



## **The Evolution of SMS**

Safety Management needs to be participated by all stakeholders and seen as an industry standard not just specific to any one company. Safety management for General Aviation industry has not been fully realized. There are several issues starting with not having a clear understanding of SMS by users and administrators, then there is the lack of well-defined training and any type of associated curriculum.

The routine becomes the standard contributing to complacency as nonstandard operations become the standard. Most crews are paired together and strict adherence to SOPs are not enforced. For commercial airlines crews may only be paired once in a career and non-standard procedures cause confusion and are called out. At issue is the reliance on techniques vs procedures. During commercial airline operations non-standard procedures are easily identified, where in general aviation techniques may be seen as SOPs may not be detected as deviations and become the standard.

Safety Management was adopted by the aviation industry but needs to be tailored to the unique aspects of general aviation. There are too many terms not well defined, such as Risk Profile, Safety Performance; couple these misunderstood terms with the subjectivity required to complete many processes, it is clear why there is confusion surrounding SMS. Compounding matters are the number of industry audits confusing SMS further, not to mention the subjectivity of the auditors.

## **Aggregate Risk Management**

We are introducing Standard Safety Procedures (SSP) which is an industry method of reviewing and making Data Driven Decisions. By sharing information, individual companies can better determine performance measured against an industry standard. The 3 major airlines have over 4,000 flights a day while most GA flight departments only have a fraction of this in a year. The airlines have many data points and methods to highlight anomalies or deviations, while most GA flight departments are limited to manual reporting.

The evolution of safety should be industry standard of refining procedures through a collective approach of reducing industry risk. Safety has never been defined besides the act of a safe flight, free of harm or risk. Unfortunately, risk is associated with all aspects of aviation and there are many contributing factors, including weather to human factors. Our approach is to reduce risk by reviewing objective data and determine policies and procedures to limit the exposure to risk.

This Aggregate Risk Management (ARM) approach to safety is a group of operators collecting and sharing data to enhance SOPs per phase of flight and reduce risk for participating members.

The interesting part of collecting data even the airlines cannot remove the perceived stigma of reporting non-standard events. Pilots across the industry only report items when deemed a necessity or self-preservation. I would argue the ASAP program has led to this perception; of only report to get out of jail, otherwise keep on going. There needs to be an industry culture shift towards enhancing operations not necessarily seen as a possible invitation of certificate action. By reporting non-standard events or issues the industry has an opportunity to examine SOPs and determine if changes are needed. I would argue if one operation is substandard this could compromise safety for the industry. One example is insurance costs increase with each accident or incident for all operations.

## **Just Culture**

Part of this cultural shift is the importance to understand oversight by regulators worldwide are committed to a Just Culture. Reported events are welcomed as an opportunity of improvement. In today's world information is communicated worldwide in seconds and nothing goes unrecorded or unnoticed. All anomalies, maintenance and operations need to be reported promptly to address potential non-compliance as an opportunity to improve operations.

For individuals not reporting safety issues or non-standard procedures may be more problematic. By encouraging a reporting culture all members are accountable and issues are resolved as a collective. By

having a transparent and open dialogue regulators will be part of this proactive approach to solving nonstandard operations or discrepancies.

Even when operations are contrary to a rule or standard there will not be certificate action if these acts are deemed non-intentional. The only events that will warrant certificate action are intentional non-compliance, but this is not the norm. We are all humans and make mistakes, to reduce the occurrence of human-error, training and an emphasis on SOPs will reduce nonintentional compliance and will increase safety. The importance of reporting deviations holds everyone accountable to a standard and reduces risks.

### **How to Evolve**

Auditing needs to evolve past third party. Audits have become a cottage industry, and some operators are in a perpetual state of being audited. I would argue the audits are not making the industry safer by just looking at NTSB data. The industry is still having the same number and types of occurrences. The original objective of audits was to operate to a higher standard than applicable CFRs. This has been diluted with this never-ending stream of standards and auditors' subjectivity. External audits can be a useful exercise however the ultimate objective for most operators is marketing by having an emblem on their website, instead of a review of policies and procedures to attain the highest degree of operating safely. An objective audit measured against a well-defined standard with goals has merit but today most audits being conducted have little effect on increasing safety.

From NTSB data not all incidents or accidents make the national news, but we seem to have the same types of events occurring year after year. While not all companies participate in audits, there have been high profile accidents with companies that do conduct audits on a regular schedule. Audits are generally looking at a company at a point in time and may not predict operations in the future with the following increasing risk factors facing the industry today:

1. Airline Hiring (High turnover in general aviation).
2. Number of aircraft purchases (More hiring).
3. More training cycles.
4. CBT – Computer Based Training can't replace classroom training.
5. Reliance on technology instead of reviewing the fundamentals of flying aircraft.
6. ADS-B – deviations from standards will be reported automatically.

Every SMS system should contain at least two components, a manual detailing policies and procedures, and a database collecting performance information.

At issue there are many different tools and methods overcomplicating a clear understanding of SMS. Einstein said If you can't explain it simply, you don't understand it well enough. SMS should be broken down to the key components and detailed in plain language for a clear understanding.

The concept of SMS is a simple process of reducing risk by:

1. Learning from the past.
2. Being proactive by looking forward at potential risks.

An aggregate approach to SMS will produce better results for the industry by looking at safety as industry responsibility not just individual company.

### **Defining the Safety Standard**

The safety standard should be a well-defined taking into the account:

1. CFRs
2. ICAO Standards
3. Best Operating Practices
4. Insurance consideration
5. Safety Policy

The Standard will define the outline for the SMS manual and will detail the data-points that need to be part of the analysis. The policy and procedures will define the SSPs and must be part of recurring training and easy to understand. Same for the SMS software, the platform should be easy to use with simple functions. There are many SMS platforms overly complicating processes and not fully realizing the objective of SMS to reduce risk. Aggregate Risk Management starts with a well-defined standard and uses a collective approach to develop SOPs and training for all participants.

