



# AVIATION SAFETY MAGAZINE 2019

A magazine of the Civil Aviation Authority

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Global and Regional Aviation Safety Management Requirements & Initiatives

Safety Culture Philosophy

ICAO SMS Framework Elements and their Implementation

Aviation Safety Department

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# CIVIL AVIATION AUTHORITY

## OBJECTIVE OF THE AUTHORITY.

The objective of the Authority is to promote the safe, regular, secure and efficient use and development of civil aviation inside and outside Uganda.

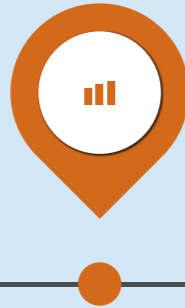
### OUR MISSION:

To maintain the highest standards of safety, security and service in civil aviation.



### OUR VISION:

The Safest, most efficient and affordable air transport Service.



### OUR CORE VALUES:

Customer Focus, Accountability, Teamwork, Efficiency, Innovation and Integrity.



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# Editorial

## Who is Responsible for Aviation Safety at your work place?

“It is as much your duty to be careful and comply with safety rules as it is to properly perform your work.” ~Safety saying, circa early 1900s

Any successful organization is characterized by clearly defined responsibilities/roles and accountabilities for every member assigned to each activity that is supposed to be undertaken to satisfactorily achieve the corporate vision, mission, strategic objectives and/or initiatives. Every staff knows their responsibilities/accountabilities, is well equipped with the necessary knowledge/skills and is held accountable for his/her actions towards or against achieving the set goals. Likewise for the successful implementation and operation of the aviation safety management system, the key players must know their responsibilities/roles as well as accountabilities for aviation safety within their workplace and have to be adequately trained for the task.

When you pause the question “**who is responsible for aviation safety at the work place?**” to any of the staff or even non staff of the organization irrespective of their position in the company, usually the answers may include; - the Manager SMS, Managing Director, head of the directorate, the head of the section/department, safety office, O’CANS, supervisor, operational staff, General manager, etc. The response seems to suggest that;-

- a. Everyone knows and believes that there is someone or office within the organization responsible for aviation safety at the work place
- b. Any or all the above mentioned can be responsible for aviation safety at the work place.
- c. Not me but someone else or not my office but some other office is responsible for aviation safety at the workplace.

The responses are in line with the traditional thinking and approach to

aviation safety management where implementation and operation of aviation safety was the responsibility of one person – safety manager/officer and/or one office – aviation safety office where it has been established.

The traditional thinking and approach to aviation safety management undermined the critical role of the entire staff of the organization in the implementation and operation of aviation safety management systems resulting into partially implemented and ineffective aviation safety management systems. Effective and successful implementation of the aviation safety management system within the organization will only be possible when **every staff member** plays their aviation safety responsibility correctly and timely. **All staff** of the CAA are **key players** in the successful implementation and operation of the aviation SMS and should therefore play their part.

The responsibility for aviation safety at the workplace within any aviation industry therefore rests upon any one who is an employee or contractor or doing oversight duties in that workplace.

Every member of staff should know their responsibility and play their part appropriately to ensure successful and effective implementation of the aviation SMS.

This edition of the annual safety magazine enhances awareness among staff through brief over view of the aviation safety management system, status of implementation, responsibilities of staff, other regional/global developments that impact aviation safety, etc.

I therefore invite each one of us, as we read this edition to identify and unreservedly take on our respective safety responsibilities and accountabilities for our own safety, safety of the industry and safety of those we serve.



**Wanzunula Rogers** - Chief Editor



**Balikuddembe Joseph Bukenya** - Sub-editor and co-ordinator



**Eva Luyiga Bamutalira** - Chief Reviewer

## MD’s Remarks



“ Safety is not an intellectual exercise to keep us in work. It is a matter of life and death. It is the sum of our contributions to safety management that determines whether the people we work with live or die – Sir Brian Appleton after Piper Alpha ”

**Dr. David M. Kakuba**  
Managing Director - CAA Uganda

The success of any system in an organization depends on the will and role of management in its implementation.

Management of CAA-Uganda has adopted a systematic approach to management of Safety in order to maintain the highest standards of safety in civil aviation and in turn promote the safest Air transport system in Africa and beyond

CAA Management has pledged commitment to the full implementation of the safety management system by defining and endorsing safety policies and SMS implementation plans for Directorate of Airports & Aviation Security (DAAS) & Directorate of Air Navigation Services (DANS).

Management is further providing resources (personnel, budget provision, support for safety activities, etc) required for the implementation of the SMS and continues to do so.

Management has established safety management functions under the DANS and DAAS in line with the ICAO SARPs contained in Annex 19 (Safety); and appointed safety managers to coordinate and oversee the effective implementation and operation of Safety Management Systems (SMS) within these two service provider directorates.

CAA Management has also taken a more participatory role to ensure effectiveness of the safety management systems within the entire organization by establishing a Corporate Safety Review Committee (CSRC) to facilitate continuous monitoring of the safety performance of the entire organization by CAA Management.

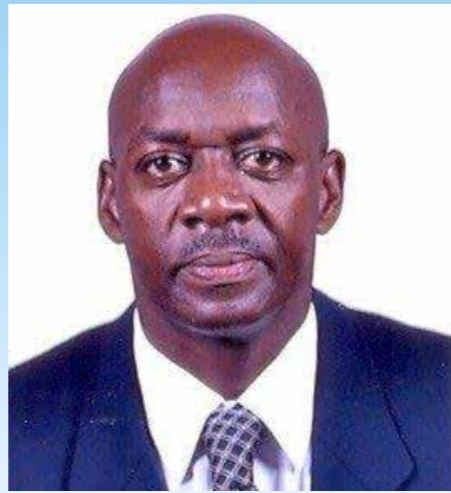
Despite all the above, effective implementation and operation of the SMS within CAA can only be realized with the involvement of the entire staff and industry stakeholders. This means everyone in the industry must know their role and be willing to play their part so as to realize the vision and mission of the organization. Annual SMS promotional workshops within Entebbe, Gulu and Soroti have been conducted for the last 3-4 years and will continue so as to raise awareness among all CAA staff.

CAA Uganda participates in regional and international/global aviation safety management initiatives to ensure harmonious progress in the implementation and operation of aviation safety.

Management commitment to the support of SMS activities has been and continues to be vital in the effective and successful implementation of the SMS in CAA- Uganda

# Corporate Safety Review Committee (CSRC)

**Mr. Richard M. Ruhesi,**  
Director Air Navigation Services



The Safety Review Committee is a very high-level committee of an organization, chaired by the accountable executive (MD) and composed of senior managers (Directors), including line managers responsible for functional areas as well as those from relevant administrative departments. The safety manager participates in the SRC in an advisory capacity only.

This committee provides the platform to achieve the objectives of resource allocation and a formal process to assess the effectiveness and efficiency of any risk mitigation strategies used to achieve the agreed safety performance targets of the organization.

The committee achieves the above by;

**a. Monitoring;** - the effectiveness of the SMS, that necessary corrective action is taken in a timely manner, safety performance against the organization's safety policy and objectives, the effectiveness of the organization's safety management processes and

the effectiveness of the safety supervision of subcontracted operations.

**b. Ensuring** that appropriate resources are allocated to achieve safety performance beyond that required by regulatory compliance.

Uganda CAA has established a safety review committee at the corporate level (Corporate Safety Review Committee - CSRC) to facilitate monitoring and review of safety performance of the entire organization by CAA Management. This is in line with ICAO SARPs Annex 19 – Safety Management and associated guidance detailed in the ICAO Doc 9859 3<sup>rd</sup> Edition – Safety Management Manual. Establishment of the Corporate Safety Review Committee has addressed the gaps which resulted from already established safety review committee at the directorate level – Directorate Safety Review Committee (DSRC) where critical members of CAA as an organization namely the accountable executive of UCAA (MD) and other functional/ administrative directorates (DF,

DHRA, Corporate) were never represented as well as having limited authority to allocate resources.

International SARPs - Annex 19 require providers of Air Navigation Services (DANS) and operators of Airports/Aerodromes (DAAS) to implement aviation Safety Management Systems (SMS). Safety Review Committees were established at the directorate level to enable each of the service provider directorates to review and monitor their safety performance as part of implementation of the SMS in line with the guidance contained in the ICAO - Safety Management Manual (Doc 9859).

The Directorate SRCs enable DAAS/DANS as service providers to monitor and review their safety performance while the Corporate SRC enables CAA Management to review and monitor the safety performance of each directorate and consequently the entire organization. The CSRC reviews and acts on aviation safety reports from DAAS, DSSER, DANS and any other CAA Directorates as appropriate.

# Global and Regional Aviation Safety Management Requirements & Initiatives

(Annex 19; the 2017 – 2019 ICAO Business Plan & Global Aviation Safety Plan)

The need for a formal and systematic approach to aviation safety management at all levels (national, regional and global) is paramount for the continuous improvement of safety of aircraft operations. The Directorate of Airports & Aviation Security (DAAS) and the Directorate of Air Navigation Services (DANS), the service provider directorates within the Uganda CAA are required to establish and operate Safety Management Systems (SMS) as per International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs) contained in Annex 19 to the Chicago Convention – Safety Management.

The directorates are further required to establish the SMS in accordance with the ICAO SMS framework of elements and which is commensurate with the size of the service provider and the complexity of the aviation products or services. The SARPs in the Annexes are intended to assist states in managing aviation safety risks. The Annex supports the continued evolution of a proactive strategy to improve safety performance considering the increasing complexity of the global air transport system and interrelated aviation activities requiring the safe operation of aircraft.

ICAO's strategic objective on safety contained in the ICAO Business Plan 2017 – 2019 focuses primarily on the State's regulatory oversight capabilities to enhance global civil aviation safety for the triennium.

The 2017 – 2019 Global Aviation Safety Plan (GASP) exists to promote coordination and collaboration among

international, regional and national initiatives aimed at delivering a harmonized, safe and efficient international civil aviation system. It provides a common frame of reference for all stakeholders and facilitates an integrated approach to safety initiatives, based on the global aviation safety roadmap, which would provide a global framework for the coordination of safety policies and initiatives.

The plan contains objectives for States to achieve through the implementation of an effective safety oversight system, a State safety programme (SSP) and safety capabilities necessary to support future aviation systems and a global aviation safety roadmap developed to support an integrated approach to implementation.

The Industry should progress in SMS implementation and work in a complementary manner with ICAO, the regions and individual States on safety information exchange, safety monitoring and auditing programmes.

International organizations should work with their members to help them develop their safety performance indicators (SPIs), and provide guidance material and training to assist with addressing global safety priorities and SMS implementation.

In order to ensure congruence between SSP and SMS indicators, States need to actively engage service providers in the development of SMS SPIs

## Focus areas to improve safety

The universal safety oversight audit programme (USOAP) audits have identified that States'

inability to effectively oversee aviation operations remains a global safety concern. This GASP provides a detailed strategy to achieve improvements.

In addition to the GASP objectives, ICAO has identified high-risk accident categories. These categories were initially determined based on an analysis of accident data, for scheduled commercial air transport operations, covering the 2006–2011 time period. Feedback from the regional aviation safety groups (RASGs) indicates that these priorities still applied during the development of the 2017–2019 edition of the GASP

**Runway safety events** were identified as one of the main high-risk accident categories. Runway safety-related events include the following ICAO accident occurrence categories: abnormal runway contact, bird strikes, ground collision, runway excursion, runway incursion, loss of control on the ground, collision with obstacle(s) and undershoot/overshoot.

- The data analysis indicated that over half of the accidents worldwide involved runway safety events.
- Analysis by ICAO region for the same timeframe (2006 – 2011) indicated that:-
  - a. Runway safety was the main accident category for all the regions.
  - b. In Eastern and Southern Africa (ESAF), 80.95 per cent of all accidents involved runway safety events, over a third of which were fatal. No CFIT or LOC-I accidents were recorded in the region during the timeframe.

By Mr. Fred Lutalo, Manager SMS Airports

# Global Aviation Safety Road map.

The global aviation safety roadmap is an action plan developed to assist the aviation community in achieving the objectives presented in the GASP and it **adopts a proactive, rather than reactive approach to managing safety.**

The roadmap provides a structured, common frame of reference for all relevant stakeholders. Its goal is to ensure that safety initiatives deliver the intended benefits associated with the GASP objectives through enhanced coordination, thus

reducing inconsistencies and duplication of effort. Completion of the safety initiatives and actions in the roadmap will also enable the aviation community to maintain a focus on addressing the global safety priorities described in the GASP

The Roadmap provides a set of safety initiatives, prioritized actions and associated timelines for each safety performance enabler found within the GASP framework. Each safety initiative is supported by a

set of actions. The roadmap includes specific initiatives targeted to the different streams of stakeholders (States, regions and industry) at different levels of maturity. The roadmap contains three distinct phases, in line with the GASP objectives:

- Phase I: effective safety oversight;
- Phase II: State safety programme (SSP) implementation; and
- Phase III: predictive risk management

## GASP Timelines

Effective safety oversight	SSP implementation	Predictive risk management
RASGs and other fora: mechanics for sharing of safety information	RASGs: mature regional monitoring and safety management programmes	All States: Implement advanced safety oversight systems, including predictive risk management
States with EI > 60% SSP implementation	All States: SSP implementation	
All States: achieve 60% EI of CEs		
2017 (near term)	2022 (mid term)	2028 (long term)

In order to drive an already low accident rate even lower, it requires an action plan of global dimension that clearly identifies the roles played by the regulatory and industry elements, **while emphasizing their complementary nature** a step beyond the traditional government/industry model, with its adversarial role-playing of regulator versus the regulated. The purpose is to achieve a partnership that will result in a reduction of the global accident risk in commercial aviation. The Roadmap will coordinate and guide safety policies and initiatives globally, thus reducing the accident risk for commercial aviation.

The roadmap further aims to assist with the implementation of harmonized, consistent and coherent safety oversight regulations and processes, which properly reflect the global nature of modern air transportation.

**By Mr. Fred Lutalo, Manager SMS Airports**



## The Abuja Safety Targets - Revised deadline –

### By 2022

**By Mr. Fred Lutalo, Manager SMS Airports**

The compelling need to continuously improve aviation safety in Africa and the need to urgently find immediate and sustainable resolution of deficiencies in safety oversight, the African Ministers responsible for civil aviation at the Ministerial Conference on Aviation Safety in Africa, from 16 – 20 July, 2012 developed a declaration referred to as the “ABUJA DECLARATION ON AVIATION SAFETY IN AFRICA”

The declaration detailed high level commitments by ministers to provide a common frame of reference on aviation initiative and aviation Safety Targets for implementation within the AFI region. These realistic, achievable and quantifiably measurable safety milestones initially adopted by the Ministerial Conference have over time been met with new challenges emerging in Safety in the areas of the provision of Air Navigation Services (ANS) in Africa necessitating the need to revise the Abuja Safety Targets.

Consequently, the African Union Commission Specialized Technical Committee (STC) meeting on Infrastructure, Transport, Tourism and Energy, held in Lomé, Togo from 13 to 17 March 2017, agreed on the necessity of the revision and the targets were reviewed in December 2017 to ensure relevance and effectiveness. African member States are expected to comply with all the Abuja Safety Targets and AFCAC was tasked to play the role of monitoring and evaluation to ensure compliance.

