

SMS Applicability

Introduction

Air Trek has revised its SMS program to come into compliance with the regulatory requirement of CFR 14 Part 5. Revision 5 to the company SMS manual is a major revision that deals with reorganization of the manual, internal record keeping requirements, and a new Safety Assurance process that follows up on adopted risk controls on a long term basis.

The basics of; identifying hazards, analyzing/assessing risk, installing risk controls, seeing that those controls fix the problem and then communicating the fixes to the issues throughout the company, still remain as the root elements in this Safety Management System (SMS) Manual.

Systems at Air Trek can be people, hardware, software, information, procedures, facilities, services, and other support facets which are directly related to our company's aviation safety activities. The aviation safety related areas where these systems are found include but are not limited to:

- Flight Operations

- Operational Control

- Maintenance and Inspection of Aircraft

Each of these areas have sub-areas with their associated systems.

Triggering the Safety Risk Management Process

The Safety Risk Management (SRM) process is triggered when an area of aviation safety related activity requires:

- a. Implementation of a new system.
- b. Revision of an existing system.
- c. Development or change of operational procedures.
- d. Identification of a hazard by an employee report that was anonymous or not.
- e. Recognition of ineffective risk controls discovered through the Safety Assurance (SA) process which is outlined in the next chapter.

STEP 1**Safety Management Personal (DO, CP, DOM)**

Look in Appendix A of this manual and find form ATSMS Form 1 (example below), this starts the process. Checkoff what the triggering condition is the reason to do a risk assessment. Write a brief summary and if no new hazards have been introduced by this change; sign it off and you're done. Easy!?

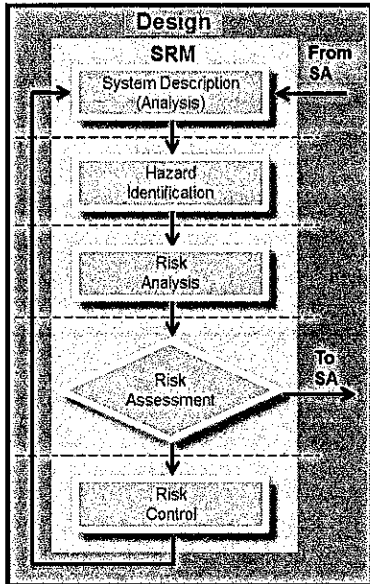
BUT if you see possible problems you need to go to **STEP 2**

APPENDIX: A

PAGE: ATSMS Form 1
REVISION: 5
DATE: 03-15-2017**Safety Risk Management Triggering Condition
and Summary****SRM Step 1**

Title:	
Reason for Risk Assessment	
1. New System Design	
2. Change to Existing Design	
3. New Operational Procedure	
4. Modification of an Existing Operation or Procedure	
5. Operational Environment Change	
6. Ineffective Risk Control	
Brief Summary:	
Where signed below, the authorized Safety Team Manager has determined that no new hazards have been introduced by this change.	
Name:	
(Circle One) DO CP DOM	
Signature:	

Safety Risk Management (SRM)



SRM is simply a way to control risk in a system or process. The basic elements or steps in the management of a safety risk are:

1. **System Analysis**
This is proactively looking at a process or system (new or old) and addressing potential issues involved in the question; "How is this going to work?"
2. **Hazard Identification**
This is exactly what it says; identify any hazards this (new or changed) system or process might cause. Basically "What could go wrong here?"
3. **Risk Analysis**
This is the potential for injury and/or damage, with the hazard/s that were identified. The potential is based on the best estimates of both the likelihood and severity of an event.
4. **Risk Assessment**
There is always risk to everything; the question is it - Negligible, Low, Medium, High, or Off the Chart? This is about how much risk the company can accept in its operation.
5. **Risk Control**
If the risk associated with the hazard is at an unacceptable level; what can be done to decrease that risk to a level that can be tolerated.

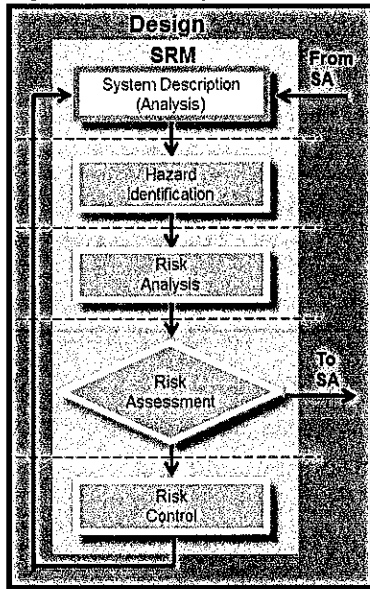
Following the introduction of the Risk Control/s (in #5 above) you simply repeat (happy loop) the process starting at #1 with the control/s in place. Now see if that brings the risk to an acceptable level.

