



State Safety Program (SSP) For Civil Aviation in Canada



This page to be filled in with copyright notice and any other publication details, including information, below.

Issuing office: Transport Canada Civil Aviation
File number: A 5500-53 U
Issue number: 01
RDIMS number: 15904513
Effective date: 2021-09-01

AMENDMENTS TO TP 15462 1st EDITION

| Amendment | Subject(s) | Effective date (yyyy/mm/dd) |
|-----------|-------------------|--------------------------------|
| 0 | Original document | TBD |

Table of contents

| | |
|--|-----------|
| AMENDMENTS TO TP 15462 1st EDITION | 3 |
| Endorsement—Name/Title | 6 |
| Foreword | 6 |
| Definitions and Abbreviations | 7 |
| 1.0 Chapter 1—Introduction | 8 |
| 1.1 Overview—SSP primary documentation..... | 8 |
| 1.2 Applicability | 9 |
| 1.3 State safety responsibilities and accountabilities..... | 9 |
| 2.0 Chapter 2—State safety policy and objectives | 13 |
| 2.1 State Safety Program policy statement..... | 13 |
| 2.2 SSP overview..... | 15 |
| 2.2.1 Canada’s SSP development | 17 |
| 2.2.2 SSP Governance—Responsibilities and resources..... | 18 |
| 2.2.3 Canada’s SSP logic model..... | 18 |
| 2.2.4 SSP Advisory Council—National safety program collaboration..... | 18 |
| 2.2.5 SSP documentation and records | 20 |
| 2.3 SSP continuous improvement..... | 20 |
| 2.3.1 Internal SSP measuring and monitoring | 20 |
| 2.3.2 External SSP assessment/audit..... | 21 |
| 2.3.3 State accident and incident investigation | 21 |
| 2.3.4 State enforcement policy..... | 21 |
| 3.0 Chapter 3—State safety risk management | 22 |
| 3.1 Strategic Safety Risk Assessment (SSRA) program | 22 |
| 3.2 Safety Management System (SMS)—Requirements for the service providers..... | 23 |
| 3.2.1 Scalability | 24 |
| 3.2.2 SMS – Aircraft, aircraft engine or propeller design organizations..... | 25 |
| 3.2.3 SMS for small operators (AOC, ATO/FTU, and AMO)..... | 25 |
| 4.0 Chapter 4—State safety assurance | 26 |
| 4.1 Surveillance policy | 26 |
| 4.2 Mandatory safety reporting | 27 |
| 4.3 Occurrence reporting system..... | 27 |
| 4.4 Voluntary/confidential incident reporting system..... | 27 |
| 4.5 Service Difficulty Reporting (SDR) system | 28 |
| 5.0 Chapter 5—Safety data collection and processing systems | 28 |
| 5.1 Data sharing and the protection of safety information | 28 |
| 5.2 Databases and Governance | 28 |
| 5.3 Aviation safety body of knowledge and other data considerations | 29 |
| 5.3.1 Data linkages to other projects..... | 29 |
| 6.0 Chapter 6—State safety training and promotion | 30 |
| 6.1 Internal training, communication of safety information | 31 |
| 6.1.1 Internal SSP, SMS and safety training..... | 31 |

| | | |
|---------|---|----|
| 6.1.2 | Delegated officer training and authorization | 31 |
| 6.1.3 | Communication of safety information..... | 32 |
| 6.2 | External support, training, communication of safety information | 33 |
| 6.2.1 | External safety management support | 33 |
| 6.2.2 | External SMS and SSP training/education facilitation | 34 |
| 6.2.3 | External (public) communication and dissemination of safety information | 34 |
| Annex A | | 35 |

Endorsement—Name/Title

This SSP policy statement is endorsed by the senior leaders of TC, and the TSB on behalf of Canada and is listed in the original signed SSP policy statement document. See RDIMS No. 15904513 for a copy.

Foreword

Canada is an immense nation spanning 18 million km² of navigable airspace from coast to coast to coast with an enviable aviation safety record. Our civil aviation system is quite complex due to many challenges: harsh weather; remote areas with limited populations; and vast distances. Established in 1936, the Department of Transport sets the rules, regulations and safety oversight framework of Canada's civil aviation safety system. Regulated by the *Aeronautics Act* and the *Canadian Aviation Regulations (CARs)*, service providers, enterprises and other certificate holders ensure safe operations, which includes safety management system (SMS) requirements with safety oversight by Transport Canada Civil Aviation (TCCA). Internally, TCCA has established the Integrated Management System (IMS) Standard which helps to facilitate the articulation of best business practices within the Department.

Canada is a founding signatory State to the Convention on International Civil Aviation (Chicago Convention) in 1944, and has been an active member of the International Civil Aviation Organization (ICAO) ever since. Canada is committed to implementing the international standards developed by the Organization and continues to support and actively participate in ICAO's initiatives. This demonstrates an ongoing commitment to the enhancement and continuous improvement of the safety, security, efficiency, and environmental sustainability of Canada's civil aviation system.