Adopted in July 2012	Revised in March 2017
<p>1 Progressively reduce the African accident rate to be in line with the global average by the end of 2015.</p> <ul style="list-style-type: none"> <li>Reduce runway related accidents and serious incidents by 50% by the end of 2015.</li> <li>Reduce controlled flight into terrain (CFIT) related accidents and serious incidents by 50% by the end of Dec 2015.</li> <li>Reduce Loss of Control In-flight (LOC-I) related accidents and serious incidents by 50% by the end of Dec 2015</li> </ul>	<p>Progressively reduce the African accident rate from 8.6 to 2.5 per million departures by the end of 2022, with focus on:</p> <ul style="list-style-type: none"> <li>Runway related accidents and serious incidents (Runway Excursion, RE).</li> <li>Controlled flight into terrain (CFIT) related accidents and serious incidents.</li> <li>Loss of Control In-flight (LOC-I) related accidents and serious incidents.</li> <li>Achieve and maintain zero fatalities in aircraft accidents by 2030.</li> </ul>
<p>2 Establish and strengthen autonomous CAAs with independent regulatory oversight, sustainable sources of funding and resources to carry out effective safety oversight and regulation of the aviation industry or delegate their functions to RSOOs or other African States by the end of Dec 2013</p>	<p>All States establish and strengthen autonomous CAAs with independent regulatory oversight, sustainable sources of funding and resources to carry out effective safety oversight and regulation of the aviation industry by 2022.</p> <ul style="list-style-type: none"> <li>States effectively exercise the safety oversight functions with a positive safety margin of at least 10% in all areas by 2022.</li> <li>States to delegate certain safety oversight functions to RSOOs or other States, by the end of 2022 in areas with safety margins below zero, and as appropriate.</li> </ul>
<p>3 As a matter of urgency, States resolve ALL identified Significant Safety Concerns created by a State in allowing the holder of an authorization or approval, to exercise the privileges attached to it without meeting the minimum requirements of the State and ICAO.</p> <ul style="list-style-type: none"> <li>Existing by July 2013;</li> <li>Any newly identified within 12 months from identification.</li> </ul>	<p>States resolve:</p> <ul style="list-style-type: none"> <li>Existing SSCs by December 2017;</li> <li>Newly identified SSCs within 6 months from the date of its official publication by ICAO</li> </ul>

Adopted in July 2012	Revised in March 2017
4 States abide by the timelines and provide resources for implementation of ICAO/State Plans of Action by July 2013.	States abide by the timelines and provide resources for implementation of ICAO/State Plans of Action <ul style="list-style-type: none"> <li>All States to have accepted ICAO Plans of Action by 2019; and</li> <li>Abide by the timelines and provide resources for their implementation by 2022</li> </ul>
5 Progressively increase the Effective Implementation (EI) score of ICAO's USOAP results to no less than 60% <ul style="list-style-type: none"> <li>35% or 19 States of all African States by the end of 2013,</li> <li>70% or 38 States of all African States by the end of 2015; and</li> <li>100% or 54 of all African States by the end of 2017.</li> </ul>	States progressively increase the Effective Implementation (EI) percentage under the ICAO USOAP such that States with: <ul style="list-style-type: none"> <li>EI &lt; 60% attain 60% by 2022;</li> <li>60% ≤ EI ≤ 70% attain 80% by 2022;</li> <li>70% &lt; EI attain 95% by 2028</li> </ul>
6 Implement State Safety Programmes (SSP) and ensure that all Service Providers implement a Safety Management System (SMS) by the end of 2015.	For the purposes of SSP/SMS Implementation, all States: <ul style="list-style-type: none"> <li>to have a Sustainable SSP established, addressing all pre-requisites by end of 2022;</li> <li>to have an Effective SSP with appropriate maturity level established by end of 2025;</li> <li>to contribute information on safety risks, including SSP SPIs, to the RASG-AFI by end of 2022;</li> <li>with a safety margin of at least 10%, and an Effective SSP, to actively engage in RASG-AFI safety risk management activities (analysis of safety risks, design and implementation of risk mitigation actions) by end of 2022.</li> </ul>
7 Certify all International Aerodromes by the end of 2015.	All International Aerodromes to be certified by end of 2022. <ul style="list-style-type: none"> <li>At least one international aerodrome in every State to be certified by end of 2020;</li> <li>All airport operators to participate in the ICAO recognized industry assessment programme for airports (APEX) by end of 2020.</li> <li>At least one international aerodrome in every State to establish a Runway Safety Team (RST) by end of 2020.</li> </ul>
8 Require all African airlines to obtain an IATA Operational Safety Audit (IOSA) certification by the end of 2015.	Require all African airlines to obtain an IATA Operational Safety Audit (IOSA) certification by 2020. <ul style="list-style-type: none"> <li>All States to establish an appropriate framework for recognition of IATA operational safety audit (IOSA) and IATA Standard Safety Assessment (ISSA) as effective safety mechanisms;</li> <li>All African airlines to obtain IOSA or ISSA certification, as appropriate, by the end of 2020.</li> </ul>



“African member States are expected to comply with all the Abuja Safety Targets and AFCAC was tasked to play the role of monitoring and evaluation to ensure compliance.”

## ICAO SMS FRAMEWORK.

The ANS directorate has established a Safety Management System (SMS) in accordance with the ICAO framework for SMS implementation. The framework represents the minimum requirements for SMS implementation and it comprises of four (4) components and twelve (12) elements as shown in the table below.

**Table 1:** Components and elements of the SMS implementation framework

No.	Component	No.	Element(s)
1	Safety policy and objectives	1.1	Management commitment & responsibility
		1.2	Safety accountabilities
		1.3	Appointment of key safety personnel
		1.4	Coordination of emergency response planning
		1.5	SMS documentation
2	Safety risk management	2.1	Hazard identification
		2.2	Safety risk assessment and mitigation
3	Safety assurance	3.1	Safety performance monitoring and measurement
		3.2	The management of change
		3.3	Continuous improvement of the SMS
4	Safety promotion	4.1	Training and education
		4.2	Safety communication

## ICAO PHASED IMPLEMENTATION OF SMS

In order to provide a manageable series of steps to follow in implementing an SMS and ensure effective management of the workload associated with SMS implementation, the ANS directorate adopted the ICAO four (4) phased approach of SMS implementation.

It comprises of four implementation phases where each phase is based upon the introduction of specific SMS elements, with succeeding elements depending upon successful implementation of preceding elements.

The table below details the phases of SMS implementation and the status of their implementation in DANS.

**Table 1:** ICAO phased implementation status in DANS

Phase	SMS element	Description of element	Status of implementation	
One	1.1 (i)	a) Identify the SMS accountable executive	✓	
		b) Establish an SMS implementation team	✓	
		c) Define the scope of the SMS	✓	
		d) Perform an SMS gap analysis	✓	
	1.5 (i)	a) Develop SMS implementation plan.	✓	
	1.3	a) Establish a key person/office responsible for the administration and maintenance of the SMS.	✓	
Two	4.1 (i)	a) Establish an SMS training programme for personnel, with priority for SMS implementation team.	✓	
		4.2 (i)	a) Initiate SMS/Safety communication channels	✓
	1.1 (ii)	a) Establish the safety policy and objectives	✓	
		1.2	a) Define Safety management responsibilities	✓
			b) Establish an SMS/Safety coordination/mechanism committee	✓
		c) Establish departmental/divisional SAGs where applicable.	✓	
	1.4	a) Establish an Emergency response plan.	✓	
	1.5 (ii)	a) Initiate progressive development of an SMS document/manual and other supporting documentation.	✓	
	Three	2.1 (i)	a) Establish a voluntary hazard reporting procedure	✓
		2.2	a) Establish safety risk management procedures	✓
3.1 (i)		a) Establish occurrence reporting and investigation procedures	✓	

		b) Establish a safety data collection and processing system for high consequence outcomes.	✓
		c) Develop high consequence SPIs and associated targets/alert settings.	On going
	3.2	a) Establish a management of change procedure that includes safety risk assessment	✓
	3.3 (i)	a) Establish an internal quality audit programme	N/A
		b) Establish an external quality audit programme.	✓
Four	1.1 (iii)	a) Enhance the existing disciplinary procedure/policy with due consideration of unintentional errors or mistakes from deliberate or gross violations.	pending
	2.1 (ii)	a) Integrate hazards identified from occurrence investigation reports with voluntary hazard reporting system.	✓
		b) Integrate hazard and risk management procedures with the subcontractor's or customer's SMS where applicable	On-going
	3.1 (ii)	a) Enhance safety data collection and processing system to include lower consequence events.	✓
		b) Develop lower consequence SPIs and associated targets and alert settings	✓
	3.3 (ii)	a) Establish SMS audit programmes or integrate them into existing internal and external audit programmes	✓
		b) Establish other operational SMS review/survey programmes where appropriate.	✓
	4.1 (ii)	a) Ensure that SMS training programme for all relevant personnel has been completed	✓
	b) Promote safety information sharing and exchange internally and externally.	✓	

SMS Element 1.5: SMS documentation exists in all phases 1 to 4; SMS Elements 4.1: SMS training and education; & 4.2: SMS Communication Starts in phase 1 and thereafter.

Actual implementation period is dependent on scope of the actions required for each element and the size/complexity of the organization.



# ICAO SMS Framework Elements and their Implementation

## Element 1.1. Management Commitment & Responsibility

**Management Commitment implies the direct participation by the highest level management (top management) in all specific and critically important aspects such as safety, quality, environment, security, etc. or programmes of an organization. It is important that the responsibility for leadership and for creating the environment of continuous improvement belongs to all levels of management and members, but particularly to the highest.**

To be defined as having a **management team committed to safety**, all members of the management team should be unified in their way of thinking about safety and incorporate it into the decisions that are made on a daily basis. Management should learn all they can about any safety initiative and ask questions so they can effectively participate/contribute to safety in the organization.

Management commitment is the **single most important determinant of** aviation safety and thus management commitment to establishing a thriving and pervasive safety culture is key to determining whether the organisation achieves its corporate objective and strategic initiative of safety. Senior management is responsible for creating a working environment that optimizes human performance and encourages personnel to actively engage in and contribute to the organization's safety management processes;

**Management ought to embrace the fact that safety comes at a price** despite the organisation's limited resources to devote to safety, and must deal continually with the conflicting goals of safety versus productivity, efficiency, or customer service objectives, which ultimately determine profitability.

A stated commitment to safety is necessary but not sufficient to enable safety improvements. The

commitment must be supported by appropriate resourcing - of personnel, training and expertise, technology and equipment, policies and systems that promote aviation safety.

Part of management commitment to safety could be demonstrated by the extent to which the resources for SMS implementation and maintenance are immune from an organisation's financial situation. i.e the commitment to safety should be consistent and visible regardless of any financial pressures facing the organisation, whether internally or externally E.g

- Safety-related training should not be seen as dispensable and so cut or postponed?
- Are SARPs and other safety requirements compromised, ignored, not prioritized, and deferred more often?
- Do management priorities, messages and most importantly their actions change from a focus on safety to other organizational goals?
- E.t.c

Responses/answers to the following six (6) questions enable management demonstrate and assess its level of commitment to aviation safety management within the organization

# 1 Is there a safety policy in place and is it signed by the accountable executive?

The safety policies of the Directorate of Airports and Aviation security (DAAS) and Directorate of Air Navigation Services (DANS), the two service provider directorates of CAA signed by the Managing Director (the accountable executive) are detailed statements of the organization's commitment to aviation safety.

# 2 Does the safety policy reflect senior management's commitment regarding safety management?

Management has committed within safety policy statements to commit all necessary resources to enable implementation of the safety policy, and to full implementation of all applicable safety standards, regulations, proven best practices and programmes aimed at enhancing safety so as to achieve the highest safety standards.

# 3 Is the safety policy relevant to aviation safety?

## Is the safety policy appropriate to the size, nature and complexity of the organization?

The established safety policy statements explicitly focus on implementation of all applicable aviation safety standards, regulations, and proven best practices/ programme.

# 4 Is the safety policy communicated with visible endorsement throughout the organization?

Is management's active support of the safety policy visible to the rest of the organization? [communication, alignment of activities with safety policy, etc]

The established safety policies are published in the safety manuals, soft copies shared on staff emails, presented in safety promotional workshops and displayed in public places accessible by all staff.

# 5 Is the safety policy periodically reviewed by senior management to ensure it remains relevant and appropriate to the organization?

The established safety policy statements have undergone periodic reviews every after two years in line with the organization's QMS procedure on documents control with the most recent done completed in October/2017.

# 6 Has the organization availed the necessary resources to implement the safety policy?

Uganda Civil Aviation Authority has appointed safety managers to head the safety management departments (one in DAAS and the other in DANS), appointed some principle officers to work with the safety managers, established safety committees and provided budget for SMS implementation and maintenance.

# 7 Does senior management regularly monitor and assess the organization's safety performance against its safety policy and safety objectives?

Uganda Civil Aviation Authority established a Corporate Safety Review Committee (CSRC) in 2015 to facilitate regular monitoring and assessment of the organization's safety performance against the established safety policy and safety objectives by CAA management.

**NB:** Management commitment is asserted through the establishment and implementation of the safety policy and safety objectives.

**“ Part of management commitment to safety could be demonstrated by the extent to which the resources for SMS implementation and maintenance are immune from an organisation's financial situation. ”**

## Safety Policy of ANS

The Safety Policy of Air Navigation Services (ANS) as defined by top management is outlined as follows:

- i) The Managing Director of CAA and Management are fully committed to issues regarding safety in the course of providing ANS.
- ii) CAA Management shall commit all necessary resources to enable implementation of this safety policy.
- iii) CAA Management is committed to the full implementation of all applicable safety Standards, Regulations, proven best practices and programs aimed at enhancing safety so as to achieve the highest safety
- iv) The Director ANS and Managers shall promote mandatory, voluntary and confidential reporting programmes among DANS personnel in all operations.
- v) The Director ANS and Managers shall ensure that the safety policy of ANS is understood, implemented and maintained at all levels in the Directorate.
- vi) In promotion of safety, disciplinary action shall not apply to outcomes of safety investigations resulting from human error unless such findings indicate beyond reasonable doubt, gross negligence or a deliberate or willful disregard of the regulations or procedures.
- vii) To attain safety satisfaction, the quality policy and other policies complement this safety policy.
- viii) In order to realise the objectives of this policy, all staff at their respective levels shall participate in SMS activities.

Signed  .....  
**Director Air Navigation Services**

Date 6/10/2017 .....

Endorsed  .....  
**Managing Director**

Date 6/10/2017 .....



## Safety Objectives

### AIR NAVIGATION SERVICES SAFETY OBJECTIVES

The Safety objectives of Air Navigation Services as set by the Directorate's Management and outlined in the SMS Implementation plan are:

1. To implement and maintain a safety management system that is in line with ICAO SMS framework and meets applicable ICAO/ regulatory safety requirements.
2. To enhance safety culture, responsibility and satisfaction among staff through the provision of safety training, effective safety communication and staff involvement in safety activities.
3. To improve safety in operations within the directorate of ANS
4. To facilitate the continuous identification and effective mitigation of hazards.
5. To ensure timely effective implementation of safety recommendations and Corrective Action Plans (CAPS).

.....  
 Manager SMS (for ANS safety office)

## Safety Culture Philosophy

Charles Dickens once said that, "...there is nothing as strong or safe in an emergency of life as the simple truth".

I implore every reader of this article therefore to endeavor always to say the simple truth to save them the labor of having to always invent the next story. This commendable behavior results in a win-win situation in a safety related incident at workplace.

Safety Management System (SMS) is about a culture of justness, commitment, awareness, adaptability, information and behavior. This is the famous **Safety culture**.

Safety Culture is the set of enduring values and attitudes regarding safety, shared at every level of an organization. Safety Culture refers to the depth of knowledge and awareness every individual in the organization has of risks and unknown hazards induced by its different activities. This continuously encourages responsible behavior which promotes

Safety Management System (SMS) is about a culture of justness, commitment, awareness, adaptability, information and behavior. This is the famous **Safety culture**.

and preserves safety; with a will, ability and conviction to communicate and adapt themselves when facing safety challenges.

In the aviation field, safety culture and its promotion is very paramount (as it may be elsewhere).

The various types of aviation organizations (Airlines, CAA's, etc.); each have their own specific organizational structure, processes and operational environment. These domain-specific circumstances necessitate a domain-specific approach to Safety Culture. Owing to this, there is provision of guidance on how the characteristics may be assessed through the use of domain-specific questions.

This approach allows for a domain-specific assessment and management of Safety Culture based on a framework that is common to all organizations bearing a responsibility for aviation safety.

By adopting the components of Safety Culture, a common mindscape of Safety Culture is established. Thus enabling different organizations to easily communicate learn from each other and work on safety culture together.

**Balikuddembe Joseph Bukenya**



...there is nothing as strong or safe in an emergency of life as the simple truth".  
**Charles Dickens**

# Safety Accountability. A practice.

Often times, the terms accountability and responsibility are used interchangeably. This is misleading especially when it comes to execution of either of them. In the context of safety management; **Safety responsibility** is the obligation to carry forward an assigned safety related task to its successful conclusion. With responsibility goes authority to direct and take the necessary action to ensure success. We undertake certain functions due to the nature of

your job/position and there are systems and regulations – supporting means – that specify how, what, when and even sometimes why we should do the job. **Safety accountability** on the other hand is the obligation to demonstrate the task achievement and takes responsibility for the safety performance in accordance with agreed expectations. Accountability is the obligation to answer for an action at a personal level and therefore **cannot be** delegated to any other

person. In this respect, statements like "This is not my responsibility", "I thought somebody else was supposed to do this" signal lack of accountability which more often than not have critical consequences.

A successful safety accountability system; Includes all employees, clearly identifies the safety related work to be conducted, establishes appropriate, attainable and proactive safety goals at all levels of the organization, and reviewed at appropriate interval.

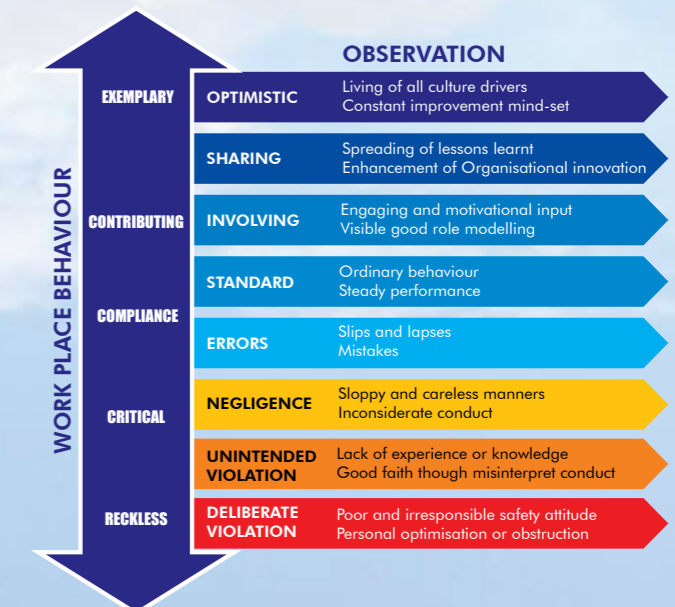
No.	Safety Responsibility	Safety Accountability
	I perform my safety role as defined in the job description	I do more than what my job description states when I identify a need
	My safety performance is evaluated basing on my job description	My safety performance is evaluated basing on my personal conduct and safety Qualifications I possess
	I don't involve myself in issues that exceed my job description	I involve myself in issues that exceed my job description and contribute new ideas
	I work with safety according to requirements	Safety is constantly on my mind

### Key differences in practical terms between safety accountability and safety responsibility.

The **Green-Jakobsen Accountability Matrix** can be used by leaders and organizations to recognize what behaviour should be developed or rewarded and what behaviour are **critical**, increase risk and should be managed.

