

**Assessing compliance in a SMS Environment: A Systems Approach to Oversight**

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# **Assessing compliance in a SMS Environment: A Systems Approach to Oversight**

## **Abstract**

In 1999, Transport Canada Civil Aviation began the process of regulating safety management system (SMS) requirements for all Canadian certificate holders. This journey involved the development of a set of regulatory requirements that apply across the civil aviation spectrum, as well as the production of implementation tools to facilitate the transition to SMS. While the implementation of SMS has required a major shift in the approach organizations take to managing safety, it has also forced them to measure and appropriately enhance their internal safety culture. Similarly, the transition to SMS has necessitated a change to the way Transport Canada conducts its own business and an assessment of where the Regulator is in respect to the development of its own internal safety culture.

The demographic, economic and social challenges facing the Canadian aviation industry and Transport Canada are representative of the situation globally. The Canadian experience, as it relates to SMS, is not unique and there are lessons to be learned for all. To address these requirements and the shifting role of the Regulator in an SMS environment, Transport Canada has developed a new approach to overseeing its certificate holders. Where typical audit programs focus on conformity to a specific standard and focus on a review of the entire organization, Transport Canada has adopted a systems based approach to oversight that focuses on the effectiveness of the processes used to manage operational risks. The focus is on outputs and outcomes rather than auditing to procedures. Transport Canada's entry point into an organization is at the system rather than the operational level. The theory being that if the systems are healthy and working effectively, the management of the operational areas and compliance level will be equally robust. This approach is well established in other high-risk industries but has not been widely used in regulatory oversight of the civil aviation system.

This paper will provide an overview of Transport Canada's approach to SMS and will focus on the use of a systems based approach to regulatory oversight. The SMS assessment tool and methodology will be examined as well as the results to date of this approach.

## Assessing compliance in a SMS Environment: A Systems Approach to Oversight

A decade has passed since Transport Canada Civil Aviation (TCCA) began the process of regulating safety management systems. On the surface it appeared quite a simple task: develop a set of regulatory instruments and the supporting tools to facilitate the implementation of SMS in Canadian aviation. What has transpired over the past ten years is the focus of this paper. A veritable lesson learned in respect to SMS regulation, implementation and cultural change. To say we've learned a lot would be an understatement. We've done some things well, others not so well and have had our share of missteps along the way. However, it's been said that: "*he who never made a mistake never made a discovery*".<sup>1</sup> To this end we've turned our lessons learned into a series of discoveries and opportunities. We now know that for a SMS to be effective there has to be a willingness to change the way *both* the Regulator and the industry conduct their business. This paper looks at the process of discovery, the challenge of change and the major activities Transport Canada undertook to facilitate the successful implementation of SMS.

In the Canadian context a safety management system: "*means a documented process for managing risks that integrates operations and technical systems with the management of financial and human resources to ensure aviation safety or the safety of the public*"<sup>2</sup> From a practical perspective this means that an organization must develop, maintain and integrate a management system comprised of six basic components:

1. A Safety management plan
2. Training
3. Safety Oversight (reactive and proactive)
4. Documentation
5. Quality assurance, and
6. Emergency response preparedness.

These 6 components and related elements form the basis of a performance (or objective) based integrated management system that looks specifically at the risks to flight safety associated with the operations conducted under the Certificate. In developing this model, Transport Canada considered what was already in place in the Canadian Aviation Regulations (CARs) and what was missing to complete the system requirements. Throughout we involved the industry in the discussion and participated in implementation projects with several airlines to enhance our knowledge of what works and what doesn't.

It's been said that: "*Any fool can make a rule, and any fool will mind it*".<sup>3</sup> Clearly this person was not a big believer in regulation. The point is: if regulation is the path chosen, it had better have a positive public contribution and go beyond regulation for regulation's sake. We fully expect SMS to benefit the industry and the public. Results to date confirm our assumptions. In striving for a positive outcome we have encouraged the industry while implementing safety management systems to go beyond basic compliance and to strive for excellence. Transport Canada wants and expects more. Compliance to the CARs, in and of itself, does not assure safety. We need to go beyond basic conformance and determine whether or not the system once established is effective. After all, no regulation is perfect; it cannot address every situation. In a performance based framework it is up to the regulatee to apply the

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<sup>1</sup> Samuel Smiles

<sup>2</sup> Canadian Aviation Regulations, Part 101.01(1)

<sup>3</sup> Henry David Thoreau

regulation in a way that is “perfect” for their scenario. Thereby accomplishing compliance, as well as demonstrating effectiveness.

From the outset, it became clear that even with the best of intentions and the appropriate resources a compliant, let alone effective, SMS could not be built overnight. To enable organizations to accomplish this we needed to give them time to implement a SMS that integrates continuous learning and improvement. The expected end result is that we have effective systems in place. But how do you accomplish this when most regulatory frameworks require immediate compliance? Transport Canada issued an exemption from the regulations providing a 39-month window for implementation. This same window has been, and will continue to be, provided for organizations required to implement an SMS.

Establishing an effective SMS requires more than the regulation calls for. In fact, no regulation can require this; it’s an expected outcome – a healthy safety culture. To explain further, compliance involves implementing the 6 components in the Transport Canada SMS model. Simply put this infrastructure development. However, if in developing the infrastructure you have involved the appropriate parties, embodied the ideas and suggestions of these groups into the SMS, encouraged people to report hazards, incidents, accidents and errors without fear of retribution and continuously improved the system based on multiple inputs, you’ll be well on the way to having a SMS that is supported by a healthy culture. An appropriate culture is a prerequisite for an effective SMS.

While the implementation of safety management systems has required a major shift in the approach organizations take to managing safety, it has also forced them to measure and appropriately enhance their safety culture. Similarly, the transition to safety management systems has necessitated a change to the way Transport Canada conducts its business and an assessment of where the Regulator is in respect to the development of its own internal safety culture. The shift to SMS within Transport Canada has necessitated multiple changes in our regulatory approach and, as with any major change, has not been without complications. We’ve had to retrain our inspectors to take a systems approach to oversight, rather than individual compliance, and we’ve moved to an enterprise management approach (multiple certificates, managed by a multi disciplinary group of inspectors), which has resulted in a complete reorganization within Transport Canada Civil Aviation.

There have also been challenges related to the myriad of myths and legends resulting from TCCA’s move to a safety management systems approach. They range from the bizarre to the ridiculous. It’s been suggested that SMS is de-regulation, self-regulation, a “get of jail card free” (due to a change in Enforcement Policy) and a budget reduction exercise. None of these things is true. In May 2008, the Government of Canada’s Office of the Auditor General (OAG) reported on Air Transportation Safety – Transport Canada. The report was the result of a rigorous review of “... Transport Canada's management of the transition to SMS-based oversight of the first sectors to implement SMS—airline operators and associated aircraft maintenance companies.”<sup>4</sup> The Report contained 9 recommendations for improvement and acknowledged that Transport Canada, as the first national Authority to regulate SMS, had developed appropriate processes and procedures for SMS implementation. In comparison to other OAG reports this was an excellent outcome; most OAG reports contain far more recommendations. But that’s not the point. The point is, Transport Canada made some mistakes along the way and the report provided insight into where we’d gone astray. More importantly it provided opportunities for improvement that have been readily accepted and acted upon by Transport Canada. This clearly demonstrates that we expect no less of ourselves in respect to our own management of SMS, than we do of the industry we regulate.

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<sup>4</sup> 2008 May Report of the Office of the Auditor General, Chapter 3.

The Government of Canada's scrutiny of SMS continued with a Parliamentary review at the Standing Committee on Transport, Infrastructure and Communities (SCOTIC). The Committee was considering key amendments to the Aeronautics Act that will allow individuals and operators to confidentially report, on a voluntary basis, less safety-critical regulatory violations. The SCOTIC vigorously debated the pros and cons of SMS and reached the conclusion that SMS was an acceptable means of managing aviation safety. In his testimony, former Chief Justice Virgil Moshanksky acknowledged that if SMS had been in place at the time of the Dryden, Air Ontario accident, it might never have happened. Suffice it say, Transport Canada's approach to SMS has been thoroughly scrutinized in the past two years. We firmly believe the Transport Canada approach to SMS has weathered the storm and in the process acquired an endorsement from the highest levels of Government.

The demographic, economic and social challenges facing the Canadian aviation industry and Transport Canada are representative of the situation globally. The Canadian experience, as it relates to SMS, is not unique and there are lessons to be learned for all. Transport Canada has had to change the way it conducts its business and to fundamentally address the changing role of the Regulator through major policy shifts. The most significant, and perhaps most hotly debated at the SCOTIC, is the move to a new approach to overseeing Certificate Holders.

In the SMS environment, Transport Canada expects operators to actively pursue knowledge related to hazards and to proactively manage attendant risks. In order to do this, a holistic approach to safety management must be adopted. In other words, risk cannot be considered in isolation to the immediate operating environment. A comprehensive safety risk profile has to consider all aspects of the operating environment including regulated and non-regulated areas to be effective. For example, the hazards and risks involved in flying a particular route can only be accurately assessed if one considers the contributing role that maintenance, airports, air traffic control, fuel suppliers etcetera play. In this example, an assessment of the hazards related to the flight deck provides insufficient information to make conclusions relating to that particular route structure.

In much the same way, Transport Canada cannot consider the effectiveness of an organization's SMS in isolation from the other parts. Conformance to a given standard can be established within the confines of a single certificate approach; however, as an effective SMS is dependent on a consideration of the operating environment as a whole, a traditional audit approach is inadequate as it applies to SMS. Transport Canada has developed a systems based approach to oversight that focuses on the effectiveness of the processes used to manage operational risks. The focus is on outputs and outcomes rather than auditing to procedures. To fully appreciate this, it's important to understand the distinction between typical audit programs, which focus on conformity to a specific standard, and an assessment approach, which focuses on a review of the entire organization.

In the past, Transport Canada's oversight focused on auditing to procedures and reviewing records and documentation that reflect front line employees and middle management. Our new assessment protocol evaluates the effectiveness of the processes put in place to ensure compliance. It balances manual review with on-site interviews, observations and review of records. It is more oriented towards outputs and outcomes and the documentation reflects more involvement with senior management.

Transport Canada's entry point into an organization is at the System rather than the operational level. . The theory being that if the System is healthy and working effectively the management of the operational areas and compliance level will be equally robust. This approach is well established in other high-risk industries but has not been widely used in the regulatory oversight of Civil Aviation. In the

past, the entry point was at the technical level and very much focused on compliance to a given standard. In a safety management environment we expect the organization to verify compliance through a robust quality assurance program. Whilst Transport Canada ensures that the processes used to verify compliance are effective.

We do this through an assessment methodology. An assessment is a process comprised of a documentation review and on-site review of the entire organization in order to determine if the safety management system is documented, in place and effective. The protocol comprises expectations, a series of open-ended questions and scoring criteria. A typical expectation provides guidance to the inspector as what they can expect to find when reviewing a SMS component or element (a subcomponent of a component). As SMS knowledge is evolving, the assessment framework provides the flexibility to accept new elements and components that are becoming the industry norm. By providing operators with a numeric score in relation to their SMS, TCCA can not only identify compliance, it can acknowledge when a company goes above and beyond this level by adopting best practices. Where a company receives satisfactory score of 3 a typical assessment cycle of three years will be applied. Companies that score above this will see an extension of their assessment cycle based on a variety of risk indicators including their assessment score.

I started this paper by suggesting that SMS regulation and implementation in Canada was infinitely more complex than we had first imagined. The journey isn't finished yet. As we phase in our implementation of SMS throughout the industry, we are continually striving to improve the implementation process, the guidance material and the services we provide to the industry. As we contemplate a fully compliant industry under the umbrella of SMS, we are also considering the changes we have to make internally to succeed. For example, the movement towards an enterprise approach to certification and oversight will require further consideration of the existing regulatory structure, including common certification standards, unified operating certificates and increased harmonization in relation to the technical areas. Any future changes of course, must be considered in terms of the value to Canadians. We firmly believe that SMS will save lives through improved safety performance. Based on the results so far, we have every reason to believe that the end result will be infinitely more impressive than we had ever imagined.