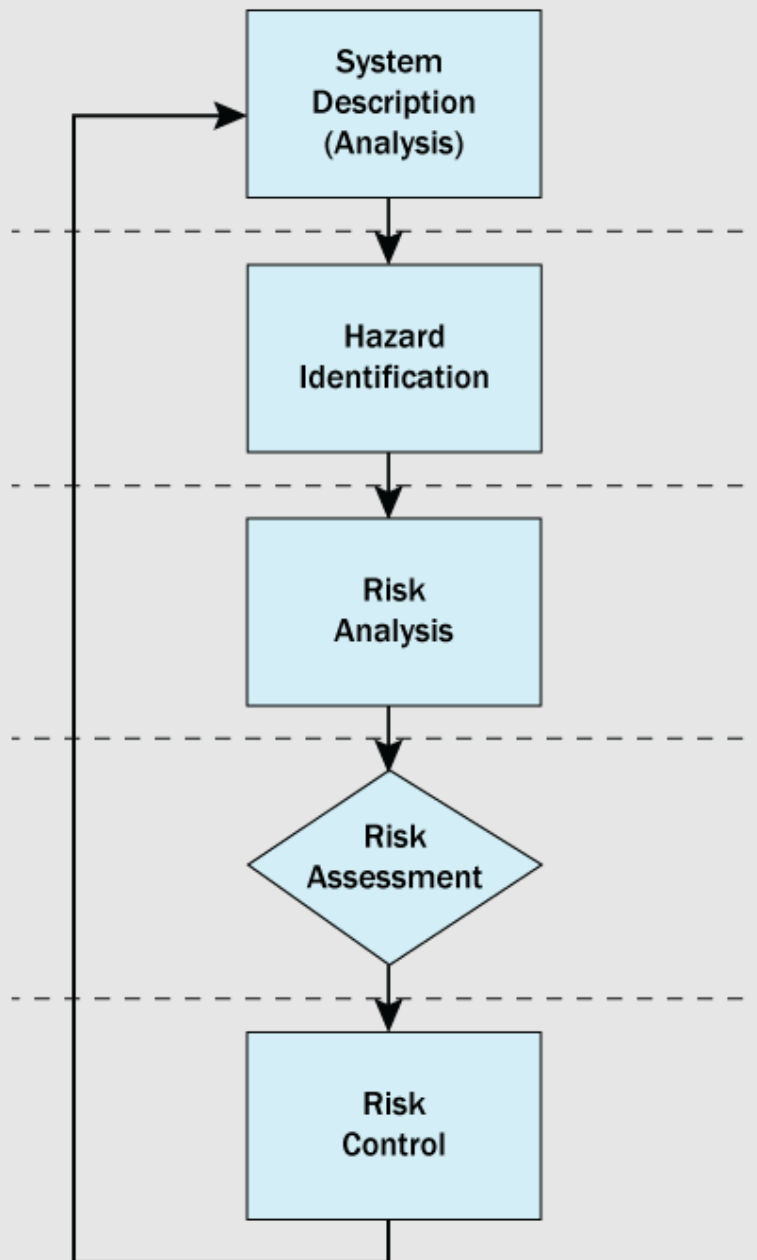


SMS Compliance Cookbook: Structuring Your SMS Program for Part 5 SRM Compliance

SRM





**Picking Apart Part 5's SRM System
Description Requirement –
Did You Do It Right?**

FAA's Safety Risk Management (SRM) Process and System Description Element

The Federal Aviation Administration's (FAA) safety risk management (SRM) compliance requirement for System Description has one clear goal: establish the components of your operating environment's systems, processes, procedures, and important safety elements.

Despite the fact that the goal is clear, system description is too often skimmed over in **aviation SMS programs**. This is a mistake.

Why is this element of SRM often skimmed over?

1. The FAA's System Description language is unhelpfully vague;
2. It is time consuming to outline the personnel, equipment, and facilities needed for sound safety operations;
3. Establishing System Description is a high level, conceptual activity, and can often feel like shooting in the dark;
4. There is limited guidance as to what FAA's definitions are – words are used differently in different contexts; and
5. There are no specific related regulatory requirements, which amounts to limited guidance and less incentive to thoroughly complete this element of the Safety Risk Management Process.

Just consider the following questions:

- How do you know if your System Description is complete?
- Can you define what a System is?
- Can you describe the purpose of System Description, as instructed by the FAA?

These are not easy questions. Part of the problem is that this element needs to be left intentionally vague in order for different operators, such as airline SMS programs and airport SMS programs, to have flexibility in establishing their System Description.

We will walk through and establish what you need to know in order to complete your System Description element as part of **the FAA's system safety operation guidelines**.



Important Language in FAA's SRM System Description

The FAA's SRM System Description element is basically asking you to create an outline of your safety management system in terms of what are the important:

- Processes;
- Components;
- Interactions; and
- Systems (of hazards, more on this in next section).

The frustrating truth about the above points is the before mentioned *vagueness*. Understanding how to analyze and describe these points involves narrowing the language to terms that provide more guidance. Here is the important language that the FAA uses in their [Advisory Circular](#), per the latest January 2015 release:

- **Activities** – what kinds of things will your company be doing to mitigate hazards (**SRR. Section 5.53(b.3)**);
- **Resources** – what equipment, **safety management system software**, documents, etc. will your safety program be using to achieve safety goals in reference to hazard mitigation (**SRR. Section 5.53(b.4)**);
- **Safety** – the FAA adopts **ICAO's definition of safety** (2.1.1) as “state in which the possibility of harm to persons or of property damage is reduced...through a continuous process of hazard identification and safety risk management”;
- **System** – your overall safety management system;
- **Systems** – the hazard categories that comprise your aviation risk management program (**SRR. Section 5.53(b.3)**);
- **Flow chart/narrative** – the system description process should all you to create a flow chart or descriptive picture of *how your SMS program works*;
- **Function** – this word as used by FAA is synonymous to mitigate hazards or successful mitigation strategy, e.g., “necessary for the system to function” is same as “necessary for system to mitigate hazards” (**SRR. Section 5.53(b.1)**); and
- **Analysis** – use a model, such as 5M or SHELL, to describe each hazard category.