Determining employee accountability demands an evaluation of the following 3 key areas – **Impact, Frequency** and **Personal Conduct**. It is crucial to identify critical evaluation points representing the safety behavior patterns that you see or want to see among your employees.

The matrix defines workplace behaviour ranging from **exemplariness** to **criticality**. If you work in "**compliance** mode", you generally do not improve or step up – however, the potential to cause damage is minor. It is the responsibility of the managers to observe workplace behaviour and log the observed events or behaviours. Consequently, the manager must make the judgement of the observations using the full matrix as a guideline to deal with behaviour. The matrix ensures fair and transparent management of safety performance. It also gives leaders good guidance on what actions to take to develop employees' safety performance and it gives employees a clear guidance on what is



expected of them. In other words the Accountability Matrix provides a framework for the managers to: recognize exemplary behaviour, develop compliance behaviour and deal with critical behavior.

These elements when managed properly should result in an improved safety culture which is a key performance metric for safety management.

Adopted from [www.green-jakobsen.com](http://www.green-jakobsen.com)

## Element 1.2 Safety Accountabilities

Aviation safety is the responsibility of all staff/personnel within the aviation industry and the safety responsibilities/accountabilities of each staff are commensurate with the level of their involvement in the implementation and maintenance of the SMS of the organization.

Accountability at work is critical to the success of an organization. Every employee of CAA, irrespective of his/her level is equally responsible for aiding success in achieving the safest air transport system in Africa and beyond through maintaining the highest standards of safety in Civil Aviation. In order to achieve the organization's strategic objective of safety in both the long and short term, it is important that all people within the company work

together and share accountability. Employees, who work together to achieve the stated organization's safety objectives help their organization to become more accountable to aviation safety and in turn make the industry more safe, productive and efficient.

Traditionally, for most organizations the safety office was entirely responsible for aviation safety within the organization. The safety manager/officer was in charge of identifying the safety issues, developing solutions, implementation of the solutions, and monitoring the effectiveness of the solutions placing ownership of the safety process entirely in the safety office, thereby removing executives, line managers and operational staff from the safety decision-making process. This created the perception that safety management/issues were not the responsibility of operational staff, line managers and top management, and safety problems were considered the responsibility of the safety office/manager. This approach neglected the valuable input that the management and other staff could bring to the organizational safety decision-making process.

Effective and meaningful safety accountability by all staff/employees of any organization begins with systematic determination and documentation of the safety responsibilities/accountabilities of all staff/employees as individuals as well as teams/groups and clear communication of these accountabilities/responsibilities to them.

CAA Uganda has identified an accountable executive – the Managing Director thus placing the responsibility for the overall safety performance at highest level of management to ensure that the SMS is effective.

The Safety | Review Committees (SRC) and the Safety Action Groups (SAG) committees have been established where some CAA staff/employees who are members of these committees assume team/group safety responsibilities/accountabilities.

The SRC provides a formal process for assessing the effectiveness and efficiency of aviation safety risk mitigation strategies, a platform for achieving the objectives of resource allocation and for discussing safety related issues from different perspectives. The SRC monitors the effectiveness of the SMS that any necessary corrective action is taken in a timely manner, safety performance against the organization's safety policy and objectives, effectiveness of the safety supervision of subcontracted operations and ensures that appropriate resources are allocated for the effective implementation and operation of the SMS.

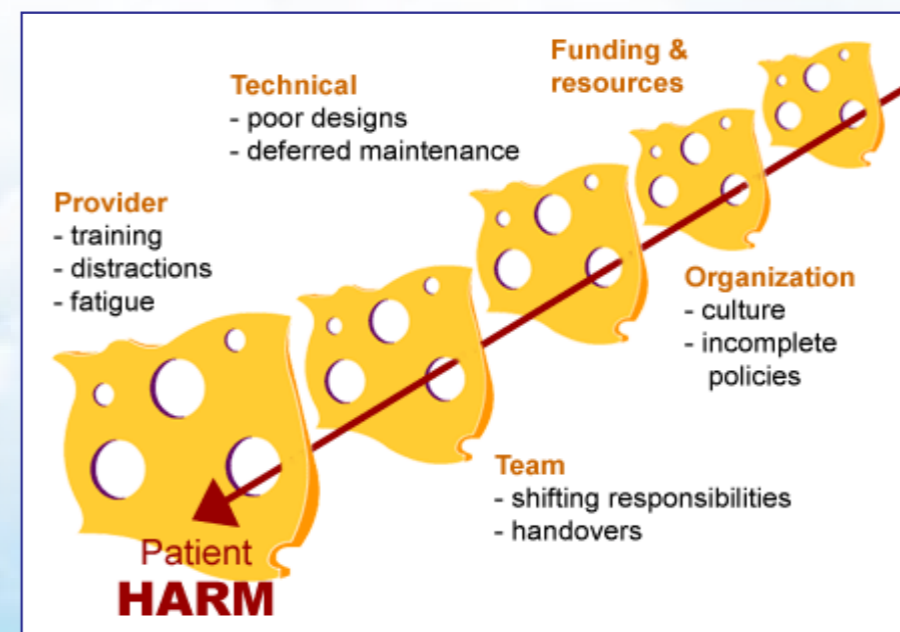
Safety review committees have been established at both the directorate level (DANS & DAAS) and at the corporate level to facilitate monitoring of the safety performance by both the Directorate management and the CAA management. Reports from the Directorate safety review committees (DSRC) are presented to the corporate safety review committee (CSRC). The CSRC is chaired by the MD, all Directors are members, the safety managers, and other managers are co-opted when needed.

The DSRC is chaired by the respective director and attended by the all managers in that directorate plus the principles. Safety reports from the CSRC are presented to CAA Board committee responsible for technical, security and safety matters.

The SAG oversees operational safety performance within the departments of the directorate and ensures that safety risk management is carried out effectively, coordinates the resolution of mitigation strategies, ensures appropriate safety data collection and feed back to all staff, coordinates safety assessment of operational changes and new technologies, coordinates implementation of CAPS, reviews effectiveness of safety recommendations and oversees safety promotional activities.

Every staff/employee of CAA and the Board of directors has a critical role in aviation safety as depicted in the diagram.

Every one working within the aviation industry and any aviation stakeholder is responsible for safety and at the bare minimum should always:-



- Report actual and/or potential hazards in area of operation.
- Report any difficulties/challenges experienced in complying/executing/following established procedures.
- Report deficiencies in and/or deviations from operational procedures.
- Report all aircraft related occurrences
- Report all partial/total unserviceabilities of any facility/equipment used to provide service(s) to aircraft.
- Participate in aviation safety activities whenever called upon.

## Element 1.3. Appointment of Key Safety Personnel

Specific aviation service providers namely approved training organizations that are exposed to safety risks related to aircraft operations namely;- operators of aeroplanes or helicopters authorized to conduct international commercial air transport, approved maintenance organizations providing services to operators of aeroplanes or helicopters engaged in international commercial air transport, organizations responsible for the type design or manufacture of aircraft, engines or propellers, air traffic services (ATS) providers and operators of certified aerodromes are required to appoint a safety manager

who is responsible for the implementation and maintenance of the SMS. Appointment of a competent person to assume the role of safety manager is essential to the effective implementation and operation of the SMS.

CAA has appointed a safety manager for the Directorate of Airports and Aviation Security (DAAS) and a safety manager for the Directorate of Air Navigation Services (DANS) in line with the ICAO SARPs. CAA further provided for appointment of principle safety officers to support the safety manager in line with ICAO guidance contained in the Safety Management Manual

ICAO Doc 9859 3rd edition regarding appointment of key safety personnel.

In order to ensure effective execution of their duties, the safety manager should have direct access or reporting to the accountable executive concerning the implementation and operation of the SMS, hold no other responsibilities that may conflict or impair her/his role as safety manager and be at a senior management level. The safety manager is also required to provide guidance on safety matters to the accountable executive and line managers.

“CAA has appointed a safety manager for the Directorate of Airports and Aviation Security (DAAS) and a safety manager for the Directorate of Air Navigation Services (DANS) in line with the ICAO SARPs.”

image: papillion.com

## Element 1.4. Coordination of Emergency Response Planning

Air Navigation Service Providers (ANSPs) and Airport Operators are required to develop emergency/contingency procedures for emergencies, system failures or other abnormal/unexpected situations to prevent/minimize disruption in the services they offer. Emergencies, system failures or abnormal/unexpected situations compromise the existing safety levels and reacting to them without prior preparation significantly increases the associated risks.

Emergency/contingency procedures are developed to provide guidance to staff on how to handle total/partial losses of major air traffic systems (Communication, Navigation, Surveillance, etc), losses or failures in support facilities (power, air conditioning, etc), aircraft emergencies (hijack, RCF, emergency descent, etc), disruption of air traffic services ( any occurrence that may require evacuation of the operations/control rooms, emergency dispersal of traffic, closure of adjacent air traffic centre, etc), closure or limited availability of national airspace as a result of adverse weather conditions (volcanic activity, typhoon, earthquakes, etc) or insecurity due to civil war, etc

The Directorate of Airports and Aviation Security (DAAS) and Directorate of Air Navigation Services (DANS) developed and documented the required emergency/contingency procedures providing a clear set of actions understood by all relevant personnel in the event of an emergency, provides regular training of all staff on the procedures and periodically practices them to assure that capabilities match the plan and to reveal any gaps or deficiencies for continued improvement.

As part of its Safety Risk Management (SRM) process, an organization develops an Emergency Response Plan (ERP) to address the aviation related emergencies, abnormal/unexpected situations and

system failures. The ERP documents actions to be taken by all responsible personnel during aviation-related emergencies. The overall objective of the ERP is the safe continuation of operations from normal to emergency operations and the return to normal operations as soon as possible. The ERP facilitates the establishment of an organizational structure and procedures for responding to emergencies, abnormal/unexpected situations and system failures and it includes all possible emergencies, their consequences, required actions, written procedures, available resources, and detailed lists of personnel including their home telephone numbers, their duties / responsibilities, etc

Developing an ERP begins with conducting a risk assessment to identify and list all likely emergencies. This provides you with an understanding of what could happen to enable you determine resource requirements, develop plans and procedures to prepare your organization.

The ERP is intended to ensure proactive identification of all possible emergency events/scenarios & their corresponding mitigation actions, documentation of emergency procedures and processes, assignment of emergency responsibilities, delegation of emergency authority, coordination of emergency efforts internally and with external parties and the safe continuation of essential operations while the crisis is being managed.

The organisation's ERP is properly coordinated with the emergency response plans of those organizations it must interface with during the provision of its services because most emergencies will require coordinated action between different organizations, possibly with other service providers and with other external organizations such as non-aviation related emergency services.

### Emergency response planning enables the organization to achieve the following:-

- Identification and analysis of risks associated with emergencies, system failures, abnormal and unexpected situations
- Development and documentation of procedures to deal with the emergencies, system failures, abnormal and unexpected situations.
- Establishment of redundant capabilities and back-up systems for all critical systems.
- Coordination of organization's ERP with those of interfacing organizations.
- Publication of the ERP.
- Establishment and adherence to the schedule for rehearsal of the ERP and procedures.
- Establishment and adherence to schedule for regular review of the organization's key risks.

## Element 1.5. SMS Documentation

SMS documentation is a set of documents arising from the organization's safety policy statement commitment to the full implementation of all applicable safety SARPs and regulations. It's a means of documenting the organization's safety management system (SMS) and communicating it internally to all employees and externally to all concerned stakeholders. Proper SMS documentation facilitates the correct execution of safety procedures/processes, provides documented safety assurance of the effective and efficient operation of the SMS in accordance expectations.

SMS documentation includes the SMS manual, SMS

implementation plan, Gap analysis, safety records, safety publications, etc.

All safety management activities are formally documented and visible providing the authoritative basis of the SMS and clarification of the relationship between safety management and other functions of the organization i.e. the way in which safety management activities integrate with those other functions and how these activities link to the organization's safety policy.

The most important piece of documentation for CAA's safety management system is the SMS manual which is also the major means for communicating the organization's approach to safety to all employees and external stakeholders. The SMS manuals for DAAS and DANS are living documents which must be regularly reviewed to reflect changes in the organization, industry, applicable regulations and SARPs, etc. It describes the organization's SMS policies, processes and procedures to facilitate the organization's internal administration, communication and maintenance of the SMS. It's intended to help personnel understand how the organization's

SMS functions, and how the safety policy and objectives will be met.

The SMS manual normally contains detailed description

of the organization's safety policy, safety objectives, scope of the safety management system, safety responsibilities and accountabilities, key safety personnel, SMS processes and procedures (i.e. processes and procedures for documentation control, emergency response planning coordination, hazard identification and risk management, safety performance monitoring and measurement, change management, safety auditing/inspection, management of change, safety education, safety communication and continuous improvement of the SMS), contracted activities, etc. Clear and detailed guidance on the development of the SMS manual has been

**“The organization SMS operations are documented using clear and unambiguous statements also referred to as safety records, appropriately dated, maintained in an orderly manner and revised at specified periods as determined by the organizations document control policy/procedure and where applicable safety documentation approved by appropriate authority.”**

provided by ICAO in the Safety Management Manual (SMM) - ICAO Doc 9859 to facilitate uniformity across the globe.

The successful and effective implementation and operation of the SMS requires a disciplined approach to information/documentation management and strict documentation controls in order to guarantee access, exactness, reliability, security and quick availability of all useful information.

The organization SMS operations are documented using clear and unambiguous statements also referred to as safety records, appropriately dated, maintained in an orderly manner and revised at specified periods as determined by the organizations document control policy/procedure and where applicable safety documentation approved by appropriate authority.

Safety records are essential to demonstrate that SMS is operating and provides data and traceability which can be used to identify and solve actual safety problems.

A safety record is the documented output of the safety management processes. Safety records are different from recorded operational safety data, such as communications between pilots and controllers.

**Examples of safety records include incident investigation reports, safety recommendations, related remedial actions and their follow-up, hazards register/report, safety assessment reports (safety cases) and supporting material, SPIs and related charts, safety survey reports, statistical data related to safety, personnel licensing data, personnel SMS/safety training records, record of completed safety risk assessments, minutes**

**of safety meetings, management decisions aimed to improve safety, any documented measure taken to control risk and to ensure that adequate levels of safety are maintained, , SMS internal review records, internal audit/inspection records, SMS implementation plan, gap analysis, etc**

Safety records for all SMS operation are created and maintained in various formats that are suitable for the various SMS activity/process. The format of the safety record(s) varies for each of the SMS activities/processes and the responsibility of creating and maintaining a particular safety record is assigned to a particular office/individual. CAA's SMS department utilizes the following SMS forms to create and maintain operational safety records for the different SMS processes/procedures.

Form No.	Name/description of SMS form
113	Workshop/seminar attendance record
114	Employee SMS recognition nomination
115	Change management
116	Situational report
120	Hazard identification report
121	System and task analysis worksheet
122	Hazard and risk management register
123	Follow up Actions on safety recommendations
124	Accident and incident investigation
125	Hazard register

The amount of the safety records in an organization depends on the range and complexity of the operation thus the amount of safety records increase with increase in the range and complexity of the operations. The organization maintains both qualitative records e.g training records, safety analyses, etc and quantitative records eg statistics derived as a result of safety monitoring. The organization should therefore clearly identify the safety records to be kept for each of the SMS processes/procedure/activity ensuring that only those critical to safety are maintained. The process of determining which safety records to maintain should take into account regulatory and international SARPs requirements for safety records.

## Element 2.1. Hazard Identification

“A prudent man foresees the difficulties ahead and prepares for them; the simpleton goes blindly on and suffers the consequences.”  
Proverbs 22:3

**S**afety is defined as the state in which the risk of harm to persons or property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management. **[Key words are hazard, risk and acceptable level of risk]**

**A hazard** as an existing condition or object with the

potential of causing injuries to personnel, damage to equipment, environment, structures, loss of material, or reduction of ability to perform a prescribed function. Examples of aviation hazards include bad weather, mountainous terrain, Foreign Object Debris (FOD), lack of emergency equipment, high workload/fatigue or aviation personnel working under influence of alcohol and other drugs.

## Element 2.2. Safety Risk Assessment and Mitigation.

**Risk** – The assessment, expressed in terms of predicted Probability and severity, of the consequence(s) of a hazard taking as reference the worst foreseeable situation. Safety risk is the projected likelihood and severity of the consequence or outcome from an existing hazard or situation.

