Implementing Safety Management Systems in Aviation: The Legal Impact on Canadian Commercial Air Carriers

By

René David-Cooper

Faculty of Law Institute of Air and Space Law McGill University Montréal, Canada

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Abstract

In light of several major aviation accidents at the end of the 20th Century, Canada's interest in protecting the travelling public's safety has shifted towards the analysis of organizational factors to increase the industry's safety. With the recent advent of Safety Management Systems (SMS) brought by the International Civil Aviation Organization (ICAO), air carriers registered in Canada are now required by law to manage the impact of their business decisions on their operation's levels of safety. Firstly, the purpose of this thesis is to objectively understand safety management theories, and secondly, analyze the legal framework imposed on Canadian carriers operating under SMS. Subsequent chapters will adopt a critical analysis of the legal and practical difficulties encountered by Canadian operators during their transition to SMS. It will also discuss the legal challenges in protecting SMS information from being disclosed in the public domain or during civil proceedings.

This treatise on SMS will explore the potential benefits and eventual shortcomings that may arise in certain areas of the law once this innovative safety regime becomes fully operational worldwide. Although SMS can effectively reduce safety risks with proactive responses to industry hazards, there is a compelling need to evaluate current deficiencies that may impact the effectiveness of this regime in reducing the number of accidents. Since Canada is the first country in the entire international aviation community to adopt and implement SMS, this thesis will bring forward legal solutions that could prevent ICAO member States from experiencing the difficulties encountered by several Canadian airlines.

Résumé

À la lumière de plusieurs accidents majeurs survenus dans le domaine de l'aviation à la fin du 20^{ème} siècle, l'intérêt du Canada dans la protection de la sécurité du public s'est déplacé vers l'analyse des facteurs organisationnels pour prévenir la répétition de tels incidents tragiques. Avec l'avènement récent des Systèmes de Gestion de la Sécurité (SGS) apportés par l'Organisation de l'aviation civile internationale (OACI), les compagnies aériennes enregistrées au Canada sont maintenant tenues par la loi de gérer et d'évaluer l'impact de leurs décisions d'affaires sur le niveau de sécurité de leurs opérations. En premier lieu, ce mémoire évaluera objectivement les théories de gestion de la sécurité et analysera le cadre légal imposé aux transporteurs aériens opérant sous le nouveau régime des SGS. Les chapitres suivants adopteront une analyse critique des difficultés juridiques et pratiques rencontrées par les exploitants canadiens au cours de la transition vers les SGS. Ces chapitres examineront également les défis juridiques encourus pour protéger la confidentialité de l'information provenant des SGS et empêcher leur divulgation dans le domaine public, voir même leur utilisation dans le cadre de procédures civiles contre un exploitant.

Ce mémoire abordera une discussion avancée sur les avantages et les lacunes inhérentes des SGS dans différents domaines du droit. Même si les SGS promettent une réduction proactive des risques en aviation au bénéfice de l'intérêt public, il y a une nécessité impérieuse d'évaluer les lacunes actuelles qui pourraient influencer l'efficacité de ce régime juridique, ainsi que la réduction du nombre d'accidents. Puisque le Canada est à l'avant-garde en tant que le premier pays de l'OACI à adopter et mettre en œuvre les SGS, cette thèse ira de l'avant en proposant des solutions, tant juridiques que pratiques, pour tenter d'éviter que d'autres États et exploitants soient confrontés aux difficultés rencontrées par plusieurs exploitants canadiens. First and foremost, I would like to dedicate this thesis to my wonderful parents, Claude and Michael, for their eternal support and encouragement throughout my legal studies. Merci Claude de m'avoir démontré l'importance fondamentale de l'éducation et de m'avoir permis d'atteindre chacun de mes rêves, peu importe le défi. To my father and favourite co-pilot Michael, you have been an invaluable inspiration for me to combine both my passions for aviation and law into one single career.

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Glossary

AGC	Auditor General of Canada
ALARP	As Low as Reasonably Practicable
АМО	Approved Maintenance Organization
APU	Auxiliary Power Unit
ASAP	Aviation Safety Action Program
ATC	Air Traffic Control
ATI	Access to Information
ATIA	Access to Information Act
ATSA	Aviation and Transportation Security Act
CARs	Canadian Aviation Regulations
CBAA	Canadian Business Aviation Association
CFIT	Controlled Flight Into Terrain
CFPA	Canadian Federal Pilots Association
CRM	Crew Resource Management
CVR	Cockpit Voice Recorder
Doc9859	ICAO Safety Management Manual
ELT	Emergency Locator Transmitter
ERP	Emergency Response Plan
EU	European Union
FAA	Federal Aviation Administration
F/O	First Officer
FSF	Flight Safety Foundation
HRO	High Reliability Organization

IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
ILS	Instrument Landing System
МН	Malaysia Airlines
MMA	Montreal, Maine & Atlantic Railway
мтоw	Maximum Takeoff Weight
NAP	National Audit Program
NASA	National Aeronautics and Space Administration
NTSB	National Transportation Safety Board
PVI	Program Validation Inspection
QA	Quality Assurance
SARPs	Standard and Recommended Practices
SDCPS	Safety Data Collection and Processing System
SIP TF	Safety Information Protection Task Force
SMS	Safety Management System
SOP	Standard Operating Procedure
SSP	State Safety Programme
TAWS	Terrain Awareness and Warning System
ТС	Transport Canada
TCAS	Traffic Collision Avoidance System
TSB	Transportation Safety Board of Canada
U.S.	United States

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Introduction

"Aviation in itself is not inherently dangerous. But to an even greater degree than the sea, it is terribly unforgiving of any carelessness, incapacity or neglect."¹

A Boeing statistic has concluded that an individual would have to live 3,500 years and fly everyday of his life to be implicated in a serious airplane accident.² Although he would have a 50% chance of surviving the accident, it would only take a person 700 years to be shot by his or her spouse.³ While many would immediately consider divorcing their significant other to avoid such marital problems, no one can divorce himself from the inherent hazards of air transportation. In light of this risk, the International Civil Aviation Organization's (ICAO) primary mandate is to advance "the safe and orderly growth of international civil aviation throughout the world"⁴ by promoting "safety of flight in international air navigation."⁵ Some scholars have argued that safety has acquired an *erga omnes* character because of every country's primary legal concern to ensure safe air transportation.⁶ Given that it transcends international borders, the *erga omnes*

(iii) the aircraft is missing or inaccessible"

¹ Speech by Captain A. G. Lamplugh, British Aviation. Insurance Group, London (1930)

² Alan J Stolzer, John J Goglia & Carl D Halford, eds, *Implementing Safety Management Systems in Aviation*, Ashgate Studies in Human Factors for Flight Operations (Burlington, VT: Ashgate Publishing Company, 2011) at 191–192; *Canadian Transportation Accident Investigation and Safety Board Act*, 1989, SC C 3 [*Canadian Transportation Accident Investigation and Safety Board Act*] at 2.(1)(a). For the purpose of this entire thesis, the term "accident" is defined by the Transportation Safety Board of Canada as an event where:

[&]quot;(i) a person is killed or sustains a serious injury as a result of

⁽A) being on board the aircraft,

⁽B) coming into direct contact with any part of the aircraft, including parts that have become detached from the aircraft, or

⁽C) being directly exposed to jet blast, rotor down wash or propeller wash,

⁽ii) the aircraft sustains structural failure or damage that adversely affects the aircraft's structural strength, performance or flight characteristics and would normally require major repair or replacement of any affected component, except for

⁽A) engine failure or damage, when the damage is limited to the engine, its cowlings or accessories, or (B) damage limited to propellers, wing tips, antennae, tires, brakes, fairings or small dents or puncture holes in the aircraft's skin, or

³ Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 2 at 191–192.

⁴ *Convention on Civil Aviation ("Chicago Convention)*, International Civil Aviation Organization (ICAO), 7 December 1944 [*Convention on Civil Aviation ("Chicago Convention)*], sec 44.(a); Paul Stephen Dempsey, "Aviation Security: The Role of Law in the War against Terrorism" (2003) 41:3 Columbia J Transnatl Law 649 at 662.

⁵ Convention on Civil Aviation ("Chicago Convention"), supra note 4 at 44.(h).

⁶ Jiefang Huang, "Aviaton Safety, ICAO and Obligations Erga Omnes" (2009) 8:1 Chin J Int Law 63; Jiefang Huang, *Aviation Safety through the Rule of Law: ICAO's Mechanisms and Practices* (Kluwer Law International, 2009), chap 5; Mikolaj Ratajcyk, "Regulatory Framework for a 'Performance-Based' Approach to Air Safety Management in the European Union" (2011) 36:6 Air Space Law 401 at 402; *Barcelona Traction (Belgium v Spain)*

nature of safety can be explained by its universal focus on elementary considerations for humanity,⁷ since unsafe transportation can endanger the lives of thousands of people. As an international obligation towards the aviation community as a whole, safety is a universal and non-reciprocal responsibility that States protect as a sacred common endeavour under the 1944 Chicago Convention and its nineteen Annexes.⁸

As one of mankind's most profound technological accomplishments providing mobility for the human race,⁹ aviation has been regulated ever since its inception to protect the public interest from its inherent dangers and complexity.¹⁰ While regulations have focused on reaching an optimal level of safety, *absolute safety*, as in the benchmark of zero accidents, is a utopia that only scholars and politicians can dream about.¹¹ Absolute safety would require a State to freeze its entire airspace; a nearly-perfect condition of safety that has not been witnessed since Canada's airspace closures following 9/11.¹² Because freedom from risk is impossible in aviation,¹³ the regulation of air transportation has focused on improving our safety levels to the lowest number of accidents *practically* achievable.¹⁴

Safety regulation has travelled numerous stages (See Figure 1) since Canada's first powered flight in 1909 when the Silver Dart took off from a frozen lake in Baddeck (Nova Scotia). Until the late 1960s, aviation was still developing as a new technology and therefore, technical failures were often to blame in most accidents.¹⁵ With increased government oversight and regulatory processes focused on improving aeronautical technology and aircraft reliability,

⁽Second Phase) ICJ Reports 1970, para 32. "In particular, an essential distinction should be drawn between the obligations of a state towards the international community as a whole, and those arising vis-a vis another State in the field of diplomatic protection. By their very nature the former are the concern of all States. In view of the importance of the rights involved, all States can be held to have a legal interest in their protection; they are obligations erga omnes.

⁷ Jiefang Huang, *supra* note 6 at 73.

⁸ *Ibid* at 72.

 ⁹ Paul Stephen Dempsey, "State of the Airline, Airport & Aviation Industries" (1992) 21:1 Transp Law J 129 at 130.
 ¹⁰ Paul Stephen Dempsey & Laurence E Gesell, *Public Policy and the Regulation of Commercial Aviation* (Chandler, AZ: Coast Aire Publication, 2013) at 114 and 153.

¹¹ Federal Aviation Administration, *Aviation Instructor's Handbook* (New-York, NY: Skyhorse Publishing Inc, 2009) at 9–3.

¹² Transport Canada, *11-09-2001: Four Days in September*, TP 13978 (Ottawa, ON: Transport Canada, 2002). 9/11 refers to the terrorist attacks on September 1st, 2001.

¹³ Federal Aviation Administration, *supra* note 11 at 9–3.

¹⁴ Mikolaj Ratajcyk, *supra* note 6 at 402.

¹⁵ Andrew Hale & Michael Baram, *Safety Management: The Challenge of Change* (Oxford, United Kingdom: Pergamon - Elservier Science Ltd., 1998) at 2.

the number of accidents where technology was at fault gradually declined.¹⁶ Between the 1970s and the mid-1990s, the investigative focus shifted towards *Human Factors*, the field which studies how human capabilities can influence flight performances and safety.¹⁷ Investigations were aimed at improving the human operator's working environment and provide them with "tools which take account of human strength and limitations, while selecting the most suitable operators and giving them the required skills."¹⁸ During this period, Canada developed several enforcement strategies and regulations to set legal barriers for acceptable and unacceptable human behaviour.¹⁹



Figure 1- The Evolution of Aviation Safety in Canada and Around the World (Source: ICAO)²⁰

In the late 20th century, several major disasters occurred in high-technology industries around the world, prompting a change of mentality in safety regulation.²¹ There was a public outcry to increase the regulation of hazardous activities after a number of high profile accidents,

¹⁶ International Civil Aviation Organization, *Doc 9859 - Safety Management Manual (SMM)*, Third ed (Montréal: International Civil Aviation Organization, 2013) at 2–1.

¹⁷ International Civil Aviation Organization, Human Factors in Air Traffic Control, No.8 ICAO Circular 241-

AN/145 (Montréal, QC: International Civil Aviation Organization, 1993) at 1.

¹⁸ *Ibid*.

¹⁹ Richard Johnstone, "Putting the Regulated Back into Regulation" (1999) 26:3 J Law Soc 378 at 378–379.

²⁰ Source of Figure 1: International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–2.

²¹ Andrew Hale & Michael Baram, *supra* note 15 at 3.

such as the Chemical Disaster at Seveso, the Bhopal Gas Tragedy, the Chernobyl Nuclear Disaster, the Piper Alpha Oil Rig Explosion, the London Underground Fire, the Sinking of the Herald of Free Enterprise and the Exxon Valdez Oil Spill.²² All of these accidents had several points in common: these were organizations which had experienced persistent success. The management believed to be safely managed by well developed, highly bureaucratic safety systems and were characterized as "High-Reliability Organizations" (HROs). ²³ They had developed a tendency to underestimate the amount of risk involved, thus creating an illusion of artificial safety. ²⁴ Hence, the analysis of safety slowly shifted towards organizational characteristics as a contributory factor to accidents.

'Judgement Day' in Canadian aviation arrived on March 10th, 1989, when Air Ontario Flight 1363 crashed after takeoff in Dryden (Ontario), killing twenty-four people onboard.²⁵ The pilots had taken off with ice and wet snow contaminating the aircraft's wings. This significantly reduced aerodynamic lift and did not enable the Fokker F-28 Fellowship to remain airborne after departure. Earlier that day, Flight 1363 had landed in Dryden during a snowstorm to refuel with a full load of passengers. The pilots could not shut down their engines because the company, as a cost-saving measure, had not fixed the aircraft's Auxiliary Power Unit (APU) to restart its turbine engines and did not provide any ground start facilities at the Dryden Regional Airport. With a policy forbidding de-icing with the aircraft's engines running, the Captain ignored the risks and opted to takeoff to avoid stranding the entire flight crew and passengers at the company's great expense. As a result, organizational decisions by Air Ontario had doomed Flight 1363.

In response to the Dryden accident, the Canadian Government instigated the *Commission* of Inquiry into the Air Ontario Crash at Dryden Ontario²⁶ (also referred to as "The Moshansky Commission") and appointed Justice Virgil P. Moshansky to investigate not only the accident itself, but also scrutinize the entire aviation system and determine how the industry's safety

²² *Ibid* at 3–4.

 ²³ Kathleen Fox, How has the implementation of Safety Management Systems (SMS) in the transportation industry impacted on risk-management and decision-making? (Thesis, Lund University, 2009) [unpublished] at 7.
 ²⁴ Ibid.

²⁵ Robert G Evans, Karen Cardiff & Sam Sheps, "High Reliability versus High Autonomy: Dryden, Murphy and Patient Safety" (2006) 1:4 Healthc Policy 12.

²⁶ The Honourable Justice Virgil P Moshansky, *Commission of Inquiry into the Air Ontario Crash at Dryden Ontario - Final Report*, Commission of Inquiry - Government of Canada (Ottawa, ON: Minister of Supply and Service Canada, 1992).

culture conditioned Air Ontario's tragic fate. The final report concluded that systemic organizational factors conditioned Air Ontario's employees to adopt unsafe and unorthodox practices to keep up with the industry's challenging financial pressures.²⁷ With the advent of Canada's economic regulatory reform which deregulated the entire air transport market as of January 1st 1988,²⁸ the pressures of new competitors and the scarcity of the passenger market at the time forced many carriers, including Air Ontario, into financial distress and self-destructive practices to remain profitable.²⁹ Similar to the *Tragedy of the Commons*,³⁰ the 'overgrazing' of the Canadian airline market produced several negative externalities,³¹ including the deterioration of safety, as many carriers struggled to safely balance profitability and their passenger's wellbeing.³² Sitting in the market as an unhealthy airline, Air Ontario's struggles were reflected in its poor level of safety, as management curtailed significant safety costs to remain profitable.³³

After an in-depth investigation that lasted twenty months, the Moshansky Commission published two interim reports and a four-volume report making 191 aviation safety recommendations for the entire aviation industry; the most comprehensive safety analysis ever produced at the time. The Inquiry concluded for the first time in the history of air accident investigations that an airline's organizational decisions were causal factors to an accident, as they contributed to the pilot's faulty decisions. This symbolized a crucial shift of focus in aviation safety, as latent organizational factors now became a major focus when evaluating safety. The Moshansky Commission ultimately changed Canada's aviation safety policy and established the foundations for Safety Management Systems (SMS).

²⁷ Robert G Evans, Karen Cardiff & Sam Sheps, "High Reliability versus High Autonomy: Dryden, Murphy and Patient Safety" (2006) 1:4 Healthc Policy 12.

²⁸ Paul Stephen Dempsey, "Canadian Transport Liberalization: Planes, Trains, Trucks & Buses Rolling Across the Great White North" (1991) 19 Transp Law J 113 at 116.

²⁹ Paul Stephen Dempsey & Laurence E Gesell, *Airline Management Strategies for the 21st Century*, Thid ed (Chandler, AZ: Coast Aire Publication, 2012) at 193 to 197ç.

³⁰ *Ibid* at 108–110. The Tragedy of the Commons is an economic theory developed by Garrett Harding. It suggests that economic deregulation encourages individuals to independently and rationally act in their own interest when acting in a specific market. This fosters natural greed and as individuals try to exploit every possible resource, the market becomes overexploited and adversely affects the long-term interests of all parties involved. ³¹ *Ibid* at 196.

³² Paul Stephen Dempsey, "The Rise and Fall of the Civil Aeronautics Board-Opening Wide The Floodgates of Entry" (1980) 11 Transp Law J 91 at 167.

³³ See Paul Stephen Dempsey, "Transportation Deregulation - On a Collision Course?" (1984) 13 Transp Law J 329 at 352.

At the beginning of the new millennium, Canada's ministerial department responsible for regulating transportation, Transport Canada (TC), announced that it would introduce SMS as a means to address organizational factors threatening aviation safety.³⁴ The Canadian Aviation Regulations (CARs) define SMS as "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."³⁵ Since the global levels of safety have peaked with stable numbers in the last decade, traditional approaches to safety largely based on compliance with regulations will not afford the travelling public with an additional reduction in airplane accidents.³⁶ On the other hand, the organizational focus of SMS may very well be the next solution to improving the overall safety of the aviation industry.

The purpose of this thesis is to understand SMS and analyze its legal consequences in Canadian commercial aviation. With both the rail and marine industry already under SMS regulations for over a decade,³⁷ an in-depth analysis of the interaction between air carriers and the new SMS regulatory regime will provide the reader with a practical appreciation of the benefits and potential shortcomings that may lie on the horizon for Safety Management Systems in aviation. The absence of an independent study on SMS in Canadian aviation warrants a detailed review of this innovative regime to determine how it may positively or adversely affect certain areas of the law.

This practical and theoretical analysis of SMS will not only consider its legal impact, but also its economic, safety and political ramifications in the field of aviation. With an in-depth analysis of industry trends, aviation statistics, accident investigations reports, government policies, parliamentary debates and individual interviews conducted with aviation professionals, this thesis will uncover several contentious issues regarding the implementation of SMS in the Canadian aviation industry.

³⁴ Transport Canada, *Flight 2005: A Civil Aviation Safety Framework for Canada*, TP 13521 (Ottawa, ON: Transport Canada, 1999).

³⁵ Canadian Aviation Regulations, 1996, SOR96-433 [Canadian Aviation Regulations], sec 101.01(1).

³⁶ Kathleen Fox, *How has the implementation of Safety Management Systems (SMS) in the transportation industry impacted on risk-management and decision-making?* (Thesis, Lund University, 2009) [unpublished] at 12.

³⁷ Railway Safety Management System Regulations, 2001, SOR2001-37 [Railway Safety Management System Regulations]; Safety Management Regulations, 1998, SOR98-348 [Safety Management Regulations].

Chapter 1 will provide an introduction to the theoretical foundations of SMS in relation to risk management and accident causation theories. *Chapter 2* will analyze the regulatory framework that encompasses the aviation industry in Canada and review the carriers' obligations under SMS regulations. *Chapter 3* will scrutinize the implementation of SMS in the aviation industry, with a specific focus on Transport Canada's SMS policies and oversight of this new safety regime. *Chapter 4* will review the vulnerability of SMS data to public disclosure, with a detailed attention given to the negative externalities arising from the disclosure of sensitive safety information. *Chapter 5* will address problems surrounding the admissibility of SMS data as evidence in civil litigation and how this might cause prejudice to both the SMS regime and the air carrier's liability.

In the legal spectrum of Safety Management Systems, Canadian carriers are currently transitioning to a safety regime focused on the interaction between organizational decisions and their operation's level of safety. A common problem in the aviation industry has been the carriers' lack of understanding of SMS and how it should be efficiently utilized as part of their operations. Therefore, the purpose of this chapter is to establish the theoretical foundations of SMS and explain how safety can be strategically managed, all the way from the board of directors to a carrier's frontline employees. Understanding how it should be correctly operated to proactively prevent the occurrence of accidents. SMS is more than a legal obligation; it is a safety culture that airlines must adopt around the world.³⁸

1.1 The Relationship between Human Behaviour and Organizational Factors

ICAO defines *safety* as "the state in which the possibility of harm to persons or of property damage is reduced to, and maintained at or below an acceptable level through a continuing process of hazard identification and safety risk management." ³⁹ This definition implies that safety is a dynamic variable influenced by human activities, including business decisions.⁴⁰ With the advent of SMS, the focus on safety has shifted towards analyzing how organizational factors can condition a human to commit mistakes. James Reason concluded that human performance continues to be cited as a recurring factor for up to 90% of aviation accidents.⁴¹ Consequently, much attention has been allocated to identifying the root causes of these human elements. Accidents can often be traced to fundamental problems in the design of systems, processes and tasks related to the human activities in which these errors occurred.⁴²

³⁸ Andrew Hale & Michael Baram, *supra* note 15 at 72.

³⁹ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–1.

⁴⁰ Karl E Weick & Kathleen M Sutcliffe, *Managing the Unexpected* (San Francisco, CA: Jossey-Bass, 2001); Georgios Leloudas, *Legal Aspects of Aviation Risk Management* (Thesis, McGill University - Institute of Air and Space Law, 2006) [unpublished] at 5.

⁴¹ James Reason, "Understanding Adverse Events: Human Factors" (1995) 4:2 Int J Qual Health Care at 80.

⁴² Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 2 at 1.

Interestingly enough, all of these factors can be directly or indirectly influenced by a carrier's managerial decisions.

With the advent of SMS, Airlines can now manage their accident rates through efficient and analytical safety processes, as they can no longer afford the luxury of reacting to serious incidents.⁴³ Although it remains difficult to make valid safety analyses regarding accident probabilities for a single airline, occurrence probability can be statistically calculated by analyzing current factors and events observed during normal flight operations.⁴⁴ Therefore, good safety management requires that the necessary controls are put in place by airlines to keep such risks at an acceptable level.⁴⁵ Traditionally, safety was strictly regulated with punitive strategies or reactive processes through post-accident investigations.⁴⁶ With SMS, safety is now approached proactively by identifying any safety deficiencies before they generate any adverse consequences.⁴⁷ Instead of asking ourselves why an airplane crashed because of a pilot's unsafe behaviour, safety management encourages air carriers to ask themselves "how can our airline's decisions prevent this airplane from falling out of the sky?"

While the field of security aims to address *intentional* harm, safety focuses on mitigating *unintentional* harm from human behaviour.⁴⁸ Understanding that aircraft are becoming more reliable and that human behaviour is the root cause of most aviation accidents,⁴⁹ a strong focus of SMS relies on the study of *Human Factors* in relation to management factors.⁵⁰ The field of human factors can be defined as "the discipline concerned with optimizing the relationships between people and their activities through the systematic application of the human sciences,

⁴³ Henry A Walters, *Statistical Tools of Safety Management*, Industrial Safety - Statistical Methods (New-Yor k, NY: Van Nostrand Reinhold, 1995) at vii.

⁴⁴ Ludwig Drees, *Model-Based Prediction of Incident and Accident Probabilities: Ideas Beyond Dividing the Number of Accidents by the Number of Flights* (Technische Universität München - Institute of Flight System Dynamics, 2013) at 5.

⁴⁵ Mikolaj Ratajcyk, *supra* note 6 at 407.

⁴⁶ Chien-tsung Lu, Stewart W Schreckengast & Jim Jia, "Safety Risk Management, Assurance, and Promotion: A Hazard Management System for Budget-Constrained Airports1" (2011) 1:1 J Aviat Technol Eng 2 at 1.

⁴⁷ National Aerospace Laboratory NLR, *Aviation Safety Management in Switzerland: Recovering from the Myth of Perfection*, Air Transport NLR-CR-2003-316 (Bern, Switzerland: Swiss Federal Departemt of Environment (DETEC), 2003) at 23.

⁴⁸ Paul Stephen Dempsey & Laurence E. Gesell, *supra* note 10 at 39.

⁴⁹ Douglas A Wiegmann & Scott A Shappell, "Human Error Perspectives in Aviation" (2001) 11:4 Int J Aviat Psychol 341 at 342.

⁵⁰ Michelle M Maldonado, *Legal Aspects of Safety Management Systems and Human Factors in Air Traffic Control* (Thesis, McGill University - Institute of Air and Space Law, 2008) [unpublished] at 2.

integrated within the framework of system engineering."51 ICAO has described human factors as an applied multi-disciplinary approach focused on understanding the human interaction with their living working environment involving "a set of personal, medical and biological considerations for optimal aircraft operations."⁵² The purpose of human factors is to use scientific evidence to reduce the likelihood of mistakes committed by pilots, thus ensuring a more error-tolerant and resilient aviation industry.⁵³

Human behaviour is a dynamic component for every employee which can be influenced by external factors such as the organization itself. Unlike standardized systems (e.g. aircraft technology), pilots can suffer considerable variations in performance.⁵⁴ Considering that for all industrial accidents, 88% of such accidents are caused by unsafe acts, 10% by unsafe actions and 2% by 'acts of God',⁵⁵ SMS is critical to accident prevention, since it focuses entirely on how airlines can statistically manage these variations with organizational strategies. Human factors focus on giving every airline employee an efficient working environment with adequate training, working tools and a safe work setting to avoid committing mistakes.⁵⁶ Even though automation has improved flight safety, human performance fluctuations can be efficiently addressed through managerial authority.

Accordingly, SMS is a tool that can effectively manage human behaviour using the airline's structure, safety culture and operating procedures. While implementing a systemic elicitation and application of knowledge about human operators and their performance characteristics,⁵⁷ SMS seeks to provide a safe interface between human components and their organizational environment, with adequate considerations for any variations in safety

⁵¹ Federal Aviation Administration, "Introduction to Aviation Human Factors", (10 September 2014), online: Fed Aviat Adm

https://www.faa.gov/othervisit/aviation-industry/designees-delegations/designee-types/ame/media/Section%20II .8.1%20Introduction%20to%20Aviation%20Human%20Factors.doc>. 52 International Civil Aviation Organization (ICAO), *Human factors Digest #1: Fundamental Human Factors*

Concepts, Circular 216-AN/131 (Montréal, QC: International Civil Aviation Organization, 1989) at 2.

⁵³ Civil Aviation Safety Authority of Australia, "Human Factors", (10 September 2014), online:

<http://www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD::pc=PC 100994>.

⁵⁴ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–7.

⁵⁵ Tania Mol, *Productive Safety Management* (Burlington, MA: Butterworth-Heinemann, 2003) at 4.

⁵⁶ Barry Kirwan, Mark Rodgers and Dirk Shafer, eds., Human Factors Impacts in Air Traffic Management (Burlington: Ashgate Publishing Company, 2005) at 4. ⁵⁷ Mark Rodgers Barry Kirwan, *Human Factors Impacts in Air Traffic Management* (Farnham, United Kingdom:

Ashgate Publishing Company, 2005) at 5.

performance.⁵⁸ The impact of workplace factors on safety is illustrated in the *SHELL Model*⁵⁹ which depicts the interaction of the four following components:⁶⁰

- 1. **Software (S)**: The interaction between humans and supporting workplace systems, such as employee checklists, aircraft manuals, rules and regulations, standard operating procedures (SOPs), safety policies etc.
- 2. **Hardware (H)**: The interaction between humans and supporting physical attributes of an airline such as aircraft equipment, machinery and airport facilities.⁶¹
- 3. Environment (E): The relationship between human behaviour and its surrounding environment. This includes *physical environment*, such as weather conditions, flying during the day or night (i.e. lighting), terrain, noise, vibration etc. The *operational environment* includes organizational morale, financial uncertainties, work rhythm, stress and pressure arising from scheduling, the attitude of employees towards safety etc.
- 4. Liveware (LL): Includes both an individual and other people present in a work environment. The individual employee can be affected by personal *psychological* and *physiological* factors (i.e. his "medical airworthiness"), ⁶² which may affect his performance while on duty.⁶³ External liveware refers to *psychosocial* factors,⁶⁴ such as the interaction between an individual employee (e.g. a pilot) with other flight crew, air traffic controllers, aircraft maintenance engineers, supporting personnel, airport ramp attendants, managers, inspectors, customers etc.

⁵⁹ Earl L Wiener & David C Nagel, *Human Factors in Aviation* (San Diego, CA: Academic Press, 1995) at 3–25.

⁵⁸ International Civil Aviation Organization, *Rules to the Air and Air Traffic Services*, ICAO Document 4444-RAC/501 13 ed. (Montréal, QC: International Civil Aviation Organization, 1996).

⁶⁰ Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 2 at 39–41.

⁶¹ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–7.

⁶² Richard O Reinhart, *Basic Flight Physiology*, 2nd ed (New-York, NY: McGraw-Hill, 1996).

⁶³ Douglas A. Wiegmann & Scott A. Shappell, *supra* note 50 at 347–348.

⁶⁴ Robert L Helmreich & H Clayton Foushee, *Why Crew Resource Management? Empirical and Theoretical Bases of Human Factors Training in Aviation?* (San Diego, CA: US: Academic Press, 1993) at 519.



Figure 2 - The SHELL Model (Source: Civil Aviation Authority of the United Kingdom)

The SHELL Model (Figure 2)⁶⁵ relies on the fact that the individual employee (individual *liveware*) must be in equilibrium with all four other workplace components.⁶⁶ Human perception, behaviour, reflexes and reactions are different for each individual and vary depending on the operational context. These task-environmental factors are the central focus of SMS since a mismatch between an individual employee and one or more of the other SHELL components can lead directly to a human error.⁶⁷ For example, a dysfunctional working relationship between a Captain and his First Officer (F/O) can result in inadequate CRM (Crew Resource Management) and contribute to an accident caused by two liveware elements. The failure of an aircraft's critical IFR ⁶⁸ instruments when flying in low-visibility conditions is a potentially deadly mismatch between a pilot's hardware and environment. If the pilot negligently attempts an IFR landing approach without the required aircraft equipment, then the combination of software (e.g. violating legal requirements), the absence of adequate hardware and individual liveware (e.g. the pilot's defiance of the law) would be at fault. Hence, understanding the organizational sources of accidents with the SHELL Model allows airlines to administer safety hazards more efficiently as

⁶⁵ Source of Figure 1: Civil Aviation Authority of the United Kingdom, *Human Factors in Aircraft Maintenance and Inspection*, Digest CAP 718 (London, United Kingdom, 2002).

⁶⁶ Earl L. Wiener & David C. Nagel, *supra* note 60 at 3–25.

⁶⁷ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–8.