The above language synonyms are important to keep in mind as you describe your system. They can help you keep from “getting stuck,” by keeping important elements of System Description less vague.



Goals, Objectives, and Definition of System Description

System Description is the first step in the SRM process. It leads directly into the **FAA's SRM Hazard Identification element**, where hazards will be identified in *each of the systems (SRR. Section 5.53(a))*. The FAA's defines the objective of System Description as, "To gain an understanding of the components and elements of operational systems, processes, procedures, and the operational environment."

Does that clarify things? It's extremely vague, and seems to almost say "describe everything." It certainly doesn't help me understand specifically what the FAA wants. Let's break it down and into terms that provide a much more specific understanding.

Using the language of the FAA, the primary goal of System description is to **describe what resources and activities are needed to successfully mitigate hazards (i.e. "function") in your operational environment**. This goal may be accomplished by the following tasks:

1. Choose an appropriate, industry accepted model (such as **5M** or **SHELL**);
2. Establish your Systems (the may be **hazard categories in a proactive hazard analysis exercise**); and
3. Detail all important safety elements of each of chosen systems.

System Description from this perspective is very straightforward.

Though the FAA's Advisory Circle doesn't seem to indicate it, the steps and requirements for fulfilling System Description are simple and straightforward, though very time consuming. The **outcome is the creation of an operational risk profile** that can easily feed your **hazard register**.



What are Systems vs. System and Model in Your SMS Program?

Part of the frustration with the FAA's SRM description is the interchangeable use of "System" and "Systems". Your "System" in the singular simply means your safety management system:

- The whole collection of activities used to mitigate risk;
- All relevant hazards and risks;
- Your operational risk profile; and
- Your company.

Your System is simply the conglomeration of everything that makes up your risk management program. "Systems" in the plural is a vague word, but it basically amounts to your specific area of operations, such as:

- Flight operations,
- Maintenance;
- Airport operations;
- Security.

If you were building a classification schema to classify hazards, these would be your "level 1 hazard categories." The assumption is that different risk mitigation strategies may be used in different Systems. To maintain a logical format, hazard categories should be broken up into logical parts, and each "system" should be described using your chosen Model. The two most common Models are:

- **SHELL**: describes systems using Software, Hardware, Environment, and Livewire components; and
- **5M**: describes system using Man, Medium, Machine, Management, and Mission.

Both models are thorough, however the SHELL model may be superior for the purposes of System Description, though this is debatable.



Steps to Fulfill FAA's SRM System Description Component

Fulfilling the FAA's SRM System Description components has four straightforward, though time consuming, steps:

1. Choose your model (5M or SHELL);
2. Establish your Systems (i.e., main area of operations or level 1 hazard categories);
3. For each system (hazard category), describe it using the components of your Model (i.e. livewire, hardware, etc.),
4. In each Model component, list the relevant items needed to reduce hazards' risk to acceptable levels (e.g., list the resources/activities needed to mitigate livewire component of Flight Ops):
 1. policies, procedures
 2. types of training
 3. risk management strategies
 4. roles, equipment, facilities, etc.
 5. operating environment factors, such as weather, safety culture, human factors, etc.
5. Document all information in aviation SMS software, an Operational Risk Profile Manual, or some other kind of documentation.

The outcome is that each of your systems has 4 (if SHELL) or 5 (if 5M) components, and each component lists the activities and resources that will be used to mitigate hazards in that hazard category.



**Hazard Identification Compliance
Requirement in Part 5's SRM
Process – What You Need to Know**

FAA's Safety Risk Management (SRM) Process and Hazard Identification Element

The **Federal Aviation Administration's (FAA) SRM compliance** requirement for **hazard identification** controls every U.S. operator's aviation SMS program's safety culture and risk management program.

The FAA's SRM process gets a lot of attention – and for good reason.

Despite the fact that the FAA was a little late in adopting and enforcing ICAO's SMS regulatory requirements, oversight agencies from many countries around the world look to the FAA for guidance.

In your risk management program, your **Safety Risk Management** process will revolve around your **operational risk profile**.

The FAA's SRM process is based on five components that flow together. The Hazard Identification Element of this process requires you to consider:

- What hazards exist in the operational environment;
- What **Human Factors** contribute to hazard expression;
- What the limitations are of the SMS program's hardware, software, and materials; and
- What the limitations are of the SMS program's bureaucracy, such as policies, procedures, checklists, etc.

The Hazard Identification element requires you to answer these questions by identifying and listing all hazards.

- Identifying hazards should also carry over (such as via training) into the operational environment; and
- Employees should be aware of and be able to recognize these hazards in their daily activities.

Hazard Identification will naturally arise from the System Description process, and will allow you to perform risk analysis on each hazard. These hazards populate your **hazard/risk register**.



What is a Hazard (Two Viewpoints)

There are two commonly accepted opinions about **what a hazard is** in the operational environment. They are as follows:

1. A hazard is a benign **thing** that has the **potential to become dangerous** if the hazard is “expressed” (i.e., toxic chemicals, high voltage lines, a mountain, flock of birds); and
2. A hazard is a **dangerous condition** that can **lead to (injury, damage, or harmful reductions** – in this understanding, point number 1 would be considered a “hazardous source.”)

