

	TANZANIA CIVIL AVIATION AUTHORITY DIRECTORATE OF SAFETY REGULATIONS	Revision: 0 Advisory Circular
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SMS ESTABLISHMENT AND MANAGEMENT FOR SERVICE PROVIDERS

1.0 INTRODUCTION

This Advisory Circular (AC) provides guidance to Service Providers on Establishment and Management of a Safety Management System (SMS).

2.0 BACKGROUND

The introduction of safety management systems (SMS) across the aviation industry brings some specific challenges for service providers. This guidance has been written for any Service Providers that operate or provide services in civil aviation.

SMS can be boiled down to the following concept:

- a) Actively look for safety issues in your operations, products, or services;
- b) Develop corrective actions to reduce the risks those safety issues present; and
- c) Monitor to be sure that you have appropriately controlled those risks.

An SMS does not have to be complicated to be effective.

Before starting to implement your SMS, consult the Authority to find out what is required. Then carry out a gap analysis to compare what you have already with what is required and see what is missing. As with any management system, it is also important to remember that your SMS should be customized to reflect your organization and the operating environment.

How Complex is the Service provider?

The SMS should be established according to the size and complexity of the organization.

Complexity considerations include:

- a) Operating environment (mountainous terrain, arctic operations, offshore operations, etc.);
- b) Types of operations (passenger operations, cargo, aerial work, Emergency Medical Services, etc.);
- c) Fleet complexity, such as number of aircraft or aircraft types;
- d) Number of locations (bases);
- e) Maintenance organisations; number of ratings, types of product ratings, specialized work, technologies employed, number of customers and sub-contractors;
- f) Types of products and parts designed/manufactured;
- g) Number of aircraft movements (aerodromes and Air Navigation Service Providers (ANSPs));
- h) Surrounding terrain and levels of equipment at aerodromes;
- i) Density and complexity of traffic for ANSPs;
- j) Extent of contracted activities; and
- k) Number of runways and taxiways at aerodromes.

3.0 SAFETY POLICY AND OBJECTIVES

The policy and objectives set out what you want to achieve. It is the best place to start; if you do not know what you want to do, you are probably going to have a really hard time doing anything useful!

Safety objectives define what your organization hopes to accomplish with your SMS. It is a statement of a desired outcome and should be a short, high-level statement of your safety priorities. Safety objectives should address your organization's most significant risks. Goals or targets should be established to achieve each safety objective. Ideally, they should be SMART:

Specific Each target should be focused on one thing only.

Measurable You should be able to measure whether or not you hit the target.

Achievable The target should be within your organization's capabilities.

Relevant The target should be something of importance or significance to safety.

Timed There should be a deadline for achieving the target.

Example:

Safety objective To gain a full picture of the safety hazards in our operation.

Goals or targets Conduct quarterly hazard identification workshops.

Increase the number of voluntary reports received by 20% this year.

Safety performance indicators Number of hazard identification workshops carried out this year.

Number of new hazards identified through workshops conducted this year.

Number of hazard reports received per employee this year versus last year.

Ideally, you should include your safety objectives and how you intend to achieve them in a simple safety plan.

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3.1 Management Commitment and Responsibility

Management commitment means that the management is totally committed to safety. Develop a statement of your commitment by writing and signing your Safety Policy. Make it clear that you will do what it takes to meet that commitment. Outline your safety reporting policy; your staff needs to know that you will operate a fair reporting system, and what type of behavior would attract disciplinary action. Then sign it, post it in a prominent place – and live up to it!

Your Safety Policy should set out what you want to achieve and how you mean to achieve it. In addition to your safety commitment statement and your safety reporting policy, it should also include your key safety objectives.

It is important that everyone sees the Safety Policy. *Service Providers* should circulate it and have everyone sign as having read it, as well as posting it on the notice board.

3.2 Safety Accountabilities

The Accountable Executive shall have the ultimate accountability for Safety.

3.3 Appointment of Key Safety Personnel

Service Providers shall appoint someone to look after the day-to-day running of the SMS. They will be responsible for making sure that safety reports are acted on and documented. This person shall need some training to be as effective as possible in his/her SMS role.

3.3.1 Person Responsible for the SMS

The person responsible for the SMS should ideally have some operational experience and understand the systems that support your operation. He/she should have an understanding of safety management principles, ideally acquired through formal training and practical experience.

3.3.2 Responsibilities

The person responsible for the SMS will:

- a) Ensure that the SMS processes are established, implemented, and maintained;
- b) Promote safety awareness and a positive safety culture;
- c) Liaise with the authorities on safety-related issues;
- d) Exchange valuable lessons learned with other organizations;
- e) Manage internal incident and accident investigations;
- f) Ensure identified hazards and issues are being managed;
- g) Maintain safety documentation; and
- h) Organize safety training.

