Building on the ICAO Global Safety Plan (GASP) to strengthen guidance and plans

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1-RASG ROLE ACCORDING TO THE GASP FOR 2020-2022

➢ Address **organizational challenges, operational safety risks, emerging issues and safety performance management**, in line with the GASP

➢ **Identify safety risks** and issues of priority, and encouraging States to initiate action using the **roadmap**

➢ Coordinate and track regional **SEIs and GASP indicators**

➢ Monitor **regional safety performance indicators (SPIs)** and identify where action is needed

➢ Serve as the focal point to coordinate regional efforts and programmes related to the GASP aimed at **mitigating operational safety risks**.

2-GLOBAL AVIATION SAFETY ROADMAP

➢ **Organizational challenges** —provides **SEIs** to meet GASP goals related to States' safety oversight capabilities and the implementation of SSPs, as well as industry's implementation of SMS, and contains two distinct components:

- ✓ State safety oversight system; and

- ✓ SSP, including service providers' SMS.

➢ **Operational safety risks** —provides **SEIs** to meet the GASP goals related to a **continuous reduction of operational safety risks**, and **regional and industry safety risk management activities** to address the **HRCs**

3-ORGANIZATIONAL CHALLENGES (ORG ROADMAP)

- ➢ Safety oversight
- ➢ SSP/SMS
- ➢ Supports the OPS Roadmap

4-OPERATIONAL SAFETY RISKS (OPS ROADMAP)

- ➢ Implement LOC-I safety actions through requirements, implementation and promotion, as appropriate

- ➢ Validate the effectiveness of the SEIs

- ➢ Identify additional contributing factors

- ➢ Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for LOC-I

- ➢ Conduct continuous evaluations of the performance of the SEIs

5-STRATEGY

➢ **THREE MAIN AREAS**

- ✓ UPRT Training
- ✓ LOC-I factors
- ✓ Regional approach

➢ **ACTION PLANS**

- ✓ National Safety Plan
- ✓ Regional Safety Plan
- ✓ LOC-I and UPRT 5-Year Plan of Action
- ✓ Safety Enhancement Initiatives

6-SAFETY ENHANCEMENT INITIATIVES (SEIs)

- Derived from:

➢ LOC-I Accidents reports

➢ Safety outcomes and recommendations from previous RASG-AFI LOC-I and UPRT workshops

➢ Generic threats leading to LOC-I

➢ OPS Roadmap of ICAO GASP

➢ Incidents having a potential of inducing an upset or loss of control of the aircraft