Canada recognizes the benefits of ICAO's **State Safety Program (SSP)** to harmonize with global civil aviation standards which demonstrate to our stakeholders (i.e., ICAO member States, the aviation industry, and the travelling public) our commitment to the continued evolution of our civil aviation safety program. The required SSP principles are outlined in the ICAO Annex 19, *Safety Management*, and are grouped into four components: State safety policy; State safety risk management; State safety quality assurance; and State safety promotion.

For Canada, the safety oversight, governance, and regulatory responsibilities reside within the TCCA Directorate. A systemic approach to risk management promotes a transparent process that establishes clear lines of accountability for decision-making. TCCA's mission is based on the concept that intervention strategies - rulemaking, oversight, and certification - are tools used to mitigate risk and that the Canadian civil aviation system is safe, secure, efficient, and environmentally responsible.

The State safety policy and objectives component defines how Canada will manage safety throughout its aviation system. This obligation includes the determination of responsibilities and accountabilities of the different State organizations related to the SSP as well as the broad safety objectives to be achieved by the program.

Canada's SSP involves multiple layers of governance relying on effective coordination and integration with systems internal to the Government of Canada (GoC) and external stakeholders. Relationships between the various SSP elements and components are briefly described in this document, however, focus is placed on the role of TCCA and its partner organizations and their required contributions to Canada's SSP. By transitioning from a historically reactive safety oversight system to one that is more proactive and predictive, Canada is striving to strengthen its positive safety culture while addressing tomorrow's risks – today.

Definitions and Abbreviations

The GoC's terminology and linguistic data bank, [TERMIUM Plus®](#), one of the largest terminology and linguistic data banks in the world, gives access to millions of terms in English, French, Spanish, and Portuguese. Abbreviations, definitions, and usage examples can be found in a wide range of specialized fields. The data bank is an essential tool for understanding an acronym, checking an official title, finding an equivalent in another language, and much more.

When possible, Canada uses terminology approved by ICAO that is commonly used in its Standards and Recommended Practices (SARPs). To maintain national consistency, Canada has established a lexicon of civil aviation terminology that is administered by the Aviation Terminology and Linguistic Services group within TCCA

To help promote the proper use of terminology in the lexicon within the civil aviation system, Canada has developed the [Civil Aviation Terminology System \(CATS\)](#), which is a search tool in the public domain.

In addition, TCCA has developed Advisory Circular (AC) 100-001, [Glossary for Pilots and Air Traffic Services Personnel](#), to promote the use of consistent terminology by air traffic services (ATS) staff and pilots. Canada recognizes the importance of communicating within the civil aviation system using the approved terminology and phraseology.

1.0 Chapter 1—Introduction

- (1) This document articulates how Canada meets the ICAO Annex 19 SSP requirements and the associated Safety Management Manual (Doc 9859) SARPs.
- (2) For clarity, this document is generally organized to model the ICAO Annex 19 SSP components and elements.

1.1 Overview—SSP primary documentation

- (1) The critical elements (CE) and components of the ICAO Annex 19 SSP are defined in many existing TCCA/TC and GoC documents. The following primary documents form a compendium of information that articulates Canada's SSP:
 - (a) **State Safety Program manual (SSPM)**
 - (i) This SSPM meets the SSP documentation requirement identified in ICAO Doc. 9859, paragraph 8.3.6.24 ("SSP Documentation") in that it describes Canada's State system and functions.
 - (ii) This document has been designed by TCCA to define how Canada exceeds the SSP requirements outlined in Doc 9859, and other applicable guidance material. The SSPM will be available both externally and internally to all stakeholders as a guidance tool to understand how Canada's civil aviation safety system is structured to meet the SSP requirements.
 - (b) **TCCA program manual**
 - (i) As Canada's civil aviation authority, TCCA is the lead organization for Canada's SSP. How TCCA conducts its Civil Aviation Program, including management, regulatory and oversight responsibilities, is described in its [TCCA Program Manual](#).
 - (ii) The TCCA program manual is a top-level document within TCCA's own quality management system, otherwise known as the Integrated Management System (IMS). IMS is a management and accountability framework, which describes all the interrelated activities necessary to consistently manage and conduct TCCA's Civil Aviation Program. The IMS is also consistent with the GoC's expectations in respect of the Management Accountability Framework.
 - (iii) By having IMS, TCCA is able to demonstrate to all stakeholders that it has a management system in place for the regulation and administration of safety. A description of TCCA's IMS is provided in its [Civil Aviation Integrated Management System Standard](#).
 - (c) **[Civil Aviation Reference Centre](#)**
 - (i) An online central document repository providing easy access to regulations, standards and guidance material for members of the Canadian civil aviation community.
 - (d) **National Aviation Safety Plan (NASP)**
 - (i) The national aviation safety plan (NASP) is a single document containing the State's strategy for the management of aviation safety and is one of the key documents produced as part of the State's SSP documentation. A State with an effective SSP has the capability to identify and mitigate national [operational safety risks](#). Therefore, the SSP assists in the development of the State's NASP by allowing the State to manage its safety improvement activities in a coherent

and proactive manner, measuring its safety performance, monitoring the implementation of the plan's safety enhancement initiatives (SEIs) and addressing any identified deficiencies.

- (2) These documents are reviewed periodically in accordance with IMS Standard to ensure they maintain alignment with ICAO, GoC and TC regulations, standards and policy.