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3.4 Coordination of Emergency Response Planning

Coordinate your emergency response plan (ERP) with other organizations that may be affected and with the emergency services, so that you all know where to go and what to expect if they get the call.

3.5 SMS Documentation

The SMS should be documented including Safety Policy, objectives and key safety personnel, risk management processes, incident investigations process. For more information, refer to the Advisory Circular **TCAA/QSP/SR/AC/GEN-13** (Guidance on development of an SMS manual).

3.5.1 Considerations for Documentation

SMS documentation is the basis for sharing your Safety Policy and explaining your SMS processes to everyone. In addition, it is important that there are records of your safety management activity. For service providers, clear documentation makes sure that everyone including your staff members, your contractors, and the Authority understand your SMS.

Keep your SMS documentation simple, concise and to the point. You need to produce an SMS manual, but it can refer to existing documentation that covers SMS requirements.

The SMS manual should be a living document that reflects the structure, the processes and the features of your organization.

The SMS documentation should describe clearly who does what, when, where, and how as well as show that your SMS meets the requirements. Don't forget that SMS Documentation includes additional records such as:

- a) Records of audits, safety meetings and management reviews;
- b) Records of safety risk assessments; and
- c) A Hazard log/register with records of actions.

3.5.2 Writing Procedures

A good SMS will have good supporting procedures related to the operational processes to be followed. To ensure these are effective and error free, we recommend that you consider the following seven points.

- a) Be Clear and Concise. Make sure procedures are easy to understand and follow.
- b) Be Correct. Make sure they are grammatically correct with no spelling errors.
- c) Be Consistent. Use the same format and delivery system for all procedures.
- d) Be Complete. Review and test a procedure with someone who does not know it, to make sure no steps have been omitted.
- e) Be in Context. Ensure that actions properly describe the activity to be performed.
- f) Be in Control. Incorporate feedback and process controls to be effective and remain effective.
- g) Be Compliant. Make sure that procedures comply with any requirements, such as user needs, national regulations, and company policies.

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4.0 SAFETY RISK MANAGEMENT

This is where you identify hazards and associated risks you face and decide how to reduce them.

4.1 Hazard Identification

Hazard identification is vital and sometimes it is easier to refer to hazards as safety issues. Safety issues can be anything that could lead to an aircraft accident/incident; unless you know what hazards are out there, you cannot identify the risks they pose. And if you do not know what the risks are, you cannot do anything about them.

Do not leave the identification of safety issues to chance; develop a simple process to actively look for safety issues. Some safety issues can be identified from occurrence or incident reports, some may be reported by individuals, and others may be the result of proactive brainstorming sessions. Encourage everyone to report any safety issues they find. Where aviation safety is concerned, it is better to follow a few false trails than to miss a lurking disaster. Publicly celebrate good reporting to motivate personnel to report.

You will need a Hazard Log to record the safety issues people find or think of, but it can be very simple. It might be a notebook in the operations room or a sheet on the notice board. It should be easily accessible and visible; it is for everyone. Encourage people to comment on the safety issues others have logged.

Appendix 3, *Sample Hazard Logs*, contains examples of Hazard logs for *Service providers*.

4.1.1. Reporting System

Hazards or safety occurrences can only be controlled if their existence is known. Underlying issues that have the potential to endanger the safety of aircraft operations can be identified through a safety reporting system. Safety reporting can be reactive (from an event that has happened) or proactive (from a potentially unsafe situation being identified).

Reporting of less significant incidents, which may not be subject to mandatory reporting, should be actively encouraged. This will give you a better understanding of what is going on and allow you to monitor your organization's safety performance and help to identify developing safety trends. Encourage all issues to be reported and then decide if they need investigating.

For the reporting system to be effective, everyone connected to the organization, whether internally or externally, needs to actively participate. Everyone needs to be clear about how to report, what to report and who to report it to. Information from the reports can then be used to identify safety risks so that appropriate action can be taken. You can also ask organizations and customers that use your products or services to report any safety issues that are related to what you have provided. Be sure to give feedback to the person reporting an event so they can see that reports are taken seriously and acted on; this will encourage further reporting.

The Safety Reporting Form is a good way to gather this vital information. The person responsible for the SMS (described in Section 3.3.1) is the best person to manage these reports and assign them to

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the appropriate person for action. Safety reporting by *Service Providers* may be by word of mouth but it is important that it is still documented so it is not lost or forgotten.