6.1-ORG SEIs

UPRT-Safety Oversight								
	STAKE-HOLDERS	AIR OPERATORS (AOs)		TRAINING ORGANIZATIONS (ATOs)		CIVIL AVIATION AUTORITIES(CAAs)		DATA (All stakeholders)	
1	Key areas	Operations manual : Parts A, B, D; SOPs	Training	Training and procedures manual and training programs	Training	Safety oversight: CE-2, 4, 5, 6, 7 and 8.	Safety management	AFI UPRT deficiencies related accidents and serious incidents	Information on other safety areas in AFI region having an impact on LOC-I and LOC-I accidents and serious incidents worldwide
2	Regulatory requirements	Operations manual to take into account UPRT requirements	Training to take into account UPRT requirements	Training and procedures manual to take into account UPRT requirements	Training programs to take into account UPRT requirements	CE-2: incorporation of UPRT related SARPs in specific operating regulations.	Safety management principles to be incorporated in UPRT training	Serious Incidents to be also shared. Framework to be established.	Sharing of data between stakeholders. Framework to be established.
3	Training	Part D of Operations manual to include UPRT programs	Training of flight crew, instructors on UPRT.	Programs to include UPRT	Training of instructor on UPRT	CE-4: training of inspector	Safety management principles to be incorporated in UPRT training	Sensitization on aircraft Upset and LOC-I for Accident investigators.	Sensitization on aircraft Upset and LOC-I for Accident investigators
4	Guidance material and procedures	Air operators to include additional procedures and information on aircraft Upset and LOC-I in Part A and Part B of the operations manual and in SOPs	Additional guidance by the CAA or industry on LOC-I and UPRT to be familiar with	Training and procedures manual to include additional procedure on UPRT	Additional guidance by the CAA or industry on UPRT to be familiar with	CE-5: inspectors' guidance materials and procedures to include UPRT. Guidance to the industry to include UPRT	Procedures for air operators and training organizations UPRT training to include safety management	Procedures for accidents and serious incidents to include aircraft Upset and LOC-I	Procedures for the analysis of data to derive relevant information and to report
6	Licensing and Approvals. Proficiency training.	-Type rating. -Multi-crew pilot training. -Flight crew training. -Academic training.	-Type rating. -Multi-crew pilot training. -Flight crew training. -Academic training.	-Type rating. -Multi-crew pilot training. -Academic training. -On-airplane training.	-Type rating. -Multi-crew pilot training. - -Academic training. -On-airplane training. -Non-type specific FSTD training.	CE-6: -Type rating issuance; -Multi-crew pilot issuance. -Instructor authorizations.	-SMS for On-aeroplane UPRT.-	-Validation of data. -Proof-of -concept trial or operational review of training programs	S\Monitoring and benchmarking
		-On-airplane training. -Non-type specific FSTD training. -Type-specific FSTD training.	-On-airplane training. -Non-type specific FSTD training. -Type-specific FSTD training	-Non-type specific FSTD training. -Type-specific FSTD training	-Type-specific FSTD training	-Approval of training organizations. -Approval of the operations manual.			
7	Monitoring and taking measures	Recurrent training	Recurrent training	Quality and SMS	Quality and SMS	CE-7 and CE-8: -Surveillance of training organizations. -Resolution of safety issues.	Apply Safety Management processes in the conduct of surveillance of training organizations.	Lessons learnt from flight data analysis to enhance training and for mitigation measures	Lessons learnt to enhance training and for mitigation measures

6.1.1-ORG-UPRT- SEIs

No.	Action	Deliverable(s) Establishment/Implementation	OPS/ORG	Responsibility
1	Transpose in specific operating regulations new SARPs on UPRT.	Amendments to PEL and OPS regulations	ORG	CAAs
2	Establish UPRT training programmes including training tasks.	UPRT training programmes including training tasks.	ORG	ATOs, AOs, IATA
3	Training of UPRT instructors and CAAs inspectors should be enhanced.	Training of UPRT instructors and CAAs inspectors	ORG	ATOs, AOs, CAAs
4	Provide on-airplane UPRT for a selected core group of instructors.	On-airplane UPRT for a selected core group of instructors	ORG	ATOs, AOs, CAAs, RSOOs
5	Upgrade current FSTDs to incorporate proper modelling of full flight envelope and instructor tools to provide feedback for pilot performance.	Refer to SEI UPRT ORG16	ORG	ATOs, AOs
6	Take into account smaller turboprop (non-swept wing) airplanes in UPRT.	To apply best practices (while waiting for ICAO to develop additional guidance material)	ORG	ATOs, AOs, CAAs, ICAO
7	Improve pilots aptitude testing and hiring processes and procedures.	Enhancement of pilots aptitude testing and hiring processes and procedures.	ORG	AOs
8	Harness assistance from airlines that have implemented UPRT, like Kenya Airways and South African Airways.	Best practices MoUs, MoCs	ORG	ICAO, ATOs, AOs, CAAs, RSOOs
9	Foster cooperation through regional organizations and regional economic communities.	-Regional arrangements -MoUs	ORG	Champion
10	Gain support from the industry and other stakeholders including insurance underwriters.	-Letters to Industry and other stakeholders for support - letters to Insurance underwriters for support	ORG	AFRAA, IATA, AOs
11	Promote champions for industry best practices.	Designation of Champions	ORG	Champion, AOs, CAAs
12	Share information on LOC-I and UPRT.	Processes and procedures for sharing of information established	ORG	Champion, All stakeholders
13	Build African capacity and expertise.	Refer to SEIs UPRT ORG 3 and 4	ORG	ATOs, AOs, CAAs, AFRAA, Champion
14	Establish a Regional UPRT training organization fitted, in particular, with adequate FSTDs.	-Letters to stakeholders -Inception	ORG	ATOs, AOs, CAAs, AFRAA, IATA, AATO
15	Establish a five years implementation plan for regulatory oversight of UPRT is essential.	five years implementation plan for regulatory oversight of UPRT	ORG	ICAO, Champion, CAAs
16	Update the established five years implementation plan for training means and provision of UPRT training	five years implementation plan for the establishment of training means and provision of training in UPRT updated	ORG	Champion, ATOs, AOs, IATA, CAAs
17	Continuous evaluation of the 5-year Plan	Periodic evaluations	ORG	Champion, CAAs
18	Evaluate the training gaps given the current curriculum for pilots and define priorities and sequencing for the training.	Training gaps and training priorities	ORG	ATOs, AOs, CAAs, IATA
19	Improve CAAs' approval systems for training organizations including simulators' approvals, training and procedures manual, quality systems and safety management systems.	Approval processes and procedures	ORG	CAAs
20	Improve approval of air operator training programmes including ensuring consistency of the applied one with air operator flight safety documents system.	Approval processes and procedures	ORG	CAAs
21	Take into account safety risks derived from flight data analysis and safety management systems for recurrent training.	UPRT training programmes including training tasks.	ORG	AOs, CAAs, IATA