These viewpoints seem similar, but they actually describe two different phases in the **flow of safety events**. Point number one refers to root causes. Point number two, which is the FAA’s point of view, is that the hazard occurs near the Dangerous Condition phase – i.e. that a hazard becomes a hazard when it is “expressed.”

The **FAA describes a hazard** as, “A condition that could foreseeably cause or contribute to an...accident...”. ICAO accounts for both views within its definition, allowing oversight agencies to adopt whichever concept of hazard that they prefer, “A **condition or object** with the potential to cause injuries...damage...or reduction...”

If you are an aviation service provider in USA, it’s important to ensure that “hazards” are treated in your SMS in the FAA’s prescribed definition, and **NOT** as in point number 1 above. This is very important, because we constantly see hazards being understood and treated in the United States as a “benign thing” rather than a “condition.”





Maintaining and Monitoring Hazard Identification Process

Maintaining a hazard identification process, fortunately, is a natural outcome of sincere aviation SMS implementation. For example, safety management systems with a formal issue management process will do this naturally as they

- Review existing hazards in safety issues;
- Review existing risk controls in safety issues; and
- Identify whether or not a new, unidentified, hazard is relevant to the current safety issue.

Issue management can be proactive, such as with safety scenarios or safety cases, or reactive, such as in response to reported safety issues, such as accidents and incidents. Proof of this process is simply:

- **A hazard risk register** that lists all hazards; and
- A demonstrable process for identifying new hazards (such as issue management process).

Monitoring Hazard Identification performance is actually inherent in the rest of the **SRM and SA processes**.

Here are some obvious signs of effective hazard identification performance:

- Large percentage of reported safety issues are in the “acceptable” risk range;
- Long term, steady increase in monthly submitted hazard reports, followed by a leveling off (indicates hazard identification is functioning at full capacity); and
- Growing trend of newly identified hazards decreases over time.



Demonstrating SRM Process and Hazard Identification Compliance

Demonstrating compliance with the Hazard Identification element of the FAA's SRM process is indicated when:

- Your company has a reporting system
 - » to capture hazards,
 - » is simple to use, and
 - » accessible to all personnel;
- Your company has proactively identified all the major hazards in your operating environment;
- Your safety reporting system includes feedback to the reporter of any actions taken (or not taken) and, where appropriate, to the rest of the organization;
- Hazard identification becomes an ongoing process and involves all key personnel and appropriate stakeholders;
- Employees have a strong history of hazard identification training;
- Your company's operations indicate that you have adopted a definition of hazard that is consistent with the FAA's definition of a hazard;
- Personnel express confidence and trust in the organization's reporting policy and process;
- The hazards identified are documented and kept available for future reference; and
- The organization uses the results of investigation of incidents and accidents as a source for hazard identification in your SMS program.



Sources of Hazards for Safety Management Systems

Hazard Identification will arise from three areas of operations:

- **System design analysis;**
- **Task analysis;** and
- **Safety issue reporting.**

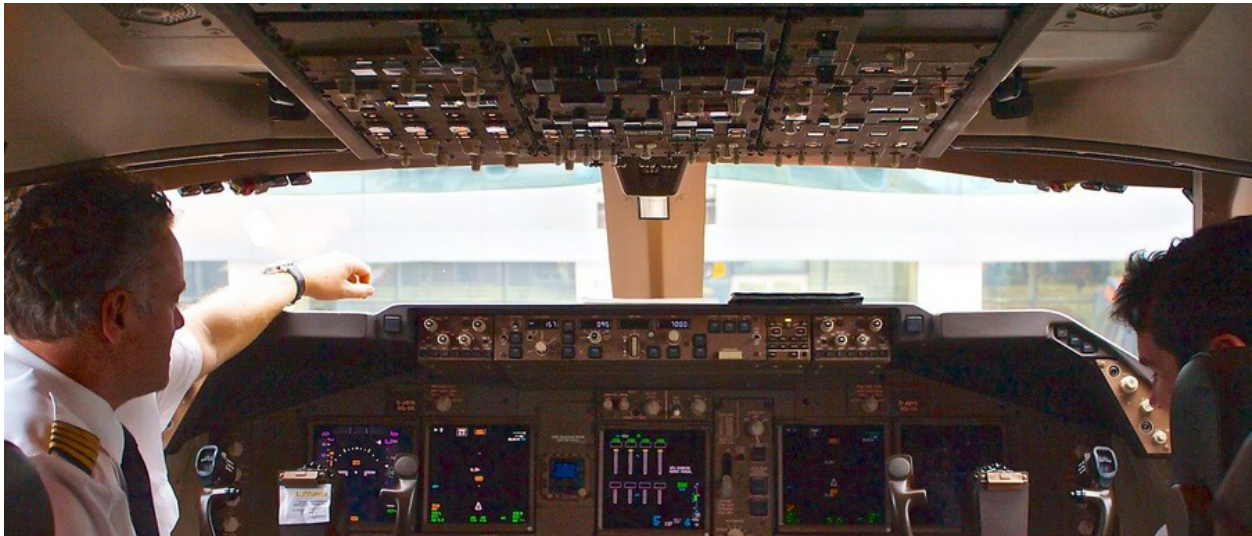
Most obvious hazards can be initially identified by analyzing the design of your SMS program and reviewing operations. This includes things like:

- Safety policies;
- **Risk management tools;**
- **Safety management system software;**
- Organizational structures (SMS org chart); and
- Documents.

In concert with system analysis, analyzing tasks should also prove to be a good source for hazard identification:

- Safety procedures;
- Checklists;
- Duties and responsibilities;
- **Aviation safety training;** and
- Materials used in operational environment.