**Predicted Probability** is an expression of how often an event is expected to occur. Probability may be based on quantitative analyses, however in situations where there is no sufficient historical data, probability is based on qualitative analyses utilizing experiences from within the context (scope, complexity and effectiveness of existing controls) of the operations. In this case severity must be considered. In defining risk probability, consideration of history of

similar occurrences, the time of exposure, number of personnel or equipment or components or procedures involved is important.

**Severity:** Severity typically combines two considerations Worst and credible case:

**Worst Case:** The most unfavorable, yet believable and possible, condition given the system state. Most unfavorable effects expected.

**Credibility:** It is reasonable to expect that the assumed

combination of conditions that define the system state will occur within the operational lifetime of a typical operation.

Safety Risk Management (SRM) is the identification, analysis and elimination (and/or mitigation to an acceptable or tolerable level) of those hazards, as well as the subsequent risks, that threaten the viability of an organization.” SRM is the key component of ICAO safety management systems framework.

“Probability may be based on quantitative analyses, however in situations where there is no sufficient historical data, probability is based on qualitative analyses utilizing experiences from within the context (scope, complexity and effectiveness of existing controls) of the operations.”



image: wired.com

## THE SAFETY RISK MANAGEMENT (SRM) PROCESS

– Hazard identification, risk assessment and risk mitigation processes.

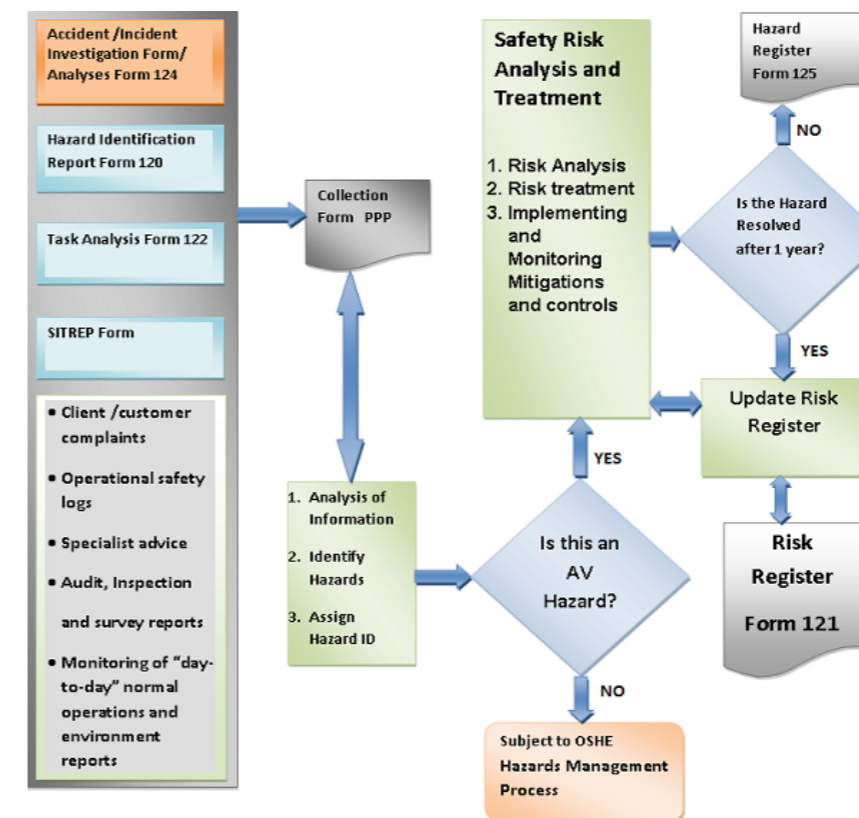
The SRM process involves sequential and successively dependent activities which need to be effectively carried out for the successful completion of the process. The activities of SRM process include; **Hazard Identification, Associated Risk Analysis, Risk Treatment, Implementing and Monitoring Mitigations and controls**

**Hazard Management in Air Navigation Services Directorates.**

DANS SMS/QA is currently implementing the SRM

according to the ICAO SMS framework. The scope covers all hazards that arise due to operations of the Air Traffic management, Aeronautical Information Management, Communications, Navigation and surveillance within the Entebbe Flight Information Region. The categories of hazards include aviation hazards, Occupational Safety hazards and Health and Environment (OSHE) hazards and composite hazards.

Chart showing DANS' schematic hazard management process.



The ANS directorate manages hazards using the process described in the chart above and maintains up-to-date documentation of the SRM process using the hazard management worksheet (SMS-form 122) and an aviation hazard Register (SMS-form 125).

Information about potential hazards is collected/ received from all staff through the established occurrence reporting mechanisms (Hazard report form, SITREP, operational log books, incident investigation reports, etc.)

**The Safety Action Group (SAG)** analyses collected information to identify and categorize hazards, conduct safety risk assessment and develop mitigations. It monitors the implementation and effectiveness of the mitigations or controls and prepares reports for the safety review committee.

**The Directorate of Safety Review Committee (DSRC)** reviews the reports from SAG, acknowledges and owns the risks associated with the identified aviation hazards, and takes appropriate action to facilitate implementation of all safety mitigations/controls

Hazards mitigations/controls that require resources that cannot be provided at the directorate level by the DSRC are escalated to the Corporate Safety Review Committee (CSRC) for further management.

List of officers who reported hazards using the hazard Identification forms and declared their identities.

No	Name	Freq	No	Name	Freq
1	Arinaitwe Jason	23	30	Ngabirano Modern	1
2	Hiwala Stephen	8	31	Ntale Gerald	1
3	Kyobe Achilles Mukalazi	8	32	Opolot Emmanuel	1
4	Wanzunula Rogers	5	33	Sneiger (Pilot)	1
5	Faraj Senkooto	5	34	Richard kato	1
6	Mayanja Stephen	5	35	Ronnie Sekagya	1
7	Samula Dennis	4	36	Rukundo Chris	1
8	Abbo Patricia	4	37	Rusoke David	1
9	Babimpa Alexander	4	38	Secondo Akuti Emin	1
10	Carol Makoha	4	39	Serwanja Stephen	1
11	Kasirye Michael	4	40	Tayebwa Ivan	1
12	Komakech Ivan	4	41	Timothy Nabongo	1
13	Odokorach Jones	3	42	Tumuhaise Fortunate	1
14	Prossy Zalwango	3	43	wabomba Moses	1
15	Balome Martin	3	44	Nanyonga Esther	1
16	Bateeze Daniel	3	45	Aguma Agnes	1
17	Mwitabangoma David	3	46	Ahereza Albert	1
18	Guma Edgar	3	47	Balikuddembe Joseph	1
19	Musoke Fred	3	48	Sendowoza Frank	1
20	Okumu Deziderius	2	49	Frank Wananda	1
21	Soyet Stephen	2	50	Henry Mutebi	1
22	Adoko Stella	2	51	Kakama Edmond	1
23	Col. Cherotine	2	52	Kasujja Jude	1
24	Derrick Sebuguzi	2	53	Kirabo Noeline	1
25	Erasmus Muhairwe	2	54	Kisa Isaac	1
26	Kijjambu Joseph	2	55	Matagala valentine	1
27	Kim McCully (Pilot)	2	56	Mbolanyi Mary	1
28	Maneza John	2	57	Moses Thokeronga	1
29	Musuza Fx	1			

“ Information about potential hazards is collected/ received from all staff through the established occurrence reporting mechanisms (Hazard report form, SITREP, operational log books, incident investigation reports, etc.) ”



image: defencetalk.com

## The Spirit of Incident Reporting

“One time while on duty in area control center I was involved in a horrible incident which, had it not been for the prompt intervention of the Almighty, would have been worse than the Ueberlingen mid air crash in which tens of innocent souls perished. I did not tell anybody about it and alas, I saved my job. Had the authorities got to know about it, I definitely would have been rendered jobless instantly. I had to choose between protecting my job and improving safety.” Kuuka Siraambye (not actual name), a retired air traffic controller told me at the regional safety workshop late last year 2016.

The story is not exclusive to Siraambye, employees are understandably reluctant to report their mistakes to management. Yet too often following an occurrence, investigators learn that many people were aware of the unsafe conditions before the event. For whatever reasons, however, they did not report the perceived hazards. So why didn't they report? Perhaps, as most safety literature suggest, it is because of:

- Embarrassed in front of their peers;
- Self-incrimination, especially if they were responsible for creating the unsafe condition;
- Retaliation from their employer for having spoken out; or
- Sanction (such as enforcement action) by the regulatory authority

The list goes and on, but I want to believe that it all tends to point to one devil - FEAR - the unpleasant thought which people have when they are worried by something painful, dangerous or bad that might happen to them.

The genesis of fear to report may be traced in retrospect from our cultural background. Since we

were kids, our parents, coaches and teachers have rewarded reporting with punishment. In the workplace many employees' initial reaction is that they SHOULD report hazardous events, but because they have been socialized to believe that the consequence of reporting is "pain", they go against their better judgment and don't report. They also fear they will be ostracized by their colleagues. Employees sometimes rationalize their failure to report by thinking, "I don't want to get this guy in trouble...he has a family and needs his job!"

For the authorities, the same cultural background haunts them too. It taught them to treat reports as precursor to non compliance to the set rules by and/or reckless behavior of someone. As such they use the report to trace and single out the bad boy, then fix sense into his mind to restore sanity!

However for both management and employees to move away from seeing events as things to be fixed to a more proactive and eventually a preventive approach, which considers events as opportunities to inform the Risk Management System and consequently continuously improve/enhance safety, they should reframe their thinking. It is only by collecting, aggregating and then analyzing hazard and incident reports that safety officers can better understand specific problems encountered during operations. Armed with this knowledge, they can then initiate systemic solutions, rather than short-term fixes that may only hide the real problems. As Don Norman once stated, "the problem is seldom the fault of an individual; it is the fault of the system. Change the people without changing the system and the problems will continue." I believe this should identify the spirit of incident reporting.

The safety department of

**Wandera Emmanuel Wabwire [Principle licensing officer]**

DANS has embarked on an ambitious program to cultivate an atmosphere in which employees will have confidence to report safety concerns without fear of blame. There is formal training in form of workshops and seminars to recognize and report hazards and to understand the incidence and consequences of hazards in the activities supporting delivery of services. As a result, operational personnel are becoming knowledgeable about the human, technical and organizational factors that determine the safety of the system as a whole.

The reporting lines are flexible in that operational personnel can report directly to the safety office when facing unusual circumstances, shifting from the established mode to a direct mode thus allowing information to quickly reach the appropriate decision-making level.

In addition, key safety data is properly safeguarded, and the promotion of a system of checks and balances that ensures that reporters of hazards feel confident that hazard reporting will not be put to use other than for which it was implemented, operational personnel are encouraged (and rewarded) for providing essential safety information related to hazards. However, there is a clear line that differentiates between acceptable and unacceptable operational performance.

In a nutshell, the safety management office is teaching the employees to be responsible and report all incidents on one hand and employees are slowly reframing their thinking to 'What if I don't report this incident and it presented a nursery bed for a catastrophe, how would I feel then if I had information that could have prevented the whole tragedy?' The principle slogan here now is "report every safety event and if in doubt, report it."

## Positioning Enterprise risk Management (ERM) and Safety Management System (SMS) in Civil Aviation Authority (Uganda)



The aviation industry is under pressure to deliver against a backdrop of evolving regulations, safety and security threats. In the face of such dynamism businesses strive to perform better, be leaner, cut costs and become more efficient.

CAA can no longer manage operations departmentally, with activities separated by departmental silos. This makes implementation of policies and processes with pan-departmental reach seem difficult. Governance, risk and compliance fall into this category- it has to span all CAA departments-but doesn't have to be such a headache.

Governance, risk and compliance(GRC) covers a lot of ground- operational risk, compliance, cyber-security, third party management, accounting and finance, auditing and so on

– and it incorporates hundreds of rules and regulations, dozens of policies and scores of risk management activities.

Step by step CAA will manage to deploy an integrated solution for all GRC activities as depicted in the figure above introducing this article. A few simple questions about CAA's processes – how they work, how they can be more effective, and how they can be audited and monitored- will reveal where the priorities lie for efficient GRC.

A valuable benefit of an integrated GRC solution is that different activities – Safety management system, risk management, compliance, quality assurance, internal and external auditing, strategic planning, accounting and finance, and so on – can share information. For this to work effectively, they need to conform

to common taxonomies.

As well as enabling collaboration, common taxonomies can help identify redundancies so that rationalization can take place. This keeps the system up to date and helps reduce the cost of control testing and risk assessments.

Think about what CAA can save (in terms of resources) if Internal Auditing, Risk Management, "SMS DANS", "SMS DAAS" and Quality Assurance (QMS) were well collaborated! One quarterly internal audit report with its components of Condition, Criteria, Cause, Effect and Recommendation will be enough to provide assurance to the board and management on all the above activities and the same applies to consulting services.

## Back to SMS versus ERM– Combined Effort

	Enterprise Risk Management	Safety Management system
I.	<b>Policy</b> – set corporate objectives, identify risk appetite, and establish program parameters and communications channels	<b>Policy</b> - establishes management's commitment to continually improve safety, defines the methods, processes and CAA structure needed to meet safety goals.
II.	<b>Risk assessment</b> – Identify, assess and prioritize risks and existing mitigations; evaluate risk treatment alternatives and implement changes to address any gaps.  Risk assessment is referenced on the stated objective to be achieved by the organization.	<b>SMS risk management</b> – Determines the need for, and adequacy of, new or revised controls based on the assessment of acceptable risk.  Risk assessment is referenced on the identified aviation hazard.
III.	<b>ERM assurance</b> – Monitor progress and facilitate continuous improvement through use of internal and external audits, metrics and performance reviews	<b>Safety assurance</b> – evaluates the continued effectiveness of implemented risk control strategies; supports the identification of new hazards; and monitors safety performance of the organization for continuous improvement.
IV.	<b>ERM promotions</b> –Build ERM culture through sustained and targeted communication and training that enables people at all levels of the organization to incorporate consideration of risk when decisions are made	<b>Safety promotions</b> – Includes aviation safety education and training for a positive safety culture.

### ERM and SMS are they two challenges or one for CAA?

- SMS exists to ensure that the organization's strategic safety objective is achieved. Whereas ERM monitors achievement of all the strategic objectives of the organization, SMS is the internationally recommended tool for achievement of aviation safety which is one of the organization's strategic objectives. SMS provides a systematic approach to managing aviation safety.
- Both ERM and SMS are based on two separate international standards i.e ISO standard for ERM and ICAO SARPs for SMS. Civil Aviation Authority of Uganda complies with both as required.

### What is Enterprise Risk Assessment?

**Risk identification** answers the question:

- What are the uncertainties that could impact the achievement of objectives? (positive and adverse potential outcomes)

**Risk analysis** answers the question:

- How likely is the risk to occur?
- If it occurs, how significant could the impact on our objectives be?

**Risk evaluation** answers the question:

- Given the risks and the overall analysis, which ones do we need focus on and treat?

### Identification of Hazards by SMS.

SMS defines a hazard as "a condition or an object with the potential to cause or contribute to an aircraft incident or accident."

- SMS receive hazard reports from all staff via various established channels.
- The reports are assessed to verify and categorize them into either aviation hazards or OSHE hazards.
- The aviation hazards are subjected to safety risk assessment and mitigation. All risk assessment under SMS focuses on conditions or objects with potential to cause or contribute to an aircraft incident or accident.

- The OSHE hazards are forwarded to the responsible office for appropriate action. E.g if chairs in operational rooms are broken, information is forwarded to Administration department for appropriate action.

### Common Risk Assessment Pitfalls

- SMS and ERM are not "one size fits all", scalable to particular organization
- Tendency to rate risks to high leads to distrust in results
- If not conducted in a methodical, interdisciplinary way, can lead to inefficient allocation of resources.

**CPA Amin Nsimbe FCCA, CISA, CFIP, MIARM**

## Element 3.1. Safety Assurance

The first ICAO strategic objective in the GANP (Global Air Navigation Plan) is Enhancement of global Civil Aviation Safety. When we talk safety, we mean the state in which risks associated with aviation operations are maintained at or below an acceptable level. ICAO has developed a framework to guide implementation of Aviation safety composed of four Components (pillars) and twelve elements.

1. Safety Policy and objectives	Establishes senior management's commitment to continually improve safety, defines the methods, processes and organizational structure needed to meet safety goals.
2. Safety Risk management	Determines the need for, and adequacy of new or revised controls based on the assessment of acceptable risk.
3. Safety Assurance	Evaluates the continued effectiveness of implemented risk control strategies, supports the identification of new hazards.
4. Safety Promotion	Includes training, communication, and other actions to create a positive safety culture within all levels of the workforce.

Safety assurance is the third pillar which gauges whether the SMS is operating as required. It has three components namely; Safety Performance Monitoring and measurement, The

Management of Change and Continuous improvement of the SMS.  
Implementation of Safety assurance elements helps assess

the health of the SMS, ensure guided change management and provide for a means of continuously monitoring the SMS for improvement

## Element 3.2. Safety Performance Monitoring and Measurement

**Safety, like any other aspect of business needs to be measured. Indeed Peter Drucker asserts that "If you can't measure it, you can't improve it." Also, Yogi Berra contends that "If you don't know where you are going, chances are you will end up somewhere else. "Safety performance monitoring and measurement is therefore a key element in safety management".**

ICAO requires civil aviation service providers including air navigation service providers to develop and maintain the means to verify the safety performance of the organization and to validate the effectiveness of safety risk controls.