5-Year LOC-I and UPRT PLAN

No	ACTION	Action by	States with EI over 60%	States with EI less than 60%
1	Amendment of regulations to reflect SARPs on UPRT	CAAs RSOOs	31 December 2016	30 June 2017
2	Establishment of requirements for training on UPRT	ATOs, AOCs, RSOOs	31 December 2017	June 2018
3	Define Instructor requirements	CAAs		
4	FSTD requirements for UPRT training	CAAs		
5	Establishment of crew qualification requirements	CAAs		
6	Establishment of CAA inspector requirements	CAAs		
7	GAP Analysis of certain State industries on what is in place: -*Define pilot bridging training* -*Define regional level needs and training requirements*	CAAs	30 June 2018	X
8	Approval of FSTDs	CAAs	30 September 2018	X
9	Core instructor training	CAAs	30 September 2018	X
10	Core inspector training	CAAs		X
11	Training of operational personnel	AOCs	30 September 2020	X

6.1.2 ORG-Add-SEIs

No.	Text	Deliverable(s) Establishment/Implementation	OPS/ORG	Responsibility
1.	Promotion of countermeasures for other safety issues and contributory factors to LOC-I accidents.	-Correspondences -Information on best practices	ORG	Champion, ATOs, AOs, CAAs
2.	Define beside the Abuja high level safety target of reducing LOC-I related accidents, subsidiary parameters in order to assess progress made in LOC-I implementation plan.	subsidiary target parameters for LOC-I	ORG	ICAO ESAF
3.	Oversee proper implementation of flight crew duty limitation and fatigue risk management systems.	-Procedures for CAAs inspectors -Processes and procedures of the AOs	ORG	AOs, CAAs
4.	Sensitize flight crew on effects of medications.	-Procedures for CAAs inspectors -Processes and procedures of the AOs	ORG	AOs, CAAs
5.	Address LOC-I issues in managing cases of unlawful interference.	-Coordination -Procedures	ORG	AOs, CAAs, ICAO
6.	Address LOC-I issues in regard to air traffic management.	-Coordination -Procedures	ORG	AOs, CAAs, ICAO
7.	Systematically report serious incidents and accidents.	Reporting processes and procedures	ORG	AOs, CAAs, AAIAs
8.	Establish and implement a data collection system in the framework of an SMS.	Data collection system in the framework of an SMS.	ORG	AOs, CAAs