Finally, as new or unidentified hazards arise in reported safety or operational issues, management can expand its list of identified hazards. This will be accomplished in the FAA's Safety Assurance process.



What Are Hazard Mechanisms (As Defined by FAA)

We are considering what makes up *a hazard as defined by the FAA*. In the FAA's understanding of a hazard, a hazard is comprised of three mechanisms, known as the Hazard Triangle:

- **Hazardous sources** – a rudimentary element of a hazard such as toxic chemicals, power lines, mountains, etc.
- **Initiating mechanism** – causal factor(s) that transform hazardous sources into hazardous conditions, such as any number of **Human Factors**; and
- **Target** – on who/what the hazardous condition is happening, such as on an aircraft, a person, etc.

It's important to understand these mechanisms because they will strongly influence the control measures that you use to control the hazard. Your control measures should directly address the mechanisms of a hazard. Cut out the mechanisms and you mitigate the hazard.



Training Hazard Identification Ability in SMS Programs

All employees should receive aviation safety training for hazard identification. Employees should be versed in:

- The mechanisms of a hazard;
- Hazards in your company;
- Hazard reporting options in your company; and
- The elements of a the Dangerous Condition phase (i.e., **Risk Event**, Undesirable Consequences, etc.)

It hardly needs to be said that hazard identification training is critical for effective hazard reporting cultures. When employees aren't trained on hazard identification, it will severely hinder:

- **Continuous improvement;**
- Risk analysis;
- System monitoring;
- Data acquisition; and
- Analysis of Data.

In short, lack of training can render impotent the entire Safety Risk Management and Safety Assurance processes.



How to Fulfill Part 5's SRM Risk Analysis Compliance Requirement

FAA's Safety Risk Management (SRM) Process for Risk Analysis

Thankfully, the Federal Aviation Administration's (FAA) SRM compliance requirement for Risk Analysis is fairly clear.

The "Risk Analysis" component description in the [Advisory Circular](#) provides most of the information you need to fulfill the requirement.

The Risk Analysis element may be seen as the centerpiece of the SRM process for a couple of reasons:

- The [FAA's SRM System Description](#) and [Hazard Identification](#) elements culminate in Risk Analysis; and
- Risk Assessment and subsequent control measures arise from Risk Analysis.

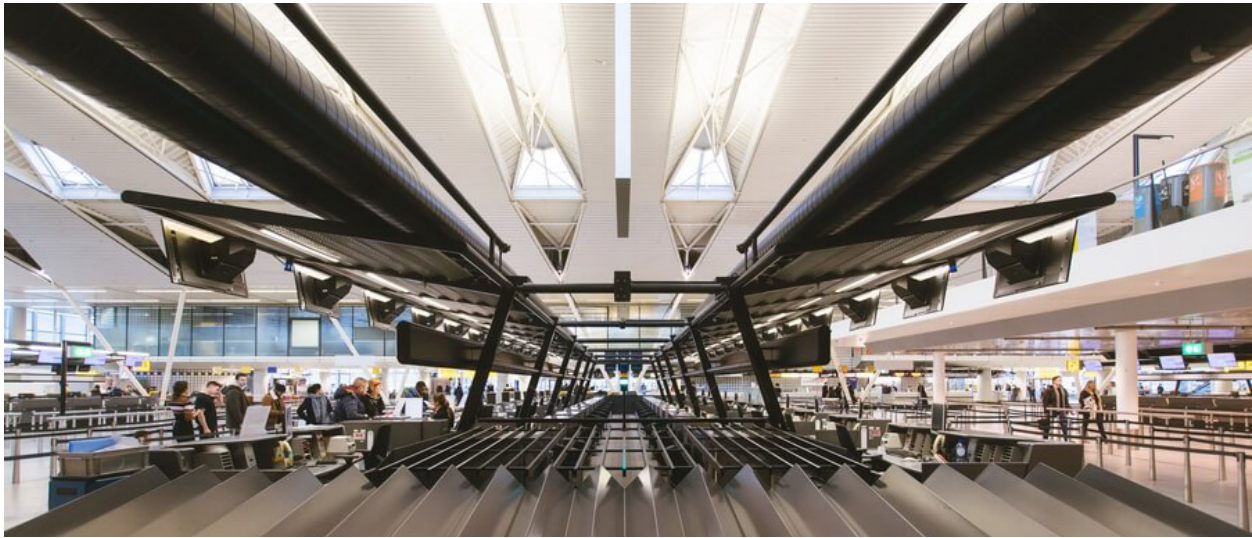
The whole purpose of the FAA's SRM Risk Analysis element is to establish:

- Potential safety incidents (i.e., accidents) that can arise from hazardous conditions;
- Effectiveness of existing risk controls;
- Basis and justification for risk assessment; and
- Need for risk control measures.

While the FAA discusses likelihood and severity quite a bit in the Advisory Circular, the Risk Analysis element should not involve making any conclusions about risk yet – that is what the SRM Risk Assessment element is for. What the FAA didn't quite make clear, but what they are getting at, is that analysis of risk:

- Naturally flows into assessing risk;
- Should analyze elements of likelihood and severity without actually conducting a risk assessment (there's an intermediary step between SRM Risk Analysis and Risk Assessment); and
- Should result in a list of potential negative outcomes (i.e. consequences) that can arise from a hazard.

To develop the list of risks, you must also establish your documentable process for analyzing risk (**SRRs. Section 5.55(a)**). This process should be something you can visually show an auditor if need be, such as using aviation risk management software or flow chart diagram.