⁶⁸ "IFR" refers to Instrument Flight Rules. When flying in IFR conditions (e.g. when flying in reduced visibility, in cloud, or on an IFR flight plan), pilots are required under law to be licensed to fly their aircraft using only their flight instruments, have operational IFR avionics and adhere to certain weather minimums.

part of their SMS. It can prevent the creation of dangerous situations caused by external disturbances and dysfunctional interaction between SHELL components.⁶⁹

1.2 Risk Management Strategies

Risk is defined as "a measure of the expected losses caused by an undesired event and factored with the probability of the event that is occurring."⁷⁰ Statistically, risk is equal the severity of an event multiplied by the likelihood of repeating itself.⁷¹ Accordingly, there has been much interest in understanding how companies can systemically manage their operational hazards to eliminate or mitigate their potentially serious outcomes.⁷² ICAO defines a *hazard* as a "condition or an object with the potential to cause death, injuries to personnel, damage to equipment or structures, loss of material, or reduction of the ability to perform a prescribed function."⁷³ Hazards are inherent to the complexity and dangers of the aviation industry. Every time an aircraft is in movement, it is surrounded by a myriad of potential hazards to the aircraft and the lives of the passengers aboard. Adverse weather conditions, pilot fatigue or sickness, runway contamination, technical malfunctions, bird strikes and the transportation of dangerous goods (e.g. fuel, ammunition, explosives, radioactive material etc.) are just a few examples of potential hazards that may affect the safety of a flight. In sum, "risk" is the likelihood that such hazards contribute to a loss including injury to persons and/or damage to property.⁷⁴

With SMS, carriers must choose between 1) eliminating the risk, 2) mitigating its impact on safety or 3) tolerating its existence.⁷⁵ The outcome of this safety exercise addressing hazards is referred to as a 'corrective action plan'. For example, a carrier should *eliminate* the serious hazard of volcanic ash and avoid flying near volcanic clouds at all times. Albeit a carrier cannot immunize himself completely from the risk of mid-air collisions, he can rely on adequate flight separation provided by air traffic control (ATC) and on his Traffic Collision Avoidance System

⁶⁹ Arthur Dijkstra, *Resilience Engineering and Safety Management Systems in Aviation*, 2013 Working Paper (Delft, Netherlands: Delf University of Technology/KLM Royal Dutch Airlines) at 4.

⁷⁰ Federal Aviation Administration, *Introduction to Safety Management Systems for Air Operators*, Advisory Circular AC 120-92 (Washington, DC: FAA, 2006).

⁷¹ O Lehmann Schubert E Huttig, *Introduction to Safety Management Concepts with Focus on Airline and Airport Operations* (Manaus, Brazil, 2019) at 4.

⁷² Georgios Leloudas, *supra* note 41 at 6.

⁷³ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–24.

⁷⁴ Tania Mol, *supra* note 56 at 3; Georgios Leloudas, *supra* note 41 at 4.

⁷⁵ Georgios Leloudas, *supra* note 41 at 9 and 10.

(TCAS) to *mitigate* such an occurrence. Other risks, such as runway cross-winds and bitter winter conditions for example, are difficult to avoid and must be simply *tolerated* to a certain extent. Accidents are statistically predictable and can be reduced if hazards are contained through efficient safety management. This is why SMS relies heavily on incident reporting.⁷⁶ It is estimated that for each major accident, there are as many as 360 incidents, where proper reporting and investigation could have identified a hazard and prevented the accident from occurring.⁷⁷ The emerging concept of safety management aims to objectively identify hazards, subjectively evaluate the underlying safety risks, calculate their frequency of occurrence and take action to avoid any serious consequences. In other words, risk management is how airlines approach hazards in the workplace and attempt to mitigate any serious outcome, while balancing the cost of doing so.⁷⁸

James Reason has stated that operators often put greater emphasis in generating profits rather than managing potential losses caused by an incident.⁷⁹ In SMS, risk management is similar to financial management systems where systematic methods can be established in both

⁷⁶ Canadian Transportation Accident Investigation and Safety Board Act, supra note 2 at 2.(1)(b). For the purpose of this thesis, the Transportation Safety Board of Canada defines the term "incident" as an event where:

[&]quot;(i) an engine fails or is shut down as a precautionary measure,

⁽ii) a power train transmission gearbox malfunction occurs,

⁽iii) smoke is detected or a fire occurs on board,

⁽iv) difficulties in controlling the aircraft are encountered owing to any aircraft system malfunction, weather phenomena, wake turbulence, uncontrolled vibrations or operations outside the flight envelope,
(v) the aircraft fails to remain within the intended landing or take-off area, lands with all or part of the landing gear retracted or drags a wing tip, an engine pod or any other part of the aircraft,
(vi) a crew member whose duties are directly related to the safe operation of the aircraft is unable to

⁽vi) a crew member whose duties are directly related to the safe operation of the aircraft is unable to perform their duties as a result of a physical incapacitation which poses a threat to the safety of persons, property or the environment,

⁽vii) depressurization of the aircraft occurs that requires an emergency descent,

⁽viii) a fuel shortage occurs that requires a diversion or requires approach and landing priority at the destination of the aircraft,

⁽ix) the aircraft is refuelled with the incorrect type of fuel or contaminated fuel,

⁽x) a collision, a risk of collision or a loss of separation occurs,

⁽xi) a crew member declares an emergency or indicates an emergency that requires priority handling by air traffic services or the standing by of emergency response services,

⁽xii) a slung load is released unintentionally or as a precautionary or emergency measure from the aircraft, or

⁽xiii) any dangerous goods are released in or from the aircraft"

⁷⁷ Civil Aviation Safety Authority of Australia, *Safety Management Systems: What's in it for you?* (Canberra, Australia: Aviation Safety Promotion Division, CASA, 2002) at 39.

⁷⁸ Australian National Audit Office, *Implementation and Administration of the Civil Aviation Safety Authority's Safety Management System Approach for Aircraft Operators*, The Auditor General Performance Audit No.12 2010-11 (Canberra, Australia: The Auditor General of Australia, 2010) at 27.

⁷⁹ National Aerospace Laboratory NLR, *supra* note 48 at 23.

areas to regulate vital business functions by taking into account organizational factors.⁸⁰ It has been demonstrated that investing in risk management can promote a financially successful carrier by preventing economic losses.⁸¹ Transport Canada (TC) supports this approach by stating that operators in the past have been bankrupted by the cost of major accidents, as accidents tend to be more expensive than the initial cost of safety.⁸² Research demonstrates that efficiency and safety are positively linked because safety-oriented carriers reduce over time their accident losses, which enhances productivity.⁸³

Risk mitigation allows carriers to take action and manage the potentially hazardous nature of operational factors with organizational strategies.⁸⁴ Risks deriving from an aviation activity can expose a carrier to significant financial and legal burdens⁸⁵ including professional liability, insurance liability, employment liability, passenger contractual and tortuous liability, statutory liability and management liability.⁸⁶ Every perceived risk can generate unexpected business surprises, such as unanticipated financial losses, decrease in productivity, labor disputes, physical damage to a fleet, passenger compensation, increased operational costs etc.⁸⁷ Moreover, airlines with excellent safety records remain more competitive towards passengers, since a good safety record inspires public confidence and market trust towards the carrier.⁸⁸ Therefore, air carriers should not focus on maximising their profits, but rather attempt to minimize their losses.⁸⁹ As an analogy, "Grand masters in chess focus on avoiding errors; rookies try to win."⁹⁰

 ⁸² Transport Canada, Safety Management Systems for Small Aviation Operations: A Practical Guide to Implementation, TC-1001017 Civil Aviation Publications TP14135E (Ottawa, ON: Transport Canada, 2004) at 1.
 ⁸³ Transport Canada, Introduction to Safety Management Systems, Civil Aviation Publications TP 13739E (Ottawa, ON: Transport Canada, 2001) at 5.

⁸⁰ Federal Aviation Administration, US Department of Transportation & Air Traffic Organization Operations Planning, *Research Report on Safety Managements Systems*, Technical Support Note DOT/FAA/AR-TN07/6 (Washington, DC: FAA, 2007) at 24.

⁸¹ Michelle M. Maldonado, *supra* note 51 at 65.

⁸⁴ Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 2 at 228.

⁸⁵ Georgios Leloudas, *supra* note 41 at 31.

Georgios Leloudas, *Legal Aspects of Aviation Risk Management* (Thesis, McGill University - Institute of Air and Space Law, 2006) [unpublished] at 31.

⁸⁶ Michelle M. Maldonado, *supra* note 51 at 58.

⁸⁷ Federal Aviation Administration, *Safety Management Systems for Aviation Service Providers Document Information*, AC 120-92A (Washington, DC: FAA, 2010).

⁸⁸ Paul Stephen Dempsey - "Independence of Aviation Safety Investigation Authorities: Keeping the Foxes from the Henhouse", *supra* note 27 at 240; Georgios Leloudas, *supra* note 42 at 9.

⁸⁹ Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 2 at 8 and 9.

⁹⁰ *Ibid* at 189.

1.3 The Accident Causation Theory and Safety Management

While implementing SMS, much attention has been allocated to understand the epidemiological symptoms behind the theory of accident causation.⁹¹ James Reason developed the Swiss Cheese Model and concluded that "while human error reduction and containment is a worthwhile goal, human error is a fundamental part of the human condition and is inevitable."92 The Swiss Cheese Model illustrates that accidents are caused by a successive series of breaches of multiple system defences, such as equipment failure, operational errors and even mistakes made by management.⁹³ ICAO has recommended using this model when conducting accident investigations.94



Figure 3 - James Reason's Swiss Cheese Model (Source: Transport Canada)⁹⁵

As depicted in Figure 3, we must imagine a Swiss cheese with randomly generated holes, which are the causal factors to accidents. The sources of accidents can be divided in two categories. Firstly, active failures during the execution phase, such as actions or inactions, including errors, slips, lapses, violations, can produce immediate adverse effects.⁹⁶ An example

⁹¹ William Haddon Jr, "A Note Concerning Accident Theory and Research with Special Reference to Motor Vehicle Accidents" (2006) 107 Ann New-York Acad Sci 635 at 635. ⁹² James Reason, *Managing the Risks of Organizational Accidents* (Brookfield, VT: Ashgate, 1997) at 22.

⁹³ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–2.

⁹⁴ International Civil Aviation Organization, Accident Investigation, AIG Report (Montréal, QC: International Civil Aviation Organization, 1992).

⁹⁵ Source of Figure 2: Transport Canada, "Chapter 5: Safety Management Systems", (9 July 2009), online: <https://www.tc.gc.ca/eng/tcss/RSA review/chapter5-392.htm>.

⁹⁶ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–3.

of an active failure would be a pilot forgetting to lower his landing gear before touchdown or inadvertently failing to fly at an altitude specifically designated by ATC. Secondly, *latent conditions* are system-wide preconditions that lie dormant in the organizational airline system, sometimes years before a damaging outcome is experienced.⁹⁷ The hiring policy of inexperienced commercial pilots in an attempt to reduce a company's payroll or the decision to cut into the aircraft maintenance budget are some key examples of latent conditions that can indirectly contribute to an accident.

Examples of latent conditions include the 2013 crash of a Sikorsky S-76A medical evacuation flight operated by ORNGE,⁹⁸ which crashed in Moosonee (Ontario), killing both pilots and two flight paramedics onboard.⁹⁹ Preliminary reports have blamed the accident on ORNGE's incompetent and corrupt management, the inadequate pilot training for night operations conducted in remote areas and the lack of advanced avionics equipment for its fleet of helicopters.¹⁰⁰ In light of this accident, it is axiomatic that all strategic business decisions will carry some negative safety consequences, because organizational decisions are shaped by economic, political and operational constraints.¹⁰¹ With the pressures of scarcity and competition, the incrementalist nature of decisions made by management can cause its safety to drift into failure over time.¹⁰² Dekker explains this drift from standard safe practices because of the

⁹⁷ James Reason, *supra* note 42 at 81.

⁹⁸ ORNGE is a Canadian carrier operating the air ambulance service for the Province of Ontario's Ministry of Health and Long-Term Care.

⁹⁹ Transportation Safety Board of Canada, "Aviation investigation A13H0001 - Collision with Terrain", (10 June 2013), online: *Transp Saf Board Can* http://www.bst-tsb.gc.ca/eng/enquetes-

investigations/aviation/2013/a13h0001/a13h0001.asp>. The official accident report has not been released yet. ¹⁰⁰ Bruce Campion-Smith, "ORNGE endangered helicopter pilots, federal probe says", *Tor Start* (18 November 2013), online:

http://www.thestar.com/news/queenspark/2013/11/18/ornge_endangered_helicopter_pilots_safety_board_says.htm >; Bruce Campion-Smith, "ORNGE: Inspection revealed pilot training woes at ORNGE", *Tor Start* (15 July 2013), online:

<http://www.thestar.com/news/canada/2013/07/15/ornge_inspection_revealed_pilot_training_woes_at_ornge.html>; Richard J Brennan & Bruce Campion-Smith, "ORNGE warnings ignored, report reveals", *Tor Start* (2 June 2014), online:

http://www.thestar.com/news/canada/2014/06/02/confidential_ornge_report_reveals_safety_flaws_tories.html. James Reason, *supra* note 42.

¹⁰² Sidney Dekker, *Ten Questions About Human Error: A New View of Human Factors and System Safety* (Farnham, United Kingdom: Ashgate Publishing Company, 2006) at 43; Kathleen Fox, *How has the implementation of Safety Management Systems (SMS) in the transportation industry impacted on risk-management and decision-making?* (Thesis, Lund University, 2009) at 5.

constant struggle to reconcile business priorities, such as efficiency and market capacity, with safety concerns.¹⁰³

Coupled together, active failures can awake dormant and hazardous latent conditions, thus creating a perfect recipe for disaster. Like holes in a Swiss cheese, hazards differ in size and in location; some align and some do not. When these holes align together and breach all available defences, the risk of a serious outcome increases significantly.¹⁰⁴ This is known as the 'trajectory of accident opportunity',¹⁰⁵ where humans can contribute to the failure of complex systems (e.g. large passenger airliners).¹⁰⁶ Similar to the Domino Theory, one single active failure can spark a series of delayed failures leading to a serious outcome.¹⁰⁷ Unless this dangerous trajectory is stopped in its tracks by a *safety defence*, this scenario may potentially result in a catastrophic situation (See Figure 4),¹⁰⁸ such as a runway incursion, fuel starvation, missed IFR approach on landing, mid-air collision, runway overshoot, controlled flight into terrain (CFIT) etc.



Figure 4 - Trajectory of Accident Opportunity (Source: ICAO)

¹⁰³ Sidney Dekker, *Ten Questions About Human Error: A New View of Human Factors and System Safety* (Farnham, United Kingdom: Ashgate Publishing Company, 2006) at 43.

¹⁰⁴ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–3.

¹⁰⁵ James Reason, Human Error (Cambridge, UK: Cambridge University Press, 1990).

¹⁰⁶ Transport Canada, *supra* note 96 at 5.

¹⁰⁷ Tania Mol, *supra* note 56 at 4.

¹⁰⁸ Source of Figure 3: International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–3.

Even in High-Reliability Organizations (HROs)¹⁰⁹ such as airlines, resident risk pathogens inherently exist in every operation system and simply cannot be eliminated. This can be referred to as the *residual risk*,¹¹⁰ which varies depending on the degree of exposure allocated by management. For example, carriers operating in the Canadian Arctic face a heightened level of residual risks, including brutally cold temperatures affecting aircraft components, minimal air traffic control coverage, the absence of accurate weather forecast, the limited choice of alternate destinations in case of an emergency or bad weather etc. Even if a carrier's behaviour is extremely safe when operating in such remote regions, these safety risks will subsist perpetually. Residual risks cannot be reduced by purely technological measures,¹¹¹ because their hazardous potential is often triggered by mistakes, such as deficiencies, failures of judgement slips and even intentional violations.¹¹² In complex industries like aviation, many safety defences against residual risk already exist and include stringent regulatory requirements, adequate and recurrent aircrew training, strict SOPs, technical equipment, redundant avionics, medical examinations etc.¹¹³

The founding postulate behind safety management is that one of these sequential defence layers includes the management of the airline itself. This is because *safe* airlines do not exclusively rely on compliance with the law and understand that their organizational design has a decisive impact on safety.¹¹⁴ Poor decisions taken by the board of directors in the executive boardroom can have a direct impact on the safety of people aboard an aircraft, and eventually contribute to unsafe working conditions or even worse, a serious accident. Inadequate operating procedures and communication failures can lead to organizational failures.¹¹⁵ In turn, good management provides airlines with a good safety track record and avoids any drift in safe

¹⁰⁹ Karl E Weick, "Organizational Culture As a Source of High Reliability" (1987) 29:2 Calif Manage Rev 112. Weick defines HROs as organizations that experience accidents fewer than normal because of their focus on safety reliability rather than on efficiency.

¹¹⁰ "Residual Risk is defined as the safety risk that exists after all controls have been implemented or exhausted and verified." Federal Aviation Administration, *Safety Management System Framework: Safety Management System* (*SMS*) - *Pilot Project Participants and Voluntary Implementation for Organizations SMS Programs*, Report A - 2nd Revision (Washington, DC: Flight Standard Service - SMS Program Office, 2009) at 9.

¹¹¹ James Reason, "Resident Pathogens and Risk Management" (1991) 9:3 Saf Aust 8.

¹¹² Tania Mol, *supra* note 56 at 11.

¹¹³ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–5.

¹¹⁴ Andrew Hopkins, "New strategies for safety regulators: Beyond compliance monitoring" (2005) 29:2 Law Policy 210 at 217.

¹¹⁵ Brent Fisse & John Braitwaite, *Corporations, Crime and Accountability* (Cambridge, UK: Cambridge University Press, 1993), chap 4.

practises. Organizational safety culture can either be an airline's best friend or its worst enemy; good decisions add defences, bad decisions eliminate these defences and encourage operational drift from safety standards.¹¹⁶ Consequently, good safety performance is inherently linked to the commitment and virtue of the airline's management.¹¹⁷

A perfect example of how the combination of latent organizational factors and active failures can contribute to a tragic accident is First Air Flight 6560, which crashed while on final approach to land in Resolute Bay (Nunavut) in 2011, killing twelve people and seriously injuring four other individuals on board. The Transport Safety Board of Canada (TSB) investigation report identified a combination of 18 human, technical and organizational factors that led to the crash of the Boeing-737.¹¹⁸ CRM training given to both pilots years before the crash was outdated and inadequate, the autopilot inadvertently changed modes and failed to line up the aircraft with the runway ILS approach,¹¹⁹ the flight visibility was almost down to IFR minimums, the aircraft's compass was inaccurate by 17-degrees and the aircraft's ELT¹²⁰ failed to activate upon impact and delayed search and rescue efforts.¹²¹ Even though the F/O notified the Captain five times that the aircraft was off-course, both pilots failed to take corrective action before the aircraft crashed in a nearby hill.¹²² This was in part because First Air's SOPs did not clearly reinforce the authorization to escalate intervention by a F/O to the point of taking aircraft control.¹²³ Proper and recurrent CRM training would have afforded the F/O confidence in following his instinct by taking over control of the aircraft from the Captain. Modernized Terrain Awareness and Warning Systems (TAWS) would have also provided the flight crew with additional defences and potentially prevented a CFIT. This is an example were all available defences failed and allowed the culmination of a complex chain of events to unravel into a

¹¹⁶ Federal Aviation Administration, U.S. Department of Transportation & Air Traffic Organization Operations Planning, *supra* note 81 at 2.

¹¹⁷ Andrew Hopkins, *supra* note 115 at 218.

 ¹¹⁸ Transportation Safety Board of Canada, *Controlled Flight Into Terrain: Bradley Air Services Limited (First Air), Boeing 737-210C, C-GNWN Resolute Bay, Nunavut 20 August 2011*, Aviation Investigation Report A11H0002 (Gatineau, QC: Transportation Safety Board of Canada).
 ¹¹⁹ The Instrument landing system (ILS) is a ground-based radio transmitter that provides aircraft with precision

¹¹⁹ The Instrument landing system (ILS) is a ground-based radio transmitter that provides aircraft with precision vertical and lateral guidance when landing in IFR conditions.

¹²⁰ Emergency Locator Transmitter

¹²¹ Transportation Safety Board of Canada, *supra* note 119 at 144–147.

¹²² *Ibid* at 144–146.

¹²³ *Ibid*.

terrible tragedy.¹²⁴ This accident accurately illustrates *Murphy's Law*: anything that could go wrong went wrong.¹²⁵ It is a perfect, yet tragic, demonstration of the accident causation theory, where latent organizational conditions, combined with technical and human failures, can lead to deadly consequences.

1.4 Safety Culture and Resilience: Keeping the Right Attitude

The most efficient method to inspire compliance with the law is to cultivate the legitimacy and morality of safety with a strong organizational culture.¹²⁶ A *Safety culture's* positive outlook on preventing accidents is primordial to a successful SMS program. Good safety culture can be defined as the "assembly of characteristics and attitudes in organizations and individuals, which establishes that, as an over-riding priority, operational safety issues receive the attention warranted by their significance."¹²⁷ A healthy safety culture must have the following fundamental characteristics, which are mutually dependent:

- Informed Culture: where employees understand and identify the risks and hazards;
- *Just Culture:* where errors are understood and wilful violations are punished (*N.B.* Just Culture will be further discussed in Chapter 4);
- *Learning Culture*: where employees are encouraged to develop and apply their safety knowledge for the benefit of the airline;
- *Flexible Culture*: where safety efforts adapt to changes in the airline;
- *Reporting Culture*: where employees are encouraged to report potential safety hazards^{.128}

¹²⁴ Kathryn Blaze Carlson, "Combination of factors blamed for fatal Resolute Bay plane crash", *Globe Mail* (25 March 2014), online: .

¹²⁵ Robert A J Matthews, "Tumbling Toast: Murphy's Law and the Fundamental Constants" 16:4 Eur J Phys 172.
¹²⁶ Neil Gunningham & Darren Sinclair, "Organizational Trust and the Limits of Management-Based Regulation" (2009) 43:4 Law Soc Rev 865 at 7.
¹²⁷ International Atomic Energy Agency (IAEA), *Summary Report on the Post Accident Review Meeting on the*

¹²⁷ International Atomic Energy Agency (IAEA), *Summary Report on the Post Accident Review Meeting on the Chernobyl Accident*, 75-INSAG-1 (Vienna, Austria: International Atomic Energy Agency (IAEA), 1986) at 20. ¹²⁸ Transport Canada - *Introduction to Safety Management Systems*, *supra* note 84 at 3–4.

Because incident data is fundamental to SMS, an ideal safety culture is one that "is supportive of the staff and systems of work, recognises that errors will be made and that it is not apportionment of blame that will resolve that problems."¹²⁹ A safety culture will encourage open reporting, seek to learn from its failures and be just in dealing with those involved."¹³⁰ This fosters *resilience*, which is an airline's ability to contain an unexpected hazard at an early stage and recover without serious consequences.¹³¹ For instance, professional pilots are required to undergo recurrent Pilot Proficiency Checks and simulate emergency scenarios (e.g. engine failures) to practice their emergency responses to serious incidents. As a foundation of SMS, resilience is how organizations build their capacity to cope with errors by anticipating such events. Resilient airlines promote incident training and simulations to build in-depth knowledge about the workplace system, thus providing effective methods to troubleshoot various situations.¹³² Both quick and accurate feedback from data collected with SMS allows airlines to proactively provide their employees with the skills to respond and recover during unexpected events.¹³³

In HROs, such as space exploration, the nuclear industry, chemical manufacturers, deepwater oil drilling and aviation, most individual decision-makers never encounter a major failure and regrettably develop the false illusion that their operation is more reliable than it really is.¹³⁴ Consequently, they become complacent and over-confident in their system's safety, which contributes over time to the degradation of their operation's safety reliability.¹³⁵ This can develop as a serious cancer for an organization's safety culture. A good example is the 1986 Space Shuttle Challenger Disaster where NASA tolerated a catastrophic design flaw in the components of the booster rocket only because it had experienced a nearly perfect safety record until this

¹²⁹ Civil Aviation Authority of the United Kingdom, *supra* note 66 at 38.

¹³⁰ Graham Braithwaite. The Application of Safety Management Systems (Cranfield University, United Kingdom, 2006).

¹³¹ Erik Hollnagel, David D Woods & Nancy Leveson, *Resilience Engineering* (Burlington, VT: Ashgate Publishing Company, 2006) at 16; Kathleen Fox, *supra* note 23 at 31.

¹³² *Ibid*.

¹³³ Wolfgang Kallus Michaela Heese & Christa Kolodej, Assessing Behaviour Towards Organizational Resilience in Aviation (Graz, Austria: Resilience Engineering Association of Austria, 2013).

¹³⁴ James G March, A Primer on Decision Making: How Decisions Happen (New-York, NY: The Free Press, 1994) at 48; Kathleen Fox, *supra* note 23 at 7. ¹³⁵ James G. March, *supra* note 135 at 48.

tragedy.¹³⁶ Under safety management, safety must be compliance-driven, where operators adopt the belief that safety is an organizational goal and not merely a regulatory requirement.¹³⁷ The crux of safety culture is about setting the boundaries for accepted executive and operational performance by establishing the norms and limits for employee behaviour.¹³⁸ Regulations should be recognized as the ultimate boundary that airlines shall not cross, similar to the edge of a tall cliff. Imagine a person that walks too close to the edge of the cliff, trips on a rock and falls to his death. Although no barrier prevented him from walking along the edge of the cliff, his poor safety culture failed to carefully manage the risk of failing down and he was not able to perceive the presence of a hazard while approaching this deadly boundary.

Applied to running an airline, this hypothetical scenario teaches us that accountable executives must promote a good safety culture, be cognizant and set internal corporate boundaries prohibiting any borderline behaviour, remain committed to safety and demonstrate competence with adequate safety management policy and procedures.¹³⁹ For example, although TC has established strict weather minima for VFR operations,¹⁴⁰ it does not imply that a pilot should attempt flying in the lowest visibility permissible by law. This had led to the notion that "safety cannot be fully controlled by setting proper rules and regulations alone, but that active and explicit safety management is required to maintain or further improve the level of aviation safety."¹⁴¹ Formal legal compliance is not necessarily a synonym for safety. Airlines must work within their own safety comfort level, inside the ultimate boundaries established by the regulator and avoid leaving their employees on the edge of a cliff.

SMS has the capacity to change airlines and impose an additional safety layer; internal self-regulation in addition to the State's regulatory oversight. This has the objective of making airlines more proactive, rather than responsive, to safety concerns in every operational process to

 ¹³⁶ National Aeronautics and Space Administration, *Report of the Presidential Commission on the Space Shuttle Challenger Accident*, Accident Investigation Executive Order 12546 of February 3, 1986 (Washington, DC, 1986).
 ¹³⁷ Neal, A F, Griffin, M A & Hart, P D, "The Impact of Organizational Climate on Safety: Climate and Individual Behavior" (109AD) 34:1-3 Saf Sci J 99 at 101.

¹³⁸ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–10.

¹³⁹ Transport Canada - Introduction to Safety Management Systems, supra note 84 at 3.

¹⁴⁰ Visual Flight Rules: Pilots that are not IFR rated must follow VFR regulations, which limit their permission to fly in certain weather conditions (e.g. visibility).

¹⁴¹ National Aerospace Laboratory NLR, *supra* note 48 at 32.

improve their safety performance and achieve behavioral change.¹⁴² Good safety culture does not rely on the fear of imminent legal penalties such as fines and suspensions, but rather on shared values and beliefs that safety is the airline's number one priority instead of profitability.

1.5 Summary

Chapter 1 has demonstrated that a systematic approach to managing safety risks can theoretically provide air carriers with an improved safety record. With efficient risk management strategies, a good safety culture and proactive hazard reporting, carriers are provided with an innovative tool to monitor and manage the impact of their company's decisions on safety. The theoretical foundations of SMS should be understood as guiding principles for establishing SMS in commercial aviation in Canada and around the world. Albeit these concepts may seem rather theoretical at first glance, the fundamental concepts of SMS discussed in this chapter have several legal and practical ramifications once introduced in the world of commercial aviation. With Chapter 2 exploring how these concepts have been synthesized as legal obligations under the Canadian Aviation Regulations (CARs),¹⁴³ the practical and legal impact of the theory supporting SMS will be scrutinized throughout this thesis.

¹⁴² Neil Gunningham & Darren Sinclair, *supra* note 127 at 867–868.

¹⁴³ Canadian Aviation Regulations, supra note 36.

2.1 Annex 19 - Landing SMS in International Air Law

ICAO defines SMS as a "systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures."¹⁴⁴ Designed to continuously improve safety with hazard identification processes, SMS aims to collect and analyse incident data with regular safety assessments.¹⁴⁵ On the 25th of February 2013, the ICAO Council adopted Annex 19 to the Chicago Convention,¹⁴⁶ which consolidates existing SMS provisions initially adopted in Annex 1 – *Personnel Licensing*,¹⁴⁷ Annex 8 – *Airworthiness of Aircraft*,¹⁴⁸ Annex 11 – *Air Traffic Services*,¹⁴⁹ Annex 13 – *Aircraft Accident and Incident Investigation*¹⁵⁰ and Annex 14 – *Aerodromes*.¹⁵¹ To support the introduction of this first annex to be added to the Convention in over 30 years, ICAO has complemented Annex 19 with the *Safety Management Manual* (Doc9859) ¹⁵² which provides detailed interpretative and operational guidance on the implementation of SMS for *service providers*.¹⁵³

¹⁴⁴ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 1–2.

¹⁴⁵ *Ibid* at 5–1.

¹⁴⁶ Annex 19 to the Convention on International Civil Aviation - Safety Management, International Civil Aviation Organization, 13 November 2013, Chic Conv [Annex 19 to the Convention on International Civil Aviation - Safety Management].

¹⁴⁷ Annex 1 to the Convention on International Civil Aviation - Personnel Licensing (Ninth Edition), International Civil Aviation Organization (ICAO), July 2001, 1944 Chic Conv [Annex 1 to the Convention on International Civil Aviation - Personnel Licensing (Ninth Edition)].

¹⁴⁸ Annex 8 to the Convention on International Civil Aviation – Airworthiness of Aircraft (Ninth Edition), International Civil Aviation Organization (ICAO), July 2001, 1944 Chic Conv [Annex 8 to the Convention on International Civil Aviation – Airworthiness of Aircraft (Ninth Edition)].

¹⁴⁹ Annex 11 to the Convention on International Civil Aviation - Air Traffic Services (Ninth Edition), International Civil Aviation Organization (ICAO), July 2001, 1944 Chic Conv [Annex 11 to the Convention on International Civil Aviation - Air Traffic Services (Ninth Edition)].

¹⁵⁰ Annex 13 to the Convention on International Civil Aviation - Accident and Incident Investigation (Ninth Edition), International Civil Aviation Organization (ICAO), July 2001, 1944 Chic Conv [Annex 13 to the Convention on International Civil Aviation - Accident and Incident Investigation (Ninth Edition)].

¹⁵¹ Annex 14 to the Convention on International Civil Aviation - Aerodromes (Ninth Edition), International Civil Aviation Organization (ICAO), July 2001, 1944 Chic Conv [Annex 14 to the Convention on International Civil Aviation - Aerodromes (Ninth Edition)].

¹⁵² International Civil Aviation Organization - Safety Management Manual, *supra* note 16.

¹⁵³ *Ibid* at 3–1. Under SMS, the term "service provider" refers to air carriers, flight training units, air traffic control services, airports and aircraft maintenance organizations.

In effect as of November 14th 2013, Annex 19 "broadens the scope of State safety oversight responsibilities, to become applicable to all types of aviation service providers."¹⁵⁴ The SMS approach in the Annex requires service providers to monitor their safety record internally and collaborate with the State's regulator for SMS and regulatory compliance. Although this thesis focuses entirely on Canadian air transport carriers, Annex 19 states that a SMS is required for operators authorized to conduct international commercial air transport, flight training organizations, approved maintenance organizations (AMOs), aircraft manufacturers, air traffic services and operators of certified aerodromes.¹⁵⁵ In Canada, Transport Canada has imposed SMS obligations on all of these service providers regardless of whether they operate internationally or not.¹⁵⁶ Distinctions regarding the applicability of SMS in certain areas of the aviation industry will be examined in Chapter 3.

With the adoption of Annex 19, SMS has become part of ICAO's *Standard and Recommended Practises* (SARPs). Under Annex 19, *Standards* are compulsory and *Recommended Practises* are merely a desired level of performance established as a common State endeavour.¹⁵⁷ SARPs can be considered as "soft law" since they are not, *per se*, part of the Chicago Convention¹⁵⁸ and therefore not subject to the international law of treaties.¹⁵⁹ It follows that, until States adopt internal regulations implementing SMS, Annex 19 will impose no legal obligations on their national airlines. Annex 19 is not a treaty itself and was developed entirely by ICAO instead of being agreed upon by the international community.¹⁶⁰ If a State finds it "impracticable" to implement SMS components contemplated by Annex 19, it must notify ICAO

¹⁵⁶ Canadian Aviation Regulations, supra note 36, sec 107.01.

¹⁵⁴ International Civil Aviation Organization, *State of Global Aviation Safety*, Safety (Montréal, QC: International Civil Aviation Organization, 2013) at 11.

¹⁵⁵ Annex 19 to the Convention on International Civil Aviation - Safety Management, supra note 147, sec 3.1.3.

¹⁵⁷ International Civil Aviation Organization, *Resolution 36-13: Consolidated statement of continuing ICAO policies and associated practices related specifically to air navigation*, ICAO Assembly Resolution ATS/AIS/SAR SG/11 WP/19 (Montréal, QC: ICAO, 2007).

¹⁵⁸ Paul Stephen Dempsey, *Public International Air Law* (Montréal, QC: McGill University Institute and Center for Research in Air and Space Law, 2008) at 75.

¹⁵⁹ Vienna Convention on the Law of Treaties, 23 May 1969, 1155 UNTS 331 [Vienna Convention on the Law of Treaties].

¹⁶⁰ Paul Stephen Dempsey, "Compliance & Enforcement in International Law: Achieving Global Uniformity in Aviation Safety" 30 N C J Int Law Commer Regul 1 at 62. "Under the Chicago Convention, SARPs may be adopted by two thirds of the ICAO Council, which is itself comprised of only thirty six member states. Thus, twenty four member states less than 13% the 188 member ICAO Assembly can promulgate a SARP."

immediately under Article 38 of the Convention.¹⁶¹ The Convention does not define what is "impracticable", meaning that a State that does not have the resources or the political will to implement SMS may exempt himself from this obligation unilaterally.¹⁶² This explains why the level of implementation of SARPs worldwide is currently estimated at only 57.7%,¹⁶³ leaving us to wonder if SMS will have a similar "success" or not.

A State's unilateral notification of non-compliance with one or several of Annex 19's requirements renders these standards non-binding on that State.¹⁶⁴ Notification does not expose the non-complying State to any direct sanction from ICAO.¹⁶⁵ Consequently, while some States will honour their obligations under SMS, the uneven adoption of SARPs worldwide will potentially create a separate caste of non-compliant States, thus weakening the overall efficiency of SMS and reducing the safety safeguards provided by the Chicago Convention.¹⁶⁶ As Michael Milde contends, "ICAO moves ahead like a fast locomotive happy with its speed but without noticing that many wagons of the train have become unhitched and stay behind."¹⁶⁷ In light of this "opt-in opt-out option", ¹⁶⁸ the SMS approach is threatened with a potential worldwide derailment if States do not have sufficient resources to implement this costly regulation.¹⁶⁹

¹⁶¹ Convention on Civil Aviation ("Chicago Convention), supra note 4, sec 38.

¹⁶² Michael Milde, *International Air Law and ICAO: Essential Air and Space Law* (The Hague, Netherlands: Eleven International Publishing, 2008) at 159; Md Tanveer Ahmad, *Adapting the Existing Regime for the Contemporary World to Achieve Global Civil Aviation Safety: A Developing Country Perspective* McGill University - Institute of Air and Space Law, 2009) at 14.

¹⁶³ Report on the Implementation of the ICAO Universal Safety Oversight Audit Programme (USOAP) under the Comprehensive Systems Approach and Evolution of the ICAO Universal Safefty Audit Programme Beyond 2010, 37th Session of the ICAO Assembly A37-WP/36 (Montréal, QC: 27 July 2010).

¹⁶⁴ Michael Milde, *supra* note 163 at 164.

¹⁶⁵ Mark Lee Morrison, "Navigating the Tumultuous Skies of International Aviation: The Federal Aviation Administration's Response to Non- Compliance With International Safety Standards" 2 Southwest Univ Sch Law Southwest J Law Trade Am 621; Paul Stephen Dempsey, "Compliance and Enforcement in International Law: Oil Pollution of the Marine Environment by Ocean Vessels" (1984) 6 N C J Int Law Commer Regul 459 at 560. "Yet, the very efficacy of international law is, itself, jeopardized in the absence of effective sanctions by which its requirements can be enforced."

¹⁶⁶ Michael Milde, "The Chicago Convention: Are Major Amendments Necessary Or Desirable 50 Years Later?" (1994) 19 Ann Air Space Law 401 at 426.

¹⁶⁷ Michael Milde, "Enforcement of Aviation Safety Standards - Problems of Safety Oversight" (1996) 45:3 Z Luft-Un Weltraumrecht 2 at 7.

¹⁶⁸ See Peter Ateh-Afac Fossungu & -, "The ICAO Assembly: The Most Unsupreme of Supreme Organs in the United Nations System: A Critical Analysis of Assembly Sessions" (1998) 26:1 Transp Law J 1.

¹⁶⁹ See Mildred Trogeler, *Crimininalisation of Air Accidents and the Creation of a Just Culture* (Master's Thesis, Leiden University, 2010) [unpublished] at 6.
On the other hand, there exists a principle of legal uniformity under Articles 37 and 38 of the Convention,¹⁷⁰ which encourages all member States to adhere to a common set of rules of the air. Accordingly, Michael Milde has asserted that SARPs are not devoid of legal significance.¹⁷¹ Article 33 of the Convention affirms that the failure of a State to comply with SMS SARPs permits another State to refuse entry of carriers registered in the delinquent country (e.g. blacklist a specific carrier) and even terminate any existing bilateral transport agreements between both States.¹⁷² Considering the adverse political consequences of publicly disclosing non-compliance with Annex 19 and the powerful desire to safely participate in international transport,¹⁷³ there is a strong political and legal incentive for ICAO member States to implement SMS for all Stateregistered carriers.¹⁷⁴ This incentive ensures uniformity of the law throughout the world, as Article 12 of the Chicago Convention requires every ICAO members to maintain its regulations in conformity with the SARPs to the greatest extent possible.¹⁷⁵ As Paul Dempsey argues, "ICAO's [191] Member States have an affirmative obligation to conform their domestic law, rules and regulations to the international leveling of [SMS] standards adopted by ICAO."¹⁷⁶ Consequently, legal obligations arising from Annex 19 require member States to adopt a State Safety Programme (SSP)¹⁷⁷ and a Safety Management System (SMS) for air carriers.¹⁷⁸ The legal analysis of Canada's SSP will be discussed in Chapter 3.

As ICAO's first member State to implement SMS, Canada has reproduced the integrity of Annex 19's legal structure into the CARs.¹⁷⁹ The implementation of an operator's SMS is

¹⁷⁰ Convention on Civil Aviation ("Chicago Convention), supra note 4.

¹⁷¹ Michael Milde, *supra* note 163 at 161.

¹⁷² Convention on Civil Aviation ("Chicago Convention), supra note 4, sec 38; Paul Stephen Dempsey "Compliance & Enforcement in International Law: Achieving Global Uniformity in Aviation Safety", supra note 161 at 132–133.

¹⁷³ Michael Milde, *supra* note 163 at 164.

¹⁷⁴ Paul Stephen Dempsey, *Law & Foreign Policy in International Aviation* (Ardsley, New-York: Transnational Publishers Inc., 1987) at 312; Paul Stephen Dempsey "Compliance & Enforcement in International Law: Achieving Global Uniformity in Aviation Safety", *supra* note 161 at 79.

¹⁷⁵ Paul Stephen Dempsey - "Compliance & Enforcement in International Law: Achieving Global Uniformity in Aviation Safety", *supra* note 161 at 10.

¹⁷⁶ Paul Stephen Dempsey, *supra* note 26 at 230.

¹⁷⁷ Annex 19 to the Convention on International Civil Aviation - Safety Management, supra note 147, chap 3; International Civil Aviation Organization, supra note 16, chap 4.

¹⁷⁸ Annex 19 to the Convention on International Civil Aviation - Safety Management, supra note 147, chap 4–5; International Civil Aviation Organization, supra note 16, chap 5.

¹⁷⁹ Canadian Aviation Regulations, supra note 36.

founded on four components of Annex 19's framework: 1) Safety Policy and Objectives; 2) Safety Risk Management; 3) Safety Assurance; and 4) Safety Promotion.¹⁸⁰

2.2 Safety Policy and Objectives

A) The Carrier's Safety Policy

Under the CARs, Canadian airlines must adopt a *safety policy*,¹⁸¹ which establishes a framework for "the internal reporting of a hazard, an incident or an accident, including the conditions under which immunity from disciplinary action will be granted."¹⁸² The importance of the safety policy is to clearly establish the airline's objectives to attain the highest safety standard possible.¹⁸³ The adoption of corporate principles (e.g. Just Culture), SOPs, safety directives, and incident reporting procedures should be communicated to all employees.¹⁸⁴ This allows employees to understand the benchmark for acceptable or unacceptable behaviour as part of the airline's disciplinary policy.¹⁸⁵ Safety must become an organizational commitment as part of the SMS approach.¹⁸⁶ More importantly, the safety policy must "set goals for the improvement of aviation safety and for measuring the attainment of those goals."¹⁸⁷

The SMS philosophy underlying the safety policy "requires that responsibility and accountability for safety be retained within the management structure of the organization."¹⁸⁸ With the senior management ultimately responsible for the airline's safety, Canadian carriers must identify a single *accountable executive* responsible for approving the safety policy¹⁸⁹ and

¹⁸⁰ International Civil Aviation Organization, *supra* note 16 at 5–2.

¹⁸¹ Canadian Aviation Regulations, supra note 36, sec 107.03(a).

¹⁸² *Ibid*, sec 705.152(1)(iv).

¹⁸³ Civil Aviation Safety Authority of Australia & Australian Government, "SMS for Aviation - A Practical Guide: Safety Policy and Objectives", online: http://www.casa.gov.au/wcmswr/_assets/main/sms/download/2012-sms-book2-safety-policy-objectives.pdf>.

¹⁸⁴ Michel Béland (ICAO EUR/NAT - Paris) International Civil Aviation Organization (ICAO), "Safety Policy and Objectives: Differences and Similarities", online: *Int Civ Aviat Organ Eur N Atl Off*

<http://www.icao.int/EURNAT/Other%20Meetings%20Seminars%20and%20Workshops/SAFE/SMS3/SMS3%20P res08.pdf>.

¹⁸⁵ Civil Aviation Safety Authority of Australia, *Safety Management Systems for Aerodromes*, Advisory Circular AC 139-16(1) (Canberra, Australia: Civil Aviation Safety Authority, 2012) at 11.

¹⁸⁶ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 5–3.

¹⁸⁷ Canadian Aviation Regulations, supra note 36, sec 107.03(b) and 705.152(1)(iii).

¹⁸⁸ Transport Canada - Introduction to Safety Management Systems, supra note 84 at 7.

¹⁸⁹ Canadian Aviation Regulations, supra note 36, sec 705.152(1)(a)(i).

ensuring the overall safety and security of operations.¹⁹⁰ This accountable executive is the individual with the financial and executive control over the airline, meaning that a member of an airline's board of directors could potentially be held liable in civil or criminal litigation if his behaviour is negligent.¹⁹¹ The impact of such negligent conduct will be examined in Chapter 5.

Using his financial technical and human resources, the accountable executive must delicately balance safety concerns (i.e. injuries, incidents, accidents etc.) with production goals (i.e. profit, market share, efficiency etc.) in his safety policy.¹⁹² Ultimately, management is responsible for safety-compliance throughout its managerial decisions, such as allocating resources, establishing priorities and endorsing safety initiatives.¹⁹³ Management must ensure that "appropriate corrective actions are taken to address hazards and errors reported, as well as responding to accident and incidents."¹⁹⁴ To facilitate this in a transparent fashion requires the adoption of a chain of command (e.g. an organizational diagram) outlining the respective safety responsibilities of each member of the senior management. Front-line personnel are ultimately the ones who will face hazards but their safety actions can be modeled and supported by senior management.¹⁹⁵

B) Safety Personnel

Under Canadian law, air carriers must appoint key safety personnel, such as a safety officer, who will neutrally assess the airline's compliance with the SMS under his authority.¹⁹⁶ His role is to develop and implement the SMS, collect safety data, communicate safety issues to the accountable executive, train personnel, maintain safety records and manage the progress of safety performance.¹⁹⁷ The safety officer is at the front-line of the SMS and operates in a safety

¹⁹⁰ Ibid, para 106.02; Transport Canada - Introduction to Safety Management Systems, supra note 84 at 7.

¹⁹¹ Federal Aviation Administration, FAA Responses to Clarifying Questions About Proposed Rulemaking for Safety Management System for Certificated Airports, FAA-2010-0997 (Washington, DC: Federal Aviation Administration, 2010); Craig H Allen, "Proving Corporate Criminal Liability for Negligence in Vessel Management and Operations: An Allision-Oil Spill Case Study" (2012) 10:2 Loyola Marit Law J 269.

¹⁹² Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile, Safety Management System and Investigations - Accident/Incident Investigation Seminar (Amman, Jordan, 2009).

¹⁹³ Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 2 at 197.

¹⁹⁴ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 5–7.

¹⁹⁵ Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 2 at 198.

¹⁹⁶ Canadian Aviation Regulations, supra note 36, sec 705.151(b); Civil Aviation Safety Authority of Australia & Australian Government, *supra* note 184. ¹⁹⁷ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 5–9.

oversight role similar to that held by a State regulator.¹⁹⁸ He must have adequate resources, tools, knowledge and skills to monitor the airline's compliance with the established tolerance of safety.¹⁹⁹ Under Canadian law, the safety officer must intervene when a hazard has been identified, make the appropriate risk assessment before serious consequences develop, propose solutions and monitor the impact of the corrective action plan.²⁰⁰

The safety officer is the primary liaison with Transport Canada and is responsible for ensuring that the airline is providing adequate safety monitoring under SMS.²⁰¹ The safety officer must conduct internal safety audits, provide safety advice to management, develop training programs, investigate incidents, develop emergency response planning (ERP), monitor the effectiveness of the airline's SMS and assess the overall impact of the SMS on the level of safety within the organization.²⁰² In summary, the role of the safety officer is to regulate safety internally and provide compliance oversight within the organization itself.²⁰³

C) The SMS Manual

A Canadian operator must also develop a SMS implementation plan to measure the safety performance against the airline's safety objectives established in the policy.²⁰⁴ The CARs obligate Canadian carriers to develop a top-level operative document "containing all safety management system processes and a process for making personnel aware of their responsibilities with respect to them."²⁰⁵ It is also referred to as the SMS Manual.²⁰⁶ It contains the safety policy and objectives, the SMS requirements under law, the SMS processes and procedures (e.g. incident reporting protocols, safety checklists, SOPs), the SMS strategies and the operator's accountability and responsibilities for all processes and procedures.²⁰⁷ Most Canadian airlines already have similar documentation as part of their operating procedures and will only be

¹⁹⁸ Transport Canada - Introduction to Safety Management Systems, supra note 84.

¹⁹⁹ Civil Aviation Safety Authority of Australia, *supra* note 186 at 20.

²⁰⁰ Canadian Aviation Regulations, supra note 36, sec 705.153(1) (b) and (c).

²⁰¹ *Ibid*, sec 705.153(1)(f).

²⁰² Civil Aviation Authority of New Zealand, "Aviation Safety Management System Training Requirements",

^{(2013),} online: *CAA* <http://www.caa.co.za/Documents/SMS%20Training.pdf>.²⁰³ Civil Aviation Safety Authority of Australia, *supra* note 186 at 12.

²⁰⁴ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 5–12.

²⁰⁵ Canadian Aviation Regulations, supra note 36, sec 107.03(f).

²⁰⁶ Annex 19 to the Convention on International Civil Aviation - Safety Management, supra note 147 at APP 2–2.

²⁰⁷ Transport Canada, Guidance for the Development of a Safety Management System Policy Manual (Transport Canada, 2004) at 6-8; Civil Aviation Safety Authority of Australia & Australian Government, supra note 184.

required to introduce minor modifications under the SMS approach. The SMS Manual should also include information on the management of documentation and records, regulatory SMS requirements, the framework for the voluntary hazard reporting system, incident reporting and investigation procedures and SMS audits protocols.²⁰⁸ The SMS manual must clearly outline the hazard reporting procedures for the SMS safety risk assessment²⁰⁹ and define the company's fundamental approach towards managing safety.²¹⁰

2.3 Annex 19 - Safety Risk Management Processes

Annex 19 states that "the service provider shall develop and maintain a process that ensures that hazards associated with its aviation products or services are identified."²¹¹ SMS aims to achieve an optimally low level of risk, known as "*As Low As Reasonably Practicable*" (ALARP), ²¹² by evaluating and managing the risks posed by identified hazards. ²¹³ This component is the cornerstone of a SMS. This process "systematically identifies hazards that exist within the context of the delivery of its products and services."²¹⁴ Referring to the *Swiss Cheese Model* explained earlier, a SMS promotes a continuous risk assessment by organizations to identify latent and active failures. Hazards can be identified by routine safety audits, mandatory and voluntary employee incident reporting, safety studies and reviews, post-accident investigations, safety surveys, feedback from employee training, industry trends etc. Consequently, Canadian airlines must adopt a "process for the internal reporting and analyzing of hazards, incidents and accidents and for taking corrective actions to prevent their recurrence."²¹⁵ These hazards must be logged in a database that is routinely updated, monitored and analyzed by the carrier's safety officer.²¹⁶

²⁰⁸ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 5–13 and 5–14; Ruwantissa Abeyratne, "Ensuring Regional Safety in Air Transport" (2010) 35:3 Air Space Law 249 at 254.

²⁰⁹ Canadian Aviation Regulations, supra note 36, sec 705.152(1)(d).

²¹⁰ Federal Aviation Administration, U.S. Department of Transportation & Air Traffic Organization Operations Planning, *supra* note 81 at 4.

²¹¹ Annex 19 to the Convention on International Civil Aviation - Safety Management, supra note 147 at APP 2–3.

²¹² Civil Aviation Safety Authority of Australia, *supra* note 186 at 20.

²¹³ Canadian Aviation Regulations, supra note 36, sec 107.03(c).

²¹⁴ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 5–14.

²¹⁵ Canadian Aviation Regulations, supra note 36, sec 107.03(e) and 705.152(1)(b).

²¹⁶ *Ibid*, sec 705.152(1)(c) and 705.153(1).

ICAO has stated that SMS "is based on routine collection and analysis of data using proactive as well as reactive methodologies to monitor known safety risks and detect emerging safety issues."²¹⁷ SMS is based on the theory that safety can be "controlled by anticipating at a sufficient level of detail, various operational scenarios and prescribing for each of them (...) a normative behaviour developed on the basis of previous experience, lessons learned from accident investigations, and expert knowledge, to ensure safety of air operations."218 SMS is an effective data-gathering process that looks at how events occurred in the past and how events might occur in the future.²¹⁹ As Paul Dempsey asserts, "The core purpose of feedback is to learn the lessons of the past, to learn from prior mistakes, and prevent the repetition of such events in the future. The experienced-based feedback loop is an important feature of safety management and a basic tenet of danger science and risk prevention."²²⁰ The SMS methodology can be summarized as follows:²²¹

- 1. Hazard Identification
- 2. Determine the airline's exposure to the hazard component (*Hazard probability*)
- 3. Risk Severity Analysis
- 4. Evaluate the probability of encountering this hazard again (*Risk*)
- 5. Determine the operator's tolerance towards this risk
- 6. Actions to mitigate, tolerate or avoid such a hazard

Because statistics reveal that smaller occurrences are more frequent than accidents or serious incidents,²²² SMS has a strong focus on documenting low-consequence events, since these events surrender valuable information regarding safety events before they generate more serious

²¹⁷ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–1.

²¹⁸ Mikolaj Ratajcyk, *supra* note 6 at 404.

²¹⁹ Transport Canada - Safety Management Systems for Small Aviation Operations: A Practical Guide to *Implementation, supra* note 83 at 24. ²²⁰ Paul Stephen Dempsey - "Independence of Aviation Safety Investigation Authorities: Keeping the Foxes from

the Henhouse", supra note 27 at 228; Francis Shubert, "Legal Barriers to a Safety Culture in Aviation" (2004) 19 Ann Air Space Law 25 at 31–32. ²²¹ Transport Canada, *supra* note 208 at 7.

²²² Pietro Carlo Cacciabue, Guide to Applying Human Factors Methods: Human Error and Accident Management in Safety Critical Systems, Human Engineering (London, United Kingdom: Springer-Verlag, 2004) at 138; Selwyn D Collins, Ruth Phillips & Dorothy S Oliver, "Accident Frequency, Place of Occurrence, and Relation to Chronic Disease" (1955) 33:2 Milbank Meml Fund Quaterly 199 at 199; National Transportation Safety Board, Annual Review of Aircraft Accident Data, PB94-181054 NTSB/ARG-94/02 (Washington, DC: National Transportation Safety Board, 1994) at 3.

consequences.²²³ Once hazards have been reported in the SMS database and analyzed as a safety risk. Canadian operators must evaluate the severity of the risk,²²⁴ i.e. "the extent of harm that might reasonably occur as a consequence or outcome of the identified hazard."²²⁵ An airline can decide to avoid, reduce or segregate the exposure of its operations to a specific hazard.²²⁶ Each proposed risk mitigation strategy should evaluate the effectiveness, the cost/benefit and the practicality of the measure before and after it is implemented.²²⁷ Feedback from the implementation of a safety measure should be obtained from employees to evaluate the value of such strategies.²²⁸ Documenting hazards within SMS has the benefit of exposing weaknesses in current defences and highlight the absence of defences. Constant monitoring of new and evolving hazards also has the benefit of ensuring that risk mitigation strategies adapt to the evolving realities of the industry or changes within the organisation (e.g. a merger with another airline, ownership change, technological improvements, regulatory changes, fleet upgrade etc.).²²⁹

The data collected may include "accidents, incidents, non-conformance or deviations and hazard reports."²³⁰ Under law, such information must be collected in a safety database, referred to by ICAO as Safety Data Collection and Processing Systems (SDCPS),²³¹ to "provide a reliable basis for evaluating safety priorities and the effectiveness of risk measures."²³² The underlying objective of a SMS is to encourage operators and their employees to actively report any issues that may affect the safety of operations. The input and collection of data affords an airline the opportunity to analyse its processes and assess known and emerging risks from all available data sources.²³³ Risk assessment should be a constant effort for operators, as changes within the airline industry can bring new safety challenges. The safety analysis can be reactive to

²²³ Mikolaj Ratajcyk, *supra* note 6 at 414.

²²⁴ Civil Aviation Safety Authority of Australia, *supra* note 186 at 21.

²²⁵ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–28.

²²⁶ Transport Canada, *supra* note 208 at 7.

²²⁷ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 5–20.

²²⁸ Simon Roberts, SMS effectiveness within Performance Based Oversight (London, United Kingdom, 2012) at 8.

²²⁹ Australian Government, An assessment of trends and risk factors in passenger air transport (Canberra, Australia: Civil Aviation Safety Authority of Australia, 2008). ²³⁰ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–18.

²³¹ *Ibid* at 4–App 5–1.

²³² *Ibid* at 2–18.

 $^{^{233}}$ *Ibid* at 2–10.

occurrences, proactive to identified hazards or even predictive.²³⁴ This is why it is important to disclose any hazard that may have an impact directly or indirectly on the "operational safety of the aircraft or aviation-related equipment, products and services."²³⁵

Except for negligent and wilful acts, it is important to stress that the reaction of an airline to the disclosure of hazards by its employees should be non-punitive and make employees understand that proactive disclosure will not only prevent disciplinary action, but is encouraged as part of the carrier's safety culture.²³⁶ Proactive reporting, occurrences reports and internal investigations all provide the necessary data to support safety analyses. The proactive and investigative facet of SMS has a significant advantage over reactive investigations. In postaccident investigations, employees and management can become uncooperative when they fear that they might bear the blame for an accident and expose themselves to disciplinary or legal actions.²³⁷ Proactive investigations under SMS are more likely to benefit an airline's level of safety, as employees will be more inclined to perceive such efforts as transparent prevention strategies, rather than the commencement of a punitive campaign.²³⁸ A successful SMS requires a continuous flow of information from front line-personnel and policies that distinguish wilful acts of misconduct from inadvertent errors.²³⁹ If an employee commits a mistake while on duty, for example miscalculates the aircraft's weight prior to takeoff and subsequently encounters trouble handling the aircraft in flight, the pilot should voluntarily report his mistake to avoid a repeat performance. In turn, this ensures the implementation of corrective action (e.g. additional pilot training for weight and balance calculations). A reporting system that is confidential, voluntary and non-punitive provides airlines with the benefit of actively identifying hazards, gathering vital safety information and building trust with its employees.²⁴⁰

²³⁴ Jens Rasmussen, *Risk Management, Adaptation, and Design for Safety* (New-York, NY: Springer, 1994) at 36.

²³⁵ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–26.

²³⁶ ICAO Transport Canada, "SMS in Canada: Implementation, Surveillance and General Strategies", online: Int Civ Aviat Organ http://www.icao.int/SAM/Documents/2009/LAR145SMSOMAS/LAR145-SMS%2006%20-%20SMS%20in%20Canada.pdf>.

²³⁷ Andrew Hopkins, *supra* note 115 at 215.

²³⁸ *Ibid* at 215.

²³⁹ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–12.

²⁴⁰ Ibid.

2.4 Safety Assurance - Managing Organizational Changes

The third component of SMS is safety assurance, which "consists of processes and activities undertaken by the service provider to determine whether the SMS is operating according to expectations and requirements."²⁴¹ Consequently, air carriers must adopt a Quality Assurance Programme (QA)²⁴² to determine the effectiveness of its SMS.²⁴³ Safety assurance is a "continuous ongoing formal management process that ensures that the processes within an organization's SMS remain valid over a period of time."²⁴⁴ Safety assurance aims to analyze the practical effectiveness of the SMS, evaluate if safety objectives have been met, determine realistic safety indicators and assess any failures.²⁴⁵ Safety assurance is based on a continuous improvement cycle through constant verification and upgrading of the SMS.²⁴⁶ Even if airline employees are following every procedure in place, results might not always be accomplished, thus requiring a review of the current state of safety.²⁴⁷ Aviation operators can also change overtime, as they start flying to new airports, install new airplane systems, acquire new aircraft, hire new staff, implement new regulatory requirements etc. As SOPs slowly adapt to these changes, incremental changes will progressively take over and deviate from the previous safety benchmark. While the accumulation of minor variations can go unnoticed over time, the overall combination of these changes can become even more significant to safety that one single major change in an airline.²⁴⁸

In practice, safety assurance can be ensured with periodic *safety audits* to assess any change within the airline, its operational impact and implement new defences for emerging hazards. Under law, Canadian operators are required to develop "a process for conducting periodic reviews or audits of the safety management system."²⁴⁹ This internal monitoring process should compare the original processes and objectives with current employee practises. Carriers

²⁴¹ Annex 19 to the Convention on International Civil Aviation - Safety Management, supra note 148 at APP 2–3,

APP 2-4; International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 5-21.

²⁴² Canadian Aviation Regulations, supra note 36, sec 107.03(g).

²⁴³ *Ibid*, sec 705.152(1)(a)(v).

²⁴⁴ Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 2 at 30.

²⁴⁵ Transport Canada, "Chapter 6 - Quality Assurance: Operational and System Reviews", (31 May 2010), online: *Gov Can* https://www.tc.gc.ca/eng/civilaviation/publications/tp14135-1-section20-2087.htm.

²⁴⁶ Federal Aviation Administration, U.S. Department of Transportation & Air Traffic Organization Operations Planning, *supra* note 81 at 5.

²⁴⁷ Federal Aviation Administration, *supra* note 111 at 9.

²⁴⁸ Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 2 at 32.

²⁴⁹ Canadian Aviation Regulations, supra note 36, sec 107.03(h).

must establish audit procedures "for making progress reports to the accountable executive at intervals determined by the accountable executive and other reports as needed in urgent cases."²⁵⁰ Safety performance assessments, or audits, provide a comparison between the baseline safety standards originally adopted under the SMS and the actual operational practices. This is known as the "*Practical Drift*" (See Figure 5), which analyzes how the baseline safety performance of a system drifts away over time from its original standard.²⁵¹



Figure 5 - The Practical Drift of Safety (Source: ICAO)²⁵²

Too much drift from the safety baseline can lead to a serious incident. Quality assurance reduces the drift by bringing operational performance back into line with the baseline performance shown above in Figure 5. Quality assurance should aim to continuously improve the overall performance of the operator's SMS and increase its effectiveness with a dynamic safety approach. In summary, an effective SMS manages change within an airline by identifying variances that affect the level of safety risk associated with the operator's services.²⁵³

2.5 Safety Promotion - Establishing a Flight Path of Continuous Learning

The last component of a SMS is *safety promotion*, which requires Canadian operators to "develop and maintain a safety training programme that ensures that personnel are trained and

²⁵⁰ *Ibid*, sec 705.152(1)(g).

²⁵¹ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 2–5 and 2–6.

²⁵² Source of Figure 4: *Ibid* at 2–6.

²⁵³ *Ibid* at 5–23.

competent to perform their SMS duties."²⁵⁴ Adopting a good safety culture with strong managerial leadership should provide operators will adequate training and education for safety matters, such as *ab initio* and recurrent safety courses to validate the SMS.²⁵⁵ To be successful, safety promotion "provides a mechanism through which lessons learned from safety event investigations and other safety-related activities are made available to all affected staff."²⁵⁶ SMS must be implemented through training, where processes are explained and procedures are practiced. Adequate SMS training must be provided on a recurrent basis to emphasize the importance of incident reporting and communicate the organization's commitment to safety. Strong communication about safety between senior management and employees, using safety newsletters, notices and bulletins, for example, enhance the overall promotion of safety within the organization.²⁵⁷ The proactive nature of a SMS should nurture a constant learning process for employees and provide them with strong safety reflexes in a dangerous situation.

2.6 Evaluating the Practical Benefits of Annex 19

The proactive and evidenced-based SMS approach proposed by Annex 19 will, in theory, prevent incidents from reoccurring.²⁵⁸ It attempts to identify all active and latent failures, compile them, analyse patterns and determine how current safety risks can be eliminated, mitigated or simply avoided. This approach incorporates the basic safety process into the management of an organization,²⁵⁹ requiring operators to act like internal regulators and monitor safety compliance. This enhances senior management commitment to safety and retains accountability within the management structure of the organization.²⁶⁰ SMS forces airlines to monitor safety instead of entirely relying on the State's regulatory oversight. It can therefore be argued that the SMS

²⁵⁴ Annex 19 to the Convention on International Civil Aviation - Safety Management, supra note 147 at APP 2–4; Canadian Aviation Regulations, supra note 36, sec 107.03(d) and 705.152(1)(f).

²⁵⁵ Transport Canada, *supra* note 208 at 6.

²⁵⁶ Civil Aviation Safety Authority of Australia, *supra* note 186 at 26.

²⁵⁷ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 5–25,5–26 and 5–27.

²⁵⁸ Commission Staff Working Document Accompanying the White Paper – Roadmap to a Single European Transport Area - Towards a Competitive and Resource Efficient Transport System, Brussels, 28 Mar. 2011, SEC (2011) at 391.

 ²⁵⁹ Transport Canada - Introduction to Safety Management Systems, supra note 84 at 6.
 ²⁶⁰ Ibid at 7.

approach adds another safety defence to the Swiss Cheese Model. Transport Canada has identified the following benefits that carriers will inherit with the implementation of SMS:²⁶¹

- Improved decision making
- Learning about operations
- Improved safety performance
- Customized mitigation strategies
- Possibly exceeding safety standards set by regulation
- Improved public and customer confidence
- Increased competitive advantage
- Demonstrated due diligence
- Potential for reduced regulatory oversight
- Enhanced relationships and collaboration
- Improved economic performance

2.7 Summary

Under Canada's *Aeronautics Act*,²⁶² an airline's inability to implement a SMS or his noncompliance towards relevant regulatory obligations can be grounds for suspension or termination of its operating certificate by TC.²⁶³ Consequently, the SMS framework established in Annex 19 and in the CARs are now statutory requirements to operate a commercial air transport operation in Canada. It can be expected that the desire of airlines to ensure safety through fair and efficient regulations, combined with the airline's self-interest to avoid punitive sanctions or costly accidents, will most likely encourage Canadian airlines to implement SMS.²⁶⁴ In summary, the fairness and effectiveness of the four components of SMS should, in theory, benefit the Canadian aviation industry. The legal framework of SMS discussed in this chapter can be perceived as an ingenious method to reduce accidents and save lives. Nonetheless, the million dollar question is: does SMS actually work? As it will be discussed in Chapter 3, Canadian carriers have struggled with SMS in the early stages of its implementation. As the legal framework of SMS remains

²⁶¹ Transport Canada, *supra* note 96; Kathleen Fox, *supra* note 23 at 10.

²⁶² Aeronautics Act, 1985 [Aeronautics Act].

²⁶³ *Ibid*, sec 6.9.

²⁶⁴ Paul Stephen Dempsey - "Compliance & Enforcement in International Law: Achieving Global Uniformity in Aviation Safety", *supra* note 161 at 64–66.

untested, other chapters will uncover its critical deficiencies, where economic factors, politics, international law and civil litigation will intersect in multifaceted legal debates.

Chapter 3 – Implementing SMS in Aviation: The Canadian Experience

When Canada announced in 2005 that SMS would become a regulatory requirement for all air service providers,²⁶⁵ it became the first ICAO member to announce its implementation²⁶⁶ and led the international aviation community in the deployment of the first ever SMS in civil aviation.²⁶⁷ Without the benefit of others countries' experience, it was expected that some difficulties would be encountered during the transition.²⁶⁸ In this chapter, the implementation process of SMS throughout Canadian commercial aviation will be scrutinized. Although the theoretical benefits of SMS discussed in previous chapters are not contested, there is strong evidence that Canada has struggled and continues to struggle with the implementation of SMS. Secondly, TC has seemingly failed to fully uphold its oversight responsibilities under this new safety regime. For the purpose of this chapter, five different Canadian operators who participated in the transition to SMS were interviewed in order to obtain a practical assessment of this new regime.²⁶⁹ To preserve confidentiality, these operators will be referred to as "informants" throughout the chapter.

²⁶⁵ Transport Canada's Enforcement of Air Safety Regulations and Implementation of Safety Management Systems, 30 November 2009 (39th Parliament) [Transport Canada's Enforcement of Air Safety Regulations and Implementation of Safety Management Systems]; Office of the Auditor General of Canada, Report of the Auditor General of Canada to the House of Commons - Oversight of Civil Aviation—Transport Canada, Chapter 5 (Ottawa, ON: Office of the Auditor General of Canada, 2012) at 8; Transport Canada - Safety Management Systems for Small Aviation Operations: A Practical Guide to Implementation, supra note 83 at 1; Canadian Aviation Regulations, supra note 36 at 107 01

supra note 36 at 107.01. ²⁶⁶ *Hearing - Bill C-6*, Standing Committee on Transport, Infrastructure and Communities, 21 March 2007 (39th Parliament) [*Hearing - Bill C-6*].

²⁶⁷ Transport Canada, *Aviation Safety Program Manual for the Civil Aviation Directorate*, Z 5000-7-1 U (Ottawa, ON: Transport Canada, 2012) at 6.

²⁶⁸ Office of the Auditor General of Canada, *supra* note 266 at 28.

²⁶⁹ Informant #1 operates a certified airport and a flight training unit. Informant #2 previously worked at a medium-sized airline operating in Northern Canada. Informant #3 operates a certified airport. Informant #4 is currently working at a medium-sized airline. Informant #5 operates a large Canadian airline operating internationally. *A sixth interview was conducted with an aviation professional working for the Canadian government. Due to *Informant #6's* obligation to maintain impartiality in his/her governmental activities, testimony #6 was used uniquely to provide a context to Transport Canada's policies regarding SMS.

3.1 The Regulatory Scope of SMS: Is the Travelling Public at Risk?

Before examining the Canadian experience with the implementation of SMS, it is necessary to explain the structure of the Canadian aviation industry. Currently, Canadian commercial air carriers are divided into three main categories:

- Air Taxi Operators ("703 carriers") are small carriers than can carry up to nine passengers inclusively in an aircraft with a MTOW²⁷⁰ of 19,000 pounds or less.²⁷¹
- **Commuter Operators ("704 carriers")** are carriers that can carry between 10 and 19 passengers inclusively²⁷² in a multi-engine aircraft with a MTOW of 19,000 pounds or less, or a turbo-jet-powered aeroplane that has a maximum zero fuel weight of 50,000 pounds.²⁷³
- Airline Operators ("705 carriers") are carriers authorized to operate aircraft with a MTOW of more than 19,000 pounds *or* that can carry 20 or more passengers.²⁷⁴ These include large airlines, such as Air Canada, First Air, Porter Airlines, WestJet, Sunwing Airlines, Air Transat etc.

In Canada, SMS was progressively introduced and implementation deadlines varied depending on the carrier's type of operation. Existing 705 carriers were required to have SMS by 2008 and new airlines applying for a 705 operator's certificate were obliged to have SMS starting in 2005.²⁷⁵ Large airports,²⁷⁶ AMOs²⁷⁷ and Canada's air traffic provider,²⁷⁸ NavCanada, were required to have SMS by 2008.²⁷⁹ The smaller 703 and 704 operators (referred to in the

²⁷⁰ MTOW: Maximum takeoff weight of an aircraft when fully loaded with fuel, cargo and passengers.

²⁷¹ Canadian Aviation Regulations, supra note 36, sec 703.01.

²⁷² *Ibid*, sec 704.01.

²⁷³ *Ibid*.

²⁷⁴ *Ibid*, sec 705.01.

²⁷⁵ Transport Canada - *Safety Management Systems for Small Aviation Operations: A Practical Guide to Implementation, supra* note 83 at 2. Starting in 2005, new 705 carriers applying for an operator's certificate were obliged to implement SMS as a necessary condition to obtain their certificate. This was the case for Porter Airlines for example, whereas existing airlines were granted an exemption in until 2008

²⁷⁶ Canadian Aviation Regulations, supra note 36, sec 107.01, 302.01 and 302.500.

²⁷⁷ *Ibid*, sec 573.01 and 573.32.

²⁷⁸ *Ibid*, sec 804.01 and 805.05.

²⁷⁹ Transport Canada's Enforcement of Air Safety Regulations and Implementation of Safety Management Systems, supra note 266.

industry as "small carriers" or "small operators") 280 were initially scheduled to start implementing SMS in 2008 but this legal requirement has been postponed indefinitely due to the significant implementation problems encountered with 705 carriers.²⁸¹ Despite this fact, a minority of 703 and 704 carriers have started adopting SMS voluntarily.

Including five large carriers that account for 60% of revenue-generating passenger miles travelled,²⁸² thirty-nine 705 carriers operate in Canada²⁸³ and carry 95% of the entire market of travelling passengers.²⁸⁴ The remainder of the industry is composed of 538 air taxi operators and 89 commuter carriers.²⁸⁵ Considering that Canadian air carriers transport close to 74 million passengers every year,²⁸⁶ the current scope of SMS does not protect 5% of passengers traveling on 703 and 704 carriers. This approximately leaves 3.7 million passengers at risk every time they board a small carrier that is not required to have SMS.²⁸⁷ All of the informants expressed concern about the continued exemption of smaller air taxis and commuter operators from the scope of SMS. Yet these operators are the ones that probably require SMS the most. As the TSB has noted, "91% of all air accidents and 93% of all fatalities can be attributed to the commuters and air taxi operators."²⁸⁸ To explain these disturbing statistics, the TSB observed that:

"Small operators typically face some interesting challenges. They're flying into more remote areas that may have little or no infrastructure. They often use aircraft that are a little older, that may not have sophisticated navigational or warning systems. The crews will likely be on the lower end of the experience scale."²⁸⁹

²⁸⁰ Transport Canada - Safety Management Systems for Small Aviation Operations: A Practical Guide to Implementation, supra note 83 at 1.

Allison Padova, Les systèmes de gestion de la sécurité: une meilleure approche pour les transports?, En Bref 2013 - 77 - F (Ottawa, ON: Bibliothèque du Parlement, 2013); Transportation Safety Board of Canada, "Air Safety Management Systems", (27 March 2013), online: Transp Saf Board Can http://www.bst-tsb.gc.ca/eng/medias- media/videos/surveillance-watchlist/aviation/aviation-video-04.asp>.

²⁸² Office of the Auditor General of Canada, *supra* note 266 at 15.

²⁸³ Transport Canada, *Transportation in Canada - Comprehensive Review*, TP 14816 (Ottawa, ON: Transport Canada, 2011) at 47.

²⁸⁴ Transport Canada's Enforcement of Air Safety Regulations and Implementation of Safety Management Systems, supra note 266.

²⁸⁵ Transport Canada, *supra* note 284 at 47.

²⁸⁶ Statistics Canada, "Table 401-0044 - Air passenger traffic and flights (Annual Numbers)", (2013), online: Gov Can

<http://www5.statcan.gc.ca/cansim/a05?lang=eng&id=4010044&pattern=4010044&searchTypeByValue=1&p2=35

²⁸⁷ Transport Canada's Enforcement of Air Safety Regulations and Implementation of Safety Management Systems, supra note 266. The Honourable Joseph Volpe

²⁸⁸ Transportation Safety Board of Canada, *supra* note 282.
²⁸⁹ *Ibid*.

In 2013, air taxis and commuter operators accounted for 19 and 5 fatalities respectively, whereas Canadian airlines did not suffer any casualties.²⁹⁰ Air taxi operations have accounted for 175 deaths in the last 10 years, equivalent to 65% of all commercial aviation fatalities.²⁹¹ Given that small operators represent the greatest risk to aviation safety,²⁹² why are they are not yet required to implement SMS?

<u>3.2 Business vs. Compliance: Does Safety Have a Price?</u>

Although the TSB has recommended that SMS should apply to every operator regardless of size,²⁹³ we must ask ourselves if such a regime is appropriate for marginal short line operators, such as 703 and 704 carriers,²⁹⁴ which have minimal organizational structures.²⁹⁵ 703 and 704 carriers are an essential component of Canada's transportation network, as they serve many isolated communities in the North that cannot be reached by roads or marine transportation.²⁹⁶ Many of these operations are relatively small in size; some carriers are operated by families utilizing very informal processes, others are one-person operations where a single individual is responsible for everything from management to ticket sales to piloting and servicing the aircraft.

Even if the complexity of implementing SMS were commensurate with the size and complexity of each operator,²⁹⁷ some informants²⁹⁸ concluded that 703 and 704 operators might

²⁹⁰ Transportation Safety Board of Canada, "Statistical Summary – Aviation Occurrences 2013", (12 November 2014), online: *Transp Saf Board Can* http://www.bst-tsb.gc.ca/eng/stats/aviation/2013/ssea-ssao-2013.asp. Airlines suffered 6 accidents, whereas commuter operators and air taxis accounted for 3 and 18 accidents respectively. Airlines suffered no fatal accidents, whereas air taxis and commuters had 5 and 1 fatal accidents respectively.

²⁹¹ Transportation Safety Board of Canada, "News release: TSB to study risks associated with air taxi operations", (19 November 2014), online: *Transp Saf Board Can* http://www.bst-tsb.gc.ca/eng/medias-

media/communiques/aviation/2014/20141119.asp>; CBC News, "Air taxis prompt Ottawa probe after 175 crash deaths", *CBC News* (19 November 2014), online: http://www.cbc.ca/news/business/air-taxis-prompt-ottawa-probe-after-175-crash-deaths-1.2840659>.

²⁹² Bruce Campion-Smith, "Safety cuts risk air disaster: Judge", (1 March 2007), online: *Tor Star* http://www.thestar.com/news/2007/03/01/safety_cuts_risk_air_disaster_judge.html>.

²⁹³ Transportation Safety Board of Canada, *Safety management and oversight*, 2014 Watchlist (Gatineau, QC: Transportation Safety Board of Canada, 2014).

 ²⁹⁴ The Montreal Gazette, "Lac-Megantic: The Case for a Judicial Inquiry", *Montr Gaz* (1 January 2014).
 ²⁹⁵ Allison Padova, *supra* note 282.

²⁹⁶ Sarah Schmidt, "Danger overhead: Why Transport Canada cuts are a red flag for small commercial aviation safety", *OCanada.com* (31 March 2013), online: http://o.canada.com/news/national/danger-overhead-why-transport-canada-cuts-are-a-red-flag-for-small-commercial-aviation-safety>.

²⁹⁷ Canadian Aviation Regulations, supra note 36, sec 107.04.

²⁹⁸ Informants #1, #2, #3 and #4.

not have the resources or the expertise and knowledge to handle the workload of SMS.²⁹⁹ While large airlines can accommodate large safety expenses, small carriers operating just a few, or even a single aircraft, have a very slim profit margin and can struggle at times to make safe business decisions. Justice Virgil P. Moshansky, who led the *Commission of Inquiry into the Air Ontario Crash at Dryden*,³⁰⁰ stated that it would be a difficult task for small 'cash-strapped' carriers to monitor their own safety levels as part of SMS.³⁰¹ The Dryden experience has shown that when a State delegates the regulatory costs of safety to the aviation industry, there is "an air of Greek tragedy about the interaction of the de-regulatory *zeitgeist* with the desperate scramble for corporate profitability."³⁰² Given that even large 705 carriers struggle to operate SMS, one must wonder if it is even feasible to safely impose sophisticated safety management systems on every small operator. The complexity of SMS could in fact exacerbate the tragic statistics associated with these carriers. Small carriers might "expend significant resources trying to make sense of diverse legal requirements, and might find it more difficult to behave virtuously."³⁰³ Hence, Canadian authorities will need to tailor SMS to the needs and operational capabilities of smaller carriers.

Even if risk management will ultimately save money for Canadian carriers, ³⁰⁴ most informants agreed that the implementation of SMS has a considerable initial start-up cost and requires expensive ongoing resources to remain operational, such as additional employees to monitor SMS databases and ensure that documentation is in order.³⁰⁵ Not every carrier will have the same resources or capabilities to maintain compliance with SMS. For instance, Informant #1 was required to remove himself from flying duties and sacrifice much of his managerial role simply to understand, implement and operate SMS. Instead of physically inspecting the airport premises and monitoring the actual safety of his operations, he had to spend much of his day in an office filling out cumbersome paperwork and ensuring that his documentation was compliant with SMS regulations. Informant #3 even stated that SMS might be economically unfeasible for the average 703 and 704 operator. In difficult financial times, it is hard to imagine a small carrier

²⁹⁹ Sarah Schmidt, *supra* note 297.

³⁰⁰ The Honorable Justice Virgil P. Moshansky, *supra* note 32.

³⁰¹ Bruce Campion-Smith, *supra* note 293.

³⁰² Robert G. Evans, Karen Cardiff & Sam Sheps, *supra* note 25 at 15.

³⁰³ Richard Johnstone, *supra* note 19 at 385.

³⁰⁴ Civil Aviation Authority of New Zealand, *supra* note 203 at 14.

³⁰⁵ *Ibid* at 15.

investing money into SMS instead of spending it on the execution of lucrative flying contracts. The smaller carriers' priority is not to invest in costly safety expenses, but rather to maximize his revenues.³⁰⁶ While large airlines can afford to create an entire safety department monitoring SMS, smaller operators might not have the resources to do so. During a difficult financial year, Informant #1 was forced to lay off the company's safety officer to remain in business, leaving it difficult to imagine how small carriers will be able to handle the financial burden of SMS. Informant #1 concluded that while you cannot put a price on safety, you can definitely put one on SMS. TC has stated that operators will have the freedom to utilize the most cost-effective SMS methods.³⁰⁷ In light of Informant #1's experience, does that mean that safety will become an expendable commodity for small carriers? It must be recalled that SMS was developed for large scale industries. While major airlines have a similar organizational structure to such industries, small carriers do not and will struggle to implement the current SMS framework. Informant #3 concluded that SMS could in fact lead to the demise of air taxis and commuter operators, which would have considerable consequences for remote communities in Canada.

Another problem is that "some smaller operators may not commit to the cultural change that is necessary to successfully integrate safety risk management principles and processes into their business operations."³⁰⁸ Informant #3 stated that carriers will likely prioritize their resources towards running their operations instead of spending their time filling out hazard identification reports. A perfect example is the 2007 crash of a Transwest Air Beech King Air in Saskatchewan, which killed the pilot and injured three other individuals onboard.³⁰⁹ Even though Transwest Air had an SMS and identified on several occasions unsafe practises by its pilots, it failed to use its SMS adequately and utilize effective corrective actions to prevent such an accident.³¹⁰ This illustrates how smaller airlines manage the pressures of operating a fast-paced business in small markets. Ultimately, flying duties have a priority over paperwork.

³⁰⁶ Wayne Benedict, "Canada's Railway Safety Regulatory Regime: Past, Present & Future" (2007) 34 Transp Law J 147 at 164.

³⁰⁷ Valance Jones, "A serious incident is looming," pilot warns", Ott Community News (17 June 2006), online: <http://www.ottawacommunitynews.com/news-story/2234772--a-serious-incident-is-looming-pilot-warns/>. ³⁰⁸ Civil Aviation Authority of New Zealand, *supra* note 203 at 15.

³⁰⁹ Transportation Safety Board of Canada, Collision with Terrain, Transwest Air, Beech A100 King Air C-GFFN, Sandy Bay, Saskatchewan, 07 January 2007, Aviation Investigation Report A07C0001 (Gatineau, QC: Transportation Safety Board of Canada, 2013). ³¹⁰ *Ibid*.

Indeed some operators view SMS as a superficial paper-pushing exercise that interferes with actual operations.³¹¹ To counter this cynical approach, the FAA³¹² has recommended that small carriers should utilize straightforward systems, with quick and effective methods striking a balance between formal (documented) and informal systems.³¹³ Therefore, TC will need to invest considerable efforts to provide practical cost-effectiveness guidance and convince the industry that SMS will provide carriers with a downstream gain for their business.

<u>3.3 Is SMS a 'Seriously Misguided System'?</u>

All informants stated that the transition to SMS was chaotic and lacked proper guidance from TC. ³¹⁴ Informant #1 asserted that his experience with SMS equates to a "<u>Seriously</u> <u>Misguided System</u>". A phased implementation with four stages was introduced ³¹⁵ to progressively adopt all ICAO standards, but the assistance provided by authorities to Canadian carriers was said to be insufficient and unclear. TC struggled to keep up with the industry's implementation of SMS and postponed implementation deadlines again and again, thus seriously damaging its credibility. The TSB has concluded that safety can be compromised if there are unclear implementation deadlines and improper milestones for safety audit inspections;³¹⁶ these characteristics define Canada's experience with SMS implementation. Although the *Supplementary Staff Instruction (SSI) No. SUR-001-P*³¹⁷ provided TC inspectors with instructions on how to oversee the implementation of SMS, the Auditor General of Canada (AGC) concluded that these instructions insufficiently stated the minimum standards and documentation required for SMS compliance.³¹⁸ This is because *SUR-001* establishes a vague policy with subjective guidelines and does not provide TC or carriers with clear and objective legal standards.³¹⁹ SMS policies were amended numerous times and consequently lacked clarity and consistency. Every

³¹¹ Neil Gunningham & Darren Sinclair, *supra* note 127 at 880.

³¹² The Federal Aviation Administration

³¹³ Federal Aviation Administration, U.S. Department of Transportation & Air Traffic Organization Operations Planning, *supra* note 81 at 16.

³¹⁴ Allison Padova, *supra* note 282 at 6.

³¹⁵ Transport Canada, *Safety Management Systems: Implementation Procedures Guide for Air Operators and Approved Maintenance Organizations*, TP 14343E (Ottawa, ON: Transport Canada, 2005) at 3–4.

³¹⁶ Transportation Safety Board of Canada, *Aviation News Release : Effective Oversight Vital to Aviation Safety, Says the TSB*, TSB # A06/2009 (Gatineau, QC: Transportation Safety Board of Canada, 2009).

³¹⁷ Transport Canada, *Supplementary Staff Instruction (SSI) No. SUR-001-P - Surveillance Procedures*, P 5000-1 (Ottawa, ON: Transport Canada, 2010).

³¹⁸ Office of the Auditor General of Canada, *supra* note 266 at 31.

³¹⁹ Transport Canada, *supra* note 318. The instruction orders TC inspectors not to make subjective statements, suggestions or recommendations in the audit reports for the SMS of carriers.

informant stated that standards varied enormously across the country. While one carrier would find its 300-page SMS manual being rejected without any feedback, another carrier's 10-page manual would be granted approval even though both carriers had a similar operational structure.

The AGC also concluded that most TC inspectors did not fully understand the SMS methodology and therefore did not conduct their duties according to the recommended surveillance methodology.³²⁰ It was further found that inspectors did not have adequate training or sufficient experience with SMS or both to actually provide accurate advice to carriers across the country.³²¹ In fact, only 40% of inspectors had received SMS training by 2011.³²² These criticisms were borne out by interviews with informants. For example, Informant #2 was told by an inspector to consult Wikipedia to learn about SMS. While carriers were struggling to understand how to implement SMS, it was clear for some informants that even TC itself did not understand SMS and how it should be adapted to aviation. Informants noted that TC was learning about SMS at the same time the airlines were trying to implement it, which caused significant implementation disparities across the industry. Coupled with a lack of proper investigative methodology, TC inspectors were struggling to provide carriers with official documents stating the minimum standards for obtaining the approval of their SMS. 323 Consequently, TC was not able to provide constructive feedback to assist carriers in introducing SMS into their operations. Overall, informants found it difficult to afford SMS any credibility, because of TC's confusion throughout the implementation process. How can the industry buy into SMS if the regulator does not seem to understand what it is doing? SMS was not sold well to the industry. It was prematurely launched and inadequately supported. As a result, the industry has struggled to invest any trust into this new regime.

3.4 Transport Canada's Failure to Uphold its Oversight Responsibilities

Paul Dempsey has eloquently stated that "Law without compliance and enforcement is like poetry – it is pleasing to the ear, but has little to do with the practical world in which we

³²⁰ Office of the Auditor General of Canada, *supra* note 266 at 21.

³²¹ *Ibid*.

³²² *Ibid* at 23.

³²³ *Ibid* at 22.

live.³²⁴ He has further asserted that ubiquitous surveillance of the industry serves the public interest by ensuring safe and dependable air services.³²⁵ The Moshansky Inquiry insisted that enforcement is a key element of an effective governmental safety program.³²⁶ In accordance with articles 12 and 37 of the Chicago Convention,³²⁷ States have the obligation to ensure the safety oversight of international transportation conducted within its airspace.³²⁸ Jiefang Huang has argued that State oversight is an essential component of the *erga omnes* nature of safety as an international law obligation.³²⁹ Since "the safety oversight function of one State will have impact upon another State," ³³⁰ there exists a natural relationship between effective oversight and humanitarian considerations.

Under Annex 19, Canada must develop a framework for a State Safety Programme (SSP), ³³¹ which complements existing oversight duties. Identical to an air carrier's SMS requirements, it must develop a legislative framework, a safety policy for the industry, industry risk management measures, safety assurance and a State safety promotion program. In other words, a SSP is a government's internal safety management system overseeing the entire industry's safety. One of the fundamental objectives of a SSP is that it must provide appropriate State oversight, ³³² ensuring continued compliance with national regulations established in accordance with ICAO SARPs. It must provide surveillance activities and safety monitoring through 1) paperwork audits and 2) physical inspections.³³³

Despite the fact that SMS was intended to introduce an *additional* layer of safety to existing oversight duties,³³⁴ Canada cancelled its National Audit Program (NAP) in 2006,³³⁵

³³⁰ Jiefang Huang, *supra* note 6 at 73; Jiefang Huang, *supra* note 6, chap 5.

³²⁴ Paul Stephen Dempsey - "Compliance & Enforcement in International Law: Achieving Global Uniformity in Aviation Safety", *supra* note 161 at 66.

³²⁵ Paul Stephen Dempsey & Laurence E. Gesell, *supra* note 10 at 98.

³²⁶ The Honourable Virgil P Moshansky, & Donald L Van Dyke, *The Role of the Judiciary in Aviation Safety: The Inside Story and Legacy of Dryden* (International Civil Aviation Organization, Montréal, QC: Royal Aeronautical Society, 2007).

³²⁷ Convention on Civil Aviation ("Chicago Convention), supra note 4, sec 12 and 37.

³²⁸ Convention on Civil Aviation ("Chicago Convention), supra note 4; International Civil Aviation Organization, Safety Oversight Manual - Part A: The Establishment and Management of a State's Safety Oversight System (Doc 9734 AN/959), 2d ed (Montréal, QC: International Civil Aviation Organization, 2006) at (v).

³²⁹ Jiefang Huang, *supra* note 6; Mikolaj Ratajcyk, *supra* note 6 at 402.

³³¹ Annex 19 to the Convention on International Civil Aviation - Safety Management, supra note 147 at ATT A-1.

³³² Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 2 at 261.

³³³ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 4–6 and 4–7.

³³⁴ *Hearing -Bill C-6*, Standing Committee on Transport, Infrastructure and Communities, 12 February 2007 (39th Parliament) [*Hearing -Bill C-6*].

which previously provided for operational and physical inspections of airlines, including airplane maintenance inspections, pilot check-rides, unannounced ramp checks etc. Subsequently, TC ordered its inspectors to cancel all enforcement actions and terminate any ongoing investigations concerning SMS certificate holders.³³⁶ Instead, pre-announced paperwork assessments and program validation inspections (PVIs) focusing on the airline's SMS are now the primary oversight tools utilized by TC.³³⁷ As part of SMS, TC has stated that "the responsibility for regulatory oversight will now rest with the aviation industry and that Transport Canada will conduct audits based on risk factors."338 A Safety Management Advisor at ICAO stated before the Parliament of Canada that replacing hands-on inspections with paperwork audits would diminish the industry's overall safety, since this would not respect ICAO's requirement to continue providing scheduled and random safety inspections.³³⁹ Several informants were convinced that the level of safety in Canada had been drastically reduced since the inception of SMS, as traditional inspections ensured carriers were conforming to safety regulations.³⁴⁰ Based on the cancellation of the NAP, it would seem that ever since TC inspectors have begun conducting paperwork audits instead of physically inspecting airplanes, the regulator has not been providing effective responses to actual industry hazards.

Under Transport Canada's current safety regime, the Canadian Federal Pilots Association (CFPA) has stated that the shift towards paper-based oversight duties has left the travelling public vulnerable to a major aviation accident.³⁴¹ Safety is essential to ensuring that aviation remains a sustainable and efficient mode of transportation.³⁴² Removing regulatory oversight threatens the viability of the entire safety regime. In addition, since adequate oversight

³³⁵ Transport Canada, *Civil Aviation Directive (CAD) No. 39- Aviation Enforcement – Safety Management Systems*, Oversight Issue 01 (Ottawa, ON: Transport Canada, 2005).

³³⁶ The Honourable Virgil P. Moshansky, & Donald L Van Dyke, *supra* note 327.

³³⁷ Sarah Schmidt, "Are big jets as safe as we thinkg? Some Canadians experts say no", *OCanada.com* (1 April 2013), online: http://o.canada.com/uncategorized/are-big-jets-as-safe-as-we-think-some-canadian-experts-say-no>.

³³⁸ Kelly McParland, "Transport Canada fears ending regular airline safety audits could be risky", *Natl Post* (1 October 2011).

³³⁹ Hearing - Bill C-6, supra note 267. Captain Daniel Maurino

³⁴⁰ Valance Jones, *supra* note 308.

³⁴¹ Canadian Federal Pilots Association (CFPA), *Aviation inspectors condemn Transport Canada's safety system -Warn of impending major accident* (Ottawa, ON: Canadian Federal Pilots Association (CFPA), 2014); Kathryn Blaze Carlson, "Survey finds gaps in aviation safety procedures", *Globe Mail* (24 April 2014), online:

<http://www.theglobeandmail.com/news/politics/survey-finds-gaps-in-aviation-safety-procedures/article18136511/>. ³⁴² Mark Kinzie, "Aviation: the Rule for Admissibility: Building a Balance Between the Interests of Air Safety and the Interests of Aviation Litigation" (1988) 41:2 Okla Law Rev 265 at 265.

is an overriding priority for ICAO, ³⁴³ Canada is in clear contravention of Annex 19's recommendation to continue providing traditional safety inspections in addition to the new SMS paperwork audits. ³⁴⁴ Greg Holbrook, the National Chair of the CFPA, stated that TC has dismantled the traditional regulatory oversight role responsible for Canada's relatively low accident rate, in exchange for system evaluations, thus shifting the focus from actual operations to paper and policy. ³⁴⁵ Because cumbersome paperwork prevented Informant #1 from effectively tackling safety concerns in his daily work activities, his operation saw its near-perfect safety record erode with a substantial increase in the number of accidents during what he described as a 'precarious' implementation process. In a similar vein, Air Canada observed: "We are concerned that this approach (SMS) has lost its way and is engendering a culture of 'paper safety' at the expense of real safety."³⁴⁶

This is a dangerous strategy, as SMS safety audits can rapidly degenerate into a meaningless 'tick-a-box' exercise.³⁴⁷ Most informants agreed that it is possible to reap the benefits of SMS only if the previous oversight regime is reinstated in combination with these new SMS audits. Under *SUR-001-M*, government inspectors only have to evaluate the effectiveness of an airline's SMS and have become system evaluators instead of effectively monitoring the actual operational safety levels of Canadian airlines.³⁴⁸ Informant #3 argued that in effect, TC has illegally abdicated its safety responsibilities and has failed to uphold its statutory oversight obligations under the Aeronautics Act.³⁴⁹ For Informant #4, it is apparent that safety oversight duties have been delegated to the industry itself.³⁵⁰ Members of Parliament even stated that:

³⁴³ Michael Milde, *supra* note 168 at 2; Paul Stephen Dempsey - "Compliance & Enforcement in International Law: Achieving Global Uniformity in Aviation Safety", *supra* note 161 at 30.

³⁴⁴ Annex 19 to the Convention on International Civil Aviation - Safety Management, supra note 148 at 3–1 and APP 1–1; International Civil Aviation Organization - Safety Management Manual, supra note 16 at 4–6.

³⁴⁵ *Hearing - Bill C-6*, Standing Committee on Transport, Infrastructure and Communities, 21 February 2007 (39th Parliament) [*Hearing - Bill C-6*].

³⁴⁶ Sarah Schmidt, *supra* note 338.

³⁴⁷ Andrew Hopkins, *supra* note 115 at 213.

³⁴⁸ Transport Canada, *supra* note 318.

³⁴⁹ Aeronautics Act, supra note 263, sec 4.2; Canwest News Service, "Transport investigator calls of aviation safety inquiry", *OCanada.com* (28 February 2007), online: http://www.canada.com/story.html?id=56bc4176-49a8-4292-b09e-decf5b17c5bd>.

³⁵⁰ CBC Radio, "Air Safety Regulation on 'The Current", *CBC Radio* (13 May 2014), online: <http://www.safeskies.ca/news/current_air_safety>.

"Our concern is having the airlines establish regulations and govern themselves. We just don't think in this competitive, commercial environment of the airline industry anywhere in the world that this is a good way to go right now. Maybe later on, when we can have that safety culture established, but right now we don't have a safety culture."³⁵¹

ICAO has stated that a strong oversight system is a necessary prerequisite for SMS and that without a healthy and mature regulatory surveillance program already established, States will struggle to harvest any benefits from SMS.³⁵² This is because States must become a dynamic factor in the industry's overall safety culture and demonstrate a strong commitment towards safety with their continued presence in the surveillance of aviation. Evidently, Canada has embarked on a completely different path, which is endangering the traveling public.

3.5 Is Canada Deregulating Aviation Safety?

Although Canada is not the only country struggling with adequate oversight,³⁵³ it has forfeited optimal safety by eliminating TC's regulatory safety inspections. Indeed, TC abandoned its inspection program even before SMS implementation had been completed for 705 carriers, thus temporarily leaving the industry with minimal safeguards. In 2014, the CFPA conducted a survey of TC's aviation inspectors regarding Canada's SMS safety regime. The survey revealed the following concerns regarding the risks created by SMS to the traveling public:

- "Effective oversight, other than in an administrative manner, is practically non-existent.
- Nine-in-ten aviation inspectors report that Transport Canada's SMS *prevent* the corrections of safety problems in a timely fashion. (...)

• 84% of aviation inspectors expect a major aviation accident or incident in the near future after working in an SMS environment for the past seven years, up from 74% who held this view in 2007.

• Two-thirds (67%) believe Transport Canada's SMS will actually increase the chances of a major aviation accident or incident, up slightly from 2007 when 61% held this view.

³⁵¹ *Hearing - Bill C-6*, Standing Committee on Transport, Infrastructure and Communities, 26 February 2007 (39th Parliament) [*Hearing - Bill C-6*].

³⁵² Mikolaj Ratajcyk, *supra* note 6 at 406.

³⁵³ John Saba, "Aviation Safety in Crisis: The Option of The International Financial Facility for Aviation Safety (IFFAS)" (2202) 1 Transp Law J 1; John Saba, "Worldwide Safe Flight: Will the International Financial Facility for Aviation Safety Help it Happen?" (2003) 68 J Air Law Commer 537 at 542; Civil Aviation Safety Authority of Australia, *supra* note 78 at 13.

• 85% of respondents believe air travellers have been exposed to higher risk as a result of Transport Canada's aviation SMS, up significantly from 2007 when 67% forecast this outcome."³⁵⁴

Given that some airlines can now go uninspected for up to 5 years under the new SMS regime,³⁵⁵ many prominent aviation experts, including Justice Moshansky, have argued that the SMS approach adopted by Transport Canada might constitute *self-regulation*,³⁵⁶ and reflects what has been described as a neoliberal approach to safety oversight.³⁵⁷ Although Alfred Kahn asserted that authorities never deregulated safety during Canada's economic deregulation of the airline market in the late 1980s,³⁵⁸ many believe that operators are left policing safety themselves with SMS.³⁵⁹ TC has stated that "that this assessment is common but not accurate, given that the SMS requirements are themselves regulations and that no regulations have been removed since SMS was introduced."360 But if one reads TC's actual policy statement regarding SMS, it is difficult to see how SMS does not constitute self-regulation:

"Transport Canada agrees to promote *voluntary compliance* with regulatory requirements, without necessarily resorting to punitive action, by providing certificate holders governed by an SMS, the opportunity to determine, by themselves, proposed corrective measures to prevent recurrence of a contravention, as well as the best course of action to help foster future compliance."361

³⁵⁴ Canadian Federal Pilots Association (CFPA), *supra* note 342; Abacus Data & Canadian Federal Pilots Association (CFPA), "Research Findings - Aviation Safety Inspector Study", (March 2014), online: Can Fed Pilots Assoc <www.cfpa-apfc.ca/eng/docs/CFPA_UCTE Report April9-v3.pptx>.

³⁵⁵ Canadian Federal Pilots Association (CFPA), supra note 342; "Aviation inspectors raise 'red flag' over airline safety". CBC News (24 April 201AD), online: http://www.cbc.ca/news/business/aviation-inspectors-raise-red-flag- over-airline-safety-1.2620472>.

³⁵⁶ CBC News, "Critics slam changes to aircraft safety inspection system", CBC News (2 September 2008), online: http://www.cbc.ca/news/critics-slam-changes-to-aircraft-safety-inspection-system-1.698546>; Hearing - Bill C-6, Standing Committee on Transport, Infrastructure and Communities, 28 February 2007 (39th Session of Parliament) [*Hearing - Bill C-6*]. ³⁵⁷ Bertrand Shepper, *Les effets de la déréglementation sur la tragédie de Lac-Mégantic*, Environement (Montréal,

QC: Institut de recherche et d'informations socio-économiques, 2013).

³⁵⁸ Paul Stephen Dempsey & Laurence E. Gesell, *supra* note 10 at 961; PBS Newshour, "The Legacy of Airline Deregulation", PBS Newshour (9 January 2003), online: . ³⁵⁹ Wayne Benedict, *supra* note 307 at 159; Bertrand Shepper, *supra* note 358.

³⁶⁰ Standing Committee on Transport, Infrastructure and Communities, Interim Report on Rail Safety Review: Report of the Standing Committee on Transport, Infrastructure and Communities (Ottawa, ON: House of Commons - Canada, 2014) at 13.

³⁶¹ Transport Canada, Civil Aviation Directive (CAD) No. 107-004 - Aviation Enforcement - Safety Management Systems, Oversight Z 5000-7-1 (Ottawa, ON: Transport Canada, 2009).

Even if SMS does not constitute safety deregulation in theory,³⁶² informants #3 and #5 both concluded that this policy has that effect in practice. Some members of Parliament have agreed that TC promotes a 'hands-off' policy forcing inspectors to rely on the good graces of airlines to police their own operations and voluntarily report non-compliance. ³⁶³ Justice Moshansky has even asserted that he does not believe "that SMS, without effective regulatory oversight, would have prevented the accident at Drvden."³⁶⁴ Informant #2 argued that TC's policy is similar to telling an automobile driver that police officers will not monitor the speed limits anymore, but that if he drives over the speed limit, he should turn himself in to receive his speeding ticket.³⁶⁵ Even if a carrier in fact voluntarily reports a violation, it may not face any sanction. TC's Civil Aviation Directive (CAD) No. 107-004³⁶⁶ states that if a carrier commits a serious violation of the CARs (e.g. landing without clearance), reports it and provides a corrective action, it will have complied with SMS regulations and pre-empt any enforcement action by TC.³⁶⁷ Consequently, a carrier cannot in theory be sanctioned by TC, even for serious violations, as long as there is no evidence of negligence.³⁶⁸ By abdicating enforcement strategies, some have even argued that TC is granting airlines a 'Get-Out-of-Jail Free Card'.³⁶⁹ How is that not self-regulation?

This is a preposterous approach, since the motivations of airlines to comply with safety requirements include the deterring effect of regulatory surveillance, rather than impartial altruism.³⁷⁰ The best way to encourage safety for airlines is to provide them with an incentive to comply with the law (e.g. compliance with proactive SMS reporting) balanced with a disincentive to violate the law, such as regular surveillance activities to keep carriers on the

³⁶² Kathleen Fox, *supra* note 23 at 15; Ruwantissa Abevratne, "Investing in Air Transport - A Prudent Move?" (2007) 34 Transp Law J 327 at 343.

³⁶³ Hearing -Bill C-6, supra note 335.

³⁶⁴ Hearing - Bill C-6, supra note 267.

³⁶⁵ CBC News, "Flight policy change called a risky manoeuvre", CBC News (9 November 2011), online: <http://www.cbc.ca/news/canada/flight-policy-change-called-a-risky-manoeuvre-1.1087729>.

³⁶⁶ Transport Canada, *supra* note 362.

³⁶⁷ Transport Canada, Staff Instruction (SI) No. SUR-006 - Safety Management Systems—Civil Aviation Non-Compliance Event Review, Z 5000-7-1 (Ottawa, ON: Transport Canada, 2010); Transport Canada, supra note 362 at Appendix A.

 ³⁶⁸ Transport Canada, *supra* note 368.
 ³⁶⁹ Standing Committee on Transport, Infrastructure and Communities, "Study: Bill C-6, An Act to amend the Aeronautics Act and to make consequential amendments to other Acts - June 6th, 2007 Meeting (39th Legislature, 56th Meeting)", (2007), online: Parliam Can

<http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=3011974&Language=E&Mode=1&Parl=39&Se s=1>.

³⁷⁰ Andrew Hopkins, *supra* note 115 at 219; Neil Gunningham & Darren Sinclair, *supra* note 127 at 869.

lookout for safety deviations.³⁷¹ Most informants agreed that we cannot rely entirely on the system's self-regulation. Regulatory inspections should be reinstated, since these are more assertive and effective.³⁷²

All informants agreed that SMS was partly implemented as a cost-saving measure by TC to reduce the number of inspectors in the field. Hence, the financial burden of safety had almost entirely shifted to the airlines.³⁷³ This is a dangerous strategy, because in the balance of profitability versus safety, the Dryden accident has demonstrated that cash-strapped airlines will likely prioritize profitability.³⁷⁴ Alfred Kahn stated that the intensive competition in the post-deregulation era might have the adverse effect of forcing airlines to cut corners on safety.³⁷⁵ We can conclude that managing economic competition and safety concerns simultaneously can generate a deadly conflict of interest for airlines.³⁷⁶ The AGC even concluded that "Transport Canada is not adequately managing the risks associated with its civil aviation oversight."³⁷⁷ This is mainly because TC has not established a minimum acceptable level of surveillance, thus leaving it to each airline to set its own safety standards.³⁷⁸

Currently, TC is not even close to having enough safety inspectors to ensure appropriate levels of safety.³⁷⁹ TC currently employs around 850 safety inspectors, well short of the 1,400 employed during the Dryden accident and the 1,800 inspectors recommended by the Moshansky Inquiry.³⁸⁰ The low number of inspectors policing the airlines can be interpreted as another example of self-regulation in practice. Thus, sufficient oversight must start with increasing the number of inspectors available to oversee the industry. Considering that TC is "uniquely placed as one of the potentially most effective defences against organisational accident," ³⁸¹ direct

³⁷¹ Dennis L Bryant, "The Maritime Compliance Program: Foghorn Protection for the Shipowner" (2000) 24:2 Tulane Marit Law J 591 at 592.

³⁷² Ruwantissa Abeyratne, "Prevention of Controlled Flight into Terrain: Regulatory and Legal Aspects" (2000) 27 Transp Law J 159 at 172.

³⁷³ The Honourable Virgil P. Moshansky, & Donald L Van Dyke, *supra* note 327 at 9; *Hearing - Bill C-6, supra* note 357 at 28.

³⁷⁴ The Honourable Virgil P. Moshansky, & Donald L Van Dyke, *supra* note 327 at 9.

³⁷⁵ Alfred Kahn, "Airline Deregulation - A Mixed Bag, But a Clear Success Nevertheless" 16 Transp Law J 229; Paul Stephen Dempsey & Laurence E. Gesell, *supra* note 10 at 697.

³⁷⁶ Wayne Benedict, *supra* note 307 at 164; National Aerospace Laboratory NLR, *supra* note 48 at 64.

³⁷⁷ Office of the Auditor General of Canada, *supra* note 266 at 28.

³⁷⁸ Hearing - Bill C-6, supra note 357 at 3.

³⁷⁹ Office of the Auditor General of Canada, *supra* note 266 at 25.

³⁸⁰ Hearing - Bill C-6, supra note 357 at 4.

³⁸¹ National Aerospace Laboratory NLR, *supra* note 48 at 17.

interventionism through systematic safety inspections will afford the industry, and more importantly, the traveling public, with a critical safety defence. In light of this, Canada should listen to ICAO's recommendation advising member States to have a high-level political commitment towards oversight and adequate resources to fully fulfil their aviation safety-related responsibilities.³⁸²

3.6 A Deadly Learning Curve - Breaking the Myth of Perfection

Several investigation reports have demonstrated that inadequate oversight can be a causal factor to major accidents.³⁸³ While TC continues to boast about Canada's impeccable safety record,³⁸⁴ its misconception about the inherent risks associated to aviation has led to a lack of awareness of the industry's actual risks.³⁸⁵ Seven recent accident investigation reports from TSB concerning carriers with SMS processes in place ³⁸⁶ have commented on the industry's challenging and sometimes deadly transition to SMS.³⁸⁷ In all of these accident reports, SMS processes failed partially or systematically and TC was not able to properly identify these deficiencies with operational inspections. In the First Air accident for instance, the airline's inadequate CRM training was not identified by TC due to a lack of on-site inspections to verify compliance with regulatory training requirements.³⁸⁸ Some of these accidents could have been

³⁸² International Civil Aviation Organization, *supra* note 329 at 1–1.

³⁸³ National Aerospace Laboratory NLR, *supra* note 48 at 100; The Honourable Virgil P. Moshansky, & Donald L Van Dyke, *supra* note 327.

 ³⁸⁴ Hearing - Bill C-6, Standing Committee on Transport, Infrastructure and Communities, 23 April 2007 (39th Parliament) [Hearing - Bill C-6].

³⁸⁵ Jacqueline L Weaver, "Offshore Safety in the Wake of the Macondo Disaster: Business as Usual or Sea Change?" (2014) 36 Houst J Int Law 147 at 164.

³⁸⁶ Transportation Safety Board of Canada, *Runway Overrun, Kelowna Flightcraft Air Charter Ltd., Boeing 727-281, C-GKFJ, St. John's, Newfoundland and Labrador, 16 July 2011,* Aviation Investigation Report A11A0035 (Gatineau, QC: Transportation Safety Board of Canada, 2013); Transportation Safety Board of Canada, *Erroneous air data indications, Sunwing Airlines Inc., Boeing 737-8Q8, C-FTAH, Toronto–Lester B. Pearson International Airport, Toronto, Ontario, 13 March 2011,* Aviation Investigation Report A1100031 (Gatineau, QC: Transportation Safety Board of Canada, 2013); Transportation Safety Board of Canada, *Pitch Excursion, Air Canada, Boeing, 767– 333, C–GHLQ, North Atlantic Ocean, 55°00'N 029°00'W, 14 January 2011,* Aviation Investigation Report A11F0012 (Gatineau, QC: Transportation Safety Board of Canada, 2013); Transportation Safety Board of Canada, *Main Gearbox Malfunction/Collision with Water, Cougar Helicopters Inc., Sikorsky S-92A, C-GZCH, St. John's, Newfoundland and Labrador, 35 nm E, 12 March 2009,* Aviation Investigation Report A09A0016 (Gatineau, QC: Transportation Safety Board of Canada, 2013); Transportation Safety Board of Canada, *Tunway, Jetport Inc. Bombardier BD-700-1A11 (Global 5000), C-GXPR, Fox Harbour Aerodrome, Nova Scotia, 11 November 2007,* Aviation Investigation Report A07A0134 (Gatineau, QC: Transportation Safety Board of Canada, 2013); Transportation Safety Board of Canada, *supra* note 310; Transportation Safety Board of Canada, *supra* note 119.

³⁸⁷ Transportation Safety Board of Canada, *supra* note 119 at 95.

³⁸⁸ Transportation Safety Board of Canada, *supra* note 119.

prevented if TC had eyes in the field monitoring the actual safety performance of these carriers, instead of reading over the airline's paperwork. To this effect, the TSB stated in its 2014 Watchlist that:

"SMS on its own is not enough. That's why we are calling on (TC) to regularly oversee all safety management systems and processes to ensure they are effective. When transportation companies are unable to effectively manage safety, TC must intervene in a way that succeeds in changing unsafe operating practices."³⁸⁹

Evidence demonstrating the insufficient level of safety oversight provided by TC is reflected in several TSB reports. In 2001, the TSB concluded that in certain areas of commercial operations, such as smaller operators in remote areas of the country, "the safety oversight efforts of TC have been somewhat ineffective"³⁹⁰ and that "there is a deficiency in TC's safety oversight program."³⁹¹ TSB concluded in the investigation reports for two fatal crashes that TC's poor level of safety oversight was a *direct contributing factor* to the accidents themselves.³⁹² In its 2012 Aviation Watchlist, the TSB stated that:

"Transport Canada does not always provide effective oversight of aviation companies transitioning to safety management systems, while some companies are not even required to have one. (...) Transport Canada must effectively monitor the integration of SMS practices into day-to-day operations."³⁹³

In one instance, TSB concluded that TC's ineffective surveillance did not ensure regulatory compliance and that unsafe practices were subsequently allowed to persist ³⁹⁴ Moreover, TC's inadequate surveillance of business aircraft operating under the Canadian Business Aviation Association (CBAA) was deemed be inadequate in the investigation of the

³⁸⁹ Transportation Safety Board of Canada, "TSB's 2014 Watchlist highlights eight significant transportation safety issues", (26 November 2014), online: Transp Saf Board Can <http://tsb.gc.ca/eng/medias-

media/communiques/autres-other/2014/20141126.asp>. ³⁹⁰ Transportation Safety Board of Canada, Aviation Recommendation A01-01 - Reassessment of the Responses from Transport Canada to Aviation Safety Recommendation A01-01 (Regulatory Safety Oversight) (Gatineau, QC: Transportation Safety Board of Canada, 2014).

³⁹¹ Ibid.

³⁹² Transportation Safety Board of Canada, Loss of Control and Collision with Terrain, Nordair Québec 2000 Inc., de Havilland DHC-2 Mk, 1 C-FGYK, La Grande-Rivière, Airport, Ouebec, 24 July 2010, Aviation Investigation Report A10Q0117 (Gatineau, QC: Transportation Safety Board of Canada, 2013); Transportation Safety Board of Canada, Engine Problem - Collision with Terrain, Aéropro (2550-4330 Québec Inc.), Beechcraft A100 King Air C-FGIN, Ouébec, Ouebec, 23 June 2010, Aviation Investigation Report A1000098 (Gatineau, OC: Transportation Safety Board of Canada, 2014).

³⁹³ Transportation Safety Board of Canada, Watchlist Fact Sheet — Air: Air safety management systems (Gatineau, QC: Transportation Safety Board of Canada, 2012). ³⁹⁴ Transportation Safety Board of Canada, *supra* note 393.

2007 crash of a Jetport Inc. Bombardier Global Express in Fox Harbour (Nova Scotia).³⁹⁵ Ineffective oversight of SMS does not have exclusive boundaries in the aviation industry and is a cancer that is now spreading to marine and rail transportation, as illustrated by some recent accident reports.396

3.7 Air Mégantic - An Accident Waiting to Happen

Although SMS has yet to contribute to a tragic meltdown of aviation safety, the TSB's concerns for the safety of transportation materialized in 2013 when a Montreal, Maine & Atlantic Railway (MMA) train carrying crude oil derailed in the town of Lac-Mégantic and caused a massive explosion, killing 47 people and destroying most of the city's downtown core.³⁹⁷ In its final investigation report, the TSB concluded that TC had failed to provide adequate oversight of MMA's deficient SMS and that this was a causal factor contributing to the accident for the following reasons:³⁹⁸

- TC did not follow up on recurring safety deficiencies at MMA and did not ensure • that proper risk management measures were actually put in place to correct serious problems. Consequently, unsafe practices persisted.³⁹⁹
- SMS systems audits by TC were limited and their scope was inadequate.⁴⁰⁰

³⁹⁶ Transportation Safety Board of Canada, Grounding, Roll-on/roll-off passenger vessel Jiimaan, Approaching Kingsville Harbour, Ontario, 11 October 2012, Marine Investigation Report M12C0058 (Gatineau, QC: Transportation Safety Board of Canada, 2014); Transportation Safety Board of Canada, "News Release - TSB is concerned about TC oversight of new passenger safety regulations as part of Jiimaan grounding investigation", (10 March 2014), online: Transp Saf Board Can http://www.bst-tsb.gc.ca/eng/medias-

media/communiques/marine/2014/m12c0058-20140310.asp>; Transportation Safety Board of Canada, Runaway/Derailmentm Canadian National, Freight Train L-567-51-29, Mile 184.8, Lillooet Subdivision, Near Lillooet, British Columbia, 29 June 2006, Railway Investigation Report R06V0136 (Gatineau, QC: Transportation Safety Board of Canada, 2013). ³⁹⁷ CBC News, "TIMELINE: Lac-Mégantic rail disaster - Explosion heavily damages Quebec town", *CBC News* (7

³⁹⁸ Transportation Safety Board of Canada, *Runaway and main-track derailment, Montreal, Maine & Atlantic* Railway, Freight train MMA-002, Mile 0.23, Sherbrooke Subdivision, Lac-Mégantic, Ouebec, 06 July 2013, Railway Investigation Report R13D0054 (Gatineau, QC: Transportation Safety Board of Canada, 2014) at 130-131. ³⁹⁹ *Ibid* at 130.

³⁹⁵ Transportation Safety Board of Canada, *supra* note 387.

October 2013), online: http://www.cbc.ca/news2/interactives/timeline-lac-megantic/.

⁴⁰⁰ *Ibid* at 130.

- TC did not conduct any follow up actions to ensure that the operator was implementing the recommended corrective actions. Consequently, systemic weaknesses in the SMS were not addressed.⁴⁰¹
- There is a heightened risk that operators will not manage safety effectively without proper and recurrent SMS audits by TC.⁴⁰²
- TC does not sufficiently monitor the overall national safety. TC's regional offices cannot guarantee that the public's safety is protected in every region and ensure that the risks to the public are being properly managed.⁴⁰³

We can draw several similarities between the TSB's conclusions in the Lac-Mégantic report with the current level of safety in aviation. If these similarities are not urgently corrected in the aviation industry, it is only a matter of time before a carrier's negligent use of SMS processes contributes to a fatal accident.⁴⁰⁴ In the Mégantic case, it is evident that inadequate surveillance of a rail operator's activities endangered rail safety and ultimately cost the lives of many innocent citizens. Although there are fundamental differences between rail and air transportation, namely the punitive working culture in the rail industry, the Lac-Mégantic accident demonstrated how leaving operators with a weak safety culture to manage their own safety can constitute a serious hazard to society.⁴⁰⁵ In the past few years, the TSB has repeatedly criticized TC's "failure to identify companies' ineffective processes, and an imbalance between auditing processes versus traditional inspections."⁴⁰⁶ Even if companies fill out SMS checklists and have adequate safety manuals, TC must send inspectors out in the field and ensure that the carrier's actual actions and behaviour reflect the company's paperwork. TC must be able to intervene when companies are not using their SMS correctly to put an end to any unsafe or unlawful practices.⁴⁰⁷

⁴⁰¹ *Ibid* at 130.

⁴⁰² *Ibid* at 131.

⁴⁰³ *Ibid*.

 ⁴⁰⁴ Amber Hildebrandt, "Transport Canada's lax safety regime goes beyond rail", *CBC News* (21 August 2014), online: http://www.cbc.ca/news/canada/transport-canada-s-lax-safety-regime-goes-beyond-rail-1.2741610.
 ⁴⁰⁵ Bruce Cheadle, "Rail-safety audit days before fatal Quebec crash found 'significant weaknesses' in government oversight", *Financ Post* (26 November 2014), online: <a href="http://business.financialpost.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-regime-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-safety-goes.com/2013/11/26/rail-

audit-days-before-fatal-lac-megantic-crash-found-significant-weaknesses-in-oversight/>.

⁴⁰⁶ Transportation Safety Board of Canada, *supra* note 294.

⁴⁰⁷ *Ibid*.

It took the tragic deaths of 47 people for the Canadian Parliament to react and instigate an extensive policy review of the role of SMS in all modes of transportation, including commercial air transportation.⁴⁰⁸ Will the aviation industry wait until it is too late and have its own '*Air Mégantic*' tragedy before it reacts in a similar fashion? Coupled with the dismantling of effective regulatory oversight by TC and the lack of safety inspectors, Justice Moshansky argued in 2007 that "18 years after Dryden, history is repeating itself, only worse."⁴⁰⁹ He further stated before ICAO that: "Pressing economic conditions, diminished regulatory oversight, and inadequate aviation legislation preceded Dryden; these symptomatic precursors seem again to be with us."⁴¹⁰

We should not ask ourselves if we will have our own *Air Mégantic* in the aviation industry, but rather when and where.⁴¹¹ Will it require a large airliner to crash in a major city like Montreal or Toronto before the government realizes it should provide safety inspections to protect the travelling public? As stated by Paul Dempsey, "[T]he development of aviation policy has long been a reactive, rather than a proactive, process."⁴¹² For instance, before the enactment of the Aviation and Transportation Security Act of 2001 (ATSA),⁴¹³ security screening in the U.S. was delegated to struggling airlines until security deficiencies were exploited on 9/11.⁴¹⁴ Canada has approached SMS in a very similar fashion and until we react to TC's complacent oversight and SMS policies, Canadian carriers might suffer a similar tragic fate.⁴¹⁵ SMS is a brilliant approach to safety in theory, but without a structured and balanced oversight from the government, there is the potential for a serious accident. The Chair of the TSB, Kathy Fox, stated

⁴⁰⁸ The Honourable Lisa Raitt - Minister of Transport, "Review - Standing Committee on Transport, Infrastructure and Communities", (18 November 2013), online: *Parliam Can*

<http://www.parl.gc.ca/Content/HOC/Committee/412/TRAN/WebDoc/WD6308134/412_TRAN_reldoc_PDF/412_ TRAN_reldoc-e.pdf>; CBC News, "Lac-Mégantic: Lisa Raitt announces rail safety rules based on crash findings", *CBC News* (29 October 2014), online: <http://www.cbc.ca/news/politics/lac-m%C3%A9gantic-lisa-raitt-announcesrail-safety-rules-based-on-crash-findings-1.2816680>; Standing Committee on Transport, Infrastructure and Communities, *supra* note 361; Gordon Isfeld, "Ottawa tightens railway safety measures in wake of Lac-Megantic train disaster", *Financ Post* (29 October 2014), online: <http://business.financialpost.com/2014/10/29/ottawatightens-railway-safety-measures-in-wake-of-lac-megantic-train-disaster/>.

⁴⁰⁹ CBC News, "Transport Canada cutbacks troubling, says Dryden crash inspector", *CBC News* (10 March 2009), online: http://www.cbc.ca/news/canada/transport-canada-cutbacks-troubling-says-dryden-crash-inspector-1.862620>.

⁴¹⁰ The Honourable Virgil P. Moshansky, & Donald L Van Dyke, *supra* note 327 at 9.

⁴¹¹ Canadian Federal Pilots Association (CFPA), *supra* note 342.

 ⁴¹² Paul Stephen Dempsey - "Aviation Security: The Role of Law in the War against Terrorism", *supra* note 4 at 649.
 ⁴¹³ Aviation and Transportation Security Act, 19 November 2001, Pub 107–71 115 Stat 597 [Aviation and Transportation Security Act].

⁴¹⁴ Paul Stephen Dempsey - "Aviation Security: The Role of Law in the War against Terrorism", *supra* note 4 at 712.

⁴¹⁵ Paul Stephen Dempsey & Laurence E. Gesell, *supra* note 10 at 798–799.

that inadequate oversight is a serious problem.⁴¹⁶ She further concluded that the efficiency of SMS depends on effective oversight and that SMS should not be a replacement for regulation or a substitute for oversight.⁴¹⁷

3.8 Summary

History has demonstrated that many sections in the CARs have been written in the aftermath of serious accidents, such as Air Ontario Flight 1363.⁴¹⁸ Unless TC proactively responds by reinstating traditional safety inspection methods, this tragic tendency will perpetuate itself. Canada has the benefit of already knowing the current gaps in its SMS regime and it should therefore act accordingly before history repeats itself. In summary, the following solutions are forwarded to ensure safety throughout aviation in Canada:

- 1. The Minister of Transport should reinstate traditional forms of oversight (i.e. the NAP) combining operational safety inspections of all airlines, with the new SMS audits.
- 2. The delegation of regulatory oversight activities to the industry for commercial airlines should be reversed and Transport Canada should clearly establish the acceptable levels of safety for SMS,
- Transport Canada should be provided with sufficient resources to oversee the industry properly (e.g. inspectors, training and monitoring tools) and to develop adequate SMS guidance resources for carriers.
- 4. The implementation of SMS for smaller 703 and 704 carriers should be reviewed. The framework should be tailored to enable them to institute and operate SMS in the most cost-effective and simplest manner possible consistent with safety.

⁴¹⁶ Transportation Safety Board of Canada, *supra* note 317.

⁴¹⁷ Review of the Canadian Transportation Safety Regime, Kathy Fox, 1 April 2014 (41st Parliament) [Review of the Canadian Transportation Safety Regime].

⁴¹⁸ See René David-Cooper, "Don't Drink and Drive, Smoke and Fly: A Clearance for Pilots to Get High?" (2014) 29 Ann Air Space Law 529.

Chapter 4 -The Confidentiality of SMS Data: Evaluating the Vulnerability of Canadian Carriers

4.1 The Current Protection of SMS Data Under Law

The objective of this chapter is to illustrate how public disclosure of SMS information could have adverse consequences on the quantity and quality of data provided by airline personnel. As explained in previous chapters, SMS relies on incident reporting systems facilitating the extensive collection of information related to safety hazards.⁴¹⁹ The importance of continuous data collection improves the overall safety learning process, provides the basis for a solid understanding of the strengths and weaknesses of aviation operations and prevents accidents.⁴²⁰ In order to abide with their regulatory SMS obligations, Canadian airlines must expose their entire operations to regulatory agencies utilizing an "open-book policy" and sometimes must disclose very sensitive information must be logged into SMS databases (SDCPS) and monitored by database operators. When a State regulator conducts external SMS audits for a specific airline (e.g. PVIs), the SDCPS is the prime source of information for demonstrating the operator's compliance with SMS regulations. By establishing a clear audit trail for every operational imperfection and non-conformity, SDCPs provide clear evidence as to whether or not SMS is being properly managed by an operator.⁴²²

For obvious reasons, such as protecting an airline's competitive position and maintaining public trust, ICAO has stated that safety-sensitive SDCPS information provided by an airline should remain confidential: "Efforts to ensure the protection of safety information must strike a very delicate balance between the need to protect safety information, the need for quality control,

⁴¹⁹ Annex 19 to the Convention on International Civil Aviation - Safety Management, supra note 147, chap 5–1. ⁴²⁰ International Civil Aviation Organization - Safety Management Manual, supra note 16 at 4–App 5–1;

International Civil Aviation Organization (ICAO), *Documentation for the session of the Assembly in 2013: Annual Report of the Council*, Doc9952 (Montréal, QC: International Civil Aviation Organization, 2010) at 15. ⁴²¹ Canadian Aviation Regulations, supra note 36, sec 705.153(1)(a).

⁴²² Susan Scott Hayes, "The Freedom of Information Act in Air Crash Discovery: Friend or Foe?" (1986) 52 J Air Law Commer 479 at 480–481.

the need for safety risk management and the proper administration of justice."⁴²³ As illustrated by Annex 19, one of the fundamental postulates of SMS is the absolute confidentiality of safety data from unwarranted disclosure.⁴²⁴

To ensure an atmosphere of trust where employees feel encouraged to share safety information, without the overlying doubt that their reports might be released to third parties, Canada must establish an environment of *Just Culture* in the aviation industry.⁴²⁵ Eurocontrol⁴²⁶ defines *Just Culture* as "a culture in which front line operators and others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated."⁴²⁷ James Reason has concluded that Just Culture is a prerequisite for the adoption of a *Reporting Culture* where employees feel comfortable reporting safety incidents.⁴²⁸ This concept provides enhanced cooperation between safety and judicial authorities to protect SMS data from being disclosed in the public domain or in judicial proceedings.⁴²⁹ This in turns ensures that safety information remains confidential over time and encourages incident reporting across the industry.⁴³⁰ The use of SMS information by a third party, other than TC or its proprietary owner (e.g. the carrier) will effectively suppress the industry's Just Culture, as it impedes on the carrier's ability to gather further safety information in the future.⁴³¹ SMS data should only be

^{42/} Eurocontrol, "Just Culture: Finding the right balance between the aviation, judicial and political authorities", (2014), online: *Eurocontrol* https://www.eurocontrol.int/articles/just-culture; Roderick D van Dam, "The Just Culture Initiative - ICAO / McGill Conference", (2007), online: *Inst Air Space Law - McGill Univ* https://www.eurocontrol.int/articles/just-culture; Roderick D van Dam, "The Just Culture Initiative - ICAO / McGill Conference", (2007), online: *Inst Air Space Law - McGill Univ*

Air Disasters: What Goal if Any, is Being Achieved?" (2011) 76 J Air Law Commer 407 at 451; Mervyn E Bennun & Gavin McKellar, "Flying Safely, The Prosecution of Pilots, and the ICAO Chicago Convention: Some Comparative Perspectives" (2009) 74 J Air Law Commer 737.

⁴²³ International Civil Aviation Organization - Safety Management Manual, *supra* note 16 at 4–App 5–1.

⁴²⁴ Annex 19 to the Convention on International Civil Aviation - Safety Management, supra note 147, chap 5 and Attachement B.

 ⁴²⁵ James Reason, *Managing the Risks of Organizational Accidents* (Farnham, United Kingdom: Ashgate Publishing Company, 1997); Mildred Trogeler, *supra* note 170.
 ⁴²⁶ Eurocontrol is an international organisation composed of Member States from the European Region providing

 ⁴²⁶ Eurocontrol is an international organisation composed of Member States from the European Region providing Air Traffic Services across most of Europe.
 ⁴²⁷ Eurocontrol, "Just Culture: Finding the right balance between the aviation, judicial and political authorities",

⁴²⁸ James Reason, "Achieving a Safe Culture: Theory and Practice" (1998) 12:3 Work Stress 293 at 305.

⁴²⁹ Eurocontrol, "Just Culture Policy", (September 2012), online:

http://www.eurocontrol.int/sites/default/files/publication/files/201209-just-culture-policy.pdf. 430 Mildred Trogeler, *supra* note 170.

⁴³¹ Federal Aviation Administration, *Safety Management Systems for Part 121 Certificate Holders*, CRF NPRM FAA-2009-0671; Notice No. 10-15 (Washington, DC: Federal Aviation Administration, 2010) at 10.
accessed on a "need-to-know" basis and limited to TC employees, TSB investigators and a carrier's manager or safety officer.⁴³²

Unless an event is caused by wilful negligence, gross negligence or reckless behaviour, Annex 13 to the Chicago Convention⁴³³ states that safety-related data (e.g. SMS) must be granted absolute confidentiality protection under national laws, which should allow disclosure only in *exceptional* circumstances.⁴³⁴ The fundamental principle of safety data protection was also reiterated in 2014 by the Flight Safety Foundation (FSF) in a statement encouraging ICAO member States to limit disclosure only to exceptional circumstances where there is a need to foster the development of safety.⁴³⁵ Hence, SMS data should only be used for the two purposes it was designed for: 1) risk assessments conducted by airlines and 2) safety audits conducted by the State.⁴³⁶

In 2003, ICAO's 11th Air Navigation Conference recommended the adoption of guidelines providing "support to States in adopting adequate measures of national law, for the purpose of protecting the sources and free flow of safety information, while taking into account the public interest in the proper administration of justice."⁴³⁷ In 2004, the 35th ICAO Assembly adopted *Resolution A35-17*, which instructed the Council to develop legal guidance for States to enact national laws and regulations affording uniform and consistent confidentiality protection to safety data collection systems, such as SMS.⁴³⁸ A35-17 was preceded by two other ICAO

⁴³² Transport Canada, "Position Paper on Safety Management System Requirements in the Canadian Aviation Regulations and the Health and Safety Policy Requirements of the Canada Labor Code", (10 January 2012), online: *Gov Can* https://www.tc.gc.ca/eng/civilaviation/standards/sms-comparison-616.htm>.

⁴³³ Annex 13 to the Convention on International Civil Aviation - Accident and Incident Investigation (Ninth Edition), supra note 152, para 5.12; International Civil Aviation Organization - Safety Management Manual, supra note 16 at 4–App 5–2 and 5–3.

 ⁴³⁴ A37-2: Non-Disclosure of Certain Accidents and Incident Records, International Civil Aviation Organization (ICAO), November 2010, 1944 Chic Conv [A37-2: Non-Disclosure of Certain Accidents and Incident Records].
 ⁴³⁵ Emily McGee, "FSF Endorses State Letter Arising From ICAO Task Force on Safety Information Protection",

⁴³⁵ Emily McGee, "FSF Endorses State Letter Arising From ICAO Task Force on Safety Information Protection", (27 October 2014), online: *Flight Saf Found FSF* http://flightsafety.org/fsf-endorses-state-letter-arising-from-icao-task-force-on-safety-information-protection. The Flight Safety Foundation "is an international non-profit organization whose sole purpose is to provide impartial, independent, expert safety guidance and resources for the aviation and aerospace industry."

⁴³⁶ See James L Simmons & Jeffrey S Forrest, "United States Aviation Safety Data: Uses and Issues Related to Sanctions and Confidentiality" (2005) 70 J Air Law Commer 83 at 85.

⁴³⁷ International Civil Aviation Organization, *Protection from Safety Data Collection Systems*, 35th ICAO Assembly WP052 (Montréal, QC: International Civil Aviation Organization, 2003).

⁴³⁸ International Civil Aviation Organization, *Protecting Information from Safety Data Collection and Processing Systems in Order to Improve Aviation Safety*, ICAO Assembly Resolution Resolution A35-17 (Montréal, QC: ICAO, 2004).

resolutions, A31-10 and A33-17, which reiterated the importance of protecting safety data under Annex 13.439 Following the 37th ICAO Assembly, the Safety Information Protection Task Force (SIP TF) was instigated to facilitate the development of legal guidance for appropriate protection and use of information generated through safety management processes.⁴⁴⁰ As demonstrated in ICAO's Global Safety Plan for 2014-2016, ICAO firmly believes that protecting safety data remains critical for the overall safety of international transportation and that confidentiality should be a guiding principle in international air law when employing safety management processes.⁴⁴¹ The European Union (EU) also adopted Directive 2003/42/EC to foster the development of Just Culture, protect the confidentiality of safety data and its disclosure outside the purview of incident review processes.⁴⁴²

When the Canadian Government introduced Bill C-6 (An Act to amend the Aeronautics Act and to make consequential amendments to other Acts) to adopt a structured approach to SMS in 2006,⁴⁴³ it made considerable efforts to ensure SMS information remained confidential under law. Unfortunately, the Bill was never passed⁴⁴⁴ and SMS data remains to this day vulnerable to third party disclosure.

4.2 Accessing SMS Data under the Access to Information Act of Canada

Described as quasi-constitutional in nature by the Supreme Court of Canada.⁴⁴⁵ the Access to Information Act⁴⁴⁶ of Canada (ATIA) is paramount over other regular Canadian

⁴³⁹ International Civil Aviation Organization, Resolution A31-10: Improving accident prevention in civil aviation, 31st ICAO Assembly A31-10 (Montréal, OC: International Civil Aviation Organization, 1995); International Civil Aviation Organization, Resolution A33-17: Non-disclosure of certain accident and incident records, 33rd ICAO Assembly A33-17 (Montréal, QC: International Civil Aviation Organization, 2001).

⁴⁴⁰ International Civil Aviation Organization, First Meeting of the Asia Pacific Accident Investigation Group *(APAC-AIG/1)*, APAC-AIG/1-IP/4 (Bali, Indonesia: International Civil Aviation Organization, 2013) at 2. ⁴⁴¹ International Civil Aviation Organization, *2014-2016 Global Aviation Safety Plan*, Safety Reports Doc10004

⁽Montréal, QC: International Civil Aviation Organization, 2013) at 26. ⁴⁴² *Directive 2003/42/EC*, The Council of the European Parliament, 13 June 2003, 16723 [*Directive 2003/42/EC*];

Elaine D. Solomon & Dina L. Relles, supra note 428 at 450; Mildred Trogeler, supra note 170.

⁴⁴³ An Act to amend the Aeronautics Act and to make consequential amendments to other Acts, House of Commons of Canada, 2007 2006, Aeronaut Act [An Act to amend the Aeronautics Act and to make consequential amendments to other Acts].

⁴⁴⁴ "House Government Bill - 39th Parliament, 1st Session (LEGISinfo)", (3 April 2006), online: Parliam Can <http://www.parl.gc.ca/LegisInfo/BillDetails.aspx?Language=E&Mode=1&billId=2164201>.

⁴⁴⁵ Canada (Information Commissioner) v Canada (Minister of National Defence), 2011 SCC 25, [2011] 2 SCR 306, , para 40; Statham v Canadian Broadcasting Corporation, 2010 FCA 315, . ⁴⁴⁶ Access to Information Act, 1985, RSC C -1 [Access to Information Act].

statutes.⁴⁴⁷ It provides every Canadian with the right to access any information under the *custody* of a government institution, 448 subject to a limited number of confidentiality exemptions. Consequently, a carrier's SMS manual and safety data provided to TC in the course of its PVI could be, in a certain shape of form, vulnerable to an access to information (ATI) request. For instance, several attempts were made to obtain MMA's SMS documents in the wake of the Lac-Mégantic tragedy.⁴⁴⁹ The fundamental purpose of the ATIA is to "improve the workings of the government; to make it more effective, responsive and accountable."⁴⁵⁰ Accordingly, the objective of the ATIA is to ensure transparency of the Canadian government.⁴⁵¹ Such a principle should not be extended to safety documents produced by private entities, such as Canadian airlines, when communicated in confidence to government entities.

When the Canadian Standing Committee on Transport, Infrastructure and Communities analyzed the implementation of SMS in 2006-2007, the Director General of Civil Aviation at Transport Canada at the time, Martin Preuss, admitted that SMS audit reports conducted by TC would be accessible under the ATIA.⁴⁵² This obviously raised concerns on the part of industry experts that the potential disclosure of SMS audit reports would have a chilling effect on the encouragement of a just culture and incident reporting by and within Canadian airlines.

The fears of many airlines were confirmed in 2014 when the Federal Court of Canada, in Porter Airlines Inc v Attorney General of Canada,⁴⁵³ ordered TC to disclose its SMS paperwork audit report on Porter Airlines following an ATI request. Under Section 20(1) of the ATIA,

⁴⁴⁷ Peter W Hogg, *Constitutional Law of Canada*, 5th ed (Toronto, Ontario: Carswells, 2007) at 358.

⁴⁴⁸ Access to Information Act, supra note 447, sec 4 (1); Canada (Information Commissioner) v Canada

⁽Commissioner of the Royal Canadian Mounted Police), (2003) 1 SCR 66, 2003 SCC 8, , para 32. ⁴⁴⁹ Wendy Gillis, "Lac-Mégantic disaster: Railway's one-man crew documents kept secret", *Tor Start* (4 April 2014), online:

<http://www.thestar.com/news/canada/2014/04/04/lacmgantic disaster railways oneman crew documents kept s ecret.html>; Wendy Gillis, "Canadian rail safety plans are kept secret from public", Tor Start (5 November 2013), online:

<http://www.thestar.com/news/canada/2013/11/05/canadian rail safety plans are kept secret from public.html>. At the time of writing this thesis, the outcome of these ATI request is unknown.

⁴⁵⁰ Canada (Attorney General) v Canada (Information Commissioner), 2005 FCA 199, leave to appeal to SCC, dismissed, [2005] SCC file 31065, .

⁴⁵¹ Ontario (Public Safety and Security) v Criminal Lawyers' Association, 2010 SCC 23, [2010] 1 SCR 815, para 1; Canada (Information Commissioner) v. Canada (Minister of National Defence), 2011 SCC 25, [2011] 2 S.C.R. 306, supra note 446 at 25; Michel WIlliam Drapeau & Marc-Aurèle Racicot, Federal Access to Information and Privacy Legislation Annotated (Toronto, Ontario: Carswells, 2011) at v.

⁴⁵² Standing Committee on Transport, Infrastructure and Communities, *supra* note 370.

⁴⁵³ Porter Airlines Inc v Attorney General of Canada, 2014 FC 392.

information (e.g. SMS data) supplied by a third party to TC, such as trade secrets, financial, commercial scientific or technical information, are exempted from public disclosure.⁴⁵⁴ Hence, raw SMS data provided by Porter Airlines to TC during a PVI is protected under law from disclosure.⁴⁵⁵ However, the Court stated that the "jurisprudence has consistently held that regulatory conclusions are generally not subject to the exemptions, whereas information supplied to the Department for its regulatory assessment generally is." ⁴⁵⁶ Consequently, TC's own analysis and observations concerning the confidential safety data logged into an airline's SMS are not precluded from disclosure.⁴⁵⁷ An identical approach regarding TC audits had previously been adopted by the Federal Court in *Air Atonabee Ltd. V Canada (Minister of Transport)*⁴⁵⁸ and in *Air Transat AT Inc v Canada (Transport Canada)*.⁴⁵⁹

In the *Air Transat* case, the Federal Court established a dichotomy between the SMS information provided by a third party to Transport Canada and the Department's regulatory conclusions: "A distinction should be made between the analysis done by the government organization from information obtained during the inspection and the information supplied directly to the inspectors by the third party."⁴⁶⁰ In other words, audit reports cannot be considered as third party information, because they reflect TC's individualized analysis of the carrier's SMS. Although direct references concerning confidential information are to be partially exempted from disclosure, the Courts have stated that "effective and creative redaction"⁴⁶¹ permits disclosure of interpretative and analytical material concerning confidential SMS information. This interpretation by the courts is flawed, since paragraph 5.12 of ICAO's Annex 13 specifies that opinions expressed in the analysis of information shall not be made available for purposes other than accident or incident investigation.⁴⁶² References to confidential data made in audit reports have the practical effect of diminishing the privileged status of such information if released

⁴⁵⁴ Access to Information Act, supra note 447, sec 20(1).

⁴⁵⁵ Porter Airlines Inc. v. Attorney General of Canada, 2014 FC 392, supra note 454, para 74.

⁴⁵⁶ *Ibid*, para 23.

⁴⁵⁷ Air Atonabee Ltd v Canada (Minister of Transport), (1989) FCJ no453, para 51; Porter Airlines Inc. v. Attorney General of Canada, 2014 FC 392, supra note 457, paras 21–22.

⁴⁵⁸ Air Atonabee Ltd. v Canada (Minister of Transport), (1989) F.C.J. no.453, supra note 458.

⁴⁵⁹ Air Transat AT Inc v Canada (Minister of Transport), (2001) FCJ no108.

⁴⁶⁰ Ibid, para 14; Merck Frosst Canada Ltd v Canada (Health), 2012 SCC 3, [2012] 1 SCR 23, , para 152.

⁴⁶¹ Porter Airlines Inc. v. Attorney General of Canada, 2014 FC 392, supra note 454, para 25.

⁴⁶² Annex 13 to the Convention on International Civil Aviation - Accident and Incident Investigation (Ninth Edition), supra note 151, para 5.12 e).

publicly. Publishing reports analyzing confidential data is effectively no different than directly disclosing that information.

In *Porter Airlines Inc v Attorney General of Canada*, Porter argued that trust between airlines and authorities can only be fostered if airlines are assured that confidential information will not be leaked to the public.⁴⁶³ It argued that the absence of safeguards protecting sensitive information would "undermine the full and frank disclosure of relevant information by Porter and other airlines,"⁴⁶⁴ provoking adverse effects on the airline industry's entire safety. Therefore, Porter argued that the public interest in maintaining confidential SMS information should outweigh the public's right to transparently access information under the ATIA.⁴⁶⁵ Porter argued it is in the public interest that analysis of SMS data remain confidential, as this will give the airline industry confidence in the SMS regulatory regime and ensure complete cooperation with Transport Canada.⁴⁶⁶ As Porter also observed, audit reports do not describe any positive corrective actions implemented by an airline following an SMS audit, which could demonstrate that an adequate level of safety has now been achieved. These reports mainly highlight deficiencies in a carrier's SMS.

Against this, the Federal Court concluded that public disclosure of the government's assessment of Canada's transportation safety outweighs commercial interests: "As the jurisprudence consistently demonstrates, it is not for the public benefit to maintain confidentiality over regulatory conclusions."⁴⁶⁷ This conclusion fails to take into account the development of a healthy Just Culture by establishing "an atmosphere of trust in which people are encouraged, even rewarded, for providing essential safety-related information." ⁴⁶⁸ Consequently, the Porter decision has endangered the industry's Just Culture and trust towards the alleged confidentiality of the SMS regime.

Not all state judiciaries have concluded that the transparency required by access to information legislation necessarily trumps over all safety considerations. In the Netherlands, for

⁴⁶³ Porter Airlines Inc. v. Attorney General of Canada, 2014 FC 392, supra note 454.

⁴⁶⁴ *Ibid*, para 69.

⁴⁶⁵ See John Parnell, "Review and Appeal in Civil Aviation De-Licensing Regimes: A Comparative Study of New Zealand, Australia and Canada" (2013) 11:3 N Z J Public Int Law 623 at 625.

⁴⁶⁶ Porter Airlines Inc. v. Attorney General of Canada, 2014 FC 392, supra note 454.

⁴⁶⁷ *Ibid*, para 62.

⁴⁶⁸ James Reason, *supra* note 93 at 205.

instance, the Administrative Chamber of the Court in Amsterdam refused to allow, under Dutch ATI legislation,⁴⁶⁹ the disclosure to the media of copies of voluntary statements obtained by the Netherlands Aviation Safety Board during the investigation of the El Al Flight 1862 accident.⁴⁷⁰ The Court concluded the legislation that had empowered authorities to obtain these statements - the Dutch Aviation Accident Act (AAA)⁴⁷¹ - pre-empted the Dutch ATI legislation: "The AAA (...) must be given prevalence whenever a request for information concerns records out of an investigation file."⁴⁷² Albeit transparency is fundamental to every democratic society, the SMS safety's objectives should be an overriding priority recognized by Canadian courts. In light of the Dutch decision, Canadian courts are in a position to offer SMS data a similar interpretation in favor of its confidentiality "without compromising the principles of public information."⁴⁷³

4.3 Measuring the Adverse Business Impact of Data Disclosure on Airlines:

Porter Airlines, Air Transat and Air Atonabee all argued that audit reports should be exempted under section 20.(1)(c) of the ATIA,⁴⁷⁴ precluding disclosure "which could reasonably be expected to result in material financial loss or gain to, or could reasonably be expected to prejudice the competitive position of a third party."⁴⁷⁵ Relying on a previous decision,⁴⁷⁶ the Court in the *Air Transat* case concluded that the third party (e.g. the airline) must demonstrate that disclosure could reasonably be expected to result in material loss or to prejudice its competitive position, and that mere allegations were insufficient.⁴⁷⁷ In support of this conclusion,

 ⁴⁷¹ Act Containing Rules With Regard to the Investigation of Accidents in Civil Aviation (Luchtvaartongevallenwet),
 June 1992, Stb 705 [Act Containing Rules With Regard to the Investigation of Accidents in Civil Aviation (Luchtvaartongevallenwet)].
 ⁴⁷¹ Act Containing Rules With Regard to the Investigation of Accidents in Civil Aviation (Luchtvaartongevallenwet),

^{4/1} Act Containing Rules With Regard to the Investigation of Accidents in Civil Aviation (Luchtvaartongevallenwet), June 1992, Stb 705 [Act Containing Rules With Regard to the Investigation of Accidents in Civil Aviation (Luchtvaartongevallenwet)].

 ⁴⁷¹ Act Containing Rules With Regard to the Investigation of Accidents in Civil Aviation (Luchtvaartongevallenwet),
 June 1992, Stb 705 [Act Containing Rules With Regard to the Investigation of Accidents in Civil Aviation (Luchtvaartongevallenwet)].
 ⁴⁷² Henk Geut, "Freedom of Information Versus Confidentiality in Accident Investigations in The Netherlands"

^{4/2} Henk Geut, "Freedom of Information Versus Confidentiality in Accident Investigations in The Netherlands" (2000) 25:1 Air Space Law 27 at 28; Mildred Trogeler, *supra* note 170 at 24.
⁴⁷³ Roderick D van Dam, "Towards a new Aviation Accident Law in the Netherlands" (1984) 8:2 Air Space Law 83

^{4/3} Roderick D van Dam, "Towards a new Aviation Accident Law in the Netherlands" (1984) 8:2 Air Space Law 83 at 85.

⁴⁷⁴ Porter Airlines Inc. v Attorney General of Canada, (2014) FC 392, supra note 457; Air Atonabee Ltd. v Canada (*Minister of Transport*), (1989) F.C.J. no.453, supra note 461; Air Transat A.T. Inc. v Canada (*Minister of Transport*), (2001) F.C.J. no.108, supra note 463.

⁴⁷⁵ Access to Information Act, supra note 450, sec 20.(1)(c); Porter Airlines Inc. v Attorney General of Canada, 2014 C 392, supra note 457.

⁴⁷⁷ Air Transat A.T. Inc. v Canada (Minister of Transport), (2001) F.C.J. no.108, supra note 460, para 22.

⁴⁷⁷ Air Transat A.T. Inc. v Canada (Minister of Transport), (2001) F.C.J. no.108, supra note 460, para 22.

the Court noted that the Supreme Court of Canada has stated that the third party must demonstrate "that the risk of harm is considerably above a *mere* possibility, although not having to establish on the balance of probabilities that the harm will in fact occur."⁴⁷⁸ Moreover, it must show "an expectation for which real and substantial grounds exist when looked at objectively."⁴⁷⁹ In the *Porter Airlines* and *Air Atonabee* cases, ⁴⁸⁰ the courts likewise concluded that it was impossible to concretely measure the potential prejudice and accordingly, the audit reports were released.

A) The Impact on Consumer Confidence

As stated earlier, SMS audits provide an intimate diary of an airline's every imperfection. Far from glorifying an airline's good safety performance, they outline how airlines have reacted to serious occurrences, including regulatory violations and actual safety incidents, and question whether an airline is in compliance with the CARs or not. Paul Dempsey has stated that aviation is a highly-competitive industry where a modest decline in the number of passengers can be financially catastrophic.⁴⁸¹ He further asserted that investigative reports, such as SMS audit reports, "can have an adverse political, economic, punitive and reputation effect upon individual airlines."⁴⁸² As observed by Air Transat's Vice-President in a statement admitted as evidence, the disclosure of SMS-related information can have serious business consequences:

"Such findings, when made in a field like that of air transport where customer confidence often depends on intangibles, could if it were released to third parties without being adequately placed in context irreparably injure the image of Air Transat A.T. Inc., and this would have an immediate effect on its goodwill. [...] The disclosure of the information without being previously placed in context and without further explanation would give the public a false image of the safety level of the company. Further, in a highly competitive market, such disclosure would by its negative impact on the public be

⁴⁷⁸ Merck Frosst Canada Ltd. v. Canada (Health), 2012 SCC 3, [2012] 1 S.C.R. 23, supra note 461, para 199. ⁴⁷⁹ Ibid, para 204.

 ⁴⁸⁰ Porter Airlines Inc. v Attorney General of Canada, 2014 FC 392, supra note 457; Air Transat A.T. Inc. v Canada (Minister of Transport), (2001) F.C.J. no.108, supra note 463; Air Atonabee Ltd. v Canada (Minister of Transport), (1989) F.C.J. no.453, supra note 461.
 ⁴⁸¹ See Paul Stephen Dempsey, "The Financial Performance of The Airline Industry Post-Deregulation" (2008) 45

⁴⁸¹ See Paul Stephen Dempsey, "The Financial Performance of The Airline Industry Post-Deregulation" (2008) 45 Houst Law Rev 421.

⁴⁸² Paul Stephen Dempsey - "Independence of Aviation Safety Investigation Authorities: Keeping the Foxes from the Henhouse", *supra* note 27 at 223.

very likely to give our competitors an advantage. In such a situation, financial loss could reasonably be expected to result."⁴⁸³

If the newspaper, televised or online media outlets were to look into an airline's records and obtain its SMS audit reports, a misinterpretation of these conclusions could influence consumer behaviour and adversely affect ticket sales for that individual airline. Jürgen Habermas has asserted that mass media communications have the power to select, interpret and reshape public content, which can sometimes distort the accuracy of the actual information into sensationalistic reports.⁴⁸⁴ For Habermas, this means that the media's powerful influence can construct entirely new public opinions and "present plausible alternatives for what counts as a reasonable position on public issues."⁴⁸⁵ Applied to aviation, the media's prominent influence on consumer behaviour could generate misunderstandings of these audit reports, present unfounded conclusions that an airline might be unsafe to fly with and influence how passengers choose carriers in the future. To the untrained and uninformed public, SMS audit reports highlight safety deficiencies and risks affecting a carrier. The public release of TC reports outlining potential safety concerns for a specific airline could discourage passengers from flying on that carrier and affect its overall profitability.

It is almost impossible to predict, nor quantify accurately how public perception will affect a particular airline. We must argue that, *a contrario*, it is also impossible to know beyond reasonable doubt that disclosing safety data will *not* cause harmful effects to an airline. Let's consider one *extreme* example where public perception played a sinister role in the finances of an airline. When Malaysia Airlines suffered two back-to-back tragedies in 2014 (MH370 and MH17),⁴⁸⁶ the constant media attention and its imaginative speculations regarding the possible causes of these tragedies fostered a public misconception that it might be unsafe to fly with Malaysia Airlines. Consequently, average weekly bookings declined 33% and the airline

⁴⁸³ Air Transat A.T. Inc. v Canada (Minister of Transport), (2001) F.C.J. no.108, supra note 460, paras 23–24.

 ⁴⁸⁴ Jurgen Habermas, "Political Communication in Media Society:Does Democracy Still Enjoy an Epistemic Dimension? The Impact of Normative Theory on Empirical Research" (2006) 16 Commun Theory 411 at 415.
 ⁴⁸⁵ *Ibid* at 418.

⁴⁸⁶ "MH370 Flight Incident - MH370 Press Briefing by Hishammuddin Hussein, Minister of Defence and Acting Minister of Transport", (Monday, March 17), online: *Malays Airl* http://www.malaysiaairlines.com/ksd-maintenance/DarkSites.html; Steve Wilson, "Malaysia Airlines plane crashes on Ukraine-Russia border", (17 July 2014), online: *The Telegraph* http://www.telegraph.co.uk/news/worldnews/europe/ukraine/10974050/Malaysia-Airlines-plane-crashes-on-Ukraine-Russia-border-live.html. MH370 disappeared on March 8th, 2014 on a flight from Kuala Lumpur to Beijing. At the time of writing this thesis, its location and the causes of the accident were unknown. MH17 crashed on July 17th, 2014 near the Russian border in Ukraine. It was presumably shot down over an active warzone during the Ukraine Civil War.

reported a second quarter net loss of \$97.4 million US dollars, even though the airline has a relatively good safety record prior to these events.⁴⁸⁷ Even though the disclosure of audit reports is not comparable to such tragedies, they illustrate how public perception considerably damaged Malaysia Airlines' business when exposed to rather riveting media reports on the airline's safety.⁴⁸⁸ In both accidents, the airline's safety was not directly at fault, since the tragedies were caused by unprecedented 'acts of God'.⁴⁸⁹ The constant media attention scrutinizing Malaysia Airlines' safety impacted the travelling public's short-term trust in this doomed carrier, even though such consumer reaction towards the airline was unfounded from a safety perspective.⁴⁹⁰

Historically, passengers' loyalty towards a carrier has been fickle when doubts arise regarding the airline's safety. As Paul Dempsey argues, "Public confidence in the safety and security of the transport sector is essential to the efficient and proper performance of transport networks that serve the public's need for travel."⁴⁹¹ This confidence also applies to individual airlines whose profitability depends on their good safety reputation in the industry. The public disclosure of an SMS audit report could be economically harmful for an airline, provoking a decline in consumer confidence and contribute to a short term loss of market share.⁴⁹² Confidentiality as opposed to transparency better ensures public confidence, since confidentiality ensures the proper flow of SMS data to regulators and, hence, enhances airline safety.⁴⁹³

⁴⁸⁷ "Malaysia Airlines Warns of Further Losses", (28 August 2014), online: *BBC News* <<u>http://www.bbc.com/news/business-28963443</u>>.

⁴⁸⁸ Tom Philips, "MH370: Six 'reasons' why plane vanished", *The Telegraph* (8 September 2014), online: <http://www.telegraph.co.uk/news/worldnews/asia/malaysia/11078770/MH370-Six-reasons-why-planevanished.html>; Anthony Bond, "BBC Horizon recap: Flight MH370 search secrets revealed in TV documentary", *The Mirror* (17 June 2014), online: <http://www.mirror.co.uk/news/world-news/bbc-horizon-recap-flight-mh370-3712912>. The media advanced many theories including the shooting down of the aircraft, the pilot's suicide, loss of depressurisation, terrorist hijacking, the use of MH370 as a future weapon etc.

⁴⁸⁹ At the time of the writing of this thesis, Malaysia Airlines Flight MH370 had not been located yet. Hence, contributory fault could not be established. This accurately demonstrates how the uninformed public, without knowledge of the exact cause of an accident, can mistakenly perceive the overall safety of an airline even though Malaysia Airline had a nearly-perfect safety record until 2014.

⁴⁹⁰ See also how ValuJet never recovered from the public's negative perception following the crash of Flight 592. Frederick M Isaac, "Is it Safe Up There?" (1997) 25:2 Transp Law J 183 at 185.

⁴⁹¹ Paul Stephen Dempsey - "Independence of Aviation Safety Investigation Authorities: Keeping the Foxes from the Henhouse", *supra* note 27 at 240.

⁴⁹² *Ibid* see page280.

⁴⁹³ This interpretation aligns itself with ICAO's principal objective to ensure the establishment of a "safe, regular, efficient and economical air transport" for the travelling public. See Chicago Convention, Article 44.

B) Airline Competition

While an airline could see its market trust diminish after the release of its SMS audit report, it would also considerably harm its competitive position with other carriers. Moreover, competing airlines could use ATI legislation to obtain technical information contained in SMS audit reports. Porter Airlines argued that "the disclosure of its unique SMS information would provide competitors with unfair insight into Porter's commercial and technical processes and procedures."⁴⁹⁴

While audit reports only contain conclusions and opinions made by TC, they would likely give competitors enough knowledge to interpret and estimate an airline's operational structure and costs. With the overlying fear of predatory competition, even indirect references to safety data in an audit report could provide a competitor with sufficient information to damage the airline in question with competitive and strategic business initiatives to challenge their respective market share.⁴⁹⁵ It would be a preposterous approach to allow opposing airlines to access content from another airline's confidential safety information for competitive and business purposes. The above-mentioned case law has sent a clear message to airlines that ATI legislation can now be used to conduct corporate surveillance on their competitors. Such disclosure would be no different than allowing someone with malicious or curious intentions to obtain a copy of his next-door neighbor's income tax report. Considering the sensitivity of SMS audit reports, Canadian courts have adopted a flawed interpretation when considering the potential prejudice caused an airline's business following the disclosure of safety data.

4.4 The Frigid Canadian 'Chilling Effect' of Data Disclosure

The industry's sudden withdrawal from proactive safety reports following the public disclosure of such information is an emerging phenomenon referred by many aviation law experts as the "*Chilling Effect*" of voluntary reporting, ⁴⁹⁶ which currently threatens the

⁴⁹⁴ Porter Airlines Inc. v Attorney General of Canada, 2014 FC 342, supra note 457, para 68.

 ⁴⁹⁵ *Ibid* at 69; See the potential for predatory behaviour in the airline industry: Paul Stephen Dempsey, "Predation, Competition and Antitrust Law: Turbulence in the Airline Industry" (2002) 67 J Air Law Commer 685 at 707–715.
 ⁴⁹⁶ Nicole Wolfe Stout, "Privileges and Immunities Available for Self-Critical Analysis and Reporting: Legal

Practical and Ethical Considerations" (2004) 69 J Air Law Commer 561 at 567; See also Elaine D. Solomon & Dina L. Relles, *supra* note 457 at 409; Walter A T Welch & Judge John E Faulk, "The Use of Aviation Accident Reports by Civil Litigants: The Historical Development of 49 U.S.C. Section 1441(e)" (1981) 9 Pepperdine Law Rev 583 at 600; Christa Meyer Hinckley, Hays Hettinger & Jeremy E Juenger, "The Argument for Federal Legislation

effectiveness of SMS in aviation. As SMS information is leaked to the public outside the safety context, pilots and airline personnel will become more and more reluctant to disclose critical safety data, thus thwarting the entire SMS process and undermining the collection of safety data.⁴⁹⁷ Eurocontrol has argued that ATI legislation can deter safety reporting, since airline personnel will want to prevent their statements from being publicly disclosed or even used in judicial proceedings.⁴⁹⁸ A study by the U.S. government has shown that only 2% of voluntary safety reports would be obtained by authorities if participants are aware of the risk of public disclosure by court order.⁴⁹⁹ A confidential SMS framework would increase the identification of additional hazards that may potentially jeopardize a carrier's safety.⁵⁰⁰

As the matter now stands, airline personnel are threatened with the potential misuse, misunderstanding and misinterpretation of their statements by the media. Aviation staff should have the confidence to participate in their airline's SMS without fear that their statements will later be disclosed to the public or even used in criminal or civil litigation.⁵⁰¹ Allowing disclosure under ATI legislation will provoke the loss of cooperation with the aviation industry.⁵⁰² As stated by an American Court regarding the FAA's equivalent of SMS, the Aviation Safety Action Program (ASAP):⁵⁰³

Protecting the Confidentiality of Aviation Safety Action Program Information" (2010) 75 J Air Law Commer 161 at 164; Jeremy Kahn, "High Technology in the Transportation Industry: Is the New Data We Gather Worth All the Costs?" (2000) 28 Transp Law J 89 at 97; Trowbridge Littleton, "The National Transportation Safety Board: How Should They Conduct Witness Investigations - The Need for a Privilege" (2000) 27 Transp Law J 255 at 262; Lisa Kloppenberg, "Disclosure of Confidential Sources in International Reporting" (1986) 60 South Calif Law Rev 1631 at 1638–1639; The Harvard Law Review Association, "The Privilege of Self-Critical Analysis" (1982) 96 Harv Law Rev 1083 at 1091; Susan Scott Hayes, *supra* note 452 at 485; Major William A Moorman, "Executive Privilege and the Freedom of Information Act: Sufficient Protection for Aircraft Mishap Reports?" (1979) 21 Air Force Law Rev 581 at 593.

 ⁴⁹⁷ NTSB Bar Association - Select Committee on Aviation Public Policy, "Aviation Professionals and the Threat of Criminal Liability - How do we Maximize Aviation Safety?" (2002) 67 J Air Law Commer 875 at 877.
 ⁴⁹⁸ Eurocontrol, *Legal and Cultural Issues in Relation to ATM Safety Occurence Reporting in Europe*, PRC Report

 ⁴⁹⁸ Eurocontrol, *Legal and Cultural Issues in Relation to ATM Safety Occurence Reporting in Europe*, PRC Report (Brussels, Belgium: Eurocontrol, 2006) at 33.
 ⁴⁹⁹ Government Accountability Office, *Aviation Safety - Improved Data Quality and Analysis Capabilities Are*

⁴⁹⁹ Government Accountability Office, *Aviation Safety - Improved Data Quality and Analysis Capabilities Are Needed as FAA Plans a Risk-Based Approach to Safety Oversigh*, Report 10-414 (Washington, DC: U.S. Government Accountability Office (GAO), 2010) at 43.

⁵⁰⁰ Jean-Pierre Arnaud, *Introduction to the Management of Safety - New ICAO Annex 19* (Cologne, Germany: European Aviation Safety Agency (EASA), 2012).

⁵⁰¹ Russel F Kane, "Accident Investigation and the Public Interest: A Pilot's View" (1989) 38 Z Luft-Un Weltraumrecht 3 at 19.

⁵⁰² NTSB Bar Association - Select Committee on Aviation Public Policy, *supra* note 498 at 901.

⁵⁰³See Nicole Wolfe Stout, *supra* note 497; Federal Aviation Administration, "Aviation Safety Action Program", (11 April 2013), online: *Fed Aviat Adm* http://www.faa.gov/about/initiatives/asap/. "The goal of ASAP is to enhance aviation safety through the prevention of accidents and incidents. Its focus is to encourage voluntary reporting of

"Without a privilege, pilots might be hesitant to come forward with candid information about in-flight occurrences, and airlines would be reluctant, if not altogether unwilling, to investigate and document the kind of incidental violations and general flight safety concerns whose disclosure is safeguarded by the ASAP program."⁵⁰⁴

Consequently, the misuse of SMS data outside the regulatory purview of TC "reduces the inclination of aviation professionals and their employees to share safety information."⁵⁰⁵ This will in turn jeopardize the quality of critical safety data and seriously hinder "the accomplishments of prompt corrective action designed to preclude recurrences of similar accidents."⁵⁰⁶ Canadian courts must understand that reducing the threat of unwarranted disclosure will reduce the likelihood of tragedies reoccurring and will ultimately save lives.⁵⁰⁷ It is of upmost importance to preserve a free flow of information from all possible sources to achieve the theoretical benefits of SMS.⁵⁰⁸

4.5 Applying Reverse Trust to SMS Data Disclosure

This section offers two alternative solutions – one judicial, the other legislative – to deal with the potential prejudicial impact on the overall safety goals of SMS of forced disclosure of SMS audit information in the Canadian context.

A) Judicial Solution

The story of the potential judicial solution begins with the 1998 decision of the Federal Court of Appeal in *Rubin v Canada (Minister of Transport)*,⁵⁰⁹ in which the Court ordered TC to disclose *Safety Review Reports*, the predecessor of modern SMS audits, for a now defunct airline. TC had argued that this would be injurious to its overall investigative processes and hinder further cooperation by the industry. In support of this argument, it invoked section 16.(1)(c) of

safety issues and events that come to the attention of employees of certain certificate holders. ASAP encourages an employee to voluntarily report safety issues even though they may involve an alleged violation of Title 14 of the Code of Federal Regulations (14 CFR)." The ASAP was implemented before SMS was introduced. It was not introduced in response of Annex 19, although it recreates it essential components and processes.

⁵⁰⁴ In re Air Crash Near Cali, Colom. On Dec. 20, 1995, 959 F. Supp at 1532

⁵⁰⁵ Kenneth P Quinn, Jennifer E Trock & Timothy C Gerheim, "Improving Global Aviation Safety by Protecting Information Sources" (2009) 9 Issues Aviat Law Policy 243 at 244.

⁵⁰⁶ Major William A. Moorman, *supra* note 497 at 586.

⁵⁰⁷ Kenneth P. Quinn, Jennifer E. Trock & Timothy C. Gerheim, *supra* note 506 at 252 and 256.

⁵⁰⁸ NTSB Bar Association - Select Committee on Aviation Public Policy, *supra* note 498 at 901.

⁵⁰⁹ Rubin v Canada (Minister of Transport), (1998) 2 FCR 430 FCA, .

the ATIA which precludes disclosure of information "which could reasonably be expected to be injurious to the enforcement of any law of Canada or a province or the conduct of lawful investigations."⁵¹⁰ The Federal Court of Appeal concluded that this exemption only applies to *ongoing* investigations and not to future investigations or the effectiveness of the entire investigative process. ⁵¹¹ This interpretation is now open to challenge following the Supreme Court of Canada's 2002 decision in *Lavigne v Canada*. ⁵¹² Although the *Lavigne* decision dealt with privacy law, the wording of section 16(1)(c) of the ATIA is *identical* to section 22(1)(b) of the *Privacy Act* ⁵¹³ and both provisions share common regulatory policies. ⁵¹⁴ Both prohibit disclosure of information that would be injurious to investigations, utilizing the term "conduct" to refer to the investigative process itself. In *Lavigne*, the Supreme Court interpreted the term "conduct" in the *Privacy Act* provision as protecting information from disclosure for *ongoing* and *future* investigations, including the *investigative process* in general. ⁵¹⁵ In light of the *Lavigne* decision, it is suggested that carriers and TC invoke section 16.(1)(c) of the ATIA ⁵¹⁶ in future litigation to prevent disclosure of SMS information on the ground that disclosure would damage the entire SMS investigative process.

B) Statutory Solution

Alternatively, the Parliament of Canada should amend Canada's ATIA to explicitly exempt direct or indirect disclosure of SMS data from obligatory disclosure. As the Federal Court of Appeal stated in *Rubin*, "there is nothing to preclude Parliament from changing the *Aeronautics Act* to provide for wide-scale confidentiality protection."⁵¹⁷ Annex 19 already

⁵¹⁰ Access to Information Act, supra note 447, sec 16.(1)(c).

⁵¹¹ Rubin v Canada (Minister of Transport), (1998) 2 FCR 430 FCA, supra note 510.

⁵¹² Lavigne v Canada (Office of the Commissioner of Official Languages), [2002] 2 SCR 773, 2002 SCC 53, .

⁵¹³ Privacy Act, 1985, RSC C P-21 [Privacy Act], para 22(1)(b).

Section 22. (1): The head of a government institution may refuse to disclose any personal information requested under subsection 12(1)

⁽b) the disclosure of which could reasonably be expected to be injurious to the enforcement of any law of Canada or a province or the *conduct* of lawful investigations, including, without restricting the generality of the foregoing, any such information:

⁽i) relating to the existence or nature of a particular investigation,

⁽ii) that would reveal the identity of a confidential source of information, or

⁽iii) that was obtained or prepared in the course of an investigation;

⁵¹⁴ Michael Nelson, *Federal Information Policy: An Introduction*, Government Information in Canada/Information Gouvernementale au Canada (Ottawa, O: Treasury Board of Canada, 1995).

⁵¹⁵ Lavigne v. Canada (Office of the Commissioner of Official Languages), [2002] 2 S.C.R. 773, 2002 SCC 53, supra note 513, para 52 and 55.

⁵¹⁶ Access to Information Act, supra note 447, sec 16(1).

⁵¹⁷ Rubin v Canada (Minister of Transport), (1998) 2 FCR 430 FCA, supra note 510.

provides an attachment with subjective guidance material regarding the protection of SMS information, but it is not legally binding and will likely be ignored by litigators seeking to obtain disclosure of safety data. Unless Canada introduces explicit statutory protection for SMS in the Act,⁵¹⁸ it will remain vulnerable to ATI requests. There is precedent for such an exemption in the Canadian context. For example, the voluntary reporting of transportation *occurrences* to the Transportation Safety Board of Canada⁵¹⁹ is afforded explicit protection against public disclosure, including judicially ordered disclosure, under the *Canadian Transportation Accident Investigation and Safety Board Act*.⁵²⁰ Since an airline's internal SMS hazard reporting and external TSB occurrence reporting are quite similar, there should be no policy or legal objection to similarly privileging SMS data.

The adoption of a legislative exemption would not be out of line with the approaches adopted by several other states. In the United States, Congress enacted 49 U.S.C. § 40123⁵²¹ to exempt from disclosure under ATI legislation ASAP information voluntarily provided, if the FAA determines that such disclosure would "inhibit the voluntary provision of that type of information."⁵²² Section 40123 recognizes that "protecting the confidentiality of data leads to more honest and complete reporting of hazards and analysis of risks and how to mitigate them."⁵²³

In Denmark, safety data contained in reporting systems has been granted a strict and *absolute* exemption from disclosure under the national ATI legislation.⁵²⁴ Since the Danish government provides yearly innominate safety statistics concerning safety occurrences, commentators have concluded that the Danish Government has struck a fair balance between promoting aviation safety through confidential safety reports and maintaining public transparency.⁵²⁵ The Danish experience suggests that if Canada were to adopt a legislative

⁵¹⁸ Access to Information Act, supra note 447.

⁵¹⁹ Transportation Safety Board Regulations, 2014, SOR2014-37 [Transportation Safety Board Regulations].

⁵²⁰ Canadian Transportation Accident Investigation and Safety Board Act, supra note 2, sec 30.

⁵²¹ 49 U.S.C. § 40123 [49 U.S.C. § 40123].

⁵²² *Ibid*; Transportation Research Board of the National Academies, *Legal Research Digest 19: Legal Issues Related to Developing Safety Management Systems and Safety Risk Management at U.S. Airports* (Washington, DC: Transportation Research Board of the National Academies, 2013) at 9.

⁵²³ Transportation Research Board of the National Academies, *supra* note 523 at 9.

⁵²⁴ Civil Aviation Administration – Denmark BL 8-10 Regulations on Mandatory Reporting of Flight Safety Occurrences (2001).

⁵²⁵ Mildred Trogeler, *supra* note 170 at 25; Peter Majgård Nørbjerg, *The Creation of an Aviation Safety Reporting Culture in Danish Air Traffic Control* (Kastrup, Denmark: Naviair).

exemption approach, it should at the same time provide for the compulsory public reporting – if only to ensure political acceptance - of general innominate information concerning aviation safety incidents at least annually.

4.6 Summary

The theme of this chapter is captured by the following quotation: "comprehensive [confidentiality] protections for aviation records generated prior to any formal aviation accident investigation are at least as fundamental to the effective promotion of system aviation safety as comprehensive [confidentiality] protection for records generated during such investigations."⁵²⁶ As we drift further away from Annex 13's confidentiality objectives, Dr. Francis Schubert has noted that litigators constantly ignore the spirit of Just Culture in aviation, which warrants an immediate and effective solution.⁵²⁷ In other words, the public interest in aviation safety should in principle override the public interest in ensuring transparency of State regulatory actions in relation to aviation safety, as confidence from the airline industry is critical to ensuring a successful SMS approach to commercial aviation. Unfortunately, as will be demonstrated in Chapter 5, private litigation has shifted the balance between these two potentially conflicting public policy objectives. As we shall see, the need for an "absolute privilege in order to secure full and frank disclosure,"⁵²⁸ has been tilted in favor of the "countervailing policy of making available all accident information to litigants."⁵²⁹

⁵²⁶ Samantha Sharif, "The Failure of Aviation Safety in New Zealand: An Examination of New Zealand's Implementation of its International Obligations Under Annex 13 of The Chicago Convention on International Civil Aviation" (2003) 68 J Air Law Commer 339 at 375.

⁵²⁷ David Learmount, "Criminilization of Air Accidents: The Solutions May Be Forged in Europe" (2010) 35:4/5 Air Space Law 325 at 326.

⁵²⁸ Walter A. T. Welch & Judge John E. Faulk, *supra* note 497 at 600.

⁵²⁹ Berguido v Eastern Airlines, 317 F2d, at 631.

SMS relies on the constant production of large amounts of safety information. Despite its confidential nature, carriers continue storing SMS data in relatively unprotected databases, unaware that their safety reports might be used against them in the event of a serious incident. Eurocontrol has predicted that it is only a matter of time before SMS data is introduced as evidence in court.530

In 2013, domestic flights accounted for 85% of commercial flights conducted by Canadian air carriers.⁵³¹ Because of the predominant number of yearly domestic flights in Canada, the premise of this chapter will largely focus on the impact of SMS data on the liability of air carriers conducting *domestic* transportation in Canada. It will also discuss the secondary impact of SMS on the level of compensation awarded in contracts of international carriage. While the Montreal Convention's 'no-fault' approach⁵³² will somewhat limit the impact of SMS data on the liability of international air carriers, the introduction of SMS as evidence will significantly influence the legal liability of Canadian domestic carriers.

5.1 The Evidentiary Significance of SMS

One of the underlying legal implications of SMS is that it requires airlines to document all potential liabilities that might have been unknown to the carrier prior to the advent of SMS,⁵³³ thus leaving a clear roadmap of evidence in the event of subsequent civil proceedings.⁵³⁴

⁵³¹ Statistics Canada - Environment, Energy and Transportation Statistics Division, Aircraft Movement Statistics: NAV CANADA Towers and Flight Service Stations: Annual Report, TP 577 (Ottawa, ON: Statistics Canada, 2013) at 10. NavCanada towers and flight service stations recorded a total of 2,987,902 flights by Canadian commercial air carriers. Domestic flights accounted for 2,535,025 and international flights recorded 452,877 movements.

⁵³² Convention for the Unification of Certain Rules for International Carriage by Air (Montreal Convention), 28 May 1999, ICAO Doc9740 [Convention for the Unification of Certain Rules for International Carriage by Air (Montreal Convention)]; Thomas J Whalen, "The New Warsaw Convention: The Montreal Convention" (2000) 25:1 Air Space Law 12 at 18. ⁵³³ Transportation Research Board of the National Academies, *supra* note 523 at 3.

⁵³⁰ Eurocontrol, *supra* note 499, para 4.4.6.

⁵³⁴ Paul Stephen Dempsey - "Independence of Aviation Safety Investigation Authorities: Keeping the Foxes from the Henhouse", supra note 27 at 270; Laurie Crick Shatjian, "The ISM Code: A Brief Overview" (1998) 29:3 J Marit Law Commer 405 at 407.

Transparent and safety-oriented airlines will likely surrender a clear stream of potential evidence to litigants if they are subpoenaed to produce SMS data as evidence during a civil trial:⁵³⁵

"It is probably going to be very easy for claimant lawyers to embark upon paper chases beyond their wildest dreams. Around every corner they will discover opportunities to find fault, to trip up the [airline], to find reasons why the [airline] should be found liable. There will be the documentary evidence created at the very hands of the [airline] and his own employees to tighten that hangman's knot more with every document which is produced."⁵³⁶

There is a genuine fear in the aviation industry that much of the SMS information is selfincriminating for airlines and could turn into a windfall for passengers making claims.⁵³⁷ While traditional discovery typically concentrated on ATC records, witness reports, and flight data information, ⁵³⁸ new discovery strategies will likely focus on obtaining SMS databases to demonstrate how management inadequately mitigated risks. Consequently, SMS may be viewed by some airlines as an increased legal liability in itself.⁵³⁹ FSF has stated that introducing safety data in Court will make airlines more "adversarial" towards proactive safety reporting:

"If some State judicial systems sanction the compulsory discovery of voluntary disclosure reporting systems to establish liability, organized labor and companies will revisit their participation in these critical safety systems."⁵⁴⁰

Some have argued that "the balance between sustaining a high standard of air safety and upholding the fair administration of justice for the private litigant must tilt in the favour of the litigant."⁵⁴¹ This interpretation poses a serious problem, as airlines will potentially be condemned by their own voluntary hazard reports ⁵⁴² after unwittingly investing "substantial time and financial resources to produce a 'smoking gun' for its opponents in future litigation."⁵⁴³ Hence,

⁵³⁵ Craig H Allan, "ISM Code and Shipowner Records: Shared Safety Goals vs. Industry's Privacy Needs" (1998)11:1 Univ San Franc Marit Law J 1 at 13.

 ⁵³⁶ Phil Anderson, *ISM Code: A Practical Guide to the Legal and Insurance Implications*, Second ed, Lloyd's Practical Shipping Guides (London, United Kingdom: LLP, 2005) at 187.
 ⁵³⁷ *Ibid* at 94; Kenneth P. Quinn, Jennifer E. Trock & Timothy C. Gerheim, *supra* note 506 at 261; Craig H. Allan,

⁵³⁷ *Ibid* at 94; Kenneth P. Quinn, Jennifer E. Trock & Timothy C. Gerheim, *supra* note 506 at 261; Craig H. Allan, *supra* note 536 at 15.

⁵³⁸ Waler J Lack, "Defendant's Discovery Plan in Mid-Air Crash Litigation" (1982) 47 J Air Law Commer 769.

⁵³⁹ Christa Meyer Hinckley, Hays Hettinger & Jeremy E. Juenger, *supra* note 497 at 177.

⁵⁴⁰ Emily McGee, *supra* note 436.

⁵⁴¹ Mark Kinzie, *supra* note 343 at 265.

⁵⁴² Richard M Dunn, Sherril M Colombo & Allison E Nold, "Are Prosecutorial Investigations Relegating Aviation Safety to the Back Seat?" (2009) 38 The Brief 11.

⁵⁴³ Nicole Wolfe Stout, *supra* note 497 at 563; Antonio J Rodriguez & Mary Campbell Hubbard, "The International Safety Management (ISM) Code: A New Level of Uniformity" (1999) 73 Tulane Law Rev 1585 at 1606.

there is a continuous divergence between the public necessity to protect safety data and the judicial interests of litigants.⁵⁴⁴

Witness statements, voluntary occurrence reports, cockpit voice recorders (CVRs), air traffic communications and other investigative evidence obtained by the TSB in the course of an investigation are already privileged from disclosure by the *Canadian Transportation Accident Investigation and Safety Board Act*.⁵⁴⁵ As the matter now stands, SMS data does not benefit from such a statutory privilege and remains unprotected from discovery. Even if SMS data was hypothetically afforded a similar privilege under law, the Ontario Court of Appeal has stated in two cases regarding the disclosure of CVRs as evidence that even safety-sensitive data protected by the Act can be exceptionally introduced as evidence in civil litigation if it:⁵⁴⁶

- 1. Contains highly relevant, probative and reliable evidence central to the case
- 2. The balance of circumstances surrounding the case favors disclosure
- 3. It is in the public interest in the administration of justice to introduce such information as evidence to allow a party to present the best and most reliable evidence concerning the case
- 4. Where the release of such evidence would not interfere with aviation safety or impede on future investigations

While the statutory privilege afforded to investigative material is evidently not absolute,⁵⁴⁷ it can be assumed that SMS data will be easily accessible in discovery with a lesser burden using an analogous analysis. In reality, whenever the benchmark favouring the public interest of justice is met to ensure a fair trial, SMS data will most likely fall within the scope of

⁵⁴⁴ John Sopinka, Sidney N Lederman & Alan Bryant, *The Law of Evidence in Canada*, 2nd ed (Toronto, Ontario: Butterworths & Company (Canada) Limited, 1999) at 713. "In any discussion about privileges, one must keep in mind the constant conflict between two countervailing policies. On the one hand, there is the policy which promotes the administration of justice requiring that all relevant probative evidence relating to the issues be before the court so that it can properly decide the issues on the merits. On the other hand, there may be a social interest in preserving and encouraging particular relationships that exist in the community at large, the viability of which are based upon confidential communications."

⁵⁴⁵ Canadian Transportation Accident Investigation and Safety Board Act, supra note 2, sec 28, 29, 30 and 31.

⁵⁴⁶ Société Air France v NAV Canada, 2010 ONCA 598, at 9 and 10; Jetport Inc v Global Aerospace Underwriting Managers, 2014 ONSC 6860, ; Propair et al v BF Goodrich (30 January 2003), No CS Montréal 500-05-058549-005, .

⁵⁴⁷ Arie Odinocki, "Determining Qualified Privilege Applicable to On-Board Recordings in Transportation Cases -The Canadian Perspective", (October 2011), online: *Transp Lawyer Mag* http://isaacsco.ca/wp-

content/uploads/2012/04/Black-Box-Article-for-Transportation-Lawyer-due-August-26-2011.pdf>; Paul Delory, "Flight Recordings as Evidence in Civil Litigation" (1975) 9 Valpso Univ Law Rev 321.

discovery.⁵⁴⁸ In Société Air France v. Greater Toronto Airports Authority et al.,⁵⁴⁹ the Court ordered the full disclosure of the pilot's medical records, training records and even the internal accident investigation conducted by Air France as admissible evidence in the wake of the 2005 runway overrun at Lester B. Pearson International Airport in Toronto. 550 While limited exceptions in Canadian law and in Annex 13 permit the exceptional use of safety-sensitive information in court,⁵⁵¹ the confidentiality of safety data should outweigh the public interest for full disclosure.⁵⁵² Therefore, a Common Law Privilege should be strictly applied to safetysensitive records, including SMS information, using the Supreme Court of Canada's Wigmore *Test*⁵⁵³ as follows:

(1) "The communications must originate in a confidence that they will not be disclosed:"554 As their SMS regulatory requirement, 555 airlines expose their operational deficiencies to Transport Canada with an expectation of confidentiality and non-punitive responses from both the regulator and the legal system;⁵⁵⁶

(2) "This element of confidentiality must be essential to the full and satisfactory maintenance of the relation between the parties:"557 Maintaining a healthy Just Culture with proactive safety reports is essential for a successful SMS program and for safer air transportation:558

⁵⁴⁸ John F Easton & Walter Mayer, "The Rights of Parties and Civil Litigants in An NTSB Investigations" (2003) 68 J Air Law Commer 205 at 230; Ruwantissa Abeyratne, "Access to Financial Statements of Airline Pilots and Privacy Issues - The Silk Air Crash" (2000) 25:3 Air Space Law 97 at 105.

⁵⁴⁹ Société Air France v Greater Toronto Airports Authority et al, 2010 ONSC 432, .

⁵⁵⁰ Transportation Safety Board of Canada, Runway Overrun and Fire, Air France Airbus A340-313 F-GLZQ, Toronto/Lester B. Pearson International Airport, 02 August 2005, Aviation Investigation Report A05H0002 (Gatineau, QC: Transportation Safety Board of Canada).

⁵⁵¹ Annex 13 to the Convention on International Civil Aviation - Accident and Incident Investigation (Ninth Edition), supra note 151, sec 5.12; Annex 19 to the Convention on International Civil Aviation - Safety Management, supra note 147 at Attachment B; Canadian Transportation Accident Investigation and Safety Board Act, supra note 2, sec 28(6) and 30(5). ⁵⁵² Samantha Sharif, *supra* note 527 at 358.

⁵⁵³ *R v Gruenke*, [1991] 3 SCR 263, at 265; John Henry Wigmore, *Evidence in Trials at Common Law*, Little ed, McNaughton Revision (Boston, MA: Little, Brown and Company, 1961). This is the benchmark test in Canada to establish a Common Law privilege for potential evidence.

⁵⁵⁴ *R. v Gruenke*, [1991] 3 S.C.R. 263, *supra* note 557 at 265.

⁵⁵⁵ Canadian Aviation Regulations, supra note 36.

⁵⁵⁶ Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 2 at 63.

⁵⁵⁷ *R. v Gruenke*, [1991] 3 S.C.R. *263*, *supra* note 557 at 265.

⁵⁵⁸ Flight Safety Foundation, "A Roadmap to A Just Culture: Enhancing the Safety Environment", (September 2004), online: Flight Saf Found FSF < http://flightsafety.org/files/just_culture.pdf> at 15.

(3) "*The relation must be one which in the opinion of the community ought to be sedulously fostered:*"⁵⁵⁹ The International Air Transport Association (IATA) has argued that in the future, participants in investigations may be less forthcoming with relevant evidence if they believe that such evidence may be used against them in civil proceedings (e.g. the *Chilling Effect*);⁵⁶⁰

(4) "*The injury that would inure to the relation by the disclosure of the communications must be greater than the benefit thereby gained for the correct disposal of litigation*:"⁵⁶¹ The greater public need for safer air transport outweighs the attempt of using aviation safety information for individual lawsuits.⁵⁶² Maintaining a protection for SMS data against its use in litigation will encourage proactive safety reports, reduce the number of accidents and ultimately save lives.⁵⁶³

In the Air France case, the Court decided that the airline had waived its Common Law privilege once it had disseminated the reports to other airline employees.⁵⁶⁴ Considering that SMS information will most likely be shared to other employees to ensure effective risk management, this decision demonstrates that significant amounts of safety-sensitive information are vulnerable to discovery. In the United States, case law has asserted that no common-law privilege protects ASAP information from discovery.⁵⁶⁵ We can only conclude that SMS information will be given an identical treatment.

Although some have argued that SMS reports could constitute *hearsay*,⁵⁶⁶ exemptions to the *Hearsay Rule*⁵⁶⁷ for written documents have been afforded considerable flexibility by

⁵⁵⁹ *R. v Gruenke*, [1991] 3 S.C.R. 263, *supra* note 557 at 265.

⁵⁶⁰ Rogers and another v Hoyle [2014] EWCA Civ 25, IATA presented these arguments before the Court of Appeal during this case. In the Hoyle decision, the Court ordered the production of an accident report as evidence in the trial. See para 75; Michael Milde, "Aircraft Accident Investigation in International Law" (194AD) 9:1 Air Space Law 61 at 64.

⁵⁶¹ *R. v. Gruenke, [1991] 3 S.C.R. 263, supra* note 554 at 265.

⁵⁶² Samantha Sharif, *supra* note 527 at 347.

⁵⁶³See Paul Stephen Dempsey, *supra* note 26 at 235–236.

⁵⁶⁴ Société Air France v. Greater Toronto Airports Authority et al, 2010 ONSC 432, supra note 550, paras 24–29.

⁵⁶⁵ In re at Lexington, Ky, Aug 27, 2006, No 5:06-CV-316-KSF, 2008 US Dist LEXIS 3864, at 621. The nature of the ASAP data and its safety regime are nearly identical to ICAO's SMS under Annex 19.

⁵⁶⁶ William D Janicki, "Aircraft Accident Reports and Other Government Documents: Evidentiary Use in International Air Crash Litigation in the United States" (2009) 74 J Air Law Commer 801 at 812.

⁵⁶⁷ John Sopinka, Sidney N. Lederman & Alan Bryant, *supra* note 545 at 156. "Written or oral statements, or communicative conduct made by persons otherwise than in testimony at the proceeding in which it is offered, are

Canadian Courts in favour of the proper administration of justice in civil cases, as this principle is not absolute anymore.⁵⁶⁸ As the matter now stands, SMS is completely vulnerable to disclosure as evidence in civil litigation. The absence of an express privilege for SMS information will offer airlines a *Hobson's Choice* of either abiding to the law and create self-incriminating records of their risk management efforts or deliberately avoid recording such evidence to mitigate their civil liability, thus endangering public safety.⁵⁶⁹ Consequently, the entire SMS process has been jeopardized by the risk of being introduced in court cases.

5.3 The Legal Impact on Contracts of International Carriage by Air

With the emerging fear of creating a paper trail to liability,⁵⁷⁰ the admissibility of SMS in legal proceedings has potential ramifications affecting the international air carrier liability regime set out by the *Montreal Convention for the Unification of Certain Rules for International Carriage by Air*, which precludes the application of domestic liability laws.⁵⁷¹ Although the Montreal Convention's 'no-fault' approach has greatly reduced the probability of litigation owing to its strict liability approach, it is argued that SMS legislation might constitute a serious inconvenience for international carriers attempting to limit their financial exposure in the event of an accident.⁵⁷²

Airlines conducting *international* carriage between two contracting member States of the Montreal Convention⁵⁷³ are liable for damages sustained in the event of the death or wounding of a passenger or any other bodily injury suffered by a passenger, including the destruction, loss or

⁵⁶⁹ Craig H. Allan, *supra* note 536 at 25; Phil Anderson, *supra* note 537 at 217.

inadmissible, if such statements or conduct are tendered either as proof of their truth or as proof of assertions implicit therein."

⁵⁶⁸ the Hearsay evidence is reliable and necessary to prove a certain fact, it may be admissible in Court *R. v Khan*, [1990] 2 S.C.R. 531, *R. v Smith*, [1992] 2 S.C.R. 915, 94 D.L.R. (4th) 590, *Samuel v Chrysler Credit Canada Ltd.*, 2007 BCCA 431, *R. v Mapara*, [2005] 1 S.C.R. 358, 332 N.R. 244 at para. 15. *R. v Evans*, 1993] 3 S.C.R. 653 at para 24: Hearsay rules and case law applies to both criminal and civil cases, *supra* note 19.

⁵⁷⁰ Craig H. Allan, *supra* note 3 at 11.

⁵⁷¹ Convention for the Unification of Certain Rules for International Carriage by Air (Montreal Convention), supra note 533.

⁵⁷² Phil Anderson, *supra* note 537 at 108.

⁵⁷³ Convention for the Unification of Certain Rules for International Carriage by Air (Montreal Convention), supra note 533, sec 1; Paul Stephen Dempsey & Michael Milde, International Air Carrier Liability: The Montreal Convention of 1999 (Montréal, QC: McGill University Centre for Research in Air and Space Law, 2005) at 66–67.

damage to any checked baggage.⁵⁷⁴ Article 17 of the Convention therefore implies that airlines are *automatically* responsible for a liability not exceeding 113,100 SDRs⁵⁷⁵ regardless of their fault under the principle of *Strict Liability*.⁵⁷⁶ Article 21 of the Convention⁵⁷⁷ also establishes a second regime of liability, the *Presumptive Liability*, where the carrier is subjected to an unlimited liability amount⁵⁷⁸ *unless* it proves "that the damage was not due to the negligence or other wrongful act or omission of the carrier or its servants or agents or such damage was solely due to the negligence or other wrongful act or other wrongful act or omission of a third party."⁵⁷⁹ The effect of presumptive liability is that carriers are now presumed liable under this regime "if a passenger alleges personal injury or if his dependents allege his death as having been caused by the airline."⁵⁸⁰

With considerable amounts of documentation demonstrating the airline's possible knowledge and tolerance of a risk, litigants will likely use SMS data to enforce the carrier's presumptive liability and obtain higher awards of compensation for victims under local law.⁵⁸¹ Although punitive or exemplary damages may not be awarded under the Convention, SMS data will be used to demonstrate a victim's exposure to risk prior to an accident and will be interpreted as an aggravating factor when awarding damages. Such data might reveal the causality between the severity of a known risk which contributed to the accident, and the severity of some injuries suffered by a passenger. Since SMS evidence will provide litigants with a clear

⁵⁷⁵ On the 30th of December 2009, the Convention's strict liability was revised from 100,000 SDRs to 113,100 SDRs. The International Monetary Fund, "Special Drawing Rights (SDRs)", (3 October 2014), online: *Int Monet Fund* <<u>http://www.imf.org/external/np/exr/facts/sdr.HTM></u>; The International Monetary Fund, "SDRs per Currency Unit and Currency Units per SDR in Last Five Days", (24 October 2014), online: *Int Monet Fund*

<http://www.imf.org/external/np/fin/data/rms_five.aspx>. Special Drawing Rights (SDRs) are "an international reserve asset, created by the IMF in 1969 to supplement its member countries" official reserves. Its value is based on a basket of four key international currencies, and SDRs can be exchanged for freely usable currencies." In 2014, 113,100 SDRs would be valued at \$187,746 (Canadian Dollars).

⁵⁷⁴ Convention for the Unification of Certain Rules for International Carriage by Air (Montreal Convention), supra note 533, sec 17.

⁵⁷⁶ Convention for the Unification of Certain Rules for International Carriage by Air (Montreal Convention), supra note 533, sec 21; Paul Stephen Dempsey & Michael Milde, supra note 574 at 121; Hanna Chouest, "Dualism, Science, and the Law: The Treatment of the Mind-Body Dichotomy under Article 17 of the Montreal Convention" (2009) 9:1 Issues Aviat Law Policy 141 at 169; Peter Neenan, "The Damaged Quilt: Inadequate Coverage of the Montreal Convention" (2012) 37:1 Air Space Law 51 at 54.

⁵⁷⁷ Convention for the Unification of Certain Rules for International Carriage by Air (Montreal Convention), supra note 533, sec 21.

⁵⁷⁸ Paul Stephen Dempsey, "International Air Cargo & Baggage Liability and the Tower of Babel" (2004) 36:2 George Wash Int Law Rev 239 at 267.

⁵⁷⁹ Paul Stephen Dempsey & Michael Milde, *supra* note 574 at 182.

⁵⁸⁰ Ruwantissa Abeyratne, *supra* note 549 at 98; Thomas J. Whalen, *supra* note 533 at 18.

⁵⁸¹ See Ruwantissa Abeyratne, *supra* note 549 at 105; Phil Anderson, *supra* note 537 at 116.

roadmap of potential risks that contributed to a victim's injuries, it will have the inevitable effect of facilitating the compensation of passengers under the presumptive liability regime.

More importantly, the introduction of SMS as potential evidence will have serious financial implications for an airline's insurance policy. Some have argued that carriers may be compelled in the future to produce SMS data to renew their insurance policy, which will undoubtedly influence the underwriter in deciding whether or not to cover the risk of operating a specific air service.⁵⁸² The failure to effectively operate SMS or disclose certain facts material to a risk insured could enable an insurer to invoke a breach of warranty by the airline. In the event that a carrier makes a claim after compensating an injured passenger, the insurer could use the carrier's SMS data to establish a breach of policy, avoid the insurance policy and deny the carrier's request.⁵⁸³ This would cause considerable financial harm to an airline following a serious accident that caused bodily injuries or even casualties. It can be concluded that the potential denial of insurance coverage supported with SMS data will likely affect both international *and* domestic carriers.

While SMS evidence will demonstrate to an insurer that an airline was aware of certain hazards and that the company turned a blind-eye to contributory elements of an accident, there will be a formidable burden for airlines to escape a denial of insurance coverage for blindly ignoring potentially hazardous situations.⁵⁸⁴ With the levels of due diligence heightened and exposed by SMS legislation, discrepancies found in a SMS would imply a deviation from onerous industry standards or even demonstrate the violation of regulations, which would strongly infer a careless conduct.⁵⁸⁵ The analysis made by judicial authorities and insurers might now shift towards examining documents illustrating the correct implementation and use of SMS procedures, whereas previous litigation strategies strictly focused on the immediate conduct of

 ⁵⁸² Gregory W Poulos, "Legal Implications of the ISM Code: New Impediments to Sea Fever" (1997) 9:1 Univ San Franc Marit Law J 37 at 60–63; Phil Anderson, *supra* note 537 at 168–169; Gregory W. Poulos, *supra* note at 1609.
 ⁵⁸³ Christopher Johnstone, "Some Legal Implications of the Implementation of the ISM Code in Australia" (2001) 6 Int Trade Bus Law 151 at 152; Paul S Edelman, "The Maritime Industry and the ISM Code" (1999) 8 Int Trade Law

J 43 at 45; Craig H. Allen, *supra* note 192 at 8–10.

⁵⁸⁴ Thomas J. Whalen, *supra* note 533 at 19.

⁵⁸⁵ Paul S. Edelman, *supra* note 584 at 44–45.

airline employees.⁵⁸⁶ With the overlying risk of losing its insurance coverage, the introduction of SMS as evidence will effectively open the carrier's monetary floodgates.

5.3 Liability Implications for Canadian Domestic Carriers

For Canadian air carriers engaged in *domestic* transportation solely within Canada, the bearing of SMS on air carrier liability will not be bound by the Montreal Convention which applies exclusively to international transport.⁵⁸⁷ Rather, the liability would depend on Canadian *Common Law Tort Law* or on Québec's Civil Law principles of *Civil Responsibility*.⁵⁸⁸ Because both legal liability systems are fault-based, the introduction of SMS as evidence will significantly influence the liability of domestic carriers.

A) Common Law Liability

In Canadian Common Law Torts, domestic air carriers are governed by the case law for common carriers.⁵⁸⁹ In Tort law, carriers are bound to use the utmost care, skill, prudence and diligence, in everything that concerns the safety of its passengers.⁵⁹⁰ A carrier must exercise an elevated *duty of care* when operating air transportation services. ⁵⁹¹ Consequently, any nonconformity with SMS procedural documentation that causes harm to another party may result in negligence.⁵⁹² In practise, "liability in negligence will be judged not by what was *reasonable* under the circumstances but rather by what would have been the *best* practice."⁵⁹³ Because of the

⁵⁸⁶ Phil Anderson, *supra* note 537 at 240.

⁵⁸⁷ Convention for the Unification of Certain Rules for International Carriage by Air (Montreal Convention), supra note 533, sec 1; Bin Cheng, "Labyrinth of the Law of International Carriage by Air - Has the Montreal Convention 1999 Slain the Minotaur" (2001) 50 Z Luft-Un Weltraumrecht 155 at 169–170; Paul Stephen Dempsey & Michael Milde, *supra* note 574 at 66–67. The liability regime of the Montreal Convention does not apply to flights conducted inside a single country, with a point of departure and destination in the same State. Consequently, the air carrier's liability regime varies geographically for Canadian carriers.

⁵⁸⁸ See Roger S Watts, "The Great White North: An Overview of Canadian Carrier and Intermediary Liability Regimes in Canada" (2013) 11 Transp Lawyer 50.

⁵⁸⁹ Fosbroke-Hobbes v Airwork Ltd, [1937] 1 All ER 108; Ludditt v Ginger Coote Airways Ltd, [1942] 2 DLR 29,
53 CRTC 353, 57 BCR 176; Gofer v Wings Ltd, [1939] 1 DLR, 13, 48 CRC 322, Nysted v Wings Ltd — [1942] MJ
No 34; [1942] 3 DLR 336; [1942] 3 WWR 39; 51 ManR 63 MBKB, Kowalewich v Airwest Airlines Ltd— [1977]
BCJ No 947; [1978] 2 WWR 60 BCSC, at 194.

⁵⁹⁰ Nysted v Wings Ltd— [1942] MJ No 34; [1942] 3 DLR 336; [1942] 3 WWR 39; 51 ManR 63 MBKB, , para 20. ⁵⁹¹ Grossman v Canada — [1952] SCJ No 11, Galer v Wings Limited [1938] CCS NO 696 CCH DRS, Arnason v

Northway Aviation Ltd, — [1980] MJ No 446, Day v Toronto Transportation Commission, [1940], .

⁵⁹² Gregory W. Poulos, *supra* note 61 at 49.

⁵⁹³ Craig H. Allen, *supra* note 192 at 11.

inherent dangerous nature of air transportation, the Supreme Court of Canada has stated that air carriers have a heightened duty of care to react to hazards:

"Although the carrier of passengers is not an insurer, yet if an accident occurs and the passenger is injured, there is a heavy burden on the defendant carrier to establish that he had used all due, proper and reasonable care and skill to avoid or prevent injury to the passenger. The care required is of a very high degree."⁵⁹⁴

It has been established that the duty of care and vigilance increases in proportion with the danger involved in the custody or control of an airline.⁵⁹⁵ A carrier must encourage "foresight in everything that pertains to its safety and fitness"⁵⁹⁶ when operating air services. When invoking negligence, a plaintiff can rely on the maxim *Res Ipsa Loquitur*,⁵⁹⁷ which allows Courts to draw inferences of negligence when an airline in question was in operational control of an aircraft that caused injury to another party.⁵⁹⁸ With SMS, this could be at the disadvantage of a defending carrier, who must provide a rebuttal for every fact to reverse the burden of negligence.⁵⁹⁹ Hence, airlines hold a very high burden of liability when defending themselves from potential liability:

"Their undertaking is to take all due care and to carry safely so far as reasonable care and forethought can attain that end. The degree of care is very high. They are bound, so far as such high degree of care can accomplish, to see that everything under their control is completed and in proper order. They are answerable for the soundness of their vehicles and are liable for any defects which careful and reasonable examination would reveal, and periodical testing and examination is a duty. As to onus that the fact that a vehicle of transportation breaks down is prima facie evidence of negligence, that if the defendant has taken all reasonable care and used the best precautions in known practical use for securing safety, the carriers are not liable for accidents due to latent defects in their vehicles which such precaution would not discover."⁶⁰⁰

For this reason, Canadian carriers will have a heightened responsibility to ensure that their SMS is providing effective and timely responses to safety concerns, or else they will be

⁵⁹⁴ Day v the Toronto Transportation Commission (1940) SCR, at 443.

⁵⁹⁵ Arnason v Northway Aviation Ltd, - [1980] MJ No 446, , para 13.

⁵⁹⁶ Nysted v Wings Ltd.— [1942] M.J. No. 34; [1942] 3 D.L.R. 336; [1942] 3 W.W.R. 39; 51 Man.R. 63 MBKB, supra note 591, para 81.

⁵⁹⁷ Howard S Goldin, "The Doctrine of Res Ipsa Loquitur in Aviation Law" (1945) 18 South Calif Law Rev 124; Warren Jefferson Davis, "The California Doctrine of Res Ipsa Loquitor as Affording an Inference of Negligence and Not a Presumption of Law" (1934) 5 Air Law Rev 28. The doctrine of res ipsa loquitur imposes "the duty upon the defendant of explaining to the triers of fact, why the defendant was without fault and why the defendant should be excused from liability" instead of leaving the burden to prove such negligent on the injured party.

⁵⁹⁸ Kowalewich v Airwest Airlines Ltd— [1977] BCJ No 947; [1978] 2 WWR 60 BCSC, .

⁵⁹⁹ Howard S. Goldin, *supra* note 598.

⁶⁰⁰ Galer v Wings Limited [1938] CCS NO 696 CCH DRS Consolidation Volume 4 P84-439 [1939] 1 DLR 13, at 13.

liable for any potential injury.⁶⁰¹ If a carrier's SMS reveals that it did not react adequately to an identified hazard, it will not be able to reverse the burden of negligence. Relying on two landmark decisions from the Supreme Court of Canada discussing the standard of negligence, *Mustapha v Culligan of Canada Ltd*⁶⁰² and *Cooper v Hobart*,⁶⁰³ the negligence of Canadian airlines will be impacted by SMS data on whether or not a carrier has breached the judicially recognized *Common Carrier Standard of Care*.⁶⁰⁴ In its analysis, Courts will be tasked with evaluating if the airline's conduct created an unreasonable risk of harm for passengers⁶⁰⁵ and "whether the circumstances disclose reasonably foreseeable harm and proximity [with the injury] sufficient to establish a prima facie duty of care."

In the legal spectrum of the Common Carrier Duty of Care, information obtained from SMS databases will provide litigators with a clear trail establishing whether or not an airline provided adequate and prompt corrective actions whenever a hazard was identified. With every possible hazard identified within an operation, it will be a challenging task for defending airlines to prove that their operation was safe and moreover, that their corrective action plans were sufficient and diligent enough, even though an accident ultimately occurred.⁶⁰⁷ In litigation cases where bodily injury or death was caused, how can defendants effectively prove that their risk management strategies were properly executed by taking all reasonable actions to precisely prevent such a tragedy?⁶⁰⁸

On the other hand, airlines that competently document hazards and correct nonconformities whenever they occur will be in a healthier position to argue that they took all reasonable measures to avoid an accident⁶⁰⁹ and ensure a standard of reasonable care under their

⁶⁰¹ Laurie Crick Shatjian, *supra* note 535 at 409.

⁶⁰² Mustapha v Culligan of Canada Ltd, [2008] 2 SCR 114, at 114.

⁶⁰³ Cooper v Hobart, [2001] 3 SCR 537.

⁶⁰⁴ *Mustapha v Culligan of Canada Ltd.*, [2008] 2 SCR 114, *supra* note 606, para 1, 3 and 5; *Cooper v. Hobart*, [2001] 3 SCR 537, 2001 SCC 79, *supra* note 607.

⁶⁰⁵ *Mustapha v Culligan of Canada Ltd.*, [2008] 2 SCR 114, *supra* note 606, para 2; Honourable Allen M Linden & Bruce Feldthusen, *Canadian Tort Law*, 9th ed (Toronto, Ontario: LexisNexis, 2011) at 130; Transportation Research Board of the National Academies, *supra* note 526 at 21.

⁶⁰⁶ Cooper v Hobart, [2001] 3 SCR 537, 2001 SCC 79, supra note 607 at 79.

⁶⁰⁷ Gregory W. Poulos, *supra* note 583 at 51.

⁶⁰⁸ Transportation Research Board of the National Academies, *supra* note 523 at 43.

⁶⁰⁹ Gregory W. Poulos, *supra* note 583 at 57; Antonio J. Rodriguez & Mary Campbell Hubbard, *supra* note 544 at 1604.

SMS.⁶¹⁰ Nevertheless, operators may be considered negligent if they violate their internal SMS safety policies, which may be considerably superior to regulatory or industry standards.⁶¹¹ SMS can be the best friend or worse enemy of an airline when defending itself from a negligence claim. Any accident will in reality be interpreted, *prima facie*, as a failure of the airline's SMS and hence, as negligence.⁶¹² The managerial ignorance of latent organizational conditions, such as outdated checklists, antiquated aircraft equipment or inadequate aircrew training, could be sufficient grounds to invoke negligence, provided there is causality between the injury and the non-compliance of SMS.⁶¹³ While SMS information will outline every safety deficiency and hazard exposure of an airline, accidents will draw inescapable inferences that the carrier did not take every reasonable action within its SMS framework to prevent such tragic occurrences from happening.⁶¹⁴ In the sphere of SMS, airlines must now adhere to near-perfect responses and must walk a thin line to avoid potential liabilities, whereas the absence of knowledge of risk before SMS could have provided a valid defence against a claim of negligence.⁶¹⁵ The mere knowledge itself of hazards, without prompt or adequate responses, could be interpreted as negligence:⁶¹⁶

"The documentation chain is almost inevitably going to contain some imperfections, and these are likely to be exploited by claimants – the greater the volume of documentation, the greater the risk of inconsistencies, given that the world is not a perfect place and the systems are run by humans. There is also a risk that more documentation will make things look worse than they actually are – many non-compliances may be minor, but in the hands of a skilled claimant lawyer they will be made to look like a catalogue of disasters."⁶¹⁷

The sheer fact that airlines will be documenting these hazards will heighten their liability, since they will expose every single operational risk and imperfection, many of which would have been unknown previous to the implementation of SMS.⁶¹⁸ In practice, the exhaustive SMS data trail will create an insurmountable burden of proof for defending airlines.

⁶¹⁰ Antonio J. Rodriguez & Mary Campbell Hubbard, *supra* note 544 at 1600.

⁶¹¹ Ibid.

⁶¹²*supra* note 583 at 49; Transportation Research Board of the National Academies, *supra* note 523 at 21.

⁶¹³ Paul S. Edelman, *supra* note 584 at 45; Gregory W. Poulos, *supra* note 583 at 49. Mustapha/Hobart Cases

⁶¹⁴ Transportation Research Board of the National Academies, *supra* note 523 at 43.

⁶¹⁵ *Ibid* at 22; Phil Anderson, *supra* note 537 at 204.

⁶¹⁶ Gregory W. Poulos, *supra* note 15 at 45; *ibid* at 50.

⁶¹⁷ Phil Anderson, *supra* note 537 at 135.

⁶¹⁸ Transportation Research Board of the National Academies, *supra* note 523 at 22.

B) Civil Law Liability

The Civil Code of Québec⁶¹⁹ codifies in Section 1458⁶²⁰ the *contractual responsibility* for a carrier's liability for bodily injury or death caused while exercising a contract of carriage⁶²¹ in the Province of Québec.⁶²² Consequently, air carriers must exercise prudence, diligence and act in a reasonable manner⁶²³ when ensuring flight safety under their reciprocal contract of carriage with its passengers. This is referred to as the *requirement of reasonable prudence*, where carriers must act with a duty of prudence and diligence to avoid causing moral, material or bodily harm to its passengers.⁶²⁴

⁶²² Ibid; Jean-Louis Baudoin & Valérie Lafond, "La responsabilité civile", (février 2014), online: Réseau Jurid Qué - Portail Droit Au Qué < http://www.avocat.qc.ca/public/iiresp-contract.htm>. Section 1458 contractual responsibility applies whenever a contractual relationship exist between parties, whereas Section 1457' extracontractual responsability applies when no contract is binding for both parties. See Dufour c. Air Canada, 2008 QCCQ 12140 (CanLII). Claims may be instituded in the Province of Québec not only for flights physically conducted within the province, but also for contracts legally executed in the jurisdiction of its Courts

Civil Law claims may be instituted in the Province of Québec under the following conditions:

⁶¹⁹ Civil Code of Québec, 1994, SQ C 64 [Civil Code of Québec].

⁶²⁰ *Ibid*, sec 1458. "Every person has a duty to honour his contractual undertakings. Where he fails in this duty, he is liable for any bodily, moral or material injury he causes to the other contracting party and is bound to make reparation for the injury; neither he nor the other party may in such a case avoid the rules governing contractual liability by opting for rules that would be more favourable to them." Sections 1607 and 1611 provide compensation for moral, material or bodily injury.

⁶²¹ Civil Code of Québec, supra note 103. See the Contract of Carriage in Sections 2030 to 2051

⁶²³ Pierre Deschamps, *Chapitre I - Les conditions générales de la responsabilité civile du fait personnel*, Collection de droit 2013-2014 (Cowansville, Québec: Éditions Yvon Blais, 2013) at 18–19; *Zagury c Société Air France*, 2004 CanLII 12442, , para 22; *Code of Civil Procedure - Province of Québec*, 2014, C-25 [*Code of Civil Procedure - Province of Québec*], sec 68.

[&]quot;68. Subject to the provisions of this Chapter and the provisions of Book X of the Civil Code, and notwithstanding any agreement to the contrary, a purely personal action may be instituted:

⁽¹⁾ Before the court of the defendant's real domicile or, in the cases contemplated by article 83 of the Civil Code, before that of his elected domicile.

If the defendant has no domicile in Québec but resides or possesses property therein, he may be sued before the court of his ordinary residence, before the court of the place where such property is situated, or before the court of the place where the action is personally served upon him;

⁽²⁾ Before the court of the place where the whole cause of action has arisen; or, in an action for libel published in a newspaper, before the court of the district where the plaintiff resides if the newspaper has circulated therein;

⁽³⁾ Before the court of the place where the contract which gives rise to the action was made ⁶²⁴ Jean-Louis Baudoin & Patrice Deslauriers, *La Responsabilité Civil*, 7th ed (Cowansville, Québec: Éditions Yvon Blais, 2007) at 158. « La responsabilité civile naît de la transgression d'un devoir ou d'une obligation envers autrui. (...) Son application se produit lorsqu'une personne fait défaut de se comporter de façon raisonnablement prudente et diligente et cause ainsi un dommage un dommage à un tiers. Dans les deux situations, naît une obligation de réparer le préjudice ainsi causé que celui-ci soit corporel, moral ou matériel.»

In reality, the standard of negligence for a contract of carriage executed in Québec or in any other Canadian province are both quite similar.⁶²⁵ The Supreme Court of Canada has concluded that "the common law standard of care is analogous to the requirement of reasonable prudence under the Civil Code."⁶²⁶ Similar to Common Law Tort liability, if an operator fails to reasonably provide corrective actions or worse, fails to implement or utilize mandatory safety management systems, the systemic lack of *precautions*⁶²⁷ taken by an air carrier to address a safety risk could lead to liability in Civil Law.⁶²⁸ Since Section 1474 of the Civil Code recognizes an *explicit* difference between *negligence* and *gross negligence*,⁶²⁹ a considerable deviation from industry standards and safety protocols documented by SMS data could even be interpreted as *gross negligence*. The Supreme Court of Canada has defined the Civil Law concept of gross negligent as:

"A conduct that shows recklessness, gross carelessness or total disregard for the interests of others, and assign specific legal consequences to it. The courts have also equated gross fault with intentional, wilful and fraudulent fault and sometimes, in specific circumstances, "serious" fault."⁶³⁰

Section 1613 explicitly states that gross negligence significantly increases the Court's assessment of damages awarded to a passenger for bodily injury or death caused by an air carrier, including punitive damages which may not be awarded in international carriage.⁶³¹ Common Law Torts also allow punitive damages for gross negligence but *only* in very exceptional cases.⁶³² In light of this, SMS records used as evidence in Civil Law jurisdictions "may also

⁶²⁵ Department of Justice, "Bijuralism in Supreme Court of Canada Judgments Since the Enactement of the Civil Code of Québec", (2013), online: *Gov Can* http://www.justice.gc.ca/eng/rp-pr/csj-sjc/harmonization/hfl-hlf/b3-f3/bf3f.html>.

⁶²⁶ Canadian National Railway Co v Vincent [1979] 1 SCR 364.

⁶²⁷ Jean-Louis Baudoin & Patrice Deslauriers, *supra* note 625 at 159–160. The emerging Civil Law principle of « Precaution » could therefore be applied. Under this principle, individuals can be found liable for failing to anticipate and prevent current risks with an existing probability of causing a generalised and serious injury to other parties. ⁶²⁸ Phil Anderson, *supra* note 537 at 220–223.

⁶²⁹ Civil Code of Québec, supra note 620, sec 1474.

[&]quot; 1474. A person may not exclude or limit his liability for material injury caused to another through an *intentional or gross fault; a gross fault is a fault which shows gross recklessness, gross carelessness or gross negligence.* He may not in any way exclude or limit his liability for bodily or moral injury caused to another"

⁶³⁰ *Finney v Barreau du Québec,* [2004] 2 SCR 17, para 34; Also see Jean-Louis Baudoin & Patrice Deslauriers, *supra* note 125 at 123–124.

⁶³¹ Civil Code of Québec, supra note 620, sec 1613 and 1621.

⁶³² Whiten v Pilot Insurance Co., [2002] 1 S.C.R. 595 : (1) Punitive damages are very much the exception rather than the rule, (2) imposed only if there has been high-handed, malicious, arbitrary or highly reprehensible misconduct that departs to a marked degree from ordinary standards of decent behaviour. (3) Where they are

demonstrate the serious omission of an act that could be construed as [grossly] negligent."⁶³³ With the introduction of SMS as evidence, the focus of litigators in Civil Law jurisdictions will likely shift towards demonstrating the carrier's gross negligence as an aggravating factor to increase the level of compensation awarded to injured parties.

While most reasonable carriers would exercise an extremely high degree of prudence and diligence when tackling safety risks, SMS data will provide a clear roadmap to litigants as to whether or not an airline has met the benchmark of due-diligence or gross negligence set out by the Civil Code of Québec. Litigators seeking to obtain SMS data will analyze the adequacy of training provided to airline personnel, emergency preparedness, the airline's business decisions in relation to safety levels etc. Irregularities found in the course of litigation could raise suspicion as to whether or not the SMS was working properly and have a bearing on the Court's interpretation of the severity of the carrier's negligence. SMS will become a valuable source of information, illustrating all potential liabilities to which the airline was exposed to and required it to act reasonably whilst exercising its standard of reasonable prudence.⁶³⁴ Consequently, the liability of carriers brought before Civil Law and Common Law jurisdictions will experience very similar fates.

5.4 Summary

In summary, we must not forget that human performance is imperfect and that even the most safety-compliant and experienced airlines will make inadvertent mistakes. Courts should

awarded, punitive damages should be assessed in an amount reasonably proportionate to such factors as the harm caused, the degree of the misconduct, the relative vulnerability of the plaintiff and any advantage or profit gained by the defendant, (4) having regard to any other fines or penalties suffered by the defendant for the misconduct in question. (5) Punitive damages are generally given only where the misconduct would otherwise be unpunished or where other penalties are or are likely to be inadequate to achieve the objectives of retribution, deterrence and denunciation. (6) Their purpose is not to compensate the plaintiff, but (7) to give a defendant his or her just desert (retribution), to deter the defendant and others from similar misconduct in the future (deterrence), and to mark the community's collective condemnation (denunciation) of what has happened. (8) Punitive damages are awarded only where compensatory damages, which to some extent are punitive, are insufficient to accomplish their purpose. (10) The jury should be told that while normally the state would be the recipient of any fine or penalty for misconduct, the plaintiff will keep punitive damages as a "windfall" in addition to compensatory damages. (11) Judges and juries in our system have usually found that moderate awards of punitive damages, which inevitably carry a stigma in the broader community, are generally sufficient.

⁶³³ Transportation Research Board of the National Academies, *supra* note 523 at 18.

⁶³⁴ Phil Anderson, *supra* note 537 at 104.

not focus their evidence on the number of reported hazards or incidents, but rather on the adequacy of subsequent risk management strategies and corrective action plans. Nonetheless, reality suggests that SMS data will likely provide litigators with additional tools to determine whether an airline was negligent in managing a risk before it contributed to a serious event. It is the author's opinion that SMS will become a considerable factor in the near-future when establishing a domestic air carrier's liability following an accident. Moreover, it will have significant ramifications for carriers trying to limit the amount of compensation awarded in domestic and international carriage. While some families and surviving passengers will benefit from the evidentiary significance of SMS, the safety-benefits of SMS will undoubtedly suffer a tragic impact, as "there may be a temptation on the part of some not to report, or at least document, non-conformities for fear that such documentation could be subsequently used against the company."⁶³⁵ A recent study has demonstrated that "the preparedness of aviation personnel to report their mistakes for the benefit of safety improvement drops considerably when the risk of prosecution becomes real."⁶³⁶ Consequently, the impact of increased SMS-based litigation will likely decrease the effectiveness of SMS and prevent it from improving the industry's safety.

⁶³⁵ *Ibid* at 216.

⁶³⁶ National Aerospace Laboratory NLR, *supra* note 48 at 260. In the Netherlands, for instance, proactive safety reporting declined by 50% when legal proceedings were instigated against air traffic controllers and where the use of such information was made available.

As the second largest land mass in the world, Canada has relied heavily on aviation for the last century as a measure to promote economic development and unite northern communities with major Canadian cities along the urban fringes of the American border.⁶³⁷ In light of this imperative political and economic interest, it is not surprising that Canada has taken the reigns as the first ICAO Member State to implement SMS in civil aviation. As a pioneer in this ground-breaking field, Canada has been a front-row witness in tailoring SMS to the aviation for the very first time in the industry's history. In the process, it has uncovered several legal deficiencies that may or may not affect the long-lasting success of this new safety regime. Some of these concerns include TC's struggles to oversee a smooth transition to SMS with adequate guidance and oversight, the vulnerability of SMS data to public disclosure and the potential use of such information against carriers in civil proceedings.

The fact remains that the theoretical benefits of SMS explained earlier in this thesis have a proven track record in several other complex industries and should not be overshadowed by these transitional glitches. We should embrace the actual knowledge of these potentially legal shortcomings and bring forward legal solutions that will afford a sustainable safety regime to Canadian carriers. Historically, the improvement of safety levels has been achieved by strict industry regulation, but more importantly, by the striving dedication of aviation professionals towards the further improvement of safety levels.⁶³⁸ To ensure its sustainability, SMS will require political commitment from TC, including adequate guidance resources and surveillance efforts. Finally, a statutory protection for SMS data against its disclosure in the public domain or as evidence in Court is necessary for the effectiveness of the SMS framework.

Niccolo Machiavelli once said that "There is nothing more difficult to take in hand, more perilous to conduct or more uncertain in its success than to take the lead in the introduction of a new order of things."⁶³⁹ SMS is the new order of safety in aviation and Canada has moved ahead

⁶³⁷ Paul Stephen Dempsey, *supra* note 27 at 114.

⁶³⁸ Mikolaj Ratajcyk, *supra* note 6 at 402.

⁶³⁹ Niccolo Machiavelli, "The Prince - Chapter VI: Concerning New Principalities Which Are Acquired By One's Own Arms And Ability", online: *The Constitution* http://www.constitution.org/mac/prince06.htm.

in this innovative era by endorsing its theoretical benefits, regardless of the relatively untested compatibility of SMS with aviation. Despite the fact that Canadian carriers have faced significant legal and practical obstacles since the launch of SMS, we must praise Canada's initiative to undertake this new challenge in its effort to improve the industry's safety levels. Albeit the fact that many countries remain hesitant about moving forward with the cultural change imposed by SMS in aviation, Canada has jumped head first into this new era of safety regulation. The fact remains that SMS is now fully operational in the airline industry and is providing these operators with an additional defences against industry hazards. While it is a relatively easy exercise to point out what went wrong during this transition, Canada's proven resiliency towards improving safety and SMS will undoubtedly provide other countries with an excellent roadmap to adopt SMS worldwide in the very near future.

We must stress the pre-eminence of safety as an essential foundation in civil aviation, which compels the entire ICAO community to address the development of modern improvements to the current accident rate.⁶⁴⁰ Law-abiding airlines are not necessarily safer airlines anymore.⁶⁴¹ This is why Safety Management Systems are crucially important for Canadian carriers, as they allow them to make the unavoidable trade-off between organizational priorities and safety concerns tenable for the travelling public.⁶⁴² ICAO statistics demonstrate that there are on average 2.8 accidents per million departures.⁶⁴³ With international air traffic expected to double between now and 2030,⁶⁴⁴ the number of accidents will consequently double in correlation with the industry's increase in size. Given that Canadian commercial air carriers suffered 39 accidents in 2013,⁶⁴⁵ the travelling public can therefore expect almost 80 serious accidents every year by 2030 and suffer several casualties if the air transportation industry does not change its approach to safety.

⁶⁴⁰ Ruwantissa Abeyratne, "Safety in the Air: Air Carriers" Rights and Responsibilities at National and International Law" (2003) 32 Common Law World Rev 275 at 297.

⁶⁴¹ Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 2 at 161.

⁶⁴² Marta Simoncini & Giuseppe Contissa, "Against the Failures of Risk Regulation Liability and Safety in Air Traffic Management (ATM)" (2013) 2 Eur J Risk Regul 175 at 189.

⁶⁴³ International Civil Aviation Organization, *ICAO Safety Report - 2014 Edition*, Safety (Montréal, QC: International Civil Aviation Organization, 2014) at 8.

⁶⁴⁴ Raymond Benjamin, "Address by the Secretary General of the International Civil Aviation Organization (ICAO)
Seventh Annual ICAO Air Services Negotiation Event (ICAN/2014)", (17 November 2014), online:

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⁶⁴⁵ Transportation Safety Board of Canada, *supra* note 291.

While we have vet to collect any statistics demonstrating the effectiveness of SMS in reducing aviation accidents, conserving traditional approaches to managing safety will certainly not protect the international community from a substantial increase in aircraft accidents. The TSB has stated that SMS brings an intricate, yet efficient, cure to these sombre statistics, as it will further reduce an already low accident rate with proactive safety management efforts.⁶⁴⁶ With the constant growth of global air traffic, proportionate and cost-efficient regulation of safety will be the key to addressing the industry's aspirations of achieving a nearly-perfect safety record. ⁶⁴⁷ While the cure might seem to be rather onerous, inconvenient and painful at times for the industry, SMS has the potential to create a safer environment where safety objectives can be realistically achieved with systematic efforts.⁶⁴⁸ In light of this, we must avoid being complacent about our current safety record and bring forward contemporary solutions, such as SMS, to promote and protect the wellbeing of the travelling public. While SMS cannot realistically immunize every carrier against the failure of an accident, other industries offer promising evidence that SMS will bring us a relatively safer industry and ultimately save countless lives in the process.

⁶⁴⁶ Transportation Safety Board of Canada, "Opening Remarks at the International Women in Aviation Conference Kathy Fox Board Member Transportation Safety Board of Canada Evolving Approaches to Managing Safety and Investigating Accidents 'From Individual to Organizational Safety Management' Orlando, Florida'', (27 February 2010), online: Transp Saf Board Can < http://www.bst-tsb.gc.ca/eng/medias-media/discoursspeeches/2010/KFox_20100227.asp>. ⁶⁴⁷ Mikolaj Ratajcyk, *supra* note 6 at 425.

⁶⁴⁸ Alan J. Stolzer, John J. Goglia, & Carl D. Halford, *supra* note 3 at 385.

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