6.2.1-OPS-UPRT-SEIs

No.	Action	Deliverable(s) Establishment/Implementation	OPS/ORG	Responsibility
1.	Standardize training and avoid negative training.	Standardized training	OPS	ATOs, AOs, CAAs, AATO, CASSOA
2.	Train for proficiency and avoid checking for UPRT.	-Amendments to PEL and OPS regulations (for CAAs) -Training of UPRT instructors and CAAs inspectors	OPS	ATOs, AOs, CAAs
3.	Consider that startle can only be rendered on on-airplane training.	Inclusion of startle factor by providing minimum on-airplane training	OPS	ATOs, AOs, CAAs
4.	Take into account smaller turboprop (non-swept wing) airplanes in UPRT.	To apply best practices (while waiting for ICAO to develop additional guidance material)	OPS	ATOs, AOs, CAAs, ICAO
5.	Establish adequate operational control for relevant training organizations.	-Operational control organization, means, processes and procedures for ATOs - Inspectors procedures for CAAs	OPS	ATOs, CAAs
6.	Address all type of stalls including tail stall.	UPRT training programmes including training tasks.	OPS	ATOs, AOs
7.	Training for high speed stall as a priority.	UPRT training programmes including training tasks	OPS	ATOs, AOs
8.	Strike a balance between use of automation and stick and rudder.	UPRT training programmes including training tasks	OPS	ATOs, AOs
9.	Properly address UPRT in CRM training.	Inclusion of UPRT in CRM training	OPS	AOs
10.	Evaluate the impact of training on special operations related to the AOC and make necessary enhancements to take into account UPRT.	Approval processes and procedures	OPS	CAAs
11.	Assess aircraft capabilities and limitations for on-airplane training.	ATO approval Procedures	OPS	ATOs, AOs, CAAs
12.	Avoid using multi-engine airplane for on-airplane training.	ATO approval Procedures	OPS	ATOs, AOs, CAAs
13.	Aircraft upset prevention recovery training in all full flight simulator type conversion and recurrent training programmes	ATO approval Procedures Air operator training programme approval	OPS	CAAs /ATOs, AOs
14.	More time devoted to training multi-crew pilots for the monitoring role	Air operator Training programme; approval	OPS	CAAs ATOs, AOs
15.	Promote bank angle alerting systems into all multi-engine aircraft	Training programme	OPS	ATOs, AOs
16.	Training on manual aircraft handling of approach to stall and stall recovery (including at high altitude)	Training programme	OPS	ATOs, AOs
17.	Recurrent training on flight mechanics	Training programme	OPS	ATOs, AOs
18.	Simulator fidelity	Training programme	OPS	ATOs, AOs
19.	Training and procedures to address Distractions	Training programme	OPS	CAAs /ATOs, AOs/RASG-AFI
20.	Training factoring Adverse weather	Training programme	OPS	CAAs/ATOs, AOs/RASG-AFI
21.	Training factoring Complacency	Training programme	OPS	CAAs/ATOs, AOs/RASG-AFI
22.	Procedures for adequate SOPs for effective flight management	Training programme Operations manual	OPS	CAAs/ATOs, AOs/RASG-AFI
23.	Training and procedures addressing Insufficient height above terrain for recovery	Training programme	OPS	CAAs/ATOs, AOs/RASG-AFI
24.	Training and procedures addressing Lack of awareness of or competence in procedures for recovery from unusual aircraft attitudes	Training programme	OPS	CAAs/ATOs, AOs/RASG-AFI
25.	Training and procedures addressing Inappropriate flight control inputs in response to a sudden awareness of an abnormal blank angle	Training programme	OPS	CAAs/ATOs, AOs/RASG-AFI