Your Process to Analyze Safety Risk and What FAA Actually Means

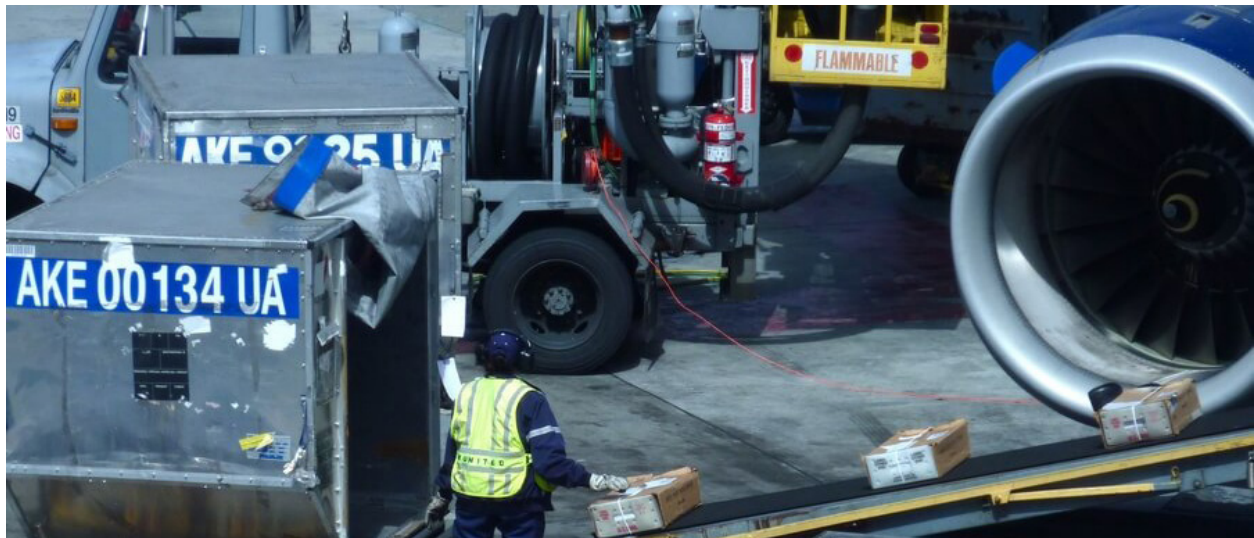
It can be frustrating for safety managers in new aviation safety management systems that the **Federal Aviation Administration** requires that “The certificate holder must develop and maintain process to analyze safety risk...”, but the FAA fails to actually explain what this means.

Fortunately, it’s not difficult to glean what they want. A process to analyze risk:

- Is a demonstrable procedure that you use for risk analysis;
- Can be shown step by step in a flow chart, diagram, etc.;
- Is repeatable; and
- Results in documentable outcomes – your list of potential incidents.

As long as your steps for analyzing risk are consistent with the above points, then you satisfy the requirement of SRRs. Section 5.55(a). As said, a good best practice is to simply create a workflow diagram of risk analysis processes.

Moreover, what the **FAA really means** when they say “safety risk,” is “**consequence**” or “**negative outcome.**” Negative outcomes and consequences are the same thing. As the FAA says, “e.g. error, failure, accident, or incident.”



How to Define Potential for Injury and Damage – What FAA Really Wants

The FAA wants you to “define potential for injury and damage that may result from an accident related to operating while exposed to the hazard.” This is a long winded way of saying:

- For each hazard, list the consequences that can arise from the hazard.

Remember, a hazard is a **“condition...or circumstance”** which is another way of saying a hazard is a **temporary state of being**. So, in the condition of a hazard,

- What problems can realistically arise?
- What are credible risk scenarios?

Understanding what is a hazard is critical for this process – read the section on **“what is a hazard” as defined by the FAA** from the linked article for more information.

When the FAA says “define potential for injury...” they do not want a definition. Instead of define, they could have easily said:

- *List* potential injury...
- *State* potential injury...
- *Describe* potential injury...
- *Indicate* potential injury...
- *Delineate* potential injury...

All of the above points are probably more to the point of what the FAA wants. Especially, “delineate,” which indicates that something should be indicated precisely. In this case, indicate precisely which likely consequences can arise from the hazard.



How FAA Defines Likelihood and Severity

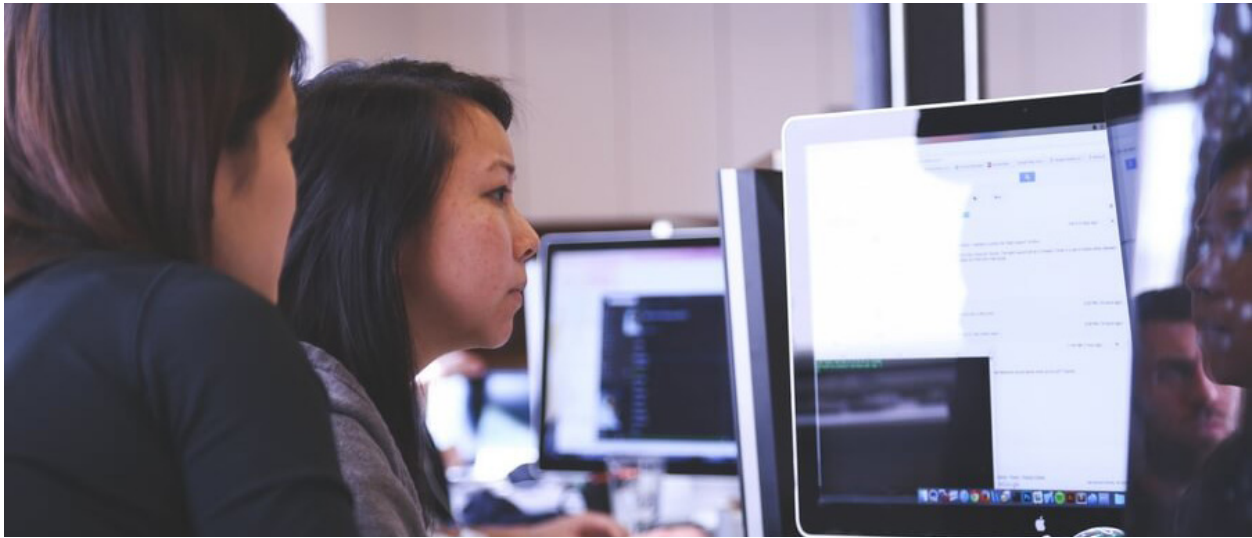
The FAA says that you need to “understand the basis for the estimates of severity and likelihood.” Here the FAA does a good job describing exactly what they want. The basis for likelihood and severity does NOT mean assess the likelihood and severity yet. It means understanding:

- **Definitions of likelihood and severity;**
- Relevant factors of the hazard that contribute/remove likelihood of *consequence* occurring; and
- Factors involved in the severity of consequence (loss of life, financial loss, etc.).

It's important to remember that the likelihood and severity factors are being established for the each negative outcome (consequence) and NOT the hazard:

- Likelihood: chance of the negative consequence happening; and
- Severity: how bad are the damages, loss of life, etc.

The need to understand likelihood and severity factors is what makes the FAA's SRM System Description component so important. As the FAA points out, “If risk analysis is not based upon a thorough understanding of the system, you may miss important details that could cause the system to fail.”



Evaluating SRM Risk Analysis Performance

Now the important question is, *how do you prove that your risk analysis technique is working?* The bad news is there is no objective, fool-proof way to prove this. The good news is that there is no expectation to “prove it” so much as to demonstrate you know what you are doing and that you have documentation proving you have analyzed risk initially and on a recurring basis.

Audit findings typically result when operators neglect to offer documentation of their risk analysis activities. We frequently see that operators will have documentation resulting from their initial risk analysis efforts, but subsequent reviews are overlooked.

The FAA acknowledges that “risk analysis in operations are often based on expertise...” This is a less direct way of communicating that if you know what you are doing, then you know what you are doing. Granted, your risk analysis activities should also be influenced by, as the FAA says:

- Failure data;
- Error data;
- Equipment reliability data; and
- Other expertise in the industry.

The long as short of it is that your SRM Risk Analysis technique is probably effective if:

- It is fully documented;
- You can easily create strong arguments for risk analysis decisions;
- Your risk analysis activities take into account information from your SRM System Description; and
- You can justify your analysis with the above bullet points.

If you wanted to go beyond expectations, you might simply document relevant factors for each hazard’s consequence.



Part 5's SRM Risk Assessment Element – Do it the Right Way

Risk Assessment in Safety Risk Management Process - It's About Consequences

The FAA's SRM Risk Assessment element is the 4th component in the Safety Risk Management Process. This process is outlined in the [Advisory Circular](#) and is based on the [4 Pillars of SMS](#).

The FAA's SRM Risk Assessment will naturally result from the [SRM Risk Analysis component](#). Once a thorough risk analysis has been performed, responsible managers should have a good idea of the chances of a risk occurring, as well as potential damages/injuries.

Remember that "risk assessment" in this case refers to the assessment of consequences discovered during SRM Risk Analysis. Each hazard may therefore have multiple risk assessments for each of its negative outcomes or "risk scenarios." Here are the most important elements of assessing risk:

- **Risk assessments** are performed by documenting the likelihood and severity of a consequence (risk) occurring;
- Assessments are almost always summarized with a risk matrix; and
- Assessments will be the deciding factor as to whether a risk moves into the FAA's Safety Assurance process or moves into the FAA's SRM Risk Control element.

It's important to note that the SRM Risk Assessment component is the bridge between the [FAA's Safety Assurance](#) and Safety Risk Management processes. This is important because the SRM and SA processes need to intimately tie together for the [aviation SMS program](#) to adequately meet regulatory requirements and reduce risk to as low as reasonably practical (ALARP).



FAA's Expectation of Likelihood and Severity

It's important to understand what the **Federal Aviation Administration's expectations** are regarding severity and likelihood, both in how you define them and how you use them. They are integral terms to performing risk assessments:

- Severity definition: how bad is the potential damage/injury of the consequence;
- Severity indication: how are you measuring damages (cost, lives lost, etc.);
- Likelihood definition: chances that the consequence will happen if the risk condition occurs; and
- Likelihood indication: what frequency are you using to measure likelihoods (happened in industry, happened in company, happened in company 3 times in last year, etc.).

You not only need to understand **how the FAA defines severity and likelihood**, but the FAA specifically says that it is your responsibility to “develop criteria for severity and likelihood...” All this means is to indicate:

- How you are measuring severity; and
- How you are measuring likelihood.

This is usually indicated on a risk matrix by simply defining the measurement next to the associated column/row header. For example, a risk matrix say in one column under severity, “Catastrophic: multiple loss of life and/or \$1,000,000+ in damages.” Or, in the likelihood header row, “Frequent: occurred 3 times in company in last year.”

Creating your own criteria for likelihood and severity is an essential component of demonstrating compliance and performing consistent risk assessments.