Safety performance of any organization is safety achievement as defined by its safety performance targets and safety performance indicators. It is therefore prudent that measurement of safety performance is performed by utilizing safety performance targets and safety performance indicators.

Safety performance indicators are data-based safety parameters used for monitoring and assessing safety performance. Safety performance indicators are expressed in three dimensions, namely, Metric, Alert Level and Target.

A *metric/ or measure* is an expression of a particular element of a system that directly relates to safety of the system for example, number of serious aircraft incidents per 100 000 flight hours, pass/fail rate of air traffic controllers at license validation checks (ANSPs).

An *alert level* is the demarcation

line between the acceptable trending region and the unacceptable region for a safety indicator and is the primary trigger (caution/alarm bell) for remedial action related to a particular safety indicator.

A *safety target* on the other hand defines the required level of safety performance of a system, eg less than 1 fatal accident per 1 000 000 operating hours. It comprises one or more safety performance indicators, together with desired outcomes expressed in terms of those indicators

Safety performance indicators are a culmination of analysis of

data collected through voluntary reports, mandatory reports, safety surveys, safety studies, safety reviews, safety audits and internal safety investigations.

### Verification of safety performance

Verification of safety performance refers to exercises that confirm implementation of safety activities, attainment of safety objectives and targets, implementation of mitigation controls, safety recommendations or standards and adherence to procedures related to safety.

Within our operations, we conduct safety internal audits and inspections on operations, we are also subject to regulatory external audits and inspections. We carry out internal studies on parameters for which the level of exposure to risk may not easily be available from the records kept, for example the unusual winds on approach paths.

### Validation of effectiveness of safety risk controls

Validation in this respect refers to all those activities aimed at confirming that the mitigation controls firstly before implementation are directly addressing the actual causes of safety issues or hazards and secondly after implementation, have reduced the causes of the hazards or safety issues. In validation of effectiveness of safety risk controls, we seek objective, factual evidence that problem causes have been reduced or removed by implementing the safety risk controls. This evidence usually takes the form of data or records. Another powerful form of evidence is your own first-hand observations.

Taking logs of noteworthy

operational events and keeping the records for trend analyses is key. This is because operational logs, inspection reports, audit reports would isolate recurring hazards and those that are growing out of control for attention. Once these are isolated, it could have a number of implications, like First, the mitigations were not addressing the causes of the safety hazards or issues; secondly, the mitigations were either not fully implemented or partially implemented; and thirdly, there have been changes in the system, not properly managed that compromised the effectiveness of the safety risk controls in place.

### How we do it.

We undertake a number of activities to verify and validate the effectiveness of safety risk controls. These include;

- Review of controls and accepting them at Safety Action Group (SAG) or safety Review Committee (SRC) level before implementation; this ensures that the mitigations/ safety risk controls are related to the cause either hazards or safety issues.
- Conduct of internal safety audits and subjection to external audits of which recurrences of events or effects of hazards is checked. This helps in assuring us that the implemented safety risk controls have either eliminated or reduced the hazards as anticipated.
- Collection and analysis of safety data collected by means of mandatory and voluntary reporting systems. The data and information thereof alerts us about the hazards that are getting

out of control and therefore require immediate attention.

- For parameters that present unpleasant trends, we carry out safety studies and investigations to specifically gain a deeper understanding of the causes and other factors responsible for the trends and then rectify them.
- We have proposed Safety Performance Indicators (SPIs) for operational safety metrics about which we have collected data, set targets and alert levels to help us monitor effectiveness of the safety risk controls and forwarded them to the regulator for acceptance.

### Engagement of and expectations from Staff.

The most critical dependent factor in safety performance monitoring and measurement is reliable data and information. This data and information can only be obtained using the voluntary and mandatory reporting programs. The most important element of these programs are the staff. Staff are therefore expected to acknowledge and appreciate the role of safety reporting in management of safety. Once this is achieved, the data and information upon which measurement and monitoring activities and decisions shall be available. This data and information however should be authentic, correct and of high integrity, otherwise, it would lead to inappropriate decision making.

Staff at supervisory level are expected to be truthful when interacting with auditors and inspectors since any concealment will lead to both wasted effort, resources and endangers operations



## Element 3.3. The Management of Change

This is a formal process to manage changes within an organization in a systematic manner, so that changes which may impact identified hazards and risk mitigation strategies are accounted for, before the implementation of such changes. [ICAO Doc 9859].

"The management of Change "is the second element (element 3.2) of Safety Assurance (3<sup>rd</sup> component of the ICAO SMS framework)

Aviation service providers regularly experience changes due to a number of reasons like organizational expansion/contraction, services improvements resulting in changes to internal systems/processes/procedures, new and revised international/ regional/ national industry requirements etc which may introduce new hazards and safety risks, impact the appropriateness and effectiveness of existing risk mitigation controls consequently lower existing safety levels of the organization. Safety management practices require that hazards resulting from change be systematically identified, and strategies to manage the consequential safety risks be developed, implemented prior to introducing the change and subsequently evaluated. Whenever changes are introduced into any system, a logical assessment of the impact of this change to the operations has to be done before implementation.

The introduction of new technology or equipment, changes in the operating environment, changes in key personnel, significant changes in staffing levels, changes in safety regulatory requirements, significant restructuring of the organization, and physical changes (new facility or base, aerodrome layout changes etc within the aviation organisation must undergo the formal process of change management prior to their introduction/implementation plus any other as may be guided

by appropriate office.

Sensitization of the staff about the intended changes well before their implementation is vital to the effective and successful implementation of any change. Management should always have a clear plan for ensuring staff are aware of all intended/planned changes in the organisation that may impact on or be influenced by the staff to improve the way the changes are perceived and implemented within the organisation.

### Why the management of change?

Development and implementation of a systematic way to manage change by aviation service providers like airport operators (UCAA/DAAS), air navigation service providers (UCAA/DANS), etc enables them to;

- Comply with the ICAO Standards and Recommended Practices (SARPs) contained in Annex 19 – Safety.
- Proactively manage safety risks associated with introduction of the planned/intended changes consequently maintaining and/or improving current safety during and after implementation of the change(s).
- Avoid possible waste of resources (financial, time, etc) that could result from hazards introduced by the change. Eg *disruption of services as a result of damaging/ cutting an underground link to a vital aircraft instrument landing system (ILS) in the process of laying underground*

*cables for electric installation of a new building. The unserviceability of the landing system may cause scheduled flights to divert causing operators financial losses as well require CAA to spend unplanned finances to repair or replace the damaged/cut link to the ILS. Proper change management would help avoid such losses.*

- Ensure harmonious and successful implementation of the intended/planned change due to prior staff engagement.

### Implementation of "the management of change "within UCAA.

Uganda CAA has implemented the "management of change" element of the "safety assurance" component in accordance with the detailed guidance contained in the Safety Management Manual (SMM) – ICAO Doc 9859 3<sup>rd</sup> Edition.

The change management process involves;-

1. Identifying changes within the organisation which may affect established processes, procedures, products and services, and
2. Identifying and documenting all necessary arrangements to ensure current safety performance/level is maintained and/or improved during and after the change is implemented.
3. Implementing the identified strategies in "2" above prior to implementation of the changes or during the implementation as may be necessary.

The following SMS forms are used to document the management of change process within Uganda CAA.

**SMS Form 121** – The system and task analysis form primarily documents all the steps that will be taken to introduce/implement the intended change from start to completion and identifies hazard(s) if any that will arise at the different steps/stages during the implementation of the change.

**SMS Form 122** - Any hazard identified in SMS form 121 is subjected to the safety risk management process using SMS form 122 ie hazards in SMS form 121 are entered into SMS form 122. If no hazard has been identified in SMS Form 121, then the intended change will have no impact on existing safety levels and therefore only need to let staff know of the change and monitor.

**SMS Form 123** – After identifying

the new hazards due to the change using SMS form 121, and completing safety risk assessment and mitigation for each of the hazard in SMS form 122, the user department will then complete SMS Form 115 requesting for the change to be accepted. User department attaches SMS forms 121 and 122 to SMS form 115 and forwards them to the safety officer for acceptance of the change before it is implemented.

### SMS FORM 121: SYSTEM AND TASK ANALYSIS WORKSHEET

		Task Title:		Task Location:	
		Analyst Name:		Date:	
Task Step	Task Step Description	Hazard(s)	Hazard Category (OSH/Aviation)	Hazard Controls	Comments

### SMS FORM 122: HAZARD AND RISK MANAGEMENT REGISTER FOR ANS

SN.	Hazard	System state	Description of consequences	Risk Assessment				Evaluation
				Current Defences	Current Risk Index	Further Actions to reduce the risks Technical and Administrative Defences	Theoretical Risk Index	

Evaluated by

Approved by (Line Manager)

Name .....  
 Signature .....  
 Date .....  
 Next Evaluation Date .....  
 Next Review Date .....

### SMS FORM 115: DIRECTORATE OF AIR NAVIGATION SERVICES

#### CHANGE MANAGEMENT FORM

Originator (Name & Title)	System/Equipment Concerned	Date Raised	Reference No.
Change Description			
Change Justification (Attach relevant documents if available)			

Back out Plan (What happens if change cannot be made)		
Areas affected by the change		
Costs (if any)	Time (how long to implement change)	Proposed Implementer

**Recommendation and Approval**

Recommended by (Line Manager) Accepted by (MSMS/QA): *(Hazards adequately identified and the proposed mitigations are sufficient to address the identified hazards)*

Name .....

Signature .....

Date .....

**Role of staff**

1. Notify management of any potential need for change in their operational areas.
2. Participate in the change management process as will be guided.
3. Monitor the change management process so as to ensure all changes in the workplace have undergone the formal change management process.
4. Line managers to ensure that all changes in their departments undergo the formal change management process.

## Element 3.4. Continuous Improvement of the SMS

Continuous improvement of the SMS is the third element of the safety assurance component. Organizations shall develop and maintain a formal process to identify the causes of sub-standard performance of the SMS, determine the implications of substandard performance of the SMS in operations and eliminate or mitigate such causes. Continuing improvement is achieved through:

- **Proactive** evaluation of facilities, equipment, documentation and procedures through safety studies, reviews, audits and surveys and Proactive evaluation of the individuals' performance, to verify the fulfilment of their safety responsibilities and accountabilities.

- **Reactive** evaluations in order to verify the effectiveness of the system for control and mitigation of risks, for example through information obtained from accidents, incidents and major events investigations.
  - i) How are we doing this in DANS?
  - ii) What is the role of staff or what is expected of staff?
  - iii) Image/pic
  - iv) Insert current survey questionnaire on next page –

← Tear Here

## Safety Culture Survey Questionnaire.

Question Number	STATEMENT	ORGANIZATION RATING				
		Strongly Disagree				Strongly Agree
1	Staff are given enough training to do their tasks safely	1	2	3	4	5
2	Managers get personally involved in safety enhancement activities	1	2	3	4	5
3	There are procedures to follow in the event of an emergency in my work area.	1	2	3	4	5
4	Managers often discuss safety issues with staff.	1	2	3	4	5
5	Staff do all they can to prevent accidents.	1	2	3	4	5
6	Everyone is given sufficient opportunity to make suggestions regarding safety issues	1	2	3	4	5
7	Staff often encourage each other to work safely.	1	2	3	4	5
8	Managers are aware of the main safety problems in the workplace.	1	2	3	4	5
9	All new staff are provided with sufficient safety training before commencing work.	1	2	3	4	5
10	Managers often praise staff they see working safely.	1	2	3	4	5
11	Everyone is kept informed of any changes, which may affect safety.	1	2	3	4	5
12	Staff follows safety rules almost all of the time.	1	2	3	4	5
13	Safety within this Directorate is better than in other Directorate.	1	2	3	4	5
14	Managers do all they can to prevent accidents.	1	2	3	4	5
15	Accident investigations attempt to find the real cause of accidents, rather than just blame the people involved.	1	2	3	4	5
16	Managers recognise when staff are working unsafely.	1	2	3	4	5
17	Any defects or hazards that are reported are rectified promptly.	1	2	3	4	5
18	There are mechanisms in place in my work area for me to report safety deficiencies.	1	2	3	4	5
19	Managers stop unsafe operations or activities.	1	2	3	4	5
20	After an accident has occurred, appropriate actions are usually taken to reduce the chance of reoccurrence.	1	2	3	4	5
21	Everyone is given sufficient feedback regarding this Directorate's safety performance.	1	2	3	4	5
22	Managers regard safety to be a very important part of all work activities.	1	2	3	4	5
23	Safety audits are carried out frequently.	1	2	3	4	5
24	Safety within this Directorate is generally well controlled.	1	2	3	4	5
25	Staff usually report any dangerous work practices they see.	1	2	3	4	5
26	Information about safety is adequate	1	2	3	4	5
27	Safety information communication channels are effective	1	2	3	4	5
28	Staff receive safety information in a timely manner	1	2	3	4	5
29	Staff receive safety information regularly	1	2	3	4	5
<b>SAFETY CULTURE TOTAL:</b>						

Fill this form, tear off at perforation and send to SMS office



# DANS SMS ACTIVITIES

Safety Management Systems and Quality Assurance (SMS/QA) is one of the departments in the Directorate of Air Navigation Services. The department undertakes a number of activities which aim at achieving and improving safety in line with the CAA mission **“to maintain the highest standards of safety, security and service in Civil Aviation.”**

These activities are guided by applicable documents and guidance material like ICAO Annex 19 Safety Management, **ICAO** Doc 9859 Safety Management Manual 3rd edition, The Civil Aviation Safety Management Regulations and the SMS Manual **for ANS**. This work is spear headed by the Safety Manager being assisted by safety officers with full support and participation of CAA Management and all staff.

During the period 2014 to 2017 the department has continued to

pursue safety in DANS through carrying out activities based on the Safety Policy and objectives as stated in the SMS Manual for air navigation services. The following are some of the activities; there are the daily activities such as collection of safety data in form of safety logs and reported aviation or occupational safety and health hazards, the weekly activities include the Safety Action Group (SAG) meetings held every Thursday, The Directorate Safety Review Committee meetings (SRC) are held **once** every after two weeks, Corporate Safety Review committee meetings scheduled on a quarterly basis, the monthly safety workshops to communicate safety information, **annual safety promotional workshops** etc. Monthly reports are prepared to capture SMS activities of that particular month. Safety inspections and audits are carried out twice every year for the stations of Entebbe, Soroti and Gulu and thereafter coordination

of the implementation of Corrective action plans (CAPS) for the directorate. Annual promotional workshops are conducted in the three stations (Entebbe, Soroti and Gulu) by the SMS department. The department also conducts annual safety culture surveys to assess they safety culture of the Directorate. The Directorate has developed an SMS training program to guide SMS related training and prepares an annual SMS training plan to guide conduct of training. The SMS calendar of scheduled events details a yearly program of when each of the safety activities namely safety assessments, emergency response planning, safety audits, etc are scheduled to be carried out.

The Directorate also participates in regional and international SMS initiatives/activities eg the SMS Peer review missions among the EAC partner states, CANSO safety programs, EAC UFIR project safety assessment, etc

## SMS Calendar of Regular Scheduled Events

Item	Scheduled frequency	Dates to accomplish this
Internal Audits by Operating Departments	Annual	July/August
Internal Evaluation of SMS	Annual	November
External Audit of SMS	Annual	Determined by external auditor
System Assessment	Quarterly with M & E	June, March, September and December
Management Review of SMS Outputs	Quarterly	June, March, September and December
Emergency Response exercise	Once every two years	September
Safety Review committee Meetings	At least Once a month	Continuous
Safety Action Group meetings	Weekly	Continuous
Updating hazard register	Annual	June
SMS workshops	Monthly	Last working day of the month
Follow up of implementation of safety recommendations	Quarterly	June, March, September and December
Annual Safety Survey	Annual	February

# Element 4.1. Training and Education

“Learning should be fun. If you don’t have fun in aviation then you don’t learn, and when learning stops, you die”.— **Pete Campbell, FAA**

The SMS department has an annual budget provision to support SMS activities including training and education. SMS training for DANS staff is determined by their level of involvement/participation in the implementation and operation of the Safety Management System in accordance with the ICAO SMS framework and ICAO phased implementation approach.

Basic SMS training is organized for all DANS staff by inviting aviation safety management instructors/specialists from accredited aviation training institutions to conduct the training for DANS’ staff in classes of 20-25 participants. Aviation safety Instructors/specialists from the Federal Aviation Administration (FAA) - USA, Air Traffic & Navigation Services (ATNS) - South Africa, Singapore Aviation Academy and the International Air Transport Association (IATA) have conducted the Basic SMS course on-site in Uganda for approximately 100 DANS’staff and over 20 non-DANS’ staff within the past five (5) years.

## SAFETY PROMOTIONAL WORKSHOPS

The SMS department in efforts to implement SMS as per the ICAO SMS framework conducts annual safety promotion workshops. The purpose of safety promotion is to encourage a positive safety culture and create an environment that is conducive to the achievement of the service provider’s safety objectives.

It enables an organization to adopt a culture that goes beyond merely avoiding accidents or reducing the number of incidents, although these are likely to be the most apparent measures of success. It is more to do the right thing at the right time in response to normal and emergency situations.