6.2.2-OPS-Add-SEIs

No.	Action	Deliverable(s) Establishment/Implementation	OPS/ORG	Responsibility
1.	Analyze in-flight incapacitation events and medical findings during medical assessments to identify areas of increased medical risk	-Procedures for designated medical examiners -Procedures for CAAs medical assessors -Processes and procedures of the AOs	OPS	AOs, CAAs
2.	Establish adequate operational control and flight planning for the air operators.	-Procedures for air operators certification and surveillance by CAAs -Adequate air operators organization for operational control and flight planning	OPS	AOs, CAAs
3.	Properly train flight operational officers/flight dispatchers.	-Training programmes for FOOs -Procedures for approval of training programmes for FOOs, instructors and examiners	OPS	AOs, CAAs
4.	Establish and implement procedures for the carriage of dangerous goods.	-Procedures for dangerous goods	OPS	AOs, CAAs
5.	Properly address and in a timely manner airworthiness/maintenance issues relating to critical parts/components/systems of the airplanes.	-Identification of critical parts/components/systems of the airplanes -Inclusion in the SMS	OPS	ATOs, AOs, CAAs
6.	Establish and implement routine and non-routine weather reporting procedures.	-Procedures for the approval of the operations manual	OPS	AOs, CAAs
7.	Improve ground-based communications for weather reporting by meteorological stations.	Improvement of ground-based communications for weather reporting by meteorological stations	OPS	CAAs, ANSPs

7-PERFORMANCE

➢ Safety Data

➢ Accident Prevention

➢ Feedback to/from Training

➢ Safety Indicators

➢ Effectiveness of Training

➢ Validation of the Effectiveness of the safety initiatives

7.1 SAFETY INDICATORS

➢ High level safety indicators

- Level of regulatory compliance

- Accidents/ Incidents Reports

- Mandatory Occurrences Reports

➢ Proactive safety indicators

- Voluntary Occurrence Reports

- Pilot reports

- Flight Data Analysis

7.1.1 LEVEL OF REGULATORY COMPLIANCE

Regulations

Regulations	SARPs
PEL regulations (UPRT)	Annex 1-Amendment 172
	Annex 1-Amendment 175
OPS regulations (UPRT)	Annex 6, Part1, Amendment 38
SMS regulations	Annex 6, Part 1 Annex 19
FDA Regulations	Annex 6, Part 1

Procedures

Procedures	Guidance
PEL procedures(UPRT)	Procedures for Air Navigation Services — Training (PANS-TRG, Doc 9868).
ATO approval procedures(UPRT) Simulator approval	Manual on Aeroplane Upset Prevention and Recovery Training (Doc 10011).
Air operator certification procedures(UPRT)	Revision 3 to Airplane Upset Prevention and Recovery training Aid (Online Application)
Instructors(UPRT)	Manual of Criteria for the Qualification of Flight Simulation Training Devices (Doc 9625). RASG-AFI Guidance
SMS	Safety Management Manual (SMM) (Doc 9859)
FDA (For aeroplane of a maximum certificated take-off mass in excess of 27 000 kg)	Manual on Flight Data Analysis Programmes (FDAP) (Doc 10000) Safety Management Manual (SMM) (Doc 9859)
Air Safety Reports	Safety Management Manual (SMM) (Doc 9859)

7.1.2 ACCIDENTS/INCIDENTS

➢ Gross failures to achieve predicted performance during take-off or initial climb.

➢ Fires and/or smoke in the cockpit, in the passenger compartment, in cargo compartments or engine fires, even though such fires were extinguished by the use of extinguishing agents.

➢ Events requiring the emergency use of oxygen by the flight crew.

➢ Aircraft structural failures or engine disintegrations, including uncontained turbine engine failures, not classified as an accident.

➢ Multiple malfunctions of one or more aircraft systems seriously affecting the operation of the aircraft.

➢ Flight crew incapacitation in flight

➢ Fuel quantity level or distribution situations requiring the declaration of an emergency by the pilot, such as insufficient fuel, fuel exhaustion, fuel starvation, or inability to use all usable fuel on board.

➢ System failures (including loss of power or thrust), weather phenomena, operations outside the approved flight envelope or other occurrences which caused or could have caused difficulties controlling the aircraft.

➢ Failures of more than one system in a redundancy system mandatory for flight guidance and navigation.