Of course there is paperwork in the form of record keeping because this manual is now based on government regulation. What else would you expect?

AND the change must be communicated **to everyone** involved or the wheels will really come off the wagon.

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System Analysis



This is proactively looking at a system or process (be it new or old) and addressing the potential issues in all of the interrelated parts that it has. The need for this can come from the SRM Triggering process or because of an ineffective risk control in the Safety Assurance (SA) process in the next chapter.

In conducting the System Analysis you need to consider the following information at a minimum.

1. The function or purpose of the system or process.
2. The operating environment of the system or process.
3. An outline or overview of the system or process and its procedures.
4. The personal, equipment, and facilities necessary for the operation of the system or process.

Basically '**How is this going to work?**' given the interactions between the hardware, software, people, and the environment (just to name a few) all in sufficient detail to see the hazards on as many levels as you can see in the crystal ball. Do not despair, this has always been done at Air Trek maybe just not this formally. Besides if you do not see all the issues (and you never can) that is what the SA (Safety Assurance) part of the SMS is about, but more about that after we finish the SRM process.

STEP 2

Look in appendix A of this manual and find form ATSMS Form 2 (example below).

If you are a Safety Manager either the DO, CP or DOM you are a Responsible Manager and have authority for risk analysis and everything else in the SMS process.

Fill in your name and position.

Now let's contemplate and write down the function and purpose of the system or process that is new or changing.

Next break down the system or process into subparts (such as the few on the form) and maybe subpart to these basic elements. If you think of others add them and their subparts also. Then, beside that, write down what are some of the related problems or issues in these areas. Basically **what is going to keep you up at night about this?** Need more paper? Get some, it's cheap compared to an accident or injury.

Don't worry about being neat, just write it down as it comes to you so the other safety managers can review it and add to it later. (If it is really sloppy it can be rewritten later)

APPENDIX: A

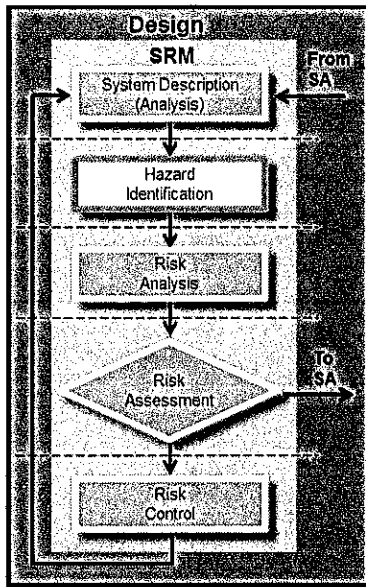
PAGE: ATSMS Form 2
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DATE: 03-15-2017SRM Step 2

Project Name:	
Safety Team Manager: (Circle One) DO CP DOM	
Function and Purpose of the System Change:	
Description of Operating Environment:	Problems or Issues:
Personnel:	Problems or Issues:
Equipment:	Problems or Issues:
Facilities:	Problems or Issues:

Reserved

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Hazard Identification



Here is where the **specific hazards** for the operational systems/processes/environment are identified, and written down, that could result in an accident and/or injury.

This is when we ask **'What could go wrong here?'** under typical or abnormal operational conditions.

Use the at least the following items and bring in anything else that could relate and help identify specific hazards and their consequences. (Don't worry about how much risk each hazard might cause during this step that will be handled in the next few steps.)

1. Past company experiences.
2. Personal life and past work experiences.
3. FAA requirements.
4. Manufacturers' technical data.
5. Experiences of companies or people from the internet or elsewhere.
6. Surmised issues.
7. Trade association best practices and the "Whys" of them.

Identification of every hazard, and the breadth of their possible consequences, is unlikely **BUT** there needs to be a solid level of due diligence to ensure a positive outcome.

STEP 3

Look in appendix A of this manual and find ATSMS Form 3 (example below).

Fill in the project, your name and position (DO, CP, DOM).

List the specific hazards and their potential consequences small or large.

Need more paper? Get another Form 3 and label it 'page 2'.