1.2 Applicability

- (1) This document, which provides a full description of Canada's program to meet its State safety management responsibilities, including oversight, is applicable to all TC and other GoC employees where their work influences civil aviation safety in Canada. In addition, this document provides the public with a description of Canada's SSP.

1.3 State safety responsibilities and accountabilities

- (1) Canada has identified, defined and documented the requirements, responsibilities and accountabilities regarding the establishment and maintenance of the elements defined in the SSP. For each of these elements Canada has clear directives to plan, organize, develop, maintain, control and continuously improve the SSP in a manner that meets Canada's safety objectives. The resources needed to implement each of these safety elements of the SSP are described in detail within the document.

(2) Government of Canada (GoC)

(a) Overview of jurisdictional responsibilities

- (i) In terms of the SSP as it relates to aviation safety, the federal government has exclusive jurisdiction over aeronautics as detailed in the [Aeronautics Act](#).

(3) Minister of Transport

- (a) The transportation portfolio is one of the largest and most diverse in the GoC. The organization is overseen by the Minister and range from local, national, and international interests. Some of these organizations are financially self-sufficient, whereas others are heavily dependent on Federal funding.
- (b) In addition to TC, the Minister of Transport is responsible for overseeing approximately 55 other organizations including:
 - (i) 21 airport authorities
 - (ii) NAV CANADA
 - (iii) Canadian Air Transport Security Authority (CATSA)
 - (iv) Canadian Transportation Agency (CTA)
 - (v) Transportation Appeal Tribunal of Canada (TATC)

(4) Transport Canada

- (a) The Deputy Minister (DM) governs TC's activities through two distinct governance structures: an Organizational Governance Structure and the Departmental Results Framework (DRF) & Program Inventory.
 - (i) Organizational Governance Structure
 - TC consists of program and support groups working from a headquarters located in Ottawa with other locations across Canada.

The organizational structure, including information about senior officials, can be viewed here in the Department's [organizational chart](#).

(ii) Departmental Results Framework (DRF)

The second governance structure is the DRF. The DRF structures how TC plans and reports on its programs and activities and includes TC's core responsibilities, results and indicators. The DRF also demonstrates how objectives are achieved by the Department and outlines the results achieved for Canadians.

(iii) The DRF consists of:

(A) Three Core Responsibilities:

- (I) A safe and secure transportation system;
- (II) A green and innovative transportation system; and
- (III) An efficient transportation system;

(B) Nine results that TC reports on publicly; and

(C) A program inventory consisting of 34 programs in support of TC's [Transportation 2030 vision](#) as well as 10 internal services supporting all three core responsibilities.

(b) TC Executive Management Committee

- (i) The Executive Management Committee (TMX) is the most senior decision-making body at TC and consists of two distinct committees: the TMX Policy, Programs and Regulations Committee which provides oversight for strategic policy, program and regulatory initiatives, and the TMX Integrated Management Committee which considers items related to all facets of Departmental management. Collectively they determines strategic direction and priorities for the Department and leads the integrated planning and reporting process.

(c) Management Boards

- (i) Management Boards, including Strategic Outcome Management Boards (SOMBs) and the Internal Services Management Board (ISMB), represent the second level of decision-making at TC and report to the TMX. The Boards are comprised of TMX members at the Assistant Deputy Minister (ADM) and Regional Director General (RDG) levels. Their purpose is to determine strategic outcome directions and priorities that align with TC priorities; identify and manage risks; guide the development and implementation of policies, programs and legislative and regulatory initiatives; and manage budget reallocations and adjustments.

(d) Program Business Committees

- (i) The Program Business Committees (PBCs) are the next level of decision integration after SOMBs and the ISMB. The PBCs are managed at the Director General (DG) level and are mandated by and responsible to their governing SOMBs. The objective is to establish priorities and set operational directions for the program, which are aligned with TC's strategic outcome priorities and objectives.
- (ii) Each program is led by a Program Accountable Executive (PAE) at the DG level who is ultimately responsible for providing functional direction for the implementation of their respective programs.

(e) Safety and Security Group

- (i) The Safety and Security Group develops regulations and standards to support safety and security in air, marine, rail, and road transportation. Their main role is to implement programs such as monitoring, testing, and inspection to enforce the regulations and standards.
- (ii) The Group develops a comprehensive number of safety/security-related policies and regulations designed according to the mode of transportation. Here are some of the Group's activities:
 - (A) developing and implementing enhanced air passenger screening procedures to address new safety/security challenges;
 - (B) Engaging in internal and external consultations while developing certain new regulations, such as the ongoing consultations about level-grade railroad crossing regulations;
 - (C) Working to make sure that child car seats provide the best possible protection;
 - (D) Inspecting marine vessels to promote compliance with Canadian regulations and international conventions;
 - (E) Maintaining and deploying aircraft used to perform services in support of TC and other federal government programs;
 - (F) Promoting environmentally-friendly standards and regulations across all modes; and
 - (G) Designing standards and regulations to address the transportation of dangerous goods.
- (iii) The following is a summary of TC's Safety and Security Directorates which touch aviation:
 - (A) **Aircraft Services Directorate:** provides aircraft and related services to support TC operations as well as select programs of other federal government departments and agencies.
 - (B) **Aviation Security Directorate:** safeguards the integrity and security of Canada's aviation transportation system.
 - (C) **Civil Aviation Directorate (TCCA):** develops regulations and standards to promote a safe civil (non-military) air transportation system for both passengers and freight, and administers them through monitoring and inspection programs. This large and active directorate, carries out work vital to Canada's air transportation sector. TCCA is the lead organization responsible for Canada's SSP.
 - (D) **Transportation of Dangerous Goods Directorate:** develops standards and regulations; expertise; and oversight in terms of the transportation of dangerous goods by all modes.
 - (E) **Centre of Enforcement Expertise:** provides functional leadership support to officers (inspectors and investigators) on multimodal enforcement as well as to managers and other employees.
- (f) **Transport Canada Civil Aviation (TCCA)**
 - (i) TCCA is responsible for delivering Canada's SSP, and for achieving all targets set out in TC's Civil Aviation Safety Program.