7.1.3 FLIGHT DATA ANALYSIS

FLIGHT DYNAMICS/AIRCRAFT HANDLING	Excessive roll attitude or roll rate Excessive pitch angle Excessive bank angle Inadequate aircraft attitude Stall protection trigger Legitimate stall warning activation Excessive speed / vertical speed /acceleration Legitimate overspeed warning Inappropriate cruise altitude Envelope protection systems Inappropriate rate of climb Excessive cabin altitude Performance of ACAS RA manoeuvres (rate of climb/descent, altitude deviation)
AIRCRAFT ENERGY	Insufficient energy at high altitude Loss of lift Loss of thrust Height loss during take-off or go-around Inadequate aircraft energy
AUTOMATION	Autopilot self-disconnect events Mismanagement of automation
AIRCRAFT MALFUNCTION	Engine failure Instrument Malfunction Structural Failure Hardware failure Flight control failure or ineffective Inconsistencies of engine parameters
AIRCRAFT SYSTEMS	Fire, smoke and fumes Pressure System Malfunction or misuse High Cabin altitude Oxygen issues De-icing system failure
AIRCRAFT PERFORMANCE	CG out of limits Special Operations Incorrect performance calculation Overweight takeoff Low go-around or rejected landing Fuel exhaustion
HUMAN FACTORS	Abnormal flight control inputs Incorrect aircraft configuration Inappropriate use of rudder in jet aircraft
WEATHER	Adverse Weather Windshear Severe turbulence Icing conditions

7.2 EFFECTIVENESS OF TRAINING

➢ **Instructor**: Requirements for competency

- • Doc 10011-Manual on Aeroplane Upset Prevention and Recovery Training, Chapter 5 (UPRT Instructors)

➢ **Simulator**: Fidelity level

- • Doc 9625-Manual of Criteria for the Qualification of Flight Simulation Training Devices, Volume I, Part III, Appendix A (on Feature and Fidelity Level Criteria); Attachment P (FSTD Qualification Guidance for Upset/ Recovery/Stall/Icing/Manoeuvres)

- • Doc 10011-Manual on Aeroplane Upset Prevention and Recovery Training, Chapter 4(FSTD fidelity requirements for UPRT)

7.2 EFFECTIVENESS OF TRAINING

➢ **Training Programme:** Skill, Knowledge, Attitude

- Doc 10011-Manual on Aeroplane Upset Prevention and Recovery Training, Chapter 2 and 3

  AUPRT Aid (Online application)
  - ✓ UPRT training elements, components, platforms and Templates

- Doc 9868-PANS Training, Chapter 3(UPRT)

- Doc 9995-Manual of Evidence-based Training, Part II-EBT Programmes, Appendix 2 (Checklists):
  - ✓ Recurrent Assessment and Training Matrix: Assessment and Training Topic, Frequency, Flight Phase for activation, Desired Outcome, Example of scenario elements, Competency map.

  - ✓ Evaluation and scenario-based training phases: Upset recovery, Automation management, CRM, Compliance with SOPs, Manual aircraft control, Monitoring (cross checking, error management, and mismanagement aircraft state), Aircraft malfunctions including operations under MEL, Surprise, Workload, Distraction, Pressure, Engine failure.

- Feedback from experience, accidents and incidents safety recommendations

8-WAY FORWARD

- Consolidate the ORG and OPS safety initiatives(SEIs)
- Collect, analyse and share data
- Identify additional threats and develop corresponding safety enhancement initiatives
- Develop further mitigation measures
- Implement safety management(SSP/SMS)
- Assess the performance of safety indicators
- Harmonize the safety indicators
- Update RASG-AFI Guidance
- Define Timelines
- Implement the safety initiatives(SEIs)
- Update and continue implementing the LOC-I and UPRT 5-year Plan
- Include references of LOC-I initiatives in State Safety Plans and the Regional Safety Plan
- Two working Groups: LOC-I-ORG and LOC-I-OPS