Safety reports should be used to enhance safety rather than to apportion blame. To encourage reporting without fear of repercussion, it is important that staff members understand the open and just culture expressed in your reporting policy.

4.1.2. Reporting Policy

Service Providers should have a reporting policy so that everyone has a clear understanding of the organization's values regarding the reporting of safety-related information and how it encourages a healthy reporting culture.

The reporting policy could be combined with the Safety Policy and should:

- a) Encourage employees to report hazards, incidents or accidents; and
- b) Define the conditions under which punitive disciplinary action would be considered (e.g., illegal activity, negligence, wilful misconduct).

A sample Safety Reporting Policy is as follows:

Our organization fully supports and encourages a culture of openness and trust between all personnel. This cannot be achieved unless employees feel they are able to report occurrences or hazards without the fear of unwarranted retribution. To that end, personnel reporting safety-related issues shall not be subject to disciplinary action except where there is clear evidence of:

- a) *Gross negligence;*
- b) *Intentional disregard of regulations or procedures;*
- c) *Attempted cover up;*
- d) *Criminal intent; or*
- e) *Use of illicit substances.*

4.1.3. Investigation

There are times when further investigation of a safety issue is necessary to determine the exact cause and the contributing factors. You do not want to develop a corrective action only to find you have not solved the underlying problem. Using a root cause analysis method for investigations will help to get to the main issue that is causing your problems.

You may not have the time or resources to investigate everything that is reported, so it is best to define when you will investigate an issue. For example, it does not make sense to investigate a problem that is of negligible consequence, but you would certainly want to investigate a problem that is both likely and potentially serious.

A simple approach is to review the safety reports and any operational occurrences and then use the risk matrix to assess the need to investigate. Document the investigation and add the outcomes to the Hazard Log. The following is a generic investigation approach.

- a) Gather information.
 - i) What happened, when, and where?

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- ii) What is the impact on the organization?
- iii) What were the conditions and actions that led to the safety issue?
- iv) Who was involved?
- b) Interview those involved.
- c) Analyze the information.
 - i) Examine all the facts and determine what happened and why (the root causes).
 - ii) Assess whether this event or something similar has happened before
 - iii) Identify contributory factors, such as:
 - ✓ Job factors (e.g., Did the work require too much or too little attention? Were there distractions or conflicting demands? Were the procedures adequate and properly understood?);
 - ✓ Human factors (e.g., physical ability (size and strength), competence (knowledge, skill and experience), fatigue, stress, morale, alcohol or drugs);
 - ✓ Organizational factors (e.g., work pressure, long hours, availability of sufficient resources, quality of supervision, safety culture);
 - ✓ Plant and equipment factors (e.g., clarity of the controls and instrumentation, layout, the role of unusual circumstances); and
 - ✓ Unsafe acts: Most safety issues are caused by unsafe acts whether deliberate or unintentional. By identifying unsafe acts and understanding what drives them you can establish a lasting and valuable safety culture.
- d) Identify suitable corrective actions.
- e) Draw up the action plan and implement it.
 - i) Corrective actions may need to be prioritized due to resources and practical implementation timescales. Keep employees fully informed of the corrective action plan and progress with its implementation.

Appendix 4, *The Five Whys Approach for Root Cause Analysis*, provides an example of this method.

Upon completion of the investigation using this example or another method, you should document the results of the investigation and summarize on the Hazard Log for tracking purposes and to identify any follow up activities. Follow up is needed to ensure the problem has been corrected or adequately controlled.

4.2 Safety Risk Assessment and Mitigation

You will also need a process to identify what could happen as a result of each safety issue (the consequence) and assess how bad the outcome will be and the likelihood of it happening (the risk). Risk assessment, put simply, is determining whether you can accept the risk as it is; if not, you must do something to reduce it (control or mitigation).

Examples of safety risk management procedures can be found in Advisory Circular **TCAA/QSP/SR/AC/GEN-15** (Guidance on Safety Risk Assessment and Mitigation),

The summary of the safety risk assessment should be documented in a Hazard Log. This should include the risk assessment for each hazard and any actions required to control the risk.

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5.0 SAFETY ASSURANCE

5.1. Safety Performance Monitoring and Measurement

Decide how you will measure your safety performance. Look for things that do happen, not things that do not. The number of safety issues reported or resolved is a more useful measure of safety performance than the number of accidents, unless you have a lot of accidents! Keep monitoring to see how you are doing and whether your mitigations are working as planned. Then take action if things are not improving. In addition to using SPIs, you can use your internal audit or review to check your performance.

5.1.1 Safety Performance Indicators (SPIs): Why Do You Need Them?

SPIs are used to monitor how close you are to achieving your safety goals, targets, and objectives. These will help you see how effective your SMS is. Rather than just using the numbers for the annual management review, monitor your SPIs regularly so that you and your organization can see how well the SMS is performing. This will allow you to take action when you start to see undesirable trends.

Make sure that everybody knows what the SPIs are and what targets have been set; this will enhance the commitment to safety and make clear what the organization is trying to achieve through its SMS.

5.1.2 How to Go About Setting Your SPIs

Focus on developing SPIs for what is important to you and to measure the effectiveness of your SMS and your safety performance. There are some generic SPIs that apply to all organizations, others that will apply to your type of organization, and perhaps some that apply only to you. The Authority may identify specific SPIs that it wants you to measure.

Generic organizational SPIs include:

- a) Number of major risk incidents (as defined in your Safety Management Manual),
- b) Number of mandatory reports,
- c) Number of voluntary reports,
- d) Number of overdue safety report closures,
- e) Number of safety meetings,
- f) Number of safety briefings, and
- g) Number of safety audits.

These indicators are all easily monitored and show the organization's general safety health. You will need to set targets for each, probably on the basis of number of events in the previous 12 months or by calendar year; make sure this is stated clearly. **TCAA/QSP/SR/AC/GEN-14, *Safety Performance Indicators for Service providers***, shows some examples, but the SPIs and the specific targets may not be right for your organization.

Mandatory reports indicate things that went wrong, so the target should be "less than x" or "reduce by ___%."

Voluntary reporting offers an opportunity for improvement, as well as being an indicator of a good safety culture, so the target should be "more than y" or "increase by ___%." Encourage your staff to

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report every safety issue they see, so that you can deal with these issues; if it is not reported it cannot get fixed. A large number of voluntary reports is a sign of a mature SMS; it is not necessarily a sign of bad things happening.

It may be more useful to monitor some SPIs against the number of movements (e.g., flights, flying hours, maintenance cycles), as this will allow for changes in your operation. So, for example, if your target was less than 2 mandatory reports per year and you bought a second aircraft, you would need to change your target, probably to 4 reports per year. But if your target was 2 reports per 1000 flights, doubling the number of aircraft would have no effect on the target.

Be careful when reviewing SPIs, unless you have a reasonably large number of events. A change from one to two incidents per year is a 100% rate increase but is not nearly as useful an indicator as a 10% change from 50 to 55.

The following are examples of organization-type SPIs.

- a) **Operator:** Number of flights flown with operational Minimum Equipment List (MEL) restrictions
- b) **Aerodrome:** Number of runway incursions, number of bird incidents
- c) **Maintenance:** Number of maintenance errors
- d) **Air Traffic Service (ATS):** Number of airspace infringements, number of losses of separation

Good indicators will enhance safety, and they should be determined based on the applicability and value to the organization.

5.1.3 Internal Audit

No matter how small your organization, an internal audit will assess your processes and procedures and give you a level of confidence that everything is being done properly and your staff members are following your policy and procedures.

Audits should be carried out by someone who is independent of the process being audited and any findings from audits recorded, together with the agreed corrective actions. These findings may be new hazards or weaknesses in your defences so you should capture them in the Hazard Log.

Even for *Service Providers* it may be challenging to establish an independent internal audit. You might consider using an external auditor, but we encourage you to do the audit internally. Experience shows that this will give you a better insight into your operations and your business.

Audits should be more than checking items on a compliance checklist; they should look at the effectiveness of processes, identify corrective and preventive actions, and check on any follow up and continuous improvement. An important area is the identification, analysis, and follow up of safety issues. The internal auditor should review the Hazard Log before auditing a business area to check that those mitigations are in place and working.

- a) **Tools:** Tools like an *SMS Evaluation Tool* tailored to your organization may be used to gain the most benefit.
- b) **Frequency:** Audits and reviews should be carried out at least annually, but covering the scope in several smaller audits or reviews may be more productive and effective.
- c) **Addressing Findings:** Audit and review findings should be addressed with preventive and corrective actions.

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5.2. The Management of Change

Change brings risk, whereas managing change reduces the risk.

Whether it is the introduction of a new aircraft type, a new maintenance procedure, or a move to new premises, your SMS needs to cover the identification of any changes that may pose a risk to aviation safety. These include the changes that would have a noticeable impact on your resources, materials, procedures, processes, training, management control, and above all your people. Management of change processes will help you identify potential problems.

5.2.1 Considerations for Managing a Change

Typical changes include:

- a) Organizational change (a new executive, the departure of experienced personnel, organizational restructuring);
- b) Operational change (a new aircraft type, a new contract, new systems, new operating procedures); and
- c) Physical change (a new facility, a new base, aerodrome layout changes).

Safety risk assessment is a key part of the process, so when you decide to make a change, start by assessing the overall risk of the change itself. It may be that the change is simply not worth the risk or that the risk of not making the change is just too high. You have probably done this intuitively, but make sure you involve the right people as they may bring up risks you had not taken into account. This may mean involving people from outside your organization (key stakeholders).

Once you decide to go ahead, identify all the factors that must be considered. For instance, if you plan to introduce a new aircraft type, you will probably need to consider aircraft certification and registration issues, training requirements and schedules and maintenance arrangements among other things. You will need to determine when things will need to happen, who will be involved, what needs to be done beforehand, what will happen next, and so on.

Once you have your basic plan in place, you can start to identify and manage the risks. And remember, introducing any new procedure, operation, or equipment type is likely to bring new safety risks.

Include a risk assessment of each issue, so that you can take any necessary steps to minimize the risks and their potential effects. For example: What is the likelihood that the training will not be completed as scheduled? If the training is late, what will be the effect on your operations and your business? And how will you minimize the risk?

Be prepared to manage the effects of changes in other organizations on your operation. For example: How would it affect your organization if your third-party maintenance provider had a significant leadership change or a move to another location? How would it affect your organization if your ANSP was to reduce operations at your aerodrome?

Document what you plan to do and what you actually do at each stage. This will help you and others to see what went well and what did not. This will also help provide a historic record of why certain actions were taken as the organization continues to improve and expand its operations.

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5.3. Continuous Improvement of the SMS

'Safe enough' is not the same as 'safe'. You can always do better, and your SMS is your main tool, so working to improve it is a good way to become a safer organization.

Two important paths to improvement are the internal audit (covered in Section 5.1.3) and the Management Review for effectiveness. If you have a quality management system (QMS) in place, you are probably doing these already; they may just need some adjustment to the SMS environment.

5.3.1 Management Review

The Management Review lets you judge how effective your SMS is. Review your SMS at least once per year and look at your safety performance indicators, the results of audits, and the risk mitigation actions you have implemented. These should give you an idea of how well your SMS is performing and what you might change to improve it. Write down the results so that you and your staff can track your progress.

To ensure the continuing adequacy and effectiveness of the SMS, the Accountable Executive should conduct periodic reviews of SMS processes and procedures and evaluate the organization's safety performance.

Organizations should monitor their safety performance indicators as part of the management review process. Management Reviews should:

- a) Be conducted periodically (usually annually) or more often if there is a need; and
- b) Cover at least the following topics:
 - i) Audit/review results;
 - ii) Safety objective achievement results;
 - iii) Hazard and event status and results;
 - iv) Corrective and preventive action(s) status and results;
 - v) Training program effectiveness;
 - vi) Follow up actions from previous management reviews;
 - vii) Changes that could affect the SMS; and
 - viii) Recommendations for improvement.

Management review can be conducted via a safety review meeting, and actions documented.

The expected result of management review is to answer the question: How effective is your SMS?

6.0 SAFETY PROMOTION

Keep the safety message alive and well; tell everyone!

6.1 Training and Education

All staff need SMS training. The safety manager should certainly be given SMS training. He or she should then know what is needed for the rest of the staff and will probably be able to deliver the training.

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6.1.1 The Basic Requirements

The simplest way is to require all staff to read and understand the SMS Manual and sign for reading the manual as part of the Training Record.

Service Providers Safety Training: All staff members need to understand their role and responsibilities in the SMS, and this can be done through training and/or reading and understanding the SMS Manual. All training needs to be recorded.

6.1.2 What is Involved?

Key Issues: It is important to ensure that all staff are trained and competent to carry out their safety-related functions. Training should suit the size, the management style, and the needs of the company. Training could be computer or classroom based, supplemented by reading specific training material. The delivery method is not important; what is important is that your staff are trained and understand how the SMS works.

All staff need to be trained on how to report safety issues, why it is important and what safety issues should be reported.

Your training program should include:

- a) Importance of the SMS;
- b) Employee's responsibilities for safety;
- c) SMS policy and processes in your organization; and
- d) Safety reporting (why, what and how).

Refresher Training: The safety training program should include periodic refresher training; this could involve regular briefings rather than formal training sessions, or a workshop format where the staff can discuss hazards or safety issues and risk mitigations. It is useful to include lessons arising from incidents and investigations, both internal and external.

Training Plan and Record: Service Providers should have a training plan, which includes as a minimum a list of staff requiring SMS training and a record of when the specific safety training (including refresher training) took place.

Safety education is an ongoing process; try to make safety-related information (magazines, books, pamphlets, posters, online resources) readily available.

Your training program should be reviewed for effectiveness during the Management Review process.

6.2 Safety Communication

Safety communication is about letting people know what the safety issues are and what is being done about them. You could bring this into your crew briefings or staff meetings; you might put a regular safety bulletin on the notice board. It is a good idea to have a formal safety meeting from time to time, so that your staff can discuss the various issues in an open forum; it would also give you the opportunity to tell staff about the successes (or failures) of the SMS and about any planned changes.

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7.0 Dealing with Contractors and Other Organizations

It is important to consider the interactions with your contractors in respect of the SMS.

The SMS does not just apply within your organization; it extends down to people who supply you with products and services and it extends up to organizations that you supply with products or services.

7.1 People Contracting to You

It is the responsibility of Service Providers to make sure that the SMS is not compromised by services or products provided by third parties.

Some of these third parties may not have (or require) an SMS, but you should make sure that they are not going to compromise safety for your organization. Even if the third party has an SMS, you should be prepared to check that it is effective. In either case, you might carry out an inspection or audit. If there is no SMS, there may be less to audit, and it exposes your organization to more unknowns.

It is useful to work out a scheme for sharing safety data with your third party contractors: their hazard and occurrence reports may alert you to a potential problem, and vice versa. This could be done through meetings with your key contracting organizations.

For example, if the contracted maintenance organization discovers a problem with something it has done for another customer operating the same aircraft type as you, the company should alert you too. And if you have a problem that might have arisen from its maintenance activity, the company needs to know.

It is important to include your SMS requirements in any contract or service agreement; your contractors need to understand your expectations from the onset, which should include how safety issues are reported.

7.2 Organizations That You Supply with Products or Services

If you supply products or services to an organization that operates an SMS, that organization may, indeed should, check that you are operating an effective SMS.

You should be prepared for the organization to ask to review your documentation or carry out an inspection or audit. They might have some suggestions for improvement which benefit both organizations. It is important that you report issues related to their operations that you identify.



Tanzania Civil Aviation Authority

APPENDIX 1:

A Step-by-Step Guide for Service Providers — Guidance for Establishment and Management

The following is a summary of the main considerations when implementing an SMS within an organization.

IMPLEMENTATION GUIDE		
Step 1	GAP ANALYSIS	1.1 Review the requirement of an SMS 1.2 Identify what you have 1.3 Identify what you need
Step 2	DESIGN AND DEVELOPMENT	2.1 Implementation Plan 2.2 Document your SMS
Step 3	INTRODUCTION AND ROLLOUT	3.1 Get your people involved 3.2 Communicate the changes 3.3 Set a realistic timeframe
Step 4	IMPROVEMENT AND MEASUREMENT	4.1 Gather feedback 4.2 Measure performance 4.3 Continuously improve your SMS

STEP 1: GAP ANALYSIS

1.1 REVIEW THE REQUIREMENTS OF AN SMS

The first step is to know what an ideal SMS looks like and then consider this in the light of your organization. Look at your regulatory requirements and any guidance from the Authority. The Authority may provide a gap analysis tool to use. The following resources and actions should help.

a) Research existing guidance material from the Authority

Put aside three to four hours to research and read any guidance material thoroughly. Review the gap analysis tool as this will help you understand what you need to address in your SMS.

b) Work together: industry and Authority

Work with similar or partner organizations and industry groups to compare and contrast your understanding of what is required. Do not aim for a cut-and-paste solution though; it might not work well and may actually waste time and effort. The Authority provide manual builders and templates for forms that you can customize to fit your organization. The Authority may also be able to provide advice on how to build a suitable SMS.

1.2 IDENTIFY WHAT YOU HAVE

While you review any guidance material, consider and document what you have in place already. Jot down some notes as you go about what you already do, and what you do well. Use the language your organization understands in your SMS.

1.3 IDENTIFY WHAT YOU NEED

This is where you need to consider carrying out a gap analysis. Here is the part where a lot of organizations feel initially overwhelmed by all the things they may not have in place and then fail to start the gap analysis. If you follow these steps, you will end up with an easy, manageable list of actions to focus on.

A gap analysis does not have to take too long or be overly complex. Below is an example of a simple table to capture results:

No.	Element	What we have	What we don't have	Actions
1	Safety policy and objectives	Quality Policy (with safety mentioned)	- Safety commitment statement - Safety objectives for 2025	- CEO to develop and sign commitment statement - Workshop

STEP 2: DESIGN AND DEVELOPMENT

In this step, the person responsible for the SMS needs to design and develop a plan to implement the SMS. If it is just you, consider seeking help or support from a partnering company or industry association.

2.1 IMPLEMENTATION PLAN

Using the action item list from the gap analysis, go through and introduce all under-developed or absent elements in an implementation plan.

A few things to consider while you do this include:

- Think about each action. Does it require the development of a philosophy (e.g., safety objectives), a process (e.g., safety reporting system) or a practice (e.g., risk assessment tool)? It can help to differentiate these to make sure you have the philosophies sorted out first.
- Read through the actions identified and prioritize them. It is useful to do a quick sensibility check, to ask yourself, "Do I really need everything I've identified to achieve a successful system?" This is a good time to see if your actions sufficiently address the gaps identified and are suitable for your organization.
- You do not need to have each action up and running straight away. Develop an implementation plan that will allow you to phase different elements over a period of time. Building an SMS overnight will be far too challenging and your goal at this stage is just setting up the foundations.
- Go with what works. Do not try to force a process or activity that clearly has no place in your business. For example, if you are attempting to develop a risk assessment methodology, think about how complex you want to make this process; make it practical and keep a focus on what you're trying to achieve (e.g., identifying the safety and business risks of a new venture).

2.2 DOCUMENT YOUR SMS

You need to document the processes and activities you currently carry out, and the ones you plan to introduce. A sensible approach is to add your SMS processes and activities to the documentation you already have such as your Operations Manual.

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STEP 3: INTRODUCTION AND ROLLOUT

3.1 GET YOUR PEOPLE INVOLVED

No matter how small your organization is, failing to get your people involved will be a missed opportunity and a showstopper. So, be sure your people are on board and understand what you are trying to achieve. A clear safety policy and a commitment from the accountable executive is the best place to start. A good safety culture begins with the accountable executive 'walking the talk.' A few one-on-one discussions go a long way.

3.2 COMMUNICATE THE CHANGES

Let your staff know about the changes, why they are being introduced and implemented, the benefits they are designed to bring, and, of course, their own roles within the SMS.

Who else may benefit from knowing that you have an SMS in place? For example, your customers and your contractors and if you are a small operator based on an aerodrome, it might be valuable to let the aerodrome operator know - your reporting system may have safety information that's worthwhile passing on to them.

It is worth letting the Authority know; this will help build the Authority's confidence in your organization.

3.3 SET A REALISTIC TIMEFRAME

Be sure to space out the implementation activities over a reasonable timeframe. Even for service providers, it will take time to implement your SMS and longer for it to become effective. Do one or two things at a time. Make sure these are in place and working before moving to the next step in your plan.

Keep checking your progress. For example, if you have implemented a new safety reporting process but have not received (or submitted) any reports, find out why.

STEP 4: IMPROVEMENT AND MEASUREMENT

An important part of implementation is seeing whether your actions have worked. This step focuses on what you can do to determine this. Consider doing a review six months after your initial development has started; you can increase the interval as your SMS matures.

4.1 GATHER FEEDBACK

To understand what is working, and what is not, consider getting both an internal and external perspective.

Internally:

- a) Review any regulatory guidance material and compare your thoughts now with what they were when you first read it.
- b) Use your initial gap analysis to identify what may need updating. Have things changed?
- c) Talk to your people and see what they think.

Externally:

- a) Check in with your partner organization or industry association.
- b) Consider having an independent evaluation done.
- c) Ask for feedback from your Authority inspectors.

4.2 MEASURE PERFORMANCE

Establish some performance measures that will help you measure your safety performance. This can simply measure the amount of significant safety events you have, the amount of voluntary safety reports you receive or the amount of safety meetings you have. Use them to see how far you have come and tell your staff about the progress made.

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4.3 CONTINUE TO IMPROVE YOUR SMS

The previous steps should give you an indication of what can be improved. Refining and enhancing your SMS does not stop. If you think you have done all you can, just remember that continual improvement is fundamental to your SMS. Your implementation is successful when it is embedded in your day-to-day activity (and has been for a while), it works consistently, and it is actually effective. This won't happen overnight, but with time you'll see the system maturing and your confidence growing.

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APPENDIX 2:

A Sample SMS Manual Format for a Service provider

The following is an example of an SMS Manual layout.

- Table of Contents
- List of Effective Pages
- Distribution List
- Safety Policy and Objectives
 - Safety Policy signed by the Accountable Executive to indicate “Management commitment and responsibility”
- Safety Organization
 - Safety accountabilities and responsibilities
 - The Accountable Executive and key safety personnel
- SMS Documentation
 - What, when, who, where and how to document and record the SMS activities
- Safety Risk Management
 - Safety reporting and hazard identification process
 - How to assess hazards and risks and how to take corrective actions
- Safety Assurance
 - Safety performance monitoring and measurement
 - Safety audits and surveys
 - How to manage changes using SMS
 - How to improve the SMS continuously using the monitoring result
 - Management Review
- Safety Promotion
 - How to provide safety training and education to all staff
 - How to achieve safety communication
- Emergency Response Plan
 - How to deal with emergency situations
 - Quick reference guide for key staff members

APPENDIX 3:

Sample Hazard Logs

Hazard Log for *Service Providers*

Note: Hazard Log information can be directly populated from reporting form.

Issue (<i>hazard</i>)	What is the result (<i>consequence</i>)	How bad is the result	How likely is it to occur	What action are we taking (Who and when)	Follow-up (if applicable)

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APPENDIX 4:

The Five Whys Approach for Root Cause Analysis

Following is an example of applying this approach.

Situation - An apprentice engineer installed the landing gear pins in the main landing gear so the aircraft could be jacked up to allow a retraction test of the nose gear. When the gear switch was selected up, the main and nose gear retracted. The main jacks (which had been lowered but not removed) punched through the bottom of the wings as the aircraft came to rest on its belly on the hangar floor. The incident took place at 3:00 AM and the aircraft was to be online at 6:00 AM.

Problem Statement – At 3:00 AM on March 1 this year, both aircraft wings were punctured on C-FOX during a retraction test of the nose gear at Prairie Base, even though landing gear safety pins had been installed.

1. Why did the main gear retract with the pins installed?			
A: The apprentice engineer installed the landing gear pins in the wrong hole.			
2. Why did the apprentice install the pins in the wrong hole?			
Organizational Factors	Supervision	Environment	Human Factors
A: These holes had not been filled, as recommended by the aircraft manufacturer's service bulletin (SB).	A: The apprentice had never been shown the correct location for the pins and was completing the work without supervision.	A: The lighting in the hangar was not adequate for night working conditions.	A: The apprentice was working under pressure.
3. Why was the SB not complied with?	3. Why was the apprentice completing unsupervised work without adequate direction?	3. Why was the lighting in the hangar inadequate?	3. Why was the apprentice working under pressure?
A: It was in a pile of SB's that had not been assessed.	A: The supervising engineer was on vacation that week. The apprentice had completed similar tasks to this before and felt qualified to complete this task.	A: The lights were more than 20 years old and some of the fixtures were broken.	A: The aircraft had to fly at 6:00 AM, the aircraft maintenance manual required the retraction test to be done, and the apprentice was fatigued.
4. Why had the SB's not been assessed?	4. Why were there no arrangements to ensure alternate supervision?	4. Why were the fixtures not repaired or replaced?	4. Why was the apprentice fatigued?
A: The company did not have a documented procedure for assessing SB's.	A: Management did not foresee the schedule conflict in time to correct the omission.	A: Management did not upgrade the lighting when the hangar was purchased 15 years ago	A: The apprentice was finishing a 12-hour graveyard shift and did not recognize the

		and did not act on complaints made about poor lighting.	cumulative effect of fatigue and pressure on work performance.
5. Why was there no procedure for assessing SB's?	5. Why did management not foresee the schedule conflict in time to compensate?	5. Why was the lighting not upgraded when complaints were received?	5. Why did the apprentice not recognize the effect of these factors on work performance?
A: The Director of Maintenance was over-tasked due to a staff shortage.	A: Although staff must get approval for vacation time, no one in Scheduling followed up to see if there was a conflict.	A: Senior management did not feel there was a need to upgrade the lighting, citing expense reasons.	A: Human factors training had not been provided.

Corrective Action - Solutions developed and implemented by this enterprise were:

1. Short-term:

- a) Issue direction that aircraft remain jacked for gear swings, regardless if pins are in place, until the service bulletin is complied with;
- b) Plug the holes as recommended by the service bulletin;
- c) Document the procedure, and assign responsibility, for ensuring all service bulletins are assessed for each type of aircraft; and
- d) Conduct training in human factors.

2. Longer-term:

- a) Install new lighting in the hangar;
- b) Implement processes to monitor leave requests for scheduling conflicts and to ensure that alternate supervision arrangements are provided; and
- c) Complete staffing of vacant position.