Safety Promotion supports safety culture communication, dissemination of lessons

learned and enables the continuous improvement process. It includes all efforts to modify structures, environment, attitudes and behaviours aimed at improving safety. The Safety promotional workshops are intended to:

- ensure that all staff are fully aware of the SMS;
- convey safety-critical information;
- explain why particular actions are taken;
- explain why safety procedures are introduced or changed;
- Convey “nice-to-know” information.

A number of safety promotion workshops have been held. Pictorials of some of the workshops held in the last 5 years.



image: cirrusaircraft.com



Group photo of participants at the Safety Management Systems sensitization workshop held in Gulu at Acholi Inn Hotel from 7th –11th July 2014.



Group photo of participants at the Safety Management Systems sensitization workshop held in Gulu at Churchill Hill Courts hotel from 8th –11th Nov 2016.



Mr. Ssemajere Everist making a presentation on behalf of his group on Safety Risk Management during the Safety Management Systems sensitization workshop held in Gulu at Churchill Hill Courts hotel from 8th –11th Nov 2016.



In Class: Participants at the Safety Management Systems sensitization workshop held in Gulu at Kakanyero hotel from 4th –7th July 2017.



Group photo of participants at the Safety Management Systems sensitization workshop held in Gulu at Kakanyero hotel from 4th –7th July 2016.



Collaborative management of safety: Participants at the Safety Management Systems sensitization workshop held in Imperial Golf View Hotel December 2016.



Group Activity Time: Participants at the Safety Management Systems sensitization workshop held in Hursey Resort Hotel 27th - 30th June 2017.



Group Photo: Participants at the Safety Management Systems sensitization workshop held in Hursey Resort Hotel 27th - 30th June 2017.



SMS Workshop in Soroti along with UPDF personnel



Principal AIMO SMS\_QA teaching SMS in Gulu



Mr. Sebinna Muwanga, Chairman Management and Advisory Task Force – Soroti Flying School making opening remarks at the Safety Management Systems sensitization workshop held in Hursey Resort Hotel 27th - 30th June 2017.



One of the groups during Group Activity Time: Participants at the Safety Management Systems sensitization workshop held in Hursey Resort Hotel 27th - 30th June 2017.



SMS Promotional workshop in Soroti



Gulu SMS workshop



Mr. Nduwayo Hezekia making a presentation on behalf of his group on Safety Risk Management during the Safety Management Systems sensitization workshop held in Soroti at Hursey Resort hotel from 27th - 30th June 2017.



English Language Proficiency Train-an-examiner course group photo of participants



English Language Proficiency course for Train-an-examiner at ENTEBBE

# Element 4.2. Safety Communication

Effective communication is important for the development of an organization as it helps managers to perform the basic functions of management- Planning, Organizing, Motivating and Controlling. It serves as the foundation of every facet of any business and an inseparable part of successful organizations. Thus, it can be said that effective communication is the building block of an organization. On the other hand, communication gap could be the biggest enemy within a particular organization which hinders creativity and profit. Some of the benefits of effective communication are: ensures productivity, job satisfaction, Co-operation, better relationships, improved work ethic through constructive feedback, at workplace and utilization of resources. It is important to note that communication is not confined solely to employees. It must communicate cut across all business stakeholders like its customers, owners, the community as well as its prospective and present employees.

## Mandate and requirements

Section 4.2 of ICAO annex 19 requires service providers like Air Navigation Service Providers (ANSP) to develop and maintain a formal means for safety communication that: a) ensures personnel are aware of the SMS to a degree commensurate with their positions; b) conveys safety-critical information; c) explains why particular actions are taken to improve safety; and d) explains why safety procedures are introduced or changed.

## Aviation safety communication?

Aviation safety communication is communication with a focus on risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level. Safety communication is vital to maintaining a safety culture. Regular communication amongst employees in an open, respectful manner, breeds willingness to give and receive feedback regarding safety, adherence to safety instructions, hazard and incident reporting and root cause mitigations. We thus need to be deliberate and ensure that the intention for communicating in the first place has been achieved. We should avoid the illusion of achievement but actually achieve communication;

## Why Safety Communication

The ANS as service providers, we are required to communicate the organization's SMS objectives, procedures, instructions, information regarding the safety performance trends and specific safety issues through bulletins and briefings to all operational personnel. The Safety office should further ensure that lessons learned from investigations and case histories or experiences, both internally and from other organizations, are distributed widely.

Safety performance will be more efficient if operational personnel are actively encouraged to identify and report hazards. Safety communication is intended to bring forth benefits that fall in the following broad categories:

### Staff awareness of the safety:

Safety awareness involves making staff and stakeholders understand the potential and real threats, hazards, the contexts within which these can be activated, how best they can be controlled and any actions required thereof in the event that they occur. The safety awareness programs are intended to reduce the organizations exposure to risk through empowering staff to proactively identify hazards and manage associated safety risks. Staff safety awareness empowers them and enhances their

involvement in safety activities, this helps each member of staff to play an active role in safety leading to fewer incidents and accidents. Staff who feel involved and valued in safety decision-making are critical agents for high safety performance within the organization. Safety awareness therefore facilitates proactive and predicative risk management as the staff are aware of the safety hazards, their consequences and how best to control evolution of the hazard into incidents or accidents.

### Conveyance of safety-critical information;

Safety critical information is information whose non-conveyance, or non-use may lead to death or serious injury to people, loss or severe damage to equipment/property. Failure; to convey, method of conveyance, to understand, or in use of safety critical information is known to be major or contributing factors to incidents. Safety communication is therefore important in controlling or avoiding occurrence of incidents and accidents. The structuring of the safety communication program should address all areas where this value of safety critical communication can be missed. It involves timeliness of conveyance, conciseness of the information, mode of conveyance, and assurance about utilization of such

information.

If all these aspects are effectively addressed, safety communication plays a significant role in control of risk to operations.

### Raised awareness of corrective actions;

When staff and stake holders identify hazards or safety concerns, report them and participate in proposing and implementation of the corrective actions, they demonstrate commitment to improving safety of the system. The corrective actions arising out of staff/ stakeholder reports, investigation reports should there be communicated for purposes of acceptance to implement them. They should see the value of the corrective and preventive active action to improving their own safety and safety of the system. Safety communication should therefore provide an avenue for feedback on action taken on the reports they make and basis for uniform and consistent implementation of the corrective action plans. Safety reporting without timely feedback on corrective actions made on the reports, rationale for such particular actions and role and further required action soon becomes a futile exercise.

### Provision of information regarding new or amended safety procedures.

Systems, and in particular the aviation system continuously undergoes changes because of the need to maintain the highest standards of safety. There are also very rapid technological changes that affect the way operations are conducted to enhance efficiency. These changes call for amendment of safety procedures and the way operations are run. It is thus imperative that any safety communication program captures the changes, the rationale for the changes and consequent changes

in the safety procedures to ensure that staff and stakeholders are continually informed about the changes.

### How safety communications should be carried out

Safety communication should, depending on the nature of operations be purposed to achieve as much safety awareness as possible. So the choice of the type of messages, means of conveyance, target discrimination should be deliberate and fitting the purpose. There are a number of channels that may be used to convey safety messages, they include but not limited to; safety processes and procedures; safety newsletters, notices and bulletins, websites or email. It is important to note that, all communication channels should as a minimum facilitate two way communication between the target audience and the sender. This facilitates the feedback which is also a mechanism of determining the effectiveness of the message, channel used and level of interest generated by the message.

### Individual roles

Different actors should play unique roles to ensure meaningful and successful safety communication procedures. These include, management, staff and other stakeholders.

Management should establish and maintain both bottom up and up-bottom communication channels that facilitate open/confidential, voluntary and mandatory reporting systems. It is important that employees feel comfortable to inform the supervisor about potential and real safety hazards. A manager and or supervisor needs strong communication and good listening skills, and should practice these skills regularly. These facilitate development and maintenance of rapport with their staff.

When management demonstrates a commitment to safety in the workplace, employees respond by taking a more active interest in safety. Employees need to be encouraged by their managers and frontline supervisors to make suggestions for improvements in workplace safety and hazard reduction.

Managers and supervisors need to respond quickly and positively to those suggestions to show employees that their concerns are not only being heard but also acted upon.

With a free hazard reporting environment, problems and hazards are likely to be identified more quickly and employees are keener to keep their operations hazard-free.

Regular and short safety meetings can address work instruction issues, emergency procedures, and common accidents like slips and lapses, and ergonomics injury prevention. Formal safety meetings and trainings should be conducted on a regular basis. In this setting, new employees are trained in safe job procedures and experienced employees receive refresher courses related to their job. The workers who participate in formal safety trainings should have their safety skills and knowledge evaluated after the presentation, have their attendance documented, and this information kept on file for possible Safety reviews and administrative feedback.

Staff should ceaseingly report any safety issues and provide feedback on any form of safety actions by management.

It is important to note, that all safety communication efforts should be matched in equal measure by actions especially on the part of management. We should thus walk the talk.

# Importance of CDM in Enhancing Safety Performance

Collaborative decision-making (CDM) is defined as an explicit supporting process focused on deciding on a course of action in pursuit of articulated objectives between two or more community members

In the implementation, operation and maintenance of the SMS, SSP and Safety Oversight within states, there are some elements/components of these systems

- Which require input from more than one stakeholder for their successful implementation,
- Which when successfully implemented their output always affects more than one stakeholder,
- Which require the participation of more than one stakeholder to maintain and continually improve, and thus need collaboration among the different stakeholders



Round table discussions about the importance of CDM in aviation at the AVI Afrique Summit 2016 at the CSIR International Convention Centre in Johannesburg.



Mr. David Matovu, Manager SMS/QA presenting at the AVI Afrique Summit 2016 at the CSIR International Convention Centre in Johannesburg, SA about the importance of CDM in aviation.

## WHY CDM?

### • Recommended global approach

- Collaboration is one of the four safety performance enablers that states and regions can use to make improvements in safety. The other enablers are standardisation, resources and safety information exchange. [GASP 2014-2016].
- A proactive approach to aviation safety **requires the participation of all** concerned stakeholders. Based on the need for a coordinated and transparent approach for aviation safety, ICAO continues to foster collaboration with its Member States and other global aviation stakeholders.

### • Associated benefits of employing CDM

- Collective responsibility.
- CDM facilitates resources sharing
- CDM provides for sharing and protection of information critical to safety performance
- etc

### CDM and Safety performance

Safety performance of any organisation, state, region or globally **depends** primarily on the effective implementation of the SMS (Service providers) and SSP/Safety oversight (States and regional safety oversight organisations) ie before one can measure safety performance, there needs to be in place an effective safety management system or framework or mechanism for managing safety.

Successful and effective implementation of some components/elements of the safety management systems require active involvement of more than one aviation stakeholder.

Safety performance measurement covers the implementation, maintenance and continuous improvement of the SMS.

Application of CDM to enhance safety performance can be achieved through;-

- Active application of CDM, and/or
- Use of collaboratively agreed procedures.

### Need for CDM in sms implementation, operation and maintenance

- Coordination of emergency response planning.
- Safety risk assessment and mitigation.
- Safety performance monitoring and measurement.
- The management of change.

### Need for CDM in SSP implementation, operation and maintenance

- state safety Policy and Objective.
- State Safety Legislative Framework.
- Accident and incident investigation.

- Agreement on the service provider's safety performance.
- Safety data collection, analysis and exchange

### Continuous safety performance improvement

Continuous safety performance improvements depends on the successful conduct of internal/ external audits, evaluations and surveys.

Continuous safety performance improvement relies on the effective audit processes which in turn require collaboration between the auditor and auditee.

### CDM in safety performance monitoring and measurement

- Development of Safety objectives.
- Development of Safety Performance indicators.
- Development of Safety performance targets.

In order to ensure effective safety performance, organizations need to incorporate CDM process so as to facilitate successful implementation of specific elements of SMS or SSP.

There is need for the aviation fraternity to collectively agree on and document areas of SMS and SSP that require CDM to ensure safety performance



**Safety performance of any organisation, state, region or globally depends primarily on the effective implementation of the SMS (Service providers) and SSP/Safety oversight (States and regional safety oversight organisations)**

image: getnews.tv

# The Civil Air Navigation Services Organization (CANSO)

CANSO is the global organization of Air Navigation Services Providers (ANSPs) including Uganda Civil Aviation Authority with the ultimate aim of improving

Air Navigation Services (ANS) on the ground and in the air voice of Air Traffic Management (ATM). CANSO represents its Members' views to a wide range of aviation stakeholders, including the International Civil Aviation Organization, where it has official Observer status. This body has an extensive network of Associate

Members drawn from across the aviation industry and support over 85% of world air traffic. CANSO's Articles of Association describe how the organization is governed and forms a binding agreement between CANSO and its Members. The Articles describe CANSO's duties and obligations towards its membership, and the duties and obligations of the members towards CANSO.



The table below highlights the original and revised targets with their respective implementation deadlines.

**CANSO Goals:** CANSO seeks to achieve the following goals;

<b>Safety, Efficiency and Effectiveness</b>	To promote safe, efficient and cost effective air navigation services.
<b>Industry Support</b>	To develop common industry positions and the resolution of key industry issues.
<b>Products and Services</b>	To support Members in the provision of their services including influencing the selection and implementation of future technology, agreement on measures of performance and providing an information exchange.
<b>Customer Focus</b>	To support Members in their alignment towards customer-driven, service-delivery organizations.
<b>Representation</b>	To represent the views and interests of Members with the relevant international bodies. To represent Full Members towards third parties such as international organizations, within the frame of formally agreed mandates.
<b>Recognition</b>	To achieve recognition of the safe high quality and cost-effective provision of air navigation services.
<b>Delivery of Value</b>	To deliver value for all Members.

**CANSO Objectives:** CANSO operations are guided by the pursuit of the following objectives

<b>Safety, Effectiveness and Efficiency</b>	To support Members in the provision of safe, efficient and cost effective air navigation services worldwide.
<b>Forum</b>	To provide a global forum for the exchange of information to support alignment towards customer-focused organizations, to agree measures of performance, to influence selection and implementation of future technology and to represent interests of Members in relevant international bodies worldwide.

<b>Performance</b>	To support increased safety, efficiency and enhanced management of air navigation services provision.
<b>Joint Action</b>	To address common issues and problems and through coordinated action and co-operation and by mobilizing expertise and knowledge, develop cost effective proposals for their resolution.
<b>Influence</b>	To provide a means to influence standardization and planning bodies in the field of air navigation services and related areas, globally.
<b>Representation</b>	To represent the views and interests of Members with the relevant international bodies. To represent Full Members towards third parties such as international organizations, within the frame of formally agreed mandates.
<b>Delivery of Value</b>	To deliver value for all Members.

## CANSO operational Structure.

CANSO is organized across five regions (Africa, Asia Pacific, Europe, Latin America and Caribbean and Middle East.) Each region has a CANSO Region Director. In addition, the CANSO Director ICAO and Industry Affairs operate in Montreal.

CANSO's regional offices coordinate activities at local level, within the framework of policies and positions agreed at CANSO global level. They represent the interests of Members on regional initiatives such as regional airspace harmonization, or the regional roll-out of operational improvements such as performance-based navigation (PBN) or ADS-B and transition from AIS to AIM

## CANSO seeks to?

Within the overall context of promoting safe and efficient air navigation service provision, CANSO seeks to:

- Maintain an international forum for the development and exchange of ideas on current air traffic management related issues and the formation of distinct CANSO policies and positions
- Develop an international network for ANS experts to enable information exchange between air navigation service providers (ANSP) and other stakeholders for the promotion of best practice within ATM
- Liaise with other air transport industry stakeholders, particularly airlines, industry

suppliers and airports, to the overall benefit of the aviation industry

- Contribute to the continuous global air transport debate through the presentation and promotion of the ANSP perspective across the range of contemporary issues in the industry
- Represent the views and interests of Members at relevant international organizations, particularly the International Civil Aviation Organization (ICAO)
- Promote and support international legislation, regulations and agreements that strengthen the position of Members

## CANSO Program Areas

CANSO has structured its operations into three program areas namely; **Safety, Operations** and **Policy** each of which area under responsibility of a program manager, standing committees and workgroups.

CANSO committees, workgroups, and policy makers are brought together through regular meetings, and through the Global ATM-Net, a unique extranet, linking CANSO Members in a global communications platform for air traffic management.

CANSO Networks/Task forces are ad hoc bodies, established to examine specific issues, and to initiate targeted policies to guide ANSPs in their strategic development.