- (ii) As lead organization for Canada's SSP, please consult the TCCA program manual for a description of TCCA's organizational, governance and reporting structures.

2.0 Chapter 2—State safety policy and objectives

- (1) As a regulatory department, TC plays a key role in the government's commitment to streamlined regulations that provide a high level of protection to the travelling public. TC is the federal government department responsible for most of the transportation policies, programs and goals set by the GoC.
- (2) In addition to developing regulations, TC conducts safety oversight activities to verify that all certificate holders are following prescribed regulations and promotes safety through different national education campaigns and collaborative initiatives. [The Department's vision and mission](#) statements further demonstrate Canada's recognition that safety is one of the key priorities of its civil aviation program/system.
- (3) In Canada's civil aviation system, the management of air navigation services (ANS) is the responsibility of [NAV CANADA](#), which is a private non-profit entity separate from TC. The [Civil Air Navigation Services Commercialization Act](#) defines how ANS is managed in Canada. NAV CANADA manages the day-to-day operations of aeronautical information services (AIS) under ICAO Annexes 4, *Aeronautical Charts*, and 15, *Aeronautical Information Services*, with air traffic services (ATS) under ICAO Annex 11, *Air Traffic Services*. TC's role is to put into effect regulations and provide safety oversight.
- (4) Incident and accident investigations in Canada are the responsibility of the [Canadian Transportation Accident Investigation and Safety Board](#), otherwise referred to as the Transportation Safety Board of Canada (TSB). This is an independent government agency responsible for incident and accident investigations under ICAO Annex 13. The [Canadian Transportation Accident Investigation and Safety Board Act](#) is the regulatory instrument that defines the TSB responsibilities and rights during accident and incident investigations.
- (5) The Transportation of Dangerous Goods (TDG) Directorate within TC is the focal point for the national program to promote public safety during the transportation of dangerous goods. The TDG Directorate serves as the major source of regulatory development, information and guidance on dangerous goods transport for the public, industry and government employees. TC has developed the TDG program with guidance from ICAO Annex 18 - *The Safe Transport of Dangerous Goods by Air*, with regulatory direction provided in the [Transportation of Dangerous Goods Act](#).
- (6) The State safety policy and objectives component defines how Canada will manage safety throughout its aviation system. This includes the determination of responsibilities and accountabilities of the different State partners that contribute to aviation safety in accordance with ICAO Annex 19, as well as the determination of the broad safety objectives to be achieved by the SSP.

2.1 State Safety Program policy statement

- (1) TCCA and the SSP State partners promote and regulate the safety of aviation in Canada. We are committed to developing and implementing effective strategies, regulatory frameworks and processes to ensure that aviation activities under our responsibility achieve the highest practicable level of safety performance.
- (2) To this end we will:
 - (a) Set national standards that support the ICAO SARPs;
 - (b) Adopt a data-driven and performance-based approach to safety regulation and industry surveillance activities where appropriate;
 - (c) Identify safety trends within the aviation industry and adopt a risk-based approach to address areas of greater safety concern or need;

- (d) Monitor and measure the safety performance of our aviation system continuously through the State's aggregate safety performance indicators as well as service providers' safety performance indicators;
 - (e) Collaborate and consult with the aviation industry to address safety matters and continuously enhance aviation safety;
 - (f) Promote good safety practices and a positive safety culture within the industry based on sound safety management principles;
 - (g) Encourage safety information collection, analysis, sharing and exchange amongst all relevant industry organizations and service providers, with the intent that such information is to be used for safety management purposes only;
 - (h) Allocate sufficient financial and human resources for safety management; and
 - (i) Equip staff with the proper skills and expertise to fulfill their safety management responsibilities competently.
 - (j) Assist in development of the the national aviation safety plan (NASP); one of the key documents produced as part of the State's SSP documentation.
- (3) State safety objectives
- (a) These are Canada's safety objectives:
 - (i) Ensure that Canada's safety system as a whole works effectively and that stakeholders are working together in the interests of safety;
 - (ii) Ensure Canada's safety regulatory and investigatory agencies remain world leading and have the skills and capabilities to maintain safety;
 - (iii) Ensure that Canada's SSP guides the NASP, which will then feed into the ICAO regional and global aviation safety plans. Together the plans allow the state to manage safety improvement activities in a coherent and proactive manner, measuring its safety performance, monitoring the implementation of the plan's safety enhancement initiatives (SEIs) and addressing any identified deficiencies.
 - (iv) Build on today's proactive accident prevention programs by adopting new tools and metrics to further anticipate potential sources of risk to identify and mitigate accident precursors and contributors, and strategically manage safety resources for maximum safety improvement in a manner that is cost effective;
 - (v) Build on safety management principles to proactively address emerging safety risk by using consistent, data-informed approaches to make smarter, system-level, risk-based decisions throughout Canada's aviation agencies, with industry, and global stakeholders;
 - (vi) Collaborate with domestic and international stakeholders to encourage cooperation for the open reporting of safety concerns;
 - (vii) Increase safety and efficiency by taking advantage of the growing availability of safety data and the development of additional analytical capabilities to systematically integrate the management of safety risk into decision-making;
 - (viii) Focus safety management activities toward higher risk areas and refine safety oversight models to prioritize safety inspection efforts based on risk;
 - (ix) Collaborate with the international aviation community to achieve smarter regulation for safety and cost effective measures to achieve sustainable aviation.