HAZARD LIST

PROJECT _____ Safety Team Manager: _____ DO CP DOM _____

	HAZARD	POTENTIAL CONSEQUENCES	Pre-Control			Post-Control			
			SEVERITY	LIKELIHOOD	RISK	ACCEPT	SEVERITY	LIKELIHOOD	RISK
H1									
H2									
H3									
H4									
H5									
H6									
H7									
H8									
H9									
H10									

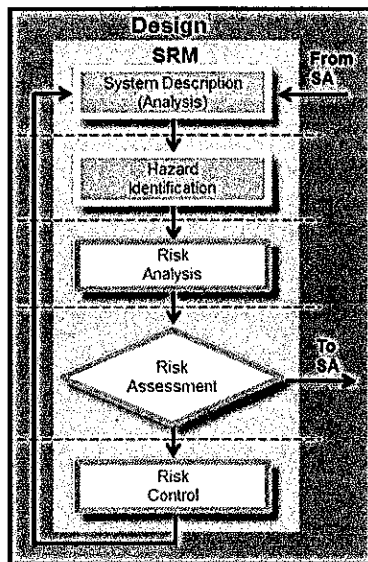
CATastrophic	FREquent	LOW
HAZardous	OCCasional	MEDium
MAJor	REMoia	High
MINor	IMPprobable	
NEGligible	EXT IMP	

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 SRM Steps 3-4-5
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Risk Analysis



Here the severity and the likelihood of a specific hazard, that has been identified, has to be estimated for potential.

To do this, there is a need to determine about the specific hazard:

Likelihood potential on a scale of:

- a. Frequent
- b. Occasional
- c. Remote
- d. Improbable
- e. Extremely Improbable

The assignment of **potential of likelihood** is based on expertise and judgment but should also as a minimum include when necessary:

- Company derived data.
- Air Trek's past experiences.
- Current company Policy and Procedures (P&P)
- Current company Standard Operating Procedures (SOPs)
- Industry experiences.
- Accidents reports and statistics.
- Failure and error data.
- NASA reports.
- Equipment reliability and serviceability reports and blogs.
- FAA malfunction and defect reports.

Severity potential on a scale of:

- a. Catastrophic
- b. Hazardous
- c. Major
- d. Minor
- e. Negligible

The assignment of **potential severity estimate** of a hazard is mainly driven by the type of consequence such as a minimum:

- Simple Error.
- Major Error.
- Failure.
- Incident.
- Accident involving damage.
- Accident involving injury.

STEP 4

Go back to ATSMS Form 3 again (example below).

Based on the best collective knowledge and wisdom available, assign a **severity and likelihood potential** to each of the hazards listed for this project.

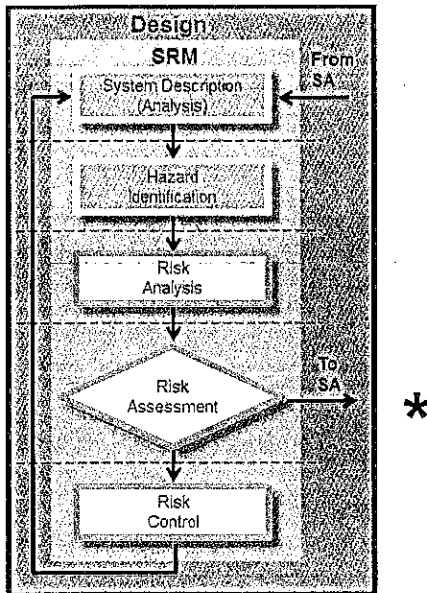
HAZARD LIST										
PROJECT			Safety Team Manager				DO CP DOM			
HAZARD	POTENTIAL	CONSEQUENCES	Pre-Control			Post-Control				
			SEVERITY	LIKELIHOOD	RISK	ACCEPT	SEVERITY	LIKELIHOOD	RISK	ACCEPT
H1										
H2										
H3										
H4										
H5										
H6										
H7										
H8										
H9										
H10										

CATastrophic	FREQuent	LOW
HAZardous	OCCasional	MEDium
MAJor	REModiate	High
MINor	IMPProbable	
NEGligible	EXT IMP	

Reserved

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Risk Assessment



Risk Assessment

This is decision making about the acceptability of the identified hazard in operations at Air Trek.

There is always risk to everything; the question is it - Negligible, Low, Medium, High, or Off the Chart?

The risk matrix below is used to assess the risk as Low, Medium, or High. Remember nothing that is done is without risk. (Even breathing the air you are now breathing in.)

Risk Matrix

Risk Likelihood	Risk Severity				
	Catastrophic	Hazardous	Major	Minor	Negligible
Frequent	High	High	High	Medium	Medium
Ocoasional	High	High	Medium	Medium	Medium
Remote	High	Medium	Medium	Medium	Low
Improbable	Medium	Medium	Medium	Low	Low
Extremely Improbable	Low	Low	Low	Low	Low

The risk assessment is based on the judgement, experience, and input of data from the work already put into hazard identification and risk analysis on ATSMS Form 3 **in the previous step** which was step 4 (Risk Assessment).

If **risk is acceptable** (In step 5 on the next page) and signed for by a Responsible Manager (DO, CP, DOM) the new or changed process/system (project) is good to go and the SMS will continued to monitor it in the Safety Assurance (SA) process (see the next chapter).