### **Accountability**

Accountability is the cornerstone of responsibility. If there is no accountability, what are the consequences of not following procedures or policies, none. One example of accountability, the FAA uses enforcement as a means of requiring compliance to CFRs<sup>1</sup>.

Accountability needs to be part of any standard and this can be in many forms. The critical part is the culture of the organization. The culture should foster an open dialogue and be free of reprisals. By being transparent all parties are part of the solution and will buy into the system. The willingness to report all types of events by all participants will increase. With a willingness to report ASAP is not needed and the extra overhead to maintain ASAP is no longer part of the process.

### **Reporting Should be SOP**

One of the cultural mind-shifts should be the need to have reporting as part of SOPs. Currently pilots and mechanics only see reporting problems or issues to protect against deviations or incidents, instead of reporting as a common part of operations.

Managers should provide positive feedback; this will lead to a trust in the system and foster the reporting discussed earlier. With more reports managers will have more data to evaluate policies and procedures and with an aggregate approach operators can measure against peers and incorporate best practices. One of the benefits of including reporting as a standard the culture of the company will change to seeing reporting as a normal part of operations. Deviations should be seen as unintentional occurrences and an opportunity to learn as a group or the industry when sharing data.

### **Safety as a Standard**

Each SMS should have the following components:

1. Safety Policy
2. SMS Procedures (SMS Manual)
3. SMS Data Collection (Simplified)
4. SMS Training
5. Flight Data Monitoring (As able)
6. An industry review measuring standards

#### **a) Safety Policy**

The safety standard starting point is the safety policy. Every member should read and acknowledge the Safety Policy as the company standard. There needs to be a full understanding of the meaning of the company policies, including accountability and responsibility of each person. The Safety Policy is dynamic and will change as needed.

#### **b) SMS Manual**

The SMS Manual will detail the company policies and procedures. The SMS procedures need to be broken down into plain English and clearly understood for all personnel. It is important to note

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<sup>1</sup> With the FAA Compliance Action program, <https://www.faa.gov/about/initiatives/cp> the FAA only uses punitive actions to violate intentional non-compliance.<sup>1</sup>

the SMS manual is an administrative tool, line pilots and mechanics should have access but are not accountable to all the processes. Reporting procedures needs to be emphasized and an explanation of the processes so there is a clear understanding of SMS processes.

**c) Data Collection**

There are many software platforms offering SMS however most are over complicated with several bars and graphs but unless there is a qualified person reviewing the data all platforms will fall short or realizing its goals. The purpose of the SMS platform should be one simple repository for data including:

1. Past reported events, including:
  - a. SMS Meeting
  - b. CASS Meeting
2. Determination (Root Cause Analysis the Why)
3. Needed Changes (Corrective Action Only when warranted)
4. Audits (Internal Evaluation Program)
5. Performance (Measured Standard)
6. Known Risk (Risk Profile)
7. Inputs (Automated Information)
8. Reports

The program needs to be written in clear terms and processes should be easy to understand.

**d) SMS Training**

All personnel should be trained on the safety management system for the organization. To include initial classroom training and quarterly recurrent, subjects and data review. CBTs are acceptable for certain sharing of information and alert personnel of news; however, I believe every twenty-four months recurrent classroom should be part of the training program.

**e) Flight Data Monitoring**

Aircraft equipped with Flight Data Records should have the data converted to reports to determine operational performance. These types of reports will provide objective analysis of operational performance and determine if standards are being met. Flight Data Monitoring is currently an EASA standard and needs to be part of a company's SOP for international operations to the EU.

**f) Peer Review**

One method of determining if standards are being met is to accomplish a Peer Review. We are suggesting transparency for the industry by sharing all data collected and allow administrators access to all reported data. This will allow an assessment of performance relevant to a group of operators.

**Conclusion**

SMS should be seen as a collective through an aggregate approach of sharing data. All participants should actively report, and reporting should be part of SOPs, non-standard and standard events. Honest and open dialogue with peers need to be part of the process.

Safety is everyone's responsibility and accountability needs, to be part of the process. The reasons for not reporting include, not having enough time, not seen as important and fear of reprisal but I believe all these past reasons are no longer valid in today's operating environment (worldwide). I can almost guarantee no close call is unique and each report may help avoid a repeat occurrence or accident. Sharing experiences is part of learning may lead to industry changes.

SOPs need to be constantly reviewed against industry data, to ensure the highest set of standards and operating procedures. By providing crew feedback examples will illustrate SOPs are the best operating practices. Another benefit, the culture of reporting will change among the group and the benefits of SMS may be realized among the industry participants.

One important point that needs to be emphasized, not all deviations require new procedures. Deviations need to be examined for the root cause (the why) and human factors should be taken into consideration. As mentioned, people make mistakes for many reasons including fatigue, and not all deviations need to alter procedures. I would argue a less is more approach and to only change procedures when needed (the benefits outweigh the risk). Each change adds the potential of nonstandard operations following any SOP change. Careful consideration of any change needs to be the priority, and if changes are deemed warranted, the changes need to be communicated and trained before implemented.

As an industry we should strive to increase safety by a collective approach of reducing risks. We need to explore and experiment new methods, techniques, and concepts. Without an honest self-examination, processes may become stale and irrelevant, leading to unsafe operations. The most important part of Aggregate Risk Management is the culture of all participants to be open, honest and be active participants in a collective approach to aviation safety.

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