Program Area	Purpose and function	Standing Committees and Workgroups
<b>1. Policy</b>	<p>This program develops common positions on key issues affecting the ATM industry, particularly the goal of safe, efficient and seamless airspace globally.</p> <p>It cooperates with industry partners and ensures CANSO's views are effectively communicated to key decision makers, including regulators and governments.</p> <p>It also creates tools and guidance materials in governance and management, to help ANSPs become more customer-focused, better performing organizations.</p>	<p>Policy Standing Committee (PSC)</p> <ol style="list-style-type: none"> <li>1. ATM Security WG</li> <li>2. Business Excellence WG</li> <li>3. Global Benchmarking WG</li> <li>4. Human Resources WG</li> </ol>
<b>2. Operations</b>	<p>This program provides leadership on ATM operational issues and facilitates the promotion and exchange of industry best practice in operations and technical areas.</p> <p>It provides operational leadership in the implementation of ATM improvements and identifies future technologies and procedures that will help transform global ATM performance.</p>	<p>Operations Standing Committee (OSC)</p> <ol style="list-style-type: none"> <li>1. Aeronautical Information Management (AIM) WG</li> <li>2. Collaborative Airspace WG</li> <li>3. Environment WG</li> <li>4. Operational Performance WG</li> <li>5. Optimized ATM Systems WG</li> </ol>
<b>3. Safety</b>	<p>CANSO's safety work program helps ANSPs improve safety through elements such as safety management systems, best practices and benchmarking. The Safety Standing Committee (SSC) oversees CANSO's Safety Program and aims to:</p> <ol style="list-style-type: none"> <li>a) Continually improve safety performance in air traffic management (ATM) operations;</li> <li>b) Further enhance safety management and culture among CANSO Members;</li> <li>c) Provide global leadership on safety management issues.</li> </ol>	<p>Safety Standing Committee (SSC)</p> <ol style="list-style-type: none"> <li>1. Future Safety Development WG</li> <li>2. Safety Management System Capability WG</li> <li>3. Safety Performance Measurement WG</li> </ol>
<b>4. ICAO Observer status</b>	<p>CANSO has official observer status at the International Civil Aviation Organization (ICAO), which enables it to be the global voice of air traffic management at the international body that determines the institutional and regulatory framework for air navigation service provision.</p> <p>CANSO's primary role is to influence the Standards and Recommended Practices (SARPs), procedures, policies and other guidance material that States will use to meet their obligations under the Convention on International Civil Aviation (Chicago Convention).</p>	ALL

**Safety Program Objectives:** The main objectives of this program are to;

- a) Provide Members with a mechanism to exchange information and best practices to improve their safety management system (SMS) and overall safety performance
- b) Establish common CANSO positions on a broad range of safety issues
- c) Represent the safety interests of CANSO Members to governmental and other bodies
- d) Identify CANSO safety goals and develop products and initiatives in support of those goals
- e) To improve the way that ANSPs identify risks and manage safety, CANSO has produced guidance to standardize risk evaluations and assessments conducted by ANSPs

safety performance metrics creates new leading indicators so that Members can better understand their safety performance and risk control effectiveness.

- c) The program conducts analysis based on comprehensive data mining, statistical research and in depth comparison to improve operational safety. Regular reports generate better understanding of the ATM system's current safety status and awareness about trends in potential safety hazards.
- d) Creates safety management guidance and tools which assist ANSPs to transition to increasingly automated service delivery.
- e) Develops safety management processes and approaches, and promotes the adoption of new practices in ANSPs with mature safety management systems (SMS).
- f) Identifies and promotes good practices in SMS within the ANSP community.
- g) Develops and updates a Standard of Excellence for Human Performance Management which will encourage ANSPs to adopt best practice in human performance.
- h) Produces and updates guidance materials to help ANSPs assess their human performance management level of maturity.

#### The CANSO safety program activities:

- a) Facilitates Implementation of the CANSO Safety Strategy that seeks to drive safety performance through global industry collaboration and a success-based approach. It does this by collaborating with industry partners and facilitating regional safety programs and safety support.
- b) Develops and implements common definitions through fostering global harmonization in safety performance measurement. Seeking predictive measures of risk and positive



CANSO's regional offices coordinate activities at a local level, within the framework of policies and positions agreed at CANSO global level. They represent the interests of Members on regional initiatives such as regional airspace harmonization, or the regional roll-out to of operational improvements such as performance-based navigation (PBN) or ADS-B and transition from AIS to AIM

# Operational Safety

## Air Traffic Control incidents.

“The sole objective of the investigation of an accident or incident is the prevention of accidents or incidents. It is not the purpose of this activity to apportion blame or liability.”

Incident investigations are conducted in DANS in fulfillment of the requirements of the safety assurance element. (the third element in the SMS framework)

The SMS department participates in the investigation of aircraft incidents conducting a parallel incident investigation alongside the one conducted by user department. The objective of the investigation process is to find out the root cause of the incident with a view of preventing recurrence. Once the root cause of the incident is identified, solutions are proposed and eventually implemented to achieve the objective of preventing recurrence.

This article looks at the incidents over the last three years and reports on the contributing factors within our operations.

## Contributing factors

According to the SOAM analysis, A “Reason-based” safety analysis tool; the cause of accidents usually falls in one of the two categories below or both.

- a) Organizational and system factors which create an atmosphere (contextual conditions) in which accidents/

incident may occur,

- b) Absent or failed barriers (PROCEDURES, EQUIPMENT, TRAINING) that allow errors made by the human element to go unchecked hence resulting into an incident.

It is the responsibility of the organization to establish a conducive work environment in which the staff can operate safely. It is also the responsibility of the organization to establish appropriate barriers to further enhance safety. This is because of the human element in the system that is prone to errors and violations thereby making the barriers necessary in the improvement of safety.

Generally aircraft incidents are due to a number of causes/ contributing factors some of which are listed below along with some safety barriers which if established are likely to minimize or eliminate associated incidents;-

1. Non-adherence to standard procedures by ATC and/or flight crew.
  - a. Establish systems/mechanism for effective monitoring of staff to ensure adherence to standard procedures.
  - b. Create an environment that promotes adherence to standard procedures.
2. Breakdown or lack of coordination between ATC/ATS units.
  - a. Have redundant inter ATC/ATS communication capabilities.
  - b. Provide adequate number of staff.
3. Flight crew making excessive

and/or unreasonable demands to ATC.

- a. Awareness through pilot/ATC interactions.
- b. Environment that enables ATC to deny unreasonable/ excessive demands without fear of being reprimanded.
4. Level burst.
5. Inadequate supervision of trainees
6. Simultaneous use of opposite runways
7. Distraction at the workplace.
8. Incorrect application of standard ATC procedures
9. Inadequate staffing levels.
10. Lack of teamwork, over confidence
11. Personal factors.
12. etc

It's important to note that occurrence of incidents is always due to some underlying condition/ hazards which are always present in the work place environment that eventually materialized into the incidents. These underlying hazards always present themselves in form of un-conducive system/ organizational environment and absent/failed safety barriers (procedures, equipment and training).

It is therefore paramount that operational staff endeavour to always report to the safety office any conditions/hazards apparent in their work place for timely and appropriate intervention to prevent them from materializing into incidents. Pilots may also report hazards as they operate in our airspace or incidents that require investigation are promptly handled.



image: spaceshipearth1.wordpress.com

## Unstable Approaches, a General Overview

The pilots have thrust and drag available as primary energy management tools but with the input of the controller they may also use track miles in the equation. The descent and arrival phases can be considered as the wide ‘mouth’ of a large funnel offering a relatively broad spectrum of speed/altitude/distance relationships within the ‘acceptable range.’

The approach and in particular the final approach, constitutes the narrow ‘neck’ of the funnel guiding the aircraft precisely to the runway threshold where the energy management options are more limited. Both ATCOs and pilots are experiencing very short decision time, high workload and few options to manoeuvre in this flight phase. The aim of the approach is to deliver the aircraft to the point in space above the runway from which a consistent flare maneuver will result in touchdown at the right speed and attitude, and within the touchdown zone, divergence from which may be considered an unstable approach, *most times* resulting into a go around and/or missed approach, *and sometimes* ‘a crush’.

Safety data from the IATA GADM Accident database shows that the approach and landing phases of flight account for the major proportion of all commercial aircraft accidents; 65% of the total accidents recorded from 2011-2015. Unstable approaches were identified as a factor in 14% of those accidents.[need to get latest data]

Many contributory factors can be identified in each accident but approach-and-landing accidents are frequently preceded by a *poorly executed and consequently un stabilized approach, together with a subsequent failure to initiate a go-around.* The aviation community through its key players, (ATCOs, Pilots, Craft manufacturers, and policy makers) has for some time recognized that

establishing and maintaining a stabilized approach is a major contributory factor in the safe conclusion of any flight. The aircraft must have the correct configuration, attitude, airspeed, power/thrust setting and be at the right position over the runway to provide the pilots with the best opportunity for a safe landing. Each of these performance criteria must be within a specified range of values throughout the final approach in order for the approach to be considered 'stabilized'. Individual operators must first define the criteria they require for a stabilized approach based upon their aircraft types, operational requirements, meteorological conditions and acceptable margins of safety. They must then promulgate a policy of strict compliance with the stabilized approach criteria, develop procedures and training to support that policy and use flight data to monitor adherence to the policy in routine operations.

A multidisciplinary approach, through collaboration and communication between all industry stakeholders, as described above, is required for network-wide implementation of effective stabilized approach policies and identified best practices.

The industry as a whole must adopt an unequivocal position that the only acceptable approach is a stabilized one, pilots and ATCOs in particular must take professional pride in achieving it on every occasion. Recognized industry practice is to recommend that a failure by the flight crew to conduct a stabilized approach should result in a go-around.

Consistent stabilized approaches are more likely when effective 'collaboration', 'cooperation' and 'communication' occur between all participants, including the operators, manufacturers, state regulators, training organizations, Air Navigation Service Providers (ANSPs), Air Traffic Control Officers (ATCOs) and of course the pilots themselves, allowing the aircraft to accurately follow the published lateral and vertical approach paths in steady, stabilized flight from a reasonable altitude above touchdown.

I encourage all key players in your capacities and concerns to work as team to have a safe end to our loved ones' voyage through reducing the figures negatively occurring out of un stabilized approaches. [Paul kalemba (SATMO/PD)]

## AVOIDING UNSTABLE APPROACHES: [ADOPTED FROM CANSO]

### Important Tips for ATCOs

There are many contributing factors that may lead to a landing incident/accident, but one that ATC can have a major influence on is the development of an unstable approach. In general terms, if an arriving aircraft is too high or too fast, the approach will most likely become unstable.

1. **Allow the arrival/approach procedure to be flown as published.** If at all possible, minimise or avoid the use of vectoring.
2. **Avoid routine vectoring** of aircraft off an arrival course to shorten the flight path. Unexpected shortcuts may lead to insufficient time and distance remaining to maintain the desired descent profile, and cause the aircraft to be high on the approach. Avoid close-in turns to final.
3. **When aircraft are being vectored, issue track miles to the airport** or approach fix in a timely manner, as appropriate.
4. **Keep the pilot informed** regarding runway assignment, type of approach and descent/speed restrictions. That will allow for proper planning and execution of the approach. Stable approaches require predictability and planning. Avoid last minute changes and advise the pilot as early as possible when changes are anticipated.
5. **Ensure the runway assignment is appropriate for the wind.** Wet or contaminated runways,

combined with cross/tail winds are often associated with runway excursions.

6. **Issue accurate and timely information** related to changing weather, wind and airport/runway conditions.
7. **Apply appropriate speed control/ restrictions.** Assigning unrealistic speeds (too fast or slow) may lead to unstable approaches.
8. **Give preference to precision approaches** over non-precision approaches. Precision approaches have vertical guidance which assists the pilot in maintaining the proper descent profile, resulting in stable approaches.
9. **Avoid instructions that combine a descent clearance and a speed reduction.** Many aircraft can't descend and slow down simultaneously.
10. **Comply with operational flight requirements** related to capturing the glide slope from below. Vectoring for an approach that places an aircraft on the final approach course above the glide slope is a leading cause of unstable approaches.
11. **Avoid close-in, last second runway changes,** even to a parallel runway. To comply with the company's operational procedures and requirements, the flight crew must have time to properly brief the approach and missed approach procedure to the runway being utilised. Even though a pilot may accept a runway change, the result may be an unstable approach

## Important Tips for pilots

**"Keep it standard, keep it simple, keep it safe" Maintain a mental picture of the required descent profile.**

1. Request distance updates from ATC if required.
2. **Advise ATC as soon as possible if descent is required or additional track miles are needed to execute a stable approach:** The sooner ATC knows, the greater the probability that the request can be accommodated.
3. **Be aware of published local ATC procedures/airspace restrictions that impact the approach:** Airspace constraints may result in route and altitude restrictions.
4. **Make requests for operational requirements, not for convenience:** The earlier you tell ATC the easier it is to accommodate any request: Understand that you are part of a tightly integrated system with lots of arriving/departing aircraft and many operational variables (traffic patterns, airspace and airport design restrictions, noise restrictions, possible emergency operations on a different frequency), so ATC may not always be able to accommodate requests.
5. **If you can't comply with an instruction, let ATC know early:** Don't accept clearances that could put you into a situation leading to an unstable approach. The worst thing to do is to accept an instruction and then not comply with it.
6. **It's OK to say "UNABLE".** Better still, say "UNABLE" and suggest an alternative. Use extreme caution when accepting visual approaches at unfamiliar airports.
7. **Be predictable:** As far as possible, minimize differences (ATC can't be aware of all the variables e.g. aircraft performance, airline SOPs, etc).
8. **When departing:** Tell ATC if you're likely to need further time on the runway, before accepting a clearance to enter the runway. ATC might be making their plans for the arriving aircraft around you starting your take-off roll without delay.
9. **If you have an emergency situation:** Let ATC know as soon as is practicable, either by selecting the appropriate Mode A or using the standard phraseology. Once ATC are aware of your situation, they will **LEAVE YOU ALONE** and can start making preparations to accommodate whatever **YOU** may request, when **YOU** are ready

# THE FOUR EYES PRINCIPLE IN ATC; What is its significance?

Over time, a number of incidents have occurred as a result of Single Person Operations (SPO) or improper exercising of the Four Eyes Principle (4EP). Most of these incidents would have been avoided if the Four Eyes Principle was exercised effectively.

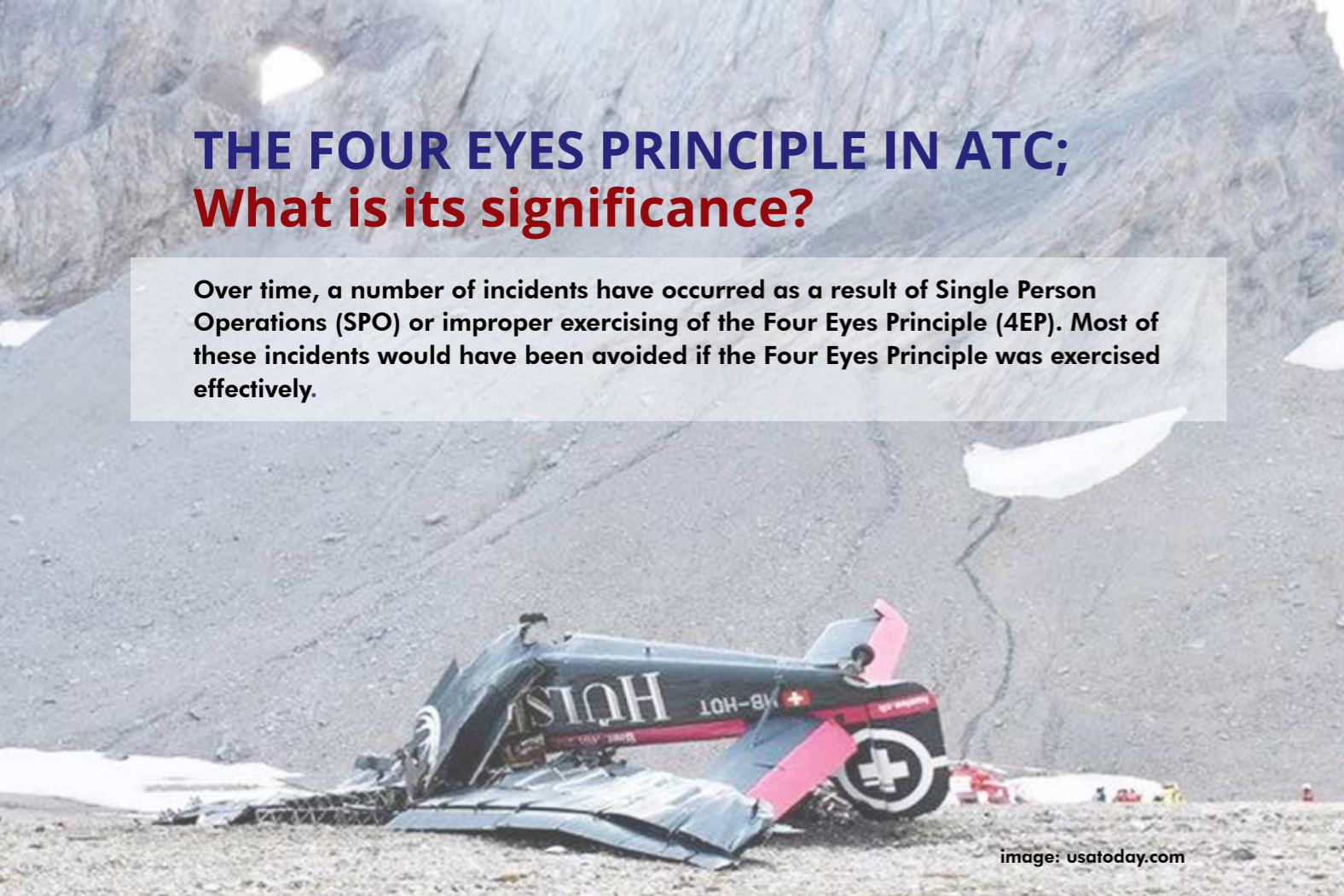


image: usatoday.com

## But what is the Four Eyes Principle?

The Four Eyes Principle is a situation where an active controller is accompanied by another appropriately qualified controller whose function includes an element of safety net by monitoring the same working area as the active controller does.