If **risk is not acceptable** there are two choices:

- Do not institute the new project and continue status quo.
- Make some changes in the form of what is call Risk Controls.

STEP 5

Go back again to ATSMS Form 3 (example below).

Using the Risk Matrix, on page 40, determine if the risk is Low, Medium, or High and write that down in the 'Risk' column.

The DO, CP, or DOM need to initial for acceptance of the risk or put a "D" in the block for decline.

If all the risk levels are acceptable the project can proceed and be monitored in the SA process (next chapter).

If a Responsible Manager declines the risk the project is dropped or it proceeds to the next phase of the SRM process – Risk Control

HAZARD LIST

PROJECT _____ Safety Team Manager: _____ DO CP DOM _____

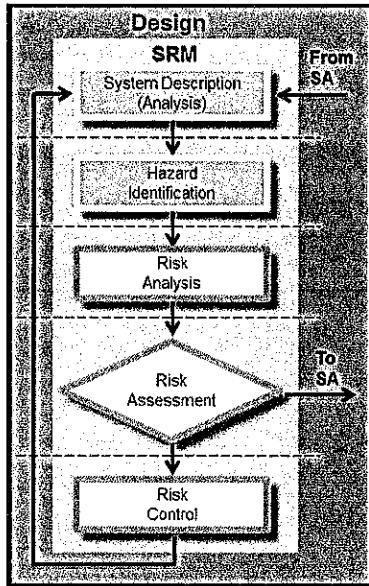
	HAZARD	POTENTIAL CONSEQUENCES	Pre-Control			Post-Control			RISK	ACCEPT
			SEVERITY	LIKELIHOOD	RISK	SEVERITY	LIKELIHOOD	RISK		
H1										
H2										
H3										
H4										
H5										
H6										
H7										
H8										
H9										
H10										

CATAsrophic	FREQuent	LOW
HAZardous	OCCasional	MEDium
MAJor	REMoTe	High
MINor	IMPProbable	
NEGligible	EXT IMP	

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 SRM Steps 3-45
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Risk Controls



There is a need in this step to reduce risk to an acceptable level for those hazards with unacceptable risk associated with them (in step 5 on page 41).

For those hazards involved in the current project that the risk level was declined (found unacceptable) there is a need to control the risk by developing at a minimum:

- a. New processes or procedure
- b. Modifying a current processes or procedure
- c. Acquiring new equipment.
- d. Added training (Pilot, Maintenance, or Staff).
- e. New or added supervisory controls.
- f. New or upgraded hardware or software.
- g. Added or changed staffing.

This may reduce the risk so it comes into an acceptable level, or the controls maybe too costly, or just not feasible but this must be determined.

To determine if the controls are workable, and will bring the risk to an acceptable level, so the project can proceed these identified unacceptable risk hazards need to be evaluated through the SRM process again with the new controls in place.

Risk Controls (Cont.)

STEP 6

Get form ATSMS Form 4 (example below) from Appendix A of this manual.

Fill in the project, your name and position as a Responsible Manager (DO, CP, DOM).

Using the same hazard number (for the unacceptable hazards for this project on form 3) write down on Form 4 the unacceptable hazard and the new control that is proposed to be put in place.

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Risk Control

SRM Step 5

PROJECT:		
Safety Team Manager:		(Circle One) DO CP DOM
	Hazard	Control
H1		
H2		
H3		
H4		
H5		
H6		
H7		
H8		
H9		
H10		

HAPPY LOOP time. Using the new controls the process starts over and repeats as many times as it takes to mitigate the unacceptable hazards and any new hazards that are introduced during the process (see page 45).

Risk Controls (Cont.)

STEP 6 (cont.)

Using STEP 2 (on the original Form 2) repeat with new controls in place.

- a. Line through 'Problems or Issues' that may have gone away as a result of the control/s that were put in place.
- b. Most important contemplate new problems or issues that the new control may have caused. Write those down in a different color ink each time the HAPPY LOOP is repeated.

Using STEP 3 (on the original Form 3) repeat with the new controls in place.

- a. In the "Post-Control" section write in the new Risk Analysis for severity and likelihood for the hazard of the previously declined risk.
- b. Write down any new hazards and do a Risk Analysis for severity and likelihood on them.

Using STEP 4 (on the original Form 3) repeat with the new control/s in place.

- a. Using the risk matrix and the 'Post-Control' severity and likelihood get a risk level and see if the risk is now acceptable.
- b. Using the risk matrix do the same for any new hazards that were introduced.

Repeating this step (STEP 6) will be necessary Over and Over again until all of the risk assessment are found acceptable and signed for by a Responsible Manager. **Then the project** and its Safety Assurance (SA) monitoring (see the next chapter) **can proceed.**

Unaccepted risk still exists??? The **project is** at a **NO GO** point and cannot proceed.

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