- (b) Individuals from public organizations who perform duties contributing to the achievement of safety objectives from the Programme, are committed to developing those duties in accordance with the principles of safety management that govern the SSP.
- (4) Endorsement
- (a) This SSP policy statement is endorsed by the senior leaders of TC, and the TSB on behalf of Canada and is listed in the original signed SSP policy statement document. See RDIMS No. 15904513 for a copy.

2.2 SSP overview

- (1) During the ICAO *High-level Safety Conference* of 2010, the development of an Annex 19 dedicated to safety management was proposed. The benefits included:
- (a) Addressing safety risks proactively;
 - (b) Managing and supporting strategic regulatory and infrastructure developments;
 - (c) Re-enforcing the role played by the State in managing safety at the State level, in coordination with service providers; and
 - (d) Emphasizing the concept of the overall safety performance in all domains.
- (2) The first edition of the new Annex became applicable on 14 November 2013. All safety management provisions in Annex 19 (except those listed below) were transferred or duplicated from safety management provisions previously contained in six other Annexes. The new provisions are as follows:
- (a) The [Safety Management System \(SMS\)](#) framework now applies to organizations responsible for the type design and manufacture of aircraft.
 - (b) The four existing components of the [State Safety Program \(SSP\)](#) framework—[Safety Policy and Objectives](#), [Risk Management](#), [Safety Assurance](#) and [Safety Promotion](#)—were raised to the status of SARPs.
 - (c) The State safety oversight system is now applicable to the oversight of all product and service providers.
 - (d) Safety data collection analysis and exchange becomes part of the SSP.
- (3) State Safety Program governance
- (a) The responsibility/accountability related to the achievement of SSP safety objectives will be shared in the following manner:
 - (i) TCCA is the SSP placeholder organization. The Director General Civil Aviation, is accountable within Canada for coordinating the implementation and ongoing compliance/maintenance of the SSP. TCCA has overall responsibility for the achievements of the aviation safety related objectives of the Program.
 - (ii) Together with TCCA, an SSP advisory council (SSPAC) has been established with representation from each State partner. The council's terms of reference are related to the implementation and maintenance of the Program. Appointment of this coordination group is intended to facilitate good communication; avoid duplication of effort and conflicting policies; and ensure effective and efficient SSP implementation. The SSPAC members are implicated inasmuch as their activities have influence in the achievement of the safety objectives of the Program. Council members also hold stake in terms of the human and financial

resources obtained through their respective budgets. The SSPAC is chaired by the head of the SSP placeholder organization.

- (iii) Planning, implementation, ongoing management and oversight of the SSP is assigned to a multidisciplinary department/team within TCCA. This team serves as the interface with ICAO in respect to SSP and Annex 19. It is tasked and resourced to ensure that the various aspects work together to deliver the State's safety objectives and the Program.
- (4) The new Annex also replicates Attachment 'E' to Annex 14 "Legal Guidance for the Protection of Safety Information from Safety Data" as Attachment 'B'.
 - (5) Annex 19 requires the State to:
 - (a) Define aviation safety management responsibilities and accountabilities, and
 - (b) Coordinate the development of a State safety policy (statement) that is applicable across the State's regulatory and administrative framework.
 - (6) The SSP is not described as a framework or management system, but rather a program to meet the State's safety management responsibilities - which includes safety oversight. The implementation of an SSP is commensurate with the size and complexity of the State's civil aviation system and may require coordination among multiple State authorities responsible for different aspects of civil aviation safety. A State's safety management responsibilities can be fulfilled by multiple aviation agencies within the State, for example the CAA and an independent accident investigation authority, or air navigation service provider. The SSP clarifies which government department or agency within the State is responsible for coordinating the maintenance and implementation of the SSP, and how the other State organizations that make a significant contribution to aviation safety are integrated.
 - (7) Altogether, the SSP is part of a broad concept of safety management to facilitate data-informed evidenced-based decision-making. It enhances the effective and efficient risk-managed regulatory oversight program development and delivery.
 - (8) ICAO Annex 19, Safety Management, establishes a program and processes for all contracting States to integrate both safety oversight and safety management and implement an SSP including the following components:
 - (a) State safety policy, objectives and resources;
 - (b) State safety risk management;
 - (c) State safety assurance; and
 - (d) State safety promotion.
 - (9) These four SSP components are further broken down into fourteen elements including eight critical elements (CE) of the State safety oversight (SOO) system as follows:
 - (a) Component 1—State safety policy, objectives and resources**
 - (i) Primary aviation legislation (CE-1)
 - (ii) Specific operating regulations (CE-2)
 - (iii) State system and functions (CE-3)
 - (iv) Qualified technical personnel (CE-4)
 - (v) Technical guidance, tools and provision of safety-critical information (CE-5)
 - (b) Component 2—State safety risk management**