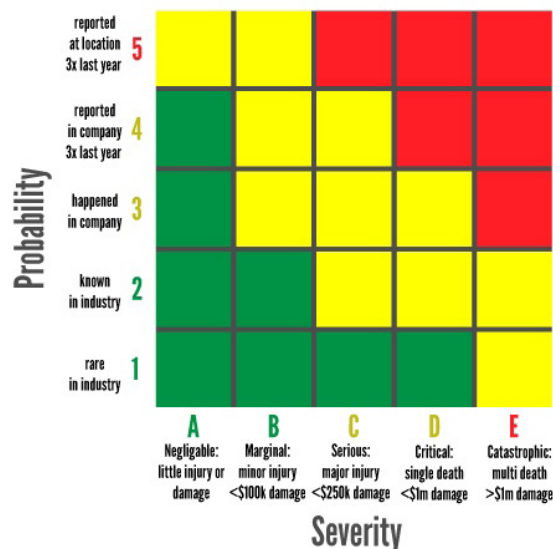
Process for Conducting Risk Assessment

You already probably have considerable experience assessing risk, which basically means reviewing all relevant details and summarizing the exposure with a **risk matrix**.

- Review relevant data related to consequence;
- Review relevant risk controls that help mitigate consequence;
- Establish where the consequence aligns with how you indicated severity;
- Establish where the consequence aligns with how you indicated likelihood; and
- Summarize assessment by choosing appropriate box on risk matrix.

The end result of the risk matrix will be a number and a letter, which is the code that summarizes your exposure. For more information, see this article covering **how to perform risk assessments with a risk matrix**.

The process can be done by an individual, such as an owner. In medium/larger organizations, the FAA recommend that this process be “coordinated across the divisional and geographic units of the company.”



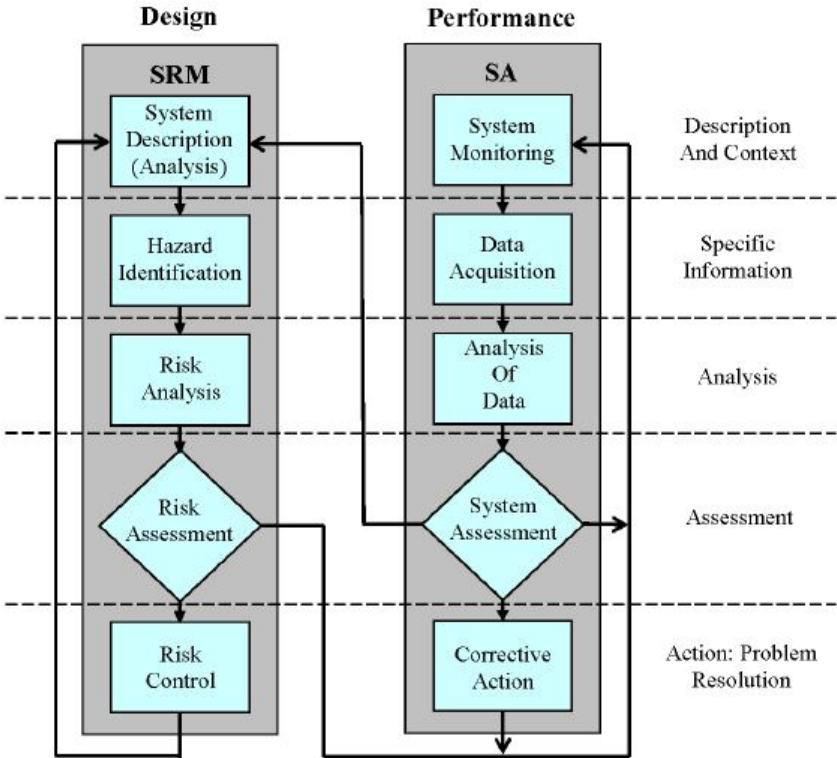


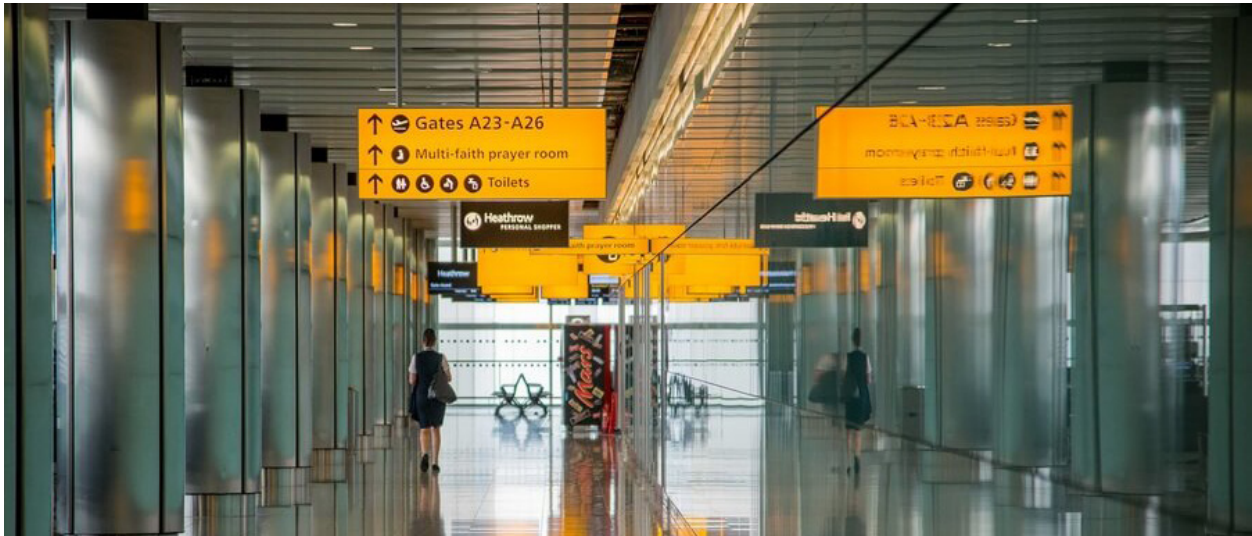
Outcomes and Goals of SRM Risk Assessment

The goals of SRM Risk Assessment are:

1. Quantify and document exposure for all consequences of a hazard;
2. Establish whether hazard is adequately controlled;
3. Establish whether hazard is ready to be monitored in SA process; and/or
4. Establish whether hazard needs further measures to control consequences.

