswana

Vision of State to Achieve Seamlessness

- Implementation of PBN in the Enroute, Terminal and Landing phases of flight

National Performance Objectives for ANS Infrastructure:

- Enhance Efficiency of TMA Arrival/Departures at Maun and SSKIA
- Upgrade FDPS/RDPS to process new FPL
- Reduction of USOAP identified deficiencies
- Enhance VHF Communication in the Lower Airspace

Current Air Navigation Systems:

- Aeronautical MET is provided by the Department of Meteorological Services
- AIM and AGA elements are established,

Current Communication:

- VHF (Air to Air)
- VSAT (Ground to Ground ATS/DS & Data)
- AFTN (Ground to Ground Data)

Current Navigation:

- NDBs
- DVOR/DMEs
- PBN (RNP 10 & 5)

Current Surveillance

- PSR/MSSR

Current ATM:

- Airspace Class A (FL150 and above)
- Airspace Class C (FL145 and below)

Near Term Operational Improvements:

- Implementation of WGS 84
- Implementation of PBN in accordance with the Regional Plan

Medium Term Operational Improvements;

- Continue implementation of PBN in accordance with the Regional Plan

STRATEGIC OPERATIONAL IMPROVEMENT/ NATIONAL PERFORMANCE OBJECTIVE – 1 ENHANCE EFFICIENCY OF TMA ARRIVAL/DEPARTURE AT MAUN & SSKA	
Performance Benefits	
Safety	Safety level maintained or improved
Environment	Reduced noise and emissions through shorter flights and use of optimum routes/trajectories
Capacity	Increased capacity through better utilization airspace resources
Cost effectiveness	1. Fuel cost reduction through availability of more optimized routes/trajectories; and 2. Ability of aircraft to conduct flight more closely to preferred trajectories
Access	Reduced diversions
ATM Community	Reduced flying time for airspace users
Performance Measurement	
Metrics	Landing rate increased by 20%
	Fewer complaints about noise

Strategy
Medium term (2010 - 2015)

Projects/Tasks	Timeframe Start/End	Responsibility	Status (as of ...)	
Engage a Flight Procedure Consultant	March 2011- August 2011	Director-ANS	Database under preparation	
Conduct study of the two airspace Systems				
Submit draft report				
Implement final report				
Publish approved routes	August 2011			
AOM, DCB, TS and CM	Timeframe Start/End	Responsibility	Status (as of ...)	

<p>Risk Management</p>	<p>Risk factors: lack of funding; delay in aircraft equipage; Insufficient databases</p>
	<p>Risk mitigation: identify different funding sources; involvement of aircraft operators in the decision making; access to commercial databases</p>
<p>Linkage to GPIs</p>	<p>GPI/1: Flexible use of airspace. GPI/7: dynamic and flexible ATS route management; GPI/8: collaborative airspace design and management; GPI/10: Terminal Area design & management GPI/11: RNP/RNAV SIDs/STARs GPI/12: FMS Based arrival procedures</p>

**STRATEGIC OPERATIONAL IMPROVEMENT/
NATIONAL PERFORMANCE OBJECTIVE – 2
UPGRADE FDPS/RDPS SYSTEMS TO PROCESS NEW FPL**

Performance Benefits

Safety	Level of safety maintained or improved
ATM Community	Airspace users able to file FPL
Global Interoperability	Botswana linked to the rest of the world
Security	Flight Plan available
Predictability	All filed FPL will be known to ATM

Performance Measurement

Metrics	Improved situation awareness
	Reduced delay due to availability of FPL
	Access to special airspaces e.g. RVSM

Strategy
Medium term (2010 - 2015)

ATM Operational Concept Components	Projects/Tasks	Timeframe Start/End	Responsibility	Status (as of ...)
AO, DCB, TS and CM	Local systems checked and confirmed not compatible	done	Director-ANS	Database under preparation
	Engaged manufacturers for more advice –Ubtech & Raytheon	done		
	Source funds for implementation	On-going		
	Process Tender for acquiring required software upgrade	April 2011		
	Conduct necessary checks	August 2011		
	Inform the ICAO Regional Office	August 2011		
	Implement by 15/11/2012	August 2011		
		Projects/Tasks	Timeframe Start/End	Responsibility

Risk Management

Risk mitigation:

- Possibility of diverting funds earmarked for other projects,
- identification different funding sources;

Linkage to GPIs

GPI/9: situational awareness;

GPI/18: Aeronautical information;

GPI/21: Navigation systems;

**STRATEGIC OPERATIONAL IMPROVEMENT/
NATIONAL PERFORMANCE OBJECTIVE – 3
REDUCTION OF SAR IDENTIFIED DEFICIENCIES**

Performance Benefits

Safety	Level of safety maintained or improved
ATM Community	Improved SAR Benefits for airspace users
Efficiency	Conformance with ICAO SARPS
Security	Conformance with ICAO SARPs

Performance Measurement

Metrics	Number of complaints
	Inability to conform SARPs
	Number of conducted exercises

Strategy
Medium term (2010 - 2015)

ATM Operational Concept Components	Projects/Tasks	Timeframe Start/End	Responsi bility	Status (as of ...)
AO, DCB, TS and CM	1. Set up Task force to correct identified deficiencies	Task force in place	CEO-CAAB	Database under preparation
	1. Develop necessary corrective action	July 2011		
	1. Document and constantly update ICAO	July 2011		
	Projects/Tasks	Timeframe Start/End	Responsi bility	Status (as of ...)

Risk Management	<p>Risk factors: Blacklisting; Failure to regulate; loss of business.</p>
	<p>Risk mitigation: Develop a legal framework and necessary procedures. Undertake to correct all outstanding deficiencies.</p>
Linkage to GPIs	<p>GPI/1: performance-based navigation; GPI/9: situational awareness; GPI/13: Aerodrome design and management; GPI/14: Runway operations; GPI/15: Matching IMC and VMC operating capacity; GPI/17: Data link applications; GPI/18: Aeronautical information; GPI/19: Meteorological systems; GPI/20: WGS-84; GPI/21: Navigation systems; and GPI/22: Communication infrastructure.</p>

**STRATEGIC OPERATIONAL IMPROVEMENT/
NATIONAL PERFORMANCE OBJECTIVE – 4
ENHANCE VHF COMMUNICATION IN THE LOWER AIRSPACE-WESTERN
BOTSWANA**

Performance Benefits

Safety	Level of safety maintained or improved
ATM Community	Improved communication by airspace users
Efficiency	Improved situation awareness by ATCOs
Security	Ability to account for all flights

Performance Measurement

Metrics	Reduced incidents
	Reduced need for SAR

Strategy
Medium term (2010 - 2015)

ATM Operational Concept Components	Projects/Tasks	Timeframe Start/End	Responsibility	Status (as of ...)
AO, DCB, TS and CM	Determine areas with Radio coverage (VHF)	April 2011	Director-ANS	Database under preparation
	Develop technical specifications and determine cost	August 2011		
	Source funds and float the tender	August 2011		
	Award the tender and implement	May 2012		
	Projects/Tasks	Timeframe Start/End	Responsibility	Status (as of ...)

Risk Management	Risk factors: lack of funding; complaints from operators; ATS incidents
	Risk mitigation: identification different funding sources; involvement of aircraft operators in the decision making;
Linkage to GPIs	GPI/22: Communication infrastructure; GPI/23: Aeronautical Radio spectrum.

ASANTENI!

THANK YOU!