- (i) Licensing, certification, authorization and/or approval obligations (CE-6)
 - (ii) Safety management system obligations
 - (iii) Accident and incident investigation
 - (iv) Hazard identification and safety risk assessment
 - (v) Management of safety risks—resolution of safety issues (CE-8)
- (c) Component 3—State safety assurance**
- (i) Surveillance obligations (CE-7)
 - (ii) State safety performance
- (d) Component 4—State safety promotion**
- (i) Internal communication and dissemination of safety information
 - (ii) External communication and dissemination of safety information
- (10) Reference Documents:
- (a) [ICAO Global Aviation Safety Plan \(GASP\)](#)
 - (b) ICAO Annex 19, Safety Management, second edition
 - (c) ICAO Doc 9859, Safety Management Manual, fourth edition
 - (d) ICAO Doc 9734 Safety Oversight Manual, Part A
 - (e) TP14693 Civil Aviation Integrated Management System (IMS) Standard

2.2.1 Canada's SSP development

- (1) The 2014-2020 strategic initiatives of Safety & Security Transformation 2020 support the ICAO Annex 19 SSP by including a number of its elements such as the following:
- (a) Strengthened oversight role of Civil Aviation
 - (b) Civil Aviation Regulatory Review
 - (c) Safety Management System (SMS)/security management system (SeMS)
 - (d) Risk Management
 - (e) Internal Quality Assurance
 - (f) Multimodal Enforcement program development
 - (g) Risk-based integrated business planning
- (2) In 2015, TCCA started working towards forming a project team dedicated to the SSP implementation project to align Canada with Annex 19.
- (3) Canada established the SSP Implementation team headed by an SSP Coordinator reporting to TCCA Senior Management. Using the ICAO SSP GAP analysis tool on the integrated Safety Trend Analysis and Reporting System (iSTARS) portal, the team assessed Canada's civil aviation system for compliance with Annex 19 Safety Management requirements and recommendations. To address the identified gaps, the SSP Implementation team created sub-projects, which it assigned to project leads who were responsible for managing and completing the corrective actions to tackle the gaps.

2.2.2 SSP Governance—Responsibilities and resources

- (1) The responsibility/accountability related to the achievement of SSP safety objectives will be shared in the following manner:
 - (a) The lead organization for Canada's SSP is TCCA Director General Civil Aviation. The director general has overall responsibility for Canada and is accountable for coordinating the implementation and ongoing maturity, conformance and maintenance of the SSP. TCCA also has the overall responsibility for the achievements of the aviation safety related objectives of the SSP.
 - (b) Within TCCA, Standards branch director is accountable for the SSP development and implementation. The day-to-day planning, implementation and ongoing management and oversight of the SSP is assigned to a multidisciplinary department/team within TCCA. This team serves as the interface with ICAO in respect to SSP and Annex 19. Its members are tasked and resourced to ensure that the various aspects work together to deliver the State's safety objectives and SSP.

2.2.3 Canada's SSP logic model

- (1) TCCA has developed a logic model to provide a simplified summary of the SSP. The purpose of this logic model is to detail to internal and external stakeholders the various processes and activities that Canada will undertake in order to meet the Annex 19 Safety Management requirements, as well as desired outcomes, en route to an effective SSP.
- (2) Reference Documents:
 - (a) SSP logic model (English RDIMS No. 15167504) (French RDIMS No. 17219007)

2.2.4 SSP Advisory Council—National safety program collaboration

- (1) Annex 19 requires all State organizations involved in any aspect of aviation safety to clarify their role and how it impacts other agencies with respect to the SSP. The State is required to ensure that each agency understands how it contributes to meeting each requirement in Annex 19 and more importantly to the management of safety in the State.
- (2) The obligations and functions of each aviation agency with respect to implementation should be documented so as to avoid ambiguity. That is, each aviation agency should not only implement activities to meet its respective obligations under the *Chicago Convention* but also document them.
- (3) For States, such as Canada, where multiple regulatory and administrative organizations are involved in aviation safety, TCCA has identified an appropriate national committee, with representation by some of the organizations listed below, to serve as the platform for the ongoing coordination of the State's SSP.
- (4) Canada's SSP requires collaboration with its SSP partners including government and government agency stakeholders. However, this document will focus on the roles of TCCA, the TSB, Public Safety—National Search and Rescue Secretariat (NSS), the Department of National Defence (DND) and NAV CANADA, all of which play key roles in Canada's SSP.
- (5) Chaired by a Senior Management representative from TCCA, the SSPAC will be established with representation of each State partner with responsibilities related to the implementation and maintenance of the SSP. Appointment of this coordination group is intended to facilitate good communication, avoid duplication of effort and conflicting policies and ensure effective and efficient SSP implementation. The SSP advisory council members are committed, inasmuch as their activities influence the achievement of the safety objectives of the Program, to allocating the human and financial resources obtained through their respective budget resources. The SSPAC

group is a form of committee chaired by the head of the SSP placeholder organization. See section 2.1 (4) a. ii.