As you can see in the diagram below, the outcomes of a risk assessment will determine what you do next. When the FAA says the objective of the SRM Risk Assessment element is, "To make a decision," this decision IS whether to monitor the hazard in SA (e.g. SA System Monitoring) or implement further risk controls.





What is “Acceptability” of Operation

“Acceptability of operation” is a key phrase used in the Objective of the SRM Risk Assessment component. In layman terms what this means is that the objective of performing the FAA’s SRM Risk Assessment component is to answer the question:

- Does this risk need more work to be “acceptable,” or can we begin **monitoring control measures**?

Where you draw the line for more work or more monitoring is your acceptability threshold. The FAA specifically says its up to you to define what acceptability is, “If you decide the risk is not acceptable.”

Many companies use the following parameter, and this seems to be satisfactory:

- Risk assessments that are assessed as “low” (green) or the lower end of “medium” (yellow) are generally considered within “acceptability of operation”;
- Risk assessment that are in the higher end of “medium” or are “unacceptable” are not within “acceptability of operation.”

Of course, some discretion is needed. Acceptability is also a product of available risk controls. If a risk control is out dated for a low risk issue, companies may find that to be “unacceptable.”

As the FAA says, “Risk assessment is based on judgment, experience, and input...” Long story short, you should simply be able to create a strong argument for each assessment.



How to Satisfy Part 5's SRM Risk Control Component

SRM Risk Control Based On Four Pillars

The FAA's SRM Risk Control component is the 5th and final element in the Safety Risk Management process. The Risk Control component is the phase in which you will bring hazards and hazards' risks into an acceptable level of safety.

Creating effective risk controls is essential – messing up here means you wasted the analysis and assessment efforts done in previous phases.

The FAA's SRM Risk Control process is outlined in the **Advisory Circular** and is based on the **4 Pillars of SMS**. Of all the Safety Risk Management Processes, the FAA probably outlines expectations the best for the Risk Control component.

The **Federal Aviation Administration** defines risk controls as, "anything that would lessen the likelihood or severity of a potential incident/accident." A risk control can be:

- New safety policies or procedures;
- New **aviation SMS software** or equipment
- New employees;
- New subcontractors;
- New duties and/or responsibilities;
- New bureaucratic elements, such as a checklist; and
- Any other type of beneficial change.

The FAA doesn't box you in as to what a risk control is. You just need to be able to demonstrate:

- The need for the risk control; and
- Why the risk control lessens risk likelihood/severity to an acceptable level.

As we discussed in the **SRM Risk Assessment** article, "acceptable level" is something that your company decides – you just need to be able to vindicate your decisions.



Important Language Points in SRM Risk Control

There are couple of subtle but extremely important points mentioned in the Advisory Circular.

- Control measures mitigate a hazard's *potential negative consequences (risk)* (**Section 5.55(d)**);
- Before a risk control is implemented, you need to be ensure that it will actually work (**Section 5.55(d)**); and
- You need to develop a “process to develop safety risk controls” ((**Section 5.55(c)**)).

All of the above points need to be strictly adhered to as you create and implement **types of risk controls**. Basically, make sure your controls are:

- Specific to particular risks;
- Analyzed and evaluated for “acceptability” before implementation; and
- Developed with the same process each time.

Fortunately, the FAA outlines the process that you need to “develop and maintain.”



Process to Develop Control Measures

The FAA strongly implies that there are three distinct phases in this component:

1. Design new risk control (3.f.1);
2. Analyze potential negative side effects of new control (“substitute risk”) (3.f.2);
and
3. Reassess risk on the hazard’s negative consequence (3.f.2).

The FAA doesn’t offer any guidance as to what they mean by “designed,” though this isn’t a problem. The straightforward implication seems to be that you need to come up with an idea for a risk control, including the purpose, function, and goal of the risk control. This is a pretty standard concept.

What the FAA is clear about is that you need to analyze new control measure to ensure that:

- It adequately brings the risk to an **acceptable level of safety**; and
- Does not accidentally introduce any new risks, known as “substitute risks.”

Controls should not be implemented before analysis!

After analysis, you need to perform a residual risk assessment (aka, a reassessment) on the risk that the control measure addresses. You should already have an initial assessment performed on the risk during the SRM Risk Analysis component.



What's Missing from the FAA's SRM Risk Control Component

While the Risk Control component does an excellent job outlining how it wants you to address creating control measures, it's hard not to feel like the SRM Risk Control requirements are missing something crucial. It's important to understand just what the FAA's requirements are asking for from your **airline SMS or airport SMS** program.

Namely, the requirements call for your safety program to:

- Create control measures in response to hazardous conditions in order to prevent risk; but
- There is no requirement in the Advisory Circular to create control measures that mitigate likelihood of the hazardous condition from being present.

Hazards are the prerequisite for accidents and safety incidents. The FAA needs to require aviation service providers to develop risk controls for hazard mechanisms too. If you cut out the hazard, you cut out the risk.

Though not required yet, your SMS program should definitely try to mitigate the likelihood of hazardous conditions through control measures that are:

- Detective;
- Corrective; and
- Preventative.

Thank you for reading this guide to Part 5 compliance.

We hope you find it helpful in understanding what the FAA wants from your SMS program. If you have any follow up comments or feedback, please contact us at

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