

Guidance Material

SMS Manual Format - Scalable

Notice to Users

This document is an advanced version of a draft CAA publication (proposed appendix to draft Advisory Circular AC137-1 Agricultural Aircraft Operations) and has not yet been approved in final form. As such its content may still be supplemented, removed, or otherwise modified during the editing and consultation process of the draft advisory circular.

General

This Appendix is intended to provide guidance material on how to develop an SMS manual and associated documentation for smaller organisations that have not previously been required to produce an exposition or manual. As such it addresses scalability at the lower end of size, nature and complexity of the organisation, and the hazards and associated risks inherent in the activities undertaken. Further detail on the topics described may be found within AC100-1 *Safety Management*.

You do need to document your SMS, but you probably have some of the documentation already, and the rest should be fairly easy to put in place. Your SMS manual might be a very short, simple document mainly referencing your existing procedures, be combined with a Health and Safety manual, or you might just add a section to your operating manual if you have one.

The SMS documentation does not need to exactly follow the format of the regulatory framework, but it 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 that don't have to be included within the manual such as:

- Records of audits, safety meetings and management reviews;
- Records of risk assessments; and
- A hazard log or risk register with records of actions.

This document is based upon international best practice (see references at the end) adapted for the New Zealand context. For a very small organisation conducting simple operations, a basic manual structure with suggested contents that you will need to personalise to your organisation, can be found within the Safety Management International Collaboration Group's (SM ICG) 'SMS for Small Organisations' document at the following link:

https://www.skybrary.aero/index.php/SMS_for_Small_Organizations

Suggested contents of a manual:

0. Front matter

If you are creating a separate manual, the manual cover page should identify:

- The organisation and participant number the manual is applicable to
- Manual Control number (document reference)
- Holder of the manual copy (hard copy manuals)

If you are using headers and footers embedded within the document, each page of the manual should be identified with:

- Organisation's name
- Original or revision date, as appropriate
- Section and page number

Table of Contents (ToC)

This lists what is in the document including any section and page numbering. It helps everyone including your staff members, your contractors, and your regulator understand how you have documented your SMS. A simple table of contents for this suggested manual structure is shown on the following page.

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List of Effective Pages (LOEP) or amendment record

If you are using hard copy manuals and will revise individual pages, you should include a list of effective pages and their revision status; some organisations prefer to use electronic documents with just an amendment record like this:

Amendment No.	Date	Amendment Details	Amended by	Date of Inclusion

Distribution List

Describe who holds a copy of the document and whether it is a hard copy or electronic.

1. Safety Policy and Objectives

Note: the title refers to the ICAO Doc 9859 (Safety Management Manual) component, but contains more than just the safety policy, it also includes policy decisions you make and how they are documented. See safety performance monitoring for a description of how safety objectives support safety goals.

Safety Policy signed by the Chief Executive to indicate “Management commitment and responsibility”

As the chief executive, you are responsible for developing 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 – including resourcing to support your safety goals and objectives.

Outline your safety reporting policy; your staff needs to know that you will operate a fair reporting system, and what type of behaviour would attract disciplinary action. Try to keep the policy short enough so that the reader can understand and remember what you have committed to and what you expect of them. You could state your safety goals within the policy, or describe where they can be found.

Safety accountabilities and responsibilities

Ultimate accountability for safety rests with the Chief Executive, but it is a good idea to appoint someone else 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, etc. This person may need some training to be as effective as possible in his/her SMS role. Refer to AC100-1 *Safety Management* for further details about training needs, and avoiding possible conflicts of interest when holding more than one Senior Person role.

You can use this section to describe safety accountabilities (who to, what for), responsibilities and authorities (e.g. decisions regarding safety risk tolerability) for managers and staff, including contractors. Alternatively you can describe where these may be found in another document.

Note: It is intended that hazard identification, risk assessment, evaluation and control become an integral part of day-to-day business. Day-to-day supervision of the operations and therefore safety, is the responsibility of the managers and all the personnel.

With the exception of very small organisations where the Safety Manager role may be one of several roles held by one person, the Safety Manager is responsible for the supervision and facilitation of the processes to support managers in developing processes, procedures and work instructions for the staff under their supervision to perform their activities in a safe manner.

The Accountable Chief Executive and key safety personnel

This can be a simple diagram showing the management structure and safety reporting lines.

SMS Documentation

You can use this section to describe how you control and revise your safety documents to ensure that staff only access the latest version. This includes how and where you store the records and for how long you need to keep them. Remember that there is a distinction between your SMS manual, and the operational supporting records and documents created during implementation and operation of the various SMS processes.

It is also a good idea to show how the correlation between the SMS manual and other existing manuals such as the maintenance programme, health and safety manual, or the training manual if your organisation has them – a simple diagram could show this.

2. Safety Risk Management

Safety risk management describes the process you use for identifying things that can or have gone wrong, assessing how bad that consequence could be, and deciding what you will do to either reduce the likelihood of it happening, or the impact on your business if it does.

Safety reporting and hazard identification process

Safety Reporting

You will already have reporting requirements under Part 12 *Accidents, Incidents and Statistics* and for other regulators such as WorkSafe. The scope of this reporting scheme also includes occurrences not normally reported to the authorities. The objectives of the occurrence reporting scheme are to:

- Enable an assessment of the safety implications of each incident and accident, including previous occurrences of a similar nature, so that any necessary action can be initiated; and
- Ensure that knowledge of relevant near misses, incidents and accidents are effectively disseminated, so that others may learn from these.

For very small organisations, a separate reporting policy may not be required if individuals are intimately involved in most aspects of the organisation's operations and employees feel free to report safety-related information.

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

In this type of organisation, the reporting policy could be combined with the Safety Policy and should:

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

Hazard Identification

Hazard identification is vital and sometimes it is easier for your staff to understand if you refer to hazards as safety issues, threats or harms. Aviation safety hazards can be anything that could lead to an aircraft accident; 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. This section should describe both your reporting system (reactive) as well as a simple process to actively look for and report safety hazards (proactive). AC100-1 *Safety Management* provides further guidance on methods of hazard identification and simple reporting templates can be found within the SM ICG 'SMS for Small Organizations' document at the following link:

https://www.skybrary.aero/index.php/SMS_for_Small_Organizations

You will also need a hazard log or risk register to record the hazards people find or think of, and what action has been / is being taken, but it can be very simple. It is a good idea to keep this document separate from the manual so that it can be easily added to or amended. It might be a notebook in the crew room or a sheet on the notice board. It should be easily accessible and visible; it is for everyone.

Safety risk management

The safety risk management process addresses **aviation safety risks**. The risk assessment process considers technical, human, organisational, and environmental aspects, as well as financial, legal, or economic aspects and all significant influences that may adversely impact aviation safety risks. The same risk management methodology can also be expanded to other types of risks, such as health and safety risks.

This section should describe how you identify what could happen as a result of each hazard or safety issue (the consequence), assess how bad the worst credible outcome could be in the context of your operation, 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) understanding that introducing controls can introduce new risks in themselves.

A risk matrix may be useful, but in a very small organisation, it may not be necessary. The important thing is to be able to show how you have managed the risk down **as low as is reasonably practicable (ALARP)** – you can find out more about what this means in this handy guide from WorkSafe: <https://worksafe.govt.nz/dmsdocument/809-health-and-safety-at-work-quick-reference-guide>

Examples of risk management procedures can be found in:

- AC100-1 *Safety Management*, or
- Appendix 9, *Risk Management Procedures for a Small Organization*, and
- Appendix 10, *Risk Management Procedures for a Very Small Organization*, at the same SM ICG link as described above for hazard identification.

The summary of the risk assessment should be documented in a hazard log or risk register. This should include the risk assessment for each hazard and any actions required to control the risk. For some organisations, a combined template showing hazards related to a specific activity, the potential consequences and controls put in place (existing and any additional to reduce the risk) can be useful – an example of this can be found within EHEST SMS guidance at this link: <http://www.skybrary.aero/bookshelf/books/2891.zip>

3. Safety Assurance

Safety assurance can be achieved through a combination of the activities described below:

Safety Investigation

You will already have a process for investigating incidents and accidents reported under Part 12 *Accidents, Incidents and Statistics* and for reporting to other regulators such as WorkSafe (mandatory reporting). To ensure that you make the most of the learning opportunities afforded by receiving voluntary reports of occurrences (those not normally reported to the authorities), you should widen the scope of your safety investigations to include these reports.

Your organisation 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 potentially serious and likely. A simple approach is to review the safety reports and any operational occurrences and then use the risk matrix or other process described in the risk management section to assess either the potential risk, or risk of recurrence and therefore the need to investigate.

You should document the steps to be taken when investigating a safety report or occurrence including: who should conduct the investigation; the process of investigating what went wrong, why and how to prevent recurrence; and how it is recorded and shared so others can learn from it. Any additional hazards uncovered by the investigation should also be entered in your hazard log or risk register for assessment as they may impact other current or future activities.

It would also be a good idea to define what level of investigation you can conduct in-house, and when you would contract external support. This might be due to the potential or actual consequences, complexity of the occurrence, or to avoid a potential conflict of interest if the investigator is also affected by, or responsible for an aspect of the investigation.

Safety performance monitoring and measurement

Describe 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!

One way to measure safety performance is to use Safety Performance Objectives (SPOs) and Safety Performance Indicators (SPIs). It might help to think of the objective as being something that supports or enables achieving your safety goal(s) with the indicator being the measure or means to track how you are progressing along the way.

Examples of generic organisational SPIs include:

- Number of major risk incidents (as defined in your Safety Management Manual)
- Number of mandatory reports
- Number of voluntary reports
- Number of overdue safety report closures
- Number of safety meetings
- Number of safety briefings
- Number of safety audits

Describe how you will keep monitoring to see how you are doing and whether your safety risk mitigations / controls are working as planned. For example, this could be through regular safety reviews attended by the chief executive, the safety manager, and any other personnel as required. 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.

Management of change

Describe how your organisation manages safety risks related to a change. The management of change is a documented process to identify external and internal changes that may have an adverse (or positive) effect on safety. It makes use of the existing hazard identification and risk management processes you have developed.

You should define what kind of changes require assessment as opposed to normal business activity. Typically these changes include:

- Organisational change (a new executive, the departure of experienced personnel, organisational restructuring);
- Operational change (a new aircraft type, a new contract, change of maintenance or training provider, new operating procedures); and
- Physical change (a new facility, a new base, new agricultural airstrip).

Continuous Improvement

Describe how your organisation reviews and reports on how effectively the SMS works (see management review below) how effectively goals and objectives were met, results of audits, and review of actions, any issues or challenges, and most importantly, proposals for improvement – remember, ‘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 organisation.

Safety audits

The person responsible for carrying out safety audits must be able to demonstrate relevant knowledge, background and appropriate experience related to the company activities; including knowledge and experience in audit techniques, and also have access to all parts of the organisation, and as necessary, any third parties that might bring risk to your business.

Your organisation needs to develop and document a plan to cover the scope of certificated operations (including third parties), to look at the effectiveness of processes, evaluate how well risk controls are working, identify corrective and preventive actions, and check on any follow up and continuous improvement.

As previously explained for the hazard log / risk register, it is a good idea to keep the plan as a separate document so that it can be easily amended in response to changes to your business. This is an area where a simple template tool or software application can also help to record audit and review findings and how they have been addressed with preventive and corrective actions.

Management Review

Like any business management system (e.g. financial, health and safety), to ensure the continuing adequacy and effectiveness of the SMS, the chief executive should conduct periodic reviews of SMS processes and procedures, and evaluate the organisation’s safety performance. You need to describe how often you will meet to do this, who will be at the meeting, what will be discussed as a standing agenda, and how you will document agreed actions and track their progress.

A typical agenda might include these topics:

- Audit/review results
- Safety objective achievement results
- Hazard and event status and results
- Corrective and preventive action(s) status and results
- Training program effectiveness
- Follow up actions from previous management reviews
- Changes that could affect the SMS
- Recommendations for improvement

4. Safety Promotion

Safety training for staff

This is where you describe the type of SMS and other safety-related training that you and your staff and contractors receive, and the process for assuring the effectiveness of the training. You might use a mix of self-study using various sources of training material (including your safety management system documentation!), class-room training, e-learning or other training types.

The process for evaluating training effectiveness can be as simple as assessing the person as they perform tasks, or asking them questions about the training to see if they understand how to apply it in the workplace. You should also maintain records for all staff of the training provided and how it was evaluated – just as for other technical and non-technical training that you provide.

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.

Whatever methods you find works best for your organisation, describe how it is done, and don't forget to identify other sources of safety information such as that shared by relevant user groups and associations, equipment manufacturers and regulatory authorities.

5. Emergency Response Plan (ERP)

Describe your organisation's intentions regarding, and commitment to dealing with, emergency situations and their corresponding recovery controls.

The ERP can be a separate document or it can be part of the SMS manual. Outline the roles and responsibilities of key personnel and stakeholders, who to contact and when. You might also want to create quick reference guides for people to use as first responders to an emergency, before your full plan is initiated; these can be distributed around key sites.

It is a good idea to coordinate your ERP with other organisations 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.

6. Interfaces with contractors and other organisations

Your SMS does not just apply within your organisation; it extends down to people who supply you with products and services and it extends up to organisations that you supply with products or services. 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 organisation. 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 that exposes your organisation to more unknowns. Listing third parties that can bring safety risk to your organisation and prioritising in order of the level of that risk, will help you to determine how much oversight and monitoring or interfacing with your SMS you need to have.

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 organisations.

For example, if the contracted maintenance provider 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 outset, which should include how safety issues are reported.

7. Examples of 'common cause' risk controls

Developing standard operating procedures is a really good way to demonstrate how you are managing your aviation safety risks. Regulations are generally developed to control, as a minimum standard, common safety risks that stem from specific or general hazards through prescriptive rules, technical standards in the areas of technology, training, or task performance. Such hazards controlled by regulations may not need to be further addressed in an operator's risk assessment, unless evidence exists that the regulatory provision is not sufficient to manage risks to ALARP, in the context of a particular sector or unique operation. If the regulation is not specific, has several options, or directly calls for a risk assessment; the hazards need to be assessed, and the appropriate controls implemented.

You might already have a procedures manual, or Standard Operating Procedures (SOP) embedded within your current documentation, such as a training manual. Perhaps you hadn't thought of them specifically as risk controls, but if we consider the risk aspects discussed in the risk management section (technical, human, organisational and environmental) it can provide another way to make sure you are discovering and managing important safety risks to your business. CAA produces sector risk profiles that can help identify these, as an example, for the agricultural aviation (see link below), 16 risks considered as medium and above were identified.

https://www.caa.govt.nz/assets/legacy/Safety_Reports/srp_agricultural.pdf

Example risk (ranked #7): "Degraded aircraft performance due to routine overloading of aircraft is prevalent amongst agricultural aviation operators, leading to unsafe operating margins and a higher risk of an accident."

Examples of some related risk control procedures:

- Technical - weight and balance calculation, aircraft loading, jettison / dumping of load, Installing & removing role equipment including pilot maintenance;
- Human - threat and error management training, pilot training and supervision requirements,
- Organisational - fatigue management / rostering, guidance for acceptance or declining tasks,
- Environmental - guidance for airstrip or load site inspection, etc.

Some of these procedures or guidance may form part of your current training programme, some may be documented, or you may have relied on your view of 'good airmanship' to include others. If you don't yet have a dedicated place for SOP, you could include them either directly, or as an appendix to your SMS documentation.

References

Advisory Circular AC100-1 *Safety Management*

CAA Form 24100/02 SMS Evaluation Tool

CAA Sector Risk Profile Agricultural Aviation 2013

EHEST Safety Management Toolkit

ICAO Doc 9859 SMS Manual 3rd Edition

Safety Management International Collaboration Group (SM ICG) – SMS for Small Organizations

WorkSafe NZ – Quick Reference Guide “Health and Safety at Work”