(6) The responsibilities of each organization are defined in the *Aeronautics Act* and subordinate Acts.

(7) State Safety Program Partner linkages with the ICAO Annexes:

(a) Transport Canada

- (i) Annex 1—Personnel Licensing
- (ii) Annex 2—Rules of the Air
- (iii) Annex 3—Meteorological Service for International Air Navigation
- (iv) Annex 4—Aeronautical Charts
- (v) Annex 5—Units of Measurement to be Used in Air and Ground Operations
- (vi) Annex 6—Operation of Aircraft
- (vii) Annex 7—Aircraft Nationality and Registration Marks
- (viii) Annex 8—Airworthiness of Aircraft
- (ix) Annex 9—Facilitation
- (x) Annex 10—Aeronautical Telecommunications
- (xi) Annex 14—Aerodromes
- (xii) Annex 15—Aeronautical Information Services
- (xiii) Annex 16—Environmental Protection
- (xiv) Annex 17—Security: Safeguarding International Civil Aviation
- (xv) Annex 18—The Safe Transport of Dangerous Goods by Air
- (xvi) Annex 19—Safety Management

(b) NAV CANADA

- (i) Annex 11—Air Traffic Services
- (ii) Annex 19—Safety Management

(c) Public Safety—National Search and Rescue Secretariat (NSS), Department of National Defence (DND)

- (i) Annex 12—Search and Rescue
- (ii) Annex 19—Safety Management

(d) Transportation Safety Board

- (i) Annex 13—Aircraft Accident and Incident Investigation
- (ii) Annex 19—Safety Management

(8) Reference Documents:

- (a) CAD 107-005, Safety Partnership Programs Framework (RDIMS No. 3838233)
- (b) Draft Terms of Reference, SSPAC (RDIMS No. 12956803)

2.2.5 SSP documentation and records

- (1) Canada's SSP documentation and records are securely stored as per TCCA's Documentation processes and are accessible to all TCCA staff through RDIMS. Externally, all relevant SSP documentation will be accessible through the TC Aviation safety management [Web page](#), which will provide links to all SSP guidance and documents. Following established written procedures, TCCA staff will categorize and store all SSP records in RDIMS to ensure they are secure and readily retrievable. As an SMS requirement, enterprises are responsible for keeping their own records as evidence that their operation is in compliance with all applicable ICAO and State regulations and standards.
- (2) Reference Documents:
 - (a) CAD QUA-002, Civil Aviation Documentation Framework (RDIMS 13623192 (E) / 14066831 (F))
 - (b) SI ADM-013, Information Management in Civil Aviation (RDIMS 15660340 (E) / 16297603 (F))
 - (c) Treasury Board of Canada Secretariat, [Policy on Information Management](#)
 - (d) Terms of Reference, National Civil Aviation RDIMS Working Group (RDIMS No. 418928)

2.3 SSP continuous improvement

- (1) TC has developed the IMS Standard to establish and maintain effective and efficient management of the Civil Aviation Program in accordance with the GoC's management framework and policies.
- (2) IMS forms the foundation that guides how TCCA manages its activities. It does so by providing a structured series of processes that flow from the Standard and describe the inputs and methods of decision-making and the level of quality achieved in the program Reference Documents:
 - (a) [TCCA Program Manual](#)
 - (b) TP 14693, Civil Aviation Integrated Management System Standard
 - (c) ICAO iSTARs SSP Analysis Tool
 - (d) ICAO USOAP [Continuous Monitoring Approach \(CMA\)](#)

2.3.1 Internal SSP measuring and monitoring

- (1) TCCA monitors and, where applicable, measures the processes that are used for program delivery in order to verify that planned results and service standards have been met. When results have not been met, a corrective action plan is developed and delivered.
- (2) TCCA ensures the continuous improvement of the Civil Aviation Program by conducting management reviews and incorporating the outputs into subsequent strategic and annual plans.
- (3) Activities are prioritized on a risk-based approach. Subsequently, they are planned and implemented following a five-year perspective.
- (4) These plans also include quality assurance activities such as TCCA's USOAP self-assessment work, which includes Annex 19 obligations to continuously evaluate effectiveness of oversight systems.

2.3.2 External SSP assessment/audit

- (1) As an ICAO member State, Canada is party to the ICAO USOAP CMA. ICAO carries out assessment, audits and other monitoring activities to determine the safety oversight capabilities of its member States by:
 - (a) Assessing their effective implementation of the eight critical elements (CEs) in eight audit areas (i.e. LEG, ORG, PEL, OPS, AIR, AIG, ANS and AGA) through protocol questions (PQs); and
 - (b) Verifying the status of the member States' implementation of:
 - (i) Safety-related ICAO standards and recommended Practices (SARPs);
 - (ii) Associated procedures and guidance material.