This is contrary to the Single Person Operation where an operational ATC unit is providing service with only one appropriately qualified ATMO on duty.

From the definition, the Four Eyes Principle should be understood as two or more qualified controllers working simultaneously as a

team at one control position and monitoring each other as much as possible.

**If an ATMO is the victim of sickness or a serious health issue while operating SPO, he/she may be in need of urgent medical help and suffer from a lack of assistance.**

## Why opt for the 4EP instead of SPO?

When the Four Eyes Principle is applied, there is a backup qualified controller who acts as a safety net. As a result, error detection can be greatly increased, for example on identifying wrong read-backs, erroneous clearances or instructions or missed alerts.

If a single controller is carrying out the roles of two people, for example, working as a planner and executive controller, there is an increased risk that the attention needed by carrying out one task may lead to the failure of detecting an error in the other task. This risk can be mitigated by the Four Eyes Principle.

A lone Controller can be quickly overwhelmed even with the most advanced equipment. In the span of ATC, an ATMO can expect to experience a rapid or unexpected increase in traffic, unforeseen weather, technical breakdowns, VVIP movement(s), neighboring ACC shutdowns or serious aircraft emergencies. These, or other circumstances may increase the workload and the complexity that an ATMO working under SPO will have to deal with. In a 4EP arrangement, this should not be a problem.

In light traffic, especially during night shifts, boredom can become a potential safety hazard if the unit is particularly quiet as attention can wander and the mind can then be distracted away from the job, resulting in poor monitoring. In such a situation, the second controller can help in maintaining alertness, the mind staying busy and in a more ready state and to provide additional monitoring capacity.

If an ATMO is the victim of sickness or a serious health issue while operating SPO, he/she may be in need of urgent medical help and suffer from a lack of assistance.

In the case of incapacitation, there may also be a temporary reduced ability to provide an ATC service.

Consideration should be taken, in that; an increase in the risk of fatigue issues is possible when operating under SPO, more so, during night shifts. Fatigue or a reduction in alertness can be alleviated when the ATMOs exchange roles at the unit without involving extra personnel.

NB: Education and creating awareness to the ATMOs and management about avoiding situations that encourage individuals proving to themselves or to others that “I can do the job at all times” despite high complexity or workload, should be done.

The effectiveness of the Four Eyes Principle relies on the ability, integrity and diligence of the individuals involved. Therefore, all the relevant parties should ensure that the Four Eyes Principle is implemented and exercised diligently and carefully.

## Recommendations

1. Rostering Single Person Operations (SPO) should be avoided
2. In the event of unavoidable SPO, appropriate measures shall be taken to ensure that the SPO situation will be alleviated as soon as possible.
3. Measures should be put in place to mitigate all impacts of SPO such as, informing neighbouring ATC units, providing work breaks, e.t.c.
4. The ATMO should not be held liable for incidents or accidents resulting from Single Person Operations.

AHUMUZA ARTHUR [PRESIDENT UGATCA]

“ A lone Controller can be quickly overwhelmed even with the most advanced equipment. In the span of ATC, an ATMO can expect to experience a rapid or unexpected increase in traffic, unforeseen weather, technical breakdowns, VVIP movement(s), neighboring ACC shutdowns or serious aircraft emergencies. These, or other circumstances may increase the workload and the complexity that an ATMO working under SPO will have to deal with. In a 4EP arrangement, this should not be a problem. ”

# Emerging Aviation Safety Challenges

## Cyber Security – Andrew Mwesige & Isaac Kamugo

In April 2015, US cyber security expert Chris Roberts claimed he had hacked a United airlines flight using the on-board entertainment system and managed to access the aircrafts FMS and briefly controlled the aircraft. Roberts was held by the FBI and later banned from all United airlines flights. In December 2016, the UK parliament was attacked blocking the email service for some time, these are typical examples of the potential of cyber threats. Cyber-crime is an emerging threat and according to Forbes, the global cyber security market reached \$75 billion for 2015 and is expected to hit \$170 billion in 2020.



Cyber security is the body of technologies, processes and practices designed to protect networks, computers, programs and data from attack, damage or unauthorized access. In a computing context, security includes both cyber security and physical security.

Ensuring cyber security requires coordinated efforts throughout an information system. Elements of cyber security include:

- Application security
- Information security
- Network security
- Disaster recovery / business continuity planning
- Operational security
- End-user education



## Aviation systems and cyber security



raises productivity, it also opens up the potential for cyber-attack. The vulnerabilities are only growing because current and next generation systems, like NextGen and SESAR, demand more information sharing through increased use of commercially available information technology, shared network and computing infrastructures, and network-centric architectures and operations.

In aviation, Network security and internet based threats is an emerging area of interest. The increasing need for data sharing e.g. in Surveillance and AIM coupled with networked systems which may require remote access to maintain have presented vulnerabilities that can be exploited by cyber criminals. The current trend in Air Navigation Services, both at the international level as well as within individual air navigation service providers (ANSPs), is toward increased sharing of information and creating a common situational awareness for a wide spectrum of aviation stakeholders. While this enhances the efficiency of operations and

Currently CAA has “two” IP based networks comprised of the general Office network “Enterprise” and dedicated Aeronautical systems Network for Air Navigation systems. The former handles the CAA office network requirements e.g. mail, internet etc., while the latter has the ANS core infrastructure. A number of ANS systems are network supported including the MSSR Radar and Airspace Management System, the automated Aeronautical Information Management system, Automatic weather Observation System, Automated Terminal Information System, ATC voice and video recorder, to mention but a few. These systems present vulnerabilities which have to be secured against intrusion.

## Cyber threats and attacks

Cyber criminals have evolved from hobby seekers motivated by notoriety into bonafide cybercriminals, often motivated by significant financial gain and sponsored by nation-states, criminal organizations, or radical political groups e.g. the recent ransomware attack on Iran, North Korea, USA, China who are always making news on cyber related issues.

Cyber-attacks can be intentional or unintentional and targeted or non-targeted. Unintentional threats can be caused by inattentive or untrained employees, software upgrades, maintenance procedures and equipment failures that inadvertently disrupt computer systems or corrupt data. Intentional threats include both targeted and non-targeted attacks. A targeted attack is when a group or individual specifically attacks a critical infrastructure system. A non-targeted attack occurs when the intended target of the attack is uncertain, such as when a virus, worm, or malware is released on the Internet with no specific target.

Repeatedly identified as the most worrisome threat is the “insider” – someone who has authorised and

legitimate access to a system or network. Other malefactors may make use of insiders, such as organised crime or a terrorist group suborning a willing insider (a disgruntled employee, for example), or making use of an unwitting insider (by getting someone with authorised network access to insert a disk containing hidden code, for example). However, insider threats can be guarded against and deterred by organisational (a policy, for example), logical (authentication, for example) and physical (restricted proximity card access, for example) controls.

Of paramount importance to cyber security in ATM is data integrity and information assurance. Information assurance requirements are confidentiality, Integrity, Availability, authentication, authorisation, non-repudiation and traceability.

Today’s attacker fits the following profile:

- has far more resources available to facilitate an attack
- has greater technical depth and focus
- is well funded
- is better organized



## Network vulnerabilities

**Malware** is Malicious softWare or code that typically damages or disables, takes control of, or steals information from a computer system. Malware broadly includes botnets, viruses, worms, Trojan horses, logic bombs, root kits, boot kits, backdoors, spyware, and adware.

As an example, an attack often begins by simply luring an individual into clicking on an infected link. The resulting page remotely exploits the individual, gains root access on the user's computer, and downloads malware to the user's computer in the background. The malware then acts as a control point inside the network, allowing the attacker to further expand the attack by finding other assets in the internal network, escalating privileges on the infected machine, and/or creating unauthorized administrative accounts — just to name a few tactics.

**Denial** of service attacks are mostly associated with Malware and prevent access to a particular service once the malware has taken control of the system.

**Spear phishing** is a targeted phishing campaign that appears more credible to its victims by

gathering specific information about the target, and thus has a higher probability of success. A spear phishing e-mail may spoof an organization (such as a financial institution) or individual that the recipient actually knows and does business with, and may contain very specific information (such as the recipient's first name, rather than just an e-mail address).

**Infection** often has a social aspect, such as getting users to click on a bad link in a phishing e-mail, luring them to a social networking site, or sending them to a web page with an infected image, for example.

**A root kit** is malware that provides privileged (root-level) access to a computer. A boot kit is a kernel-mode variant of a rootkit, commonly used to attack computers that are protected by full-disk encryption.

**Backdoors** enable an attacker to bypass normal authentication procedures to gain access to a compromised system. Backdoors are often installed as failover in case other malware is detected and removed from the system.

“ .....an attack often begins by simply luring an individual into clicking on an infected link. The resulting page remotely exploits the individual, gains root access on the user's computer, and downloads malware to the user's computer in the background. ”

## Securing networks



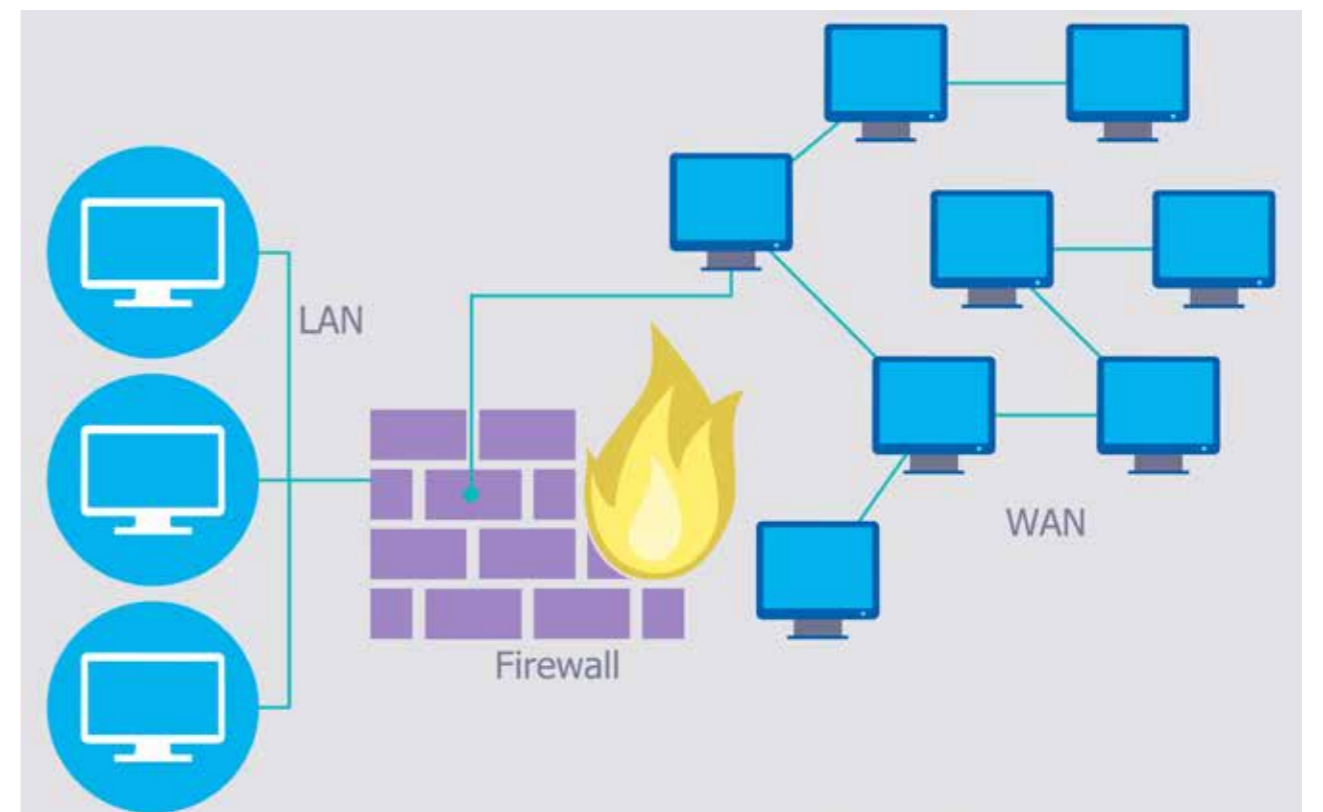
Network Security is the process of taking physical and software preventive measures to protect the underlying networking infrastructure from unauthorized access, misuse, malfunction, modification, destruction, or improper disclosure, thereby creating a secure platform for computers, users and programs to perform their permitted critical functions within a secure environment.

In DANS, the systems are physically located in Access controlled areas to prevent unauthorised access.

On the Software side, the networks are secured through use of Firewalls, Passwords, Data encryption, and Network intrusion detection systems and overall an IT policy is in place at the corporate level.

It is essential that in the wake of cyber threats, cyber security a top priority for the organisation and that directorates work together to ensure secure networks. Cyber security is not a choice but a requirement.

As staff, caution should be taken while accessing critical systems e.g. not using flash disks on critical system computers e.g. SDDs in ATS Units, AMS computers, AIM Systems, etc. Also, opening emails from unknown sources, accessing suspicious websites, leaving computers on the network after working hours, not updating anti-virus software, reporting suspicious computer behaviour e.g. loss of data are some of the preventive mechanisms that can be adopted to defend against the risk of cyber-attacks.



# Drones, unmanned aerial vehicles and unmanned aerial systems - Kakama Edmond

The International Civil Aviation Organization's (ICAO) new Remotely Piloted Aircraft Systems (RPAS) Panel aims to deliver standards for unmanned aircraft to the organization's governing council in 2018. The goal of ICAO in addressing RPAS is to provide an international regulatory framework through Standards and Recommended Practices (SARPs), with supporting Procedures for Air Navigation Services (PANS) and guidance material, to underpin routine operation of RPAS throughout the world in a safe, harmonized and seamless manner comparable to that of manned operations. Once approved, the standards will guide ICAO's 191 member states in setting their own national regulations. The overall process of producing RPAS standards is expected to take a decade or longer.

A drone is any kind of autonomously or remotely guided vehicle whether on land, sea, or air. The main qualifier, and currently only agreed upon definition, for something to be a drone is that there is no pilot inside. Drones and Unmanned Aerial Vehicle (UAVs) are considered to be fairly synonymous references although some would contend that a Drone can be differentiated by a level of automation that

renders its flight dependent upon pre-programmed behaviours, as opposed to a UAV which is a remotely piloted aircraft flown by "stick and rudder" with a pilot in control. This point of differentiation, however, remains



debatable.

**The International Civil Aviation Organization's (ICAO) new Remotely Piloted Aircraft Systems (RPAS) Panel aims to deliver standards for unmanned aircraft to the organization's governing council in 2018.**

encapsulates the aircraft or UAV, the ground-based controller, and the system of communications connecting the two.

UAS are used in a number of Operations; Humanitarian efforts (search & rescue, firefighting, infrastructure

monitoring and research & development (R&D) ,Airwork including all form of photography and video surveillance, Carrying loads or discharging substances (e.g. crop dusting, insect control and many other operations.

The CAA is responsible for ensuring aviation safety and protecting the public from aviation hazards. Operators of aircraft, whether manned or unmanned are likewise responsible for operating safely. The rapid rise of UAS raises new challenges that were not considered in current aviation regulatory frameworks thus critical need to understand and assess the UAS situation in Uganda before devising any regulatory framework for UAS operations.

Compiled by Kakama Edmond - Senior Air traffic management officer

## Who walked down the aisle



Tony Sssenkubuge (Air traffic management) and his wife on their wedding day.



SMS Manager David Matovu with his wife at their wedding



Bernard Ssekutte (AirTraffic Management) and his fiancée at their introduction

# WINNING FORMULA

'Outdo & Compete with yourself everyday'

**First**, never stop being in awe of the element of winning, The pure excitement it brings;

But always keep it real and Human!  
When you are striving for success,  
Always remember to do your part  
The same way as everybody else;  
Never forget that you have something in common with everyone!

**Whatever** success story you are modeling For yourself in your formula for winning, Stay humbled by the awe of success because the Universe is always changing and you never know what tomorrow brings for you. Ever!

**Second**, forget every New Year's resolution you've ever made and set goals instead. By this time of the month you've probably forgotten or given up on them already!  
Redirect yourself, and set goal; Which is so much simpler, than we make it out to be!  
That's what this winning formula is all about!

**Also**, I'll remind you that in order to win, you need to be competitive! Some people shirk away from this concept. You don't have to view the world as a dog eat dog place, But you must strive to outdo and Compete with yourself everyday!

Maj. Elly  
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Uganda Martyrs' Day  
03/06/2017

## Airliners of the Future May Sport Some Very Unusual Designs

Boeing's advanced vehicle concept centers around the familiar blended wing body design with Pratt & Whitney geared turbofan engines on the top of the plane's back end, flanked by two vertical tails to shield people on the ground from engine noise.

image: nbcnews.com





image: thedrive.com



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