EVALUATION OF SAFETY MANAGEMENT SYSTEMS IN CIVIL AVIATION

Evaluation Summary - 2019

A **Safety Management System (SMS)** is 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. The intent is that an SMS becomes a part of the culture of an organization and its everyday work.

Since 2008, some airline operators, private operators, approved maintenance organizations who service airline operator aircraft, air navigation services, and aerodromes/airport/heliports are required to have an SMS in place.

TC's Evaluation and Advisory Services conducted an evaluation of SMS in Civil Aviation in order to answer two key questions: **after 10 years of implementation, what has been the impact of SMS on aviation safety?** and; **what lessons have we learned from SMS roll-out and implementation?**

EVALUATION METHODOLOGIES

8 CASE STUDIES
INVOLVING OPERATORS IN 3 REGIONS

AN ONLINE SURVEY
OF 1799 INDUSTRY STAKEHOLDERS
20% response rate: 360 industry representatives (213 operators, 62 AMOs, 85 aerodromes)

MORE THAN 40
INTERVIEWS

DOCUMENT & LITERATURE REVIEW

WHAT WE FOUND

IMPACT ON SAFETY

Evaluation results suggest a positive impact of SMS on aviation safety in Canada over the last 10 years:

- A number of **organizations have in place traits and practices that are indicative of an effective SMS**, specifically in the areas of non-punitive reporting, executive commitment, and hazard identification and mitigation.
- In those organizations a **more systematic and documented way of identifying and addressing aviation risks** is taking hold.
- There is **notable buy-in to SMS**, in particular amongst large organizations.

We noted significant research evidence showing a correlation between SMS and improved safety performance, but it was not possible to statistically attribute the extent of SMS's contribution to aviation safety improvement, due in part to data limitations.

SMS IMPLEMENTATION

While there has been an improvement in the last five years, there are still issues in the aviation sector of **inconsistent interpretation of and confusion about regulations**.

SMS FOR SMALLER ORGANIZATIONS

The majority of interview respondents believe that **SMS can be useful to an organization of any size**. In the survey, we found that smaller organizations are much more impacted by the following than larger organizations: resource considerations; training, awareness and competence; and lack of perceived benefits of SMS.

LONG-TERM RISKS

Stakeholders identified the following **key risks**:

- TC's perceived retreat from its oversight responsibilities
- Complacency in organizations regarding SMS
- Shortage of qualified people
- Lack of collaboration within the industry

RECOMMENDATIONS

TRANSPORT CANADA SHOULD:

ACTIONS

TRANSPORT CANADA CIVIL AVIATION AGREED TO:

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To realize the full benefits of SMS, explore ways with the civil aviation enterprises to **improve** their **root cause analysis capacity.**	Develop SMS discussion paper to be used for consultation with industry; Develop white paper with options and plan for way forward.
Determine the extent to which **organizations' risk assignment practices** are appropriate and take the necessary steps to mitigate if it detects a pervasive issue.	Implement the first stage of Canada's State Safety Program; Continue contribution to the Canadian Aviation Safety Collaboration Forum meeting; Strategic Safety Risk Assessment methodology (SSRA) update
In order to be able to conduct **quantitative analysis of SMS**'s impact on aviation safety, identify information needs and develop and execute a data strategy to address those needs.	Consult with with civil-aviation authorities for solutions and best practices; Complete its business intelligence project, the Civil Aviation Oversight Application Rationalization (CAOAR)
Build capacity for **continuous improvement** in the industry by encouraging innovative approaches to safety management.	Continue contribution to Safety Forum meeting; Conduct ICAO literature review.
Ensure that **updated training** addresses issues in Evaluation report, is consistent across regions, occurs in a timely fashion, and is relevant to assessing SMS in practice.	Review software platforms; Develop SMS discussion paper to be used for consultation with industry; Develop white paper with options and plan for way forward.
Engage with industry and TC inspectors to explore what level of **collaboration in risk assessment and data-sharing** is appropriate; determine **data needs for monitoring/improving** aviation safety; and assess feasibility of more **open data-sharing**.	Continue contribution to the Safety Forum meeting. Explore enhanced information sharing; take advantage of inclusion of SSRA in TC Data Lake Initiative, to improve data analysis.