2.3.3 State accident and incident investigation

- (1) Canada has structured aviation accident and incident investigations in accordance with ICAO Annex 13. Canada has designated, by regulation, the TSB to investigate all civil aviation occurrences that take place in or over Canada and any place that is under Canadian air traffic control. The TSB also investigates occurrences anywhere in the world that involved an aircraft for which a Canadian aviation document was in force, or that was operated by a person whom a Canadian aviation document had been issued under Part I of the *Aeronautics Act*.
- (2) The TSB is an independent, multimodal agency that is responsible for investigating occurrences in air, marine, rail and pipeline transportation. It generates safety [reports](#), [recommendations](#), [advisories](#) and [Watchlist](#) issues that are accessible to anyone on their [web site](#).
- (3) The TSB's air investigators are certified as pilots, aircraft maintenance engineers, air traffic controllers, and airworthiness engineers etc. They all have varied and extensive experience in the aviation industry. As well as conducting investigations, the Board participates in national and international government/industry groups to monitor safety trends and communicate safety issues to change agents.
- (4) TC staff can participate in accident and incident occurrences as Ministerial Observers; however, the official investigative conclusions and reports are the responsibility of the TSB. In addition, representatives from industry, such as aircraft manufacturers, may be invited to participate in the investigation as technical subject matter experts.
- (5) Reference Documents:
 - (a) TP 4044, CADORS Manual
 - (b) TP 11776, Minister's Observer Manual

2.3.4 State enforcement policy

- (1) Canada has established the Centre for Enforcement Expertise (CEE), which is a multimodal framework that establishes the enforcement policy.
- (2) The responsibility to support effective safety and security enforcement is a shared responsibility for all engaged in oversight and enforcement at TC. Whether it is the detention of a vessel in Canadian waters, the monitoring of dangerous goods throughout Canada or the supervision and monitoring of aviation activities, enforcement is a critical part of our work involving every mode, every regional office and every TC inspector.
- (3) Setting meaningful rules and standards is only the first step. The CEE also needs to oversee these rules and standards and take action when they find non-compliance. They take appropriate

action to encourage, support and, in certain cases, force compliance with those rules, which is a vital part of the process. Enforcing these rules is another part of how the CEE serves Canadians.

- (4) The Departmental Enforcement Standards, also known as the “Desk Book”, is a collection of standards, best practices, guidance and direction on how to undertake effective enforcement actions. Since its initial publication, it has been very well received and has a prominent place in how TC plans, undertakes and delivers enforcement.
- (5) The CEE developed this tool to promote purposeful, balanced and effective enforcement. The chapters are organized to support enforcement officials in the exercise of their authorities and discretion and to help guide managers in their enforcement planning.
- (6) While the Desk Book does not provide an authoritative answer to every scenario faced by enforcement officers or managers, it does provide the standards and guidance that should apply in most instances. For those situations where the Desk Book is silent, questions can be referred to the CEE. Where there is a conflict between the Desk Book and modal practices or procedures, the CEE advice shall prevail.
- (7) Reference Documents:
 - (a) CAD 107-004, Aviation Enforcement—Safety Management Systems (RDIMS No. 5165410)
 - (b) SI SUR-006, Safety Management System—Civil Aviation Non-Compliance Event Review
 - (c) Departmental Enforcement Standards ‘Desk Book’ (RDIMS No. 10546608)
 - (d) TC Enforcement Policy (RDIMS No. 8952191)

3.0 Chapter 3—State safety risk management

- (1) As Canada's civil aviation authority, TCCA is the lead organization for Canada's SSP. How TCCA conducts its Civil Aviation Program, including management, regulatory and oversight responsibilities, is described in the TCCA [Program Manual](#)
- (2) The manual is a top-level document within TCCA's own quality management system, otherwise known as the IMS. This system is a management and accountability framework, which describes all the interrelated activities necessary to consistently manage and conduct TCCA's Civil Aviation Program.
- (3) By having this initiative, TCCA is able to demonstrate to all stakeholders that it has a management system in place to regulate and administer safety. TCCA describes the integrated system in the IMS Standard.

3.1 Strategic Safety Risk Assessment (SSRA) program

- (1) The Safety Policy and Intelligence Branch within TCCA, comprised of the Policy, Aviation Safety Analysis and Strategic Risk Assessment teams, is responsible for identifying systemic risks within Canada's civil aviation system. Canada, through the SSRA program, is in the process of creating processes, methodology and tools in order to modernize its system-level safety risk management approach, and enhance proactive management of risk in the aviation system.
- (2) The vision driving TCCA SSRA Program activities is articulated as follows:
 - (a) Safety Risk Analysis
 - (i) Promote and ensure integrated analysis of available safety information
 - (ii) Facilitate ongoing risk evaluation and monitoring of system-level safety issues

- (b) Communication and Collaboration
 - (i) Ensure effective communication of safety risk priorities internally, and with industry and global safety partners
 - (ii) Promote safety collaboration with internal and external stakeholders
 - (c) Enhance Safety Performance
 - (i) Develop tