



Australian Government
Civil Aviation Safety Authority



SMS 7

SMS FOR AVIATION—A PRACTICAL GUIDE | 2ND EDITION

SMS for small,
non-complex
organisations





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The case studies featuring 'Bush Aviation and Training' and 'Outback Maintenance Services' are entirely fictitious. Any resemblance to actual organisations and/or persons is purely coincidental.

Small, non-complex organisations

Size does matter. SMS is just as relevant for small charter organisations as it is for airlines, and can be scaled to suit the size and complexity of the organisation.

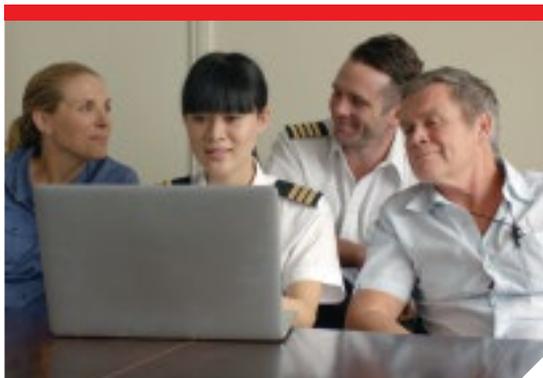
Small organisations may feel they are at a disadvantage when it comes to implementing a safety management system, but ... SMS is scalable—so not all elements of SMS will look the same in all organisations.

An RPT airline's emergency response plan (ERP) is going to be different to a small charter operator's ERP. The RPT airline's document will detail all the actions to be taken and the relationships with stakeholders:

- » emergency services (ARFF etc.)
- » the operational chain-of-command
- » third-party contractors such as ground handling
- » PR and media protocols
- » air traffic control.

On the other hand a small, non-complex organisation's ERP might consist of a simple, regularly updated list of phone and contact details. Common sense must prevail.

Confidential reporting, which is an important part of encouraging a safety reporting culture in airlines, and employees feel they can speak up because their anonymity is protected, is obviously not possible in a small organisation where often, everybody knows everybody's business.



While a small regional charter organisation obviously will not have the resources available to an airline, and gathering the breadth and depth of reporting data will not be possible for small organisations, there *are* advantages to being small. Communication, one of the key parts of running an efficient business, and an effective SMS, is easier in small organisations with their direct lines of communication with everybody involved. Calling a meeting in an airline, for example, can be a complicated process, requiring the bringing together of people from dispersed locations. It is also easier for small organisations based at a regional aerodrome, for example, to bring all the interested parties together to discuss safety issues: other operators, maintenance organisations, local government aerodrome managers, aero clubs, emergency services, ATC and clients.

Small organisations too, are often more flexible, able to make critical decisions in a more timely fashion, without the complicated chain-of-command and convoluted sign-off process which often characterise larger organisations.

One safety management practitioner refers to SMS as 'organised common sense'. There must be common sense, but equally those common-sense practices must be organised and systematic. Many small operators may already have many of the SMS components in place—doing them informally—but for the system to be effective, these components must be documented, tracked and tweaked where necessary. An SMS is a living system, not a manual sitting on the shelf to be dusted off when CASA does an audit. Make someone who is passionate about safety accountability your safety officer; as the owner/operator lead by example—'walk the talk'; document your safety policies and objectives; identify your potential 'gotchas'—your hazards and risks, and what steps you are taking to remove or mitigate them; and, importantly, check regularly whether these steps are working, and you are meeting your objectives.



What does 'small, non-complex' mean when talking about an aviation organisation?

A small aviation organisation can be considered non-complex in SMS terms if some or all of the following apply:

- » How many safety-sensitive aviation activity (SSAA) employee positions the organisation has.
 - Organisations with 10 or fewer SSAA employees are automatically considered to be small and non-complex
 - If an organisation has more than 10, but no more than 20, SSAA employees, and does not exceed any of the other criteria for non-complex organisations, it may also be considered small and non-complex.

When it comes to SMS, complex and small, non-complex organisations share similar considerations:

- » Management commitment and responsibility for safety
- » Safety objectives and planning
- » Safety culture
- » SMS implementation plan
- » FDAP (if required).

Management commitment and responsibility

For an SMS to be successful, the CEO of the organisation must drive and champion it. This senior management commitment is the single-most important factor determining whether your SMS is successful.

1. Management

- The organisation's senior management must be committed to develop, implement and continuously improve their SMS
- A management team must be recruited, or in place, appropriate to the size and complexity of the organisation, to support the organisation's SMS
- Senior management must take an active part in developing and disseminating the organisation's safety policy and safety objectives
- Senior management must have documented defined roles, responsibilities, and accountabilities to support the organisation's SMS.

2. Organisational structure

- Senior management must develop an organisational structure showing who is responsible and accountable for which roles. This must support the effective functioning of the SMS
- This organisational chart must have a clear line of communication from the safety manager/ safety officer directly to the CEO.

Safety policy

The organisation needs a safety policy, setting a clear, high-level direction so that the organisation can manage safety effectively. This safety policy should be signed by the organisation's accountable manager. The safety policy should detail your safety reporting procedures; show clearly what constitutes 'unacceptable' behaviour; and highlight conditions where disciplinary action would not apply.

The organisation should have the following as a minimum:

1. The safety policy should be individual and reflect the unique operating environment of the organisation.
2. The safety policy should outline the organisation's fundamental approach to safety.
3. The safety policy should highlight a senior management commitment to safety.
4. The safety policy should show a commitment to provide adequate resources to manage safety effectively, and to manage risks effectively.
5. The safety policy should highlight responsibilities and accountabilities for safety for the whole organisation.
6. The safety policy should also foster the growth of the organisation's safety culture.

Safety objectives and planning

The most effective SMS objectives are those setting specific safety goals reflecting the organisation's safety vision and senior management's commitment to the systematic management of safety.

1. Safety objectives should be SMART, that is they should be: specific, measurable, achievable, realistic and timely so that you can measure their effectiveness.
2. You can document these safety objectives in terms of short-, medium- and/or long-term desired goals

For example:

- » Providing feedback to staff on safety reports within two weeks
- » To see an increase in safety reporting by 20 per cent over the next 12 months
- » To see a reduction in maintenance-related events by 15 per cent over the next 12 months.

So that you can achieve each specified safety objective, you need a documented action plan (implementation plan/phased approach).

For example:

- » Phase 1—short-term objectives—to be addressed within six months
- » Phase 2—medium-term objectives—to be addressed within 12 months
- » Phase 3—long-term objectives—to be addressed within 24 months
- You will also need to review/revise your stated safety objectives periodically to ensure they are still relevant and helping to achieve your safety goals.



Safety culture

An organisation's safety culture is crucial to its safety achievement. The ideal safety culture supports staff and systems, recognises errors will be made and believes blaming staff will not solve problems. A positive and supportive safety culture encourages open and honest reporting, seeks to learn from its failures and is open and fair in dealing with those involved.

1. Trust—an atmosphere of trust exists in the organisation. Personnel are encouraged (even rewarded) for providing safety-related information, but are also clear about where the line must be drawn between acceptable and unacceptable behaviour.
2. Support—senior management openly supports, promotes and encourages an open and fair reporting culture and a positive and supportive safety culture. This may be demonstrated by some of the following:
 - Evidence of senior management leading by example—staff see examples of senior management actions, decisions and behaviours encouraging an open and fair culture
 - Evidence of support and encouragement for hazard reporting
 - The open and fair culture is included and endorsed in key documentation and communication to staff
 - Management continue to monitor the organisation's 'safety climate' through survey and audit
 - All staff are involved in establishing and maintaining the organisation's safety culture.

Safety accountabilities and responsibilities of managers (including key personnel)

The organisation must identify who will be responsible and accountable for implementing and maintaining the SMS (the accountable manager). The organisation also needs to document the safety 'who does what' and communicate these roles and responsibilities so that everyone knows.

1. You can delegate responsibility for safety issues; however, the accountable manager is always the one ultimately accountable for safety in the organisation.
2. The organisation should have an organisational chart showing the key positions with their responsibilities and the lines of accountability (this should include a direct reporting line from the safety manager/safety officer, or person responsible for maintaining the SMS, to the accountable manager).

Appointing safety management personnel

Having an appropriate safety manager/safety officer is critical to the success of your SMS. Depending on your organisation's size and complexity, the safety manager/safety officer/safety representative should have operational management experience, a technical background adequate for understanding the systems supporting operations, and a sound understanding of safety management principles.

A small, non-complex organisation may add the safety manager duties to an existing role, appoint a part-time employee to the role of safety manager, or consider outsourcing some or all of the safety manager duties to a third-party service provider.

Ideally the organisation should have:

1. A person in the safety role to ensure ongoing SMS maintenance and administration. Relevant SMS functions will be included in the person's terms of reference
2. Periodic meetings of all safety-sensitive personnel to discuss safety issues.

Safety committee

The organisation should have the following as a minimum:

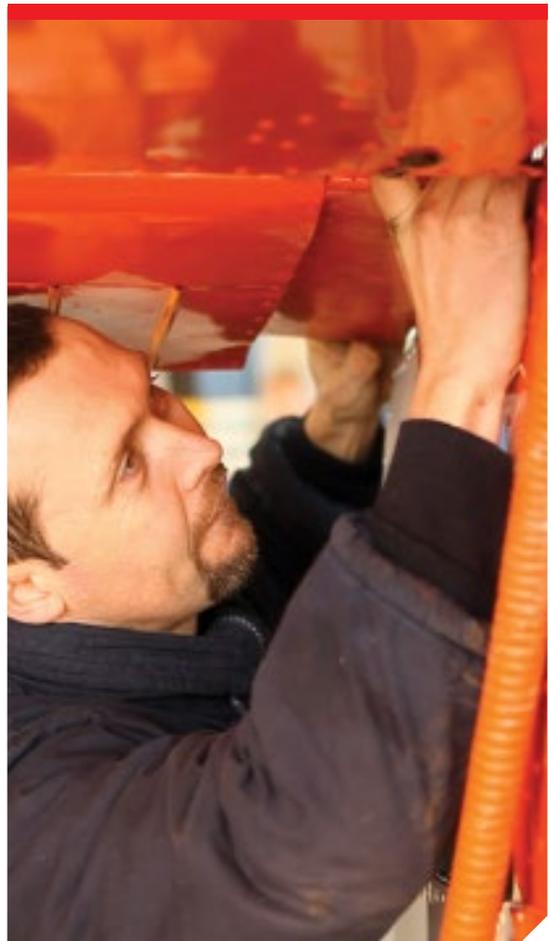
1. A person in the safety role to ensure ongoing SMS maintenance and administration. This person should report directly to the accountable manager
2. There should be regular meetings of staff and any third-part contractors to discuss safety-related issues. These can take the form of:
 - Safety meetings
 - Toolbox meetings
 - Safety stand-down days.

Human factors integration

Integrating human factors (HF) into your SMS gives you a framework to ensure you systematically identify and analyse any HF issues and fix them. These may include stress, fatigue, poor communication—including HF in your SMS improves safety and operational efficiency.

The organisation should have the following as a minimum:

1. Be able to demonstrate that HF has been integrated into the organisation's SMS; for example:
 - Ensuring organisational processes and actions are transparent—staff know and understand who does what, and why
 - Involving staff—respecting and valuing their input. This is especially important in risk and management of change.
 - Encouraging timely, relevant and clear two-way communication, by giving, for example, feedback from audits, safety reviews or safety reports
 - Ensuring fair treatment—with an open, safety reporting culture, demonstrated in, for example, timely incident follow-up and investigation findings.
2. Be able to demonstrate that HF training is being adopted by the organisation.



Identification and analysis of HF issues

As a minimum, the organisation should be able to show that it understands HF issues and that these are represented in the reporting and investigation processes.

Examples of typical HF issues may include:

- » Communication breakdown, leading to
 - lack of understanding
 - incomplete briefings
- » Fatigue
- » Stress
- » Time pressures
- » Environmental hazards (lighting, noise, weather etc).



SMS implementation plan

The SMS implementation plan details how you will put your SMS in place. It must be realistic and take into account your safety strategy, safety objectives, resource issues, safety training, safety promotion and timelines.

Depending on the size, complexity and scope of work of the organisation, one person (SM) or a group can develop the SMS implementation plan.

1. Gap analysis

- To implement your SMS first you need to identify which SMS components and elements you already have, and what you need to add or modify to meet SMS as well as regulatory requirements—in other words, you need to do a gap analysis.
- Once you have completed and documented your gap analysis, the items identified as missing or deficient—the gaps—you can begin to flesh out your SMS implementation plan. You must tailor your SMS to suit your organisation's size and complexity; what you do; and the hazards and risks associated with your operations.

In booklet 2, p23–29, you will find a helpful gap analysis checklist to help you determine what SMS elements you have and which ones are missing.

2. Implementation plan

Your initial gap analysis should form part of your SMS implementation plan, which must include

- » Safety policy, objectives and planning
- » Management commitment and responsibility for safety
- » Safety accountabilities of managers (including key personnel)
- » Appointment of safety management personnel

- » Human factors integration into the SMS
- » SMS implementation plan
- » Relevant third-party relationships and interactions
- » Coordination of an emergency response plan (ERP)
- » SMS documentation
- » Safety risk management
 - Hazard identification
 - Risk assessment and mitigation
- » Safety assurance
 - Safety performance monitoring and measurement
 - Internal safety investigation
 - Management of change
 - Continuous improvement of the SMS
 - Flight data analysis program (FDAP) (if applicable)
- » Safety promotion—safety training and safety communication
 - safety training
 - safety communication
- » Your SMS implementation plan will also need to detail the development of processes, such as hazard identification and risk assessment, reporting processes, and how you intend to implement the key SMS components and elements.

3. Phased approach

Your gap analysis is likely to identify deficiencies in your readiness to implement an SMS, so it makes more sense to have a phased approach to bringing it in. If you do take a phased approach, then your plan will need to include timelines for starting and completing each of the major SMS elements.

Relevant third-party relationships

Your SMS must ensure your organisation's safety is not adversely affected by the services and supplies external (third-party) organisations provide. Third-party contractors/interfaces may include:

- » Maintenance providers (aircraft/simulator)
- » Contract instructors
- » Flight dispatch
- » Flight following.

Whether you are a large contractor or a small business, as the 'contracting authority', you hold the overall responsibility for the safety of services the contractor provides. Therefore, the contract between organisation and contractor must specify what safety standards must be met. The contracting authority is then responsible for guaranteeing that the contractor complies with the safety standards specified in the contract.

The organisation should have the following as a minimum:

1. The organisation should have written contracts, or service level agreements (SLAs) with third-party service providers.
2. The organisation should be able to demonstrate that all third-party service providers are delivering trained, competent personnel with the relevant qualifications to carry out the work.
3. All third parties should understand the organisation's SMS and how they interact with it—where possible, this can be demonstrated by completing SMS induction training.

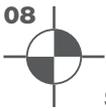
Coordination of an emergency response plan (ERP)

An emergency response plan (ERP) is an integral part of your SMS and should facilitate management of a hazardous event/accident and mitigate the impact on normal operations. All your operational locations should develop ERPs (where applicable) and maintain a robust means of coordinating these with the main accident coordination procedures.

The plan should assign responsibilities to specific individuals; provide emergency procedures; control the notification of outside agencies; nominate channels and centres of communication; provide for 'in-house' emergency response; and provide effective liaison with accident investigators and outside emergency services. This plan should also cover methods for communicating with the public in the event of a major incident.

The organisation should have the following as a minimum:

1. The ERP should be available to, and understood by, all key personnel and practised periodically so that everyone is aware of what they need to do, and competent to do it in an emergency.
2. Laminated cards/checklists with appropriate contact numbers to assist staff in an emergency.
3. Your ERP should be coordinated with other interfacing organisations, such as emergency services and third-party contractors.



SMS documentation

Your SMS should be supported by robust, current, controlled and freely available documentation. Your safety documentation demonstrates to all staff and third parties that your business is based on safety management principles.

If your procedures are in separate manuals (as can happen in larger organisations), this must be made clear, so that everyone can find detailed information about your SMS procedures and processes simply and efficiently.

The organisation should have the following SMS documentation as a minimum:

1. Safety policy and objectives of the SMS
2. The responsibilities of the accountable manager and key personnel
3. Any safety-related processes, procedures or checklists
4. Results of, and subsequent actions from, any safety audits or assessments
5. Results of any risk assessments and mitigation measures (controls/defences) in place
6. A hazard and risk register.

As a small, non-complex organisation you may have a separate SMS manual, or it may be easier for you to document your SMS within existing manuals. A typical contents page for a small non-complex organisation's SMS is:

1. Table of contents
2. List of effective pages
3. Distribution list
4. Safety policy and objectives (this should include the safety policy signed by the accountable manager)
5. Safety management structure of the organisation, to include:
 - Scope of the SMS and contracted services
 - Safety accountabilities and responsibilities
 - Documentation of the SMS (how the SMS is documented and recorded)

6. Hazard identification and risk management process
7. Safety assurance (how the SMS is audited, including the safety performance monitoring and measurement process)
8. Management of change (how the organisation uses the SMS to manage change—for example: risk analysis)
9. Emergency response plan (how the organisation will deal with an emergency, as well as a quick reference guide for key personnel).

Safety risk management

Traditionally, safety risk management emphasised the individual, focused on unsafe acts and conditions, and often excluded the environment in the analysis. It was more reactive, often leading to constraints on operations, reduced training realism, and occasionally poor organisational morale. The more progressive approach is proactive, seeking to identify the factors contributing to an accident before an accident or incident actually occurs. This process uses the knowledge of those who actually fly, maintain, build, support, plan or control.

Organisations pursuing a proactive strategy for safety risk management believe that the risk of accidents and/or incidents can be minimised by identifying weaknesses and by taking the necessary action to reduce the risk of adverse consequences arising from them.

Therefore, safety risk management is the identification, analysis and mitigation (or where possible— elimination) of risks the organisation encounters. Systematically identifying and treating organisational risks and hazards is fundamental to an SMS: ongoing monitoring and communication of the risk management process will improve its effectiveness.

Hazard identification

A hazard is a source of potential harm, or a situation with the potential to cause loss. Hazard identification is fundamental to risk management: if a hazard cannot be identified, it cannot be controlled.

The starting point for any safety risk management must be establishing the context and identifying hazard. This hazard ID must be systematic and comprehensive because any hazards not identified at this stage may be excluded from further risk analysis and mitigation.

The organisation should demonstrate the following as a minimum:

1. Hazard identification is used regularly to assess changes within the organisation. These changes could be:
 - An organisational (structural) change
 - Rapid expansion or contraction
 - Whenever new equipment or procedures are introduced
 - Changes to key personnel positions
 - Whenever the organisation believes a new risk may be encountered
2. To identify hazards, the organisation should have a simple, confidential (and open and fair) and convenient safety reporting process.

Risk assessment and mitigation

Risk assessment and mitigation—risk management—is an integral component of safety management and typically involves five necessary steps:

- » Hazard identification
- » Risk analysis probability
- » Risk analysis severity
- » Risk assessment and tolerability
- » Risk controls and mitigation.

The key to risk assessment and mitigation is to keep the process simple.

The organisation should demonstrate the following as a minimum:

1. Risks should be assessed in terms of consequence (severity) and likelihood.
2. A risk assessment should be carried out to determine the level of risk.
3. Appropriate measures should be taken to eliminate, or mitigate, the risks to be as low as reasonably practicable (ALARP).
4. Periodic review of the controls/defences should be undertaken to ensure validity and relevance.

Safety assurance

Internal elements of your safety assurance will include:

- » Safety performance monitoring
- » Internal safety investigation
- » Management of change
- » Continuous SMS improvement
- » Flight data analysis program (FDAP) (If required).



Safety performance monitoring and measurement

You must ensure that you receive appropriate feedback in your SMS to complete the safety management cycle. Use this feedback to track how your SMS is performing, and make changes if required. All stakeholders involved with your organisation need to know the level of safety in your organisation, because:

- » Staff need to be confident that they are in a safe working environment
- » Line management needs feedback on safety performance so that they can allocate adequate resources to often-conflicting goals of operations, production and safety
- » Passengers/customers utilising the organisation's services need to have confidence in your operation
- » Senior management can take comfort if your corporate image and market share are protected
- » Shareholders wishing to protect their investment are provided comfort.

As part of your SMS, you will need to monitor compliance—ideally, through an independent assessment to ensure that your SMS is working effectively.

The organisation should do the following as a minimum:

1. Review how the organisation complies with SMS legislative requirements (internal audit).
2. Verify that safety performance indicators are linked to safety objectives (annual review).
3. Assess how effectively the SMS procedures and processes described in the SMS manual (or SMS documentation) are implemented and practised (periodic review).

In a small, non-complex organisation where everyone may be involved in the SMS it will be challenging to establish an independent review or audit. In this case, you could use independent external auditors, or consult with other similar organisations which may provide information against which you can benchmark your organisation's performance.

Internal safety investigation

Your internal safety investigations should include occurrences which you do not have to report to the Australian Transport Safety Bureau or CASA. While these safety occurrences may often appear minor, including them in a systematic investigation may reveal potentially hidden hazards.

The size and scope of the investigation needs to be appropriate—sufficiently detailed and big enough to identify and validate any potential hazards. The effort you put in should be in keeping with benefit your organisation will gain from identifying hazard and risk.

The organisation should have the following as a minimum:

1. A simple, user-friendly reporting system.
2. Objective internal investigations: the focus should be on the 'what' and 'how' rather than on 'who' was to blame.
3. Review of all findings from incidents by the safety committee, or safety representative; recommendation/s for improvements/changes/amendments to the SMS, if required.
4. Dissemination of any lessons arising from investigations throughout the organisation, and (where possible) other similar organisations. This can be accomplished by:
 - toolbox meetings
 - email
 - company intranet
 - safety bulletins.

Management of change

The management of change should be a formal process to identify external and internal change that may affect established processes and services. It uses the organisation's existing risk management processes to ensure that there is no adverse effect on safety. Change can introduce new hazards that could affect the appropriateness and effectiveness of any existing risk mitigation.

Management of change within an SMS should only focus on hazard identification and controls/defences related to the safety of operations. Other potential risk factors (such as lack of business growth) may also be considered, as while they are additional to the scope of SMS change management, they may affect operational safety.

The organisation should do the following as a minimum:

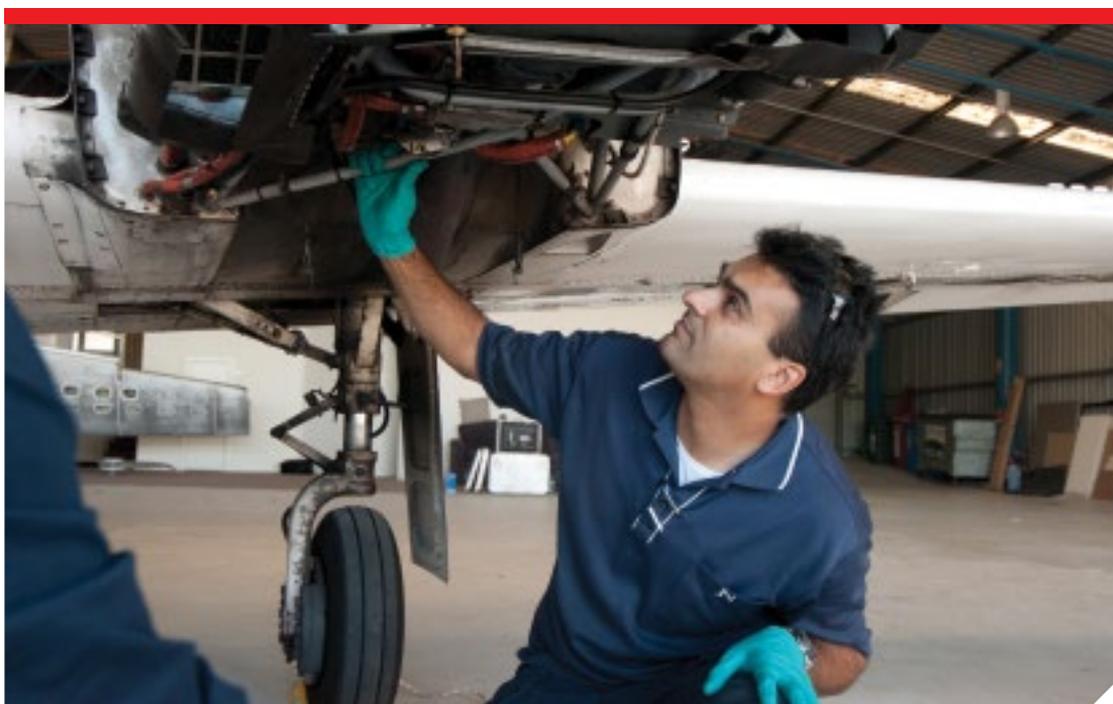
- » The management of change process should follow the same structured approach you use for normal risk assessment.

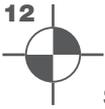
SMS continuous improvement

All organisations, large or small, complex or simple, need a way to review regularly whether they are achieving their SMS aims and objectives. A safety review validates the SMS and paves the way for continuous improvement, ensuring the SMS remains effective and relevant to the organisation's operations.

The organisation should do the following as a minimum:

1. You should be able to demonstrate continuous improvement of your SMS by:
 - periodically monitoring and reviewing the risk management process
 - implementing recommendations from incident investigations
 - implementing recommendations from audit reports
 - involving all personnel in safety meetings
 - networking with other similar organisations and sharing safety information.





Flight data analysis program — if applicable

A flight data analysis program (FDAP), where required, is a useful tool for organisations to identify safety hazards proactively and predictively and mitigate the associated risks by allowing them to compare their standard operating procedures (SOPs) with those actually achieved in everyday flights. The program must be non-punitive and de-identify the crew, while ensuring data gathered is secure. A feedback loop, which should be a part of the organisation's SMS, will allow timely corrective action to be taken where safety may be compromised by significant deviation from standard operating procedures (SOPs).

FDAP equipment

Basic equipment to support FDAP includes:

- » a flight data recorder (FDR, QAR or equivalent)
- » a data retrieval device
- » ground station hardware and software (normally a PC with appropriate software)
- » optional software for flight animation.

FDAP phased approach

A start-up airline is likely to take a minimum of two years to implement an effective monitoring program. Implementation would need to take a phased approach and consider the following:

- » negotiation and implementation of pilot agreements
- » implementation and audit of data security procedures
- » installation of equipment
- » selection and training of personnel
- » commencement of data collection for analysis.

FDAP and SMS integration

- » An FDAP should be integrated seamlessly with the organisation's SMS to maximise safety benefits
- » FDAP operational data will provide quantitative information to support investigations that would otherwise be based on subjective reports
- » Operational data provided by the FDAP should be regularly analysed and recorded in support of improving flight operations, and, as a direct consequence, the improvement of the organisation's SMS.

Safety promotion

An SMS must include safety promotion, which includes SMS training and education, and SMS safety communication. Safety training is related to, but different from safety promotion. Organisations must ensure that their personnel are trained and competent to perform their roles within the SMS, and that the training programs are tailored to suit the needs and complexity of the organisation.

Safety promotion assists in setting the SMS tone for the organisation and helps to build a robust safety culture. Safety promotion communicates the lessons learned, safety information, safety procedures, and key safety messages from senior management to foster improved safety performance.

SMS training

Providing appropriate safety training to all staff highlights management's commitment to providing an effective SMS. The key function of SMS training is to create awareness of the organisation's safety objectives and the importance of creating a positive safety culture. Your SMS training needs to focus on identifying and reducing hazards in the system, and why the 'human factor' is significant in achieving this.

The organisation should do the following as a minimum:

1. Make all personnel aware of the safety hazards and risks associated with their duties. This may be accomplished by:
 - induction training
 - safety briefings
 - toolbox meetings
 - safety communication—visual: signs, posters, visual cues, such as high-vis vests when undertaking safety-critical work; verbal—newsletter, note with pay slip etc.
2. Record all personnel's safety training.
3. Ensure ongoing SMS refresher training.

SMS safety communication

An ongoing safety communication program should ensure your employees benefit from safety lessons learned and continue to understand the organisation's SMS. Safety communication is essential to maintaining two-way communication, ensuring that all staff are informed and that feedback is captured and acted upon where appropriate.

At a minimum safety communication should:

- ensure all staff are aware of the organisation's SMS
- convey safety-critical information
- explain why particular actions are taken
- » Explain why safety procedures are introduced or changed.

It is also valuable to communicate 'good-to-know' safety principles and information to staff.

The organisation should do the following as a minimum:

- » Promote your SMS so that everyone is aware of their SMS roles and responsibilities. You can achieve this by regular safety communication:
 - meetings—regular staff and toolbox meetings
 - visual—signs, posters, visual cues, such as high-vis vests when undertaking safety-critical work
 - verbal—safety newsletters, safety bulletin, note with pay slip, email, company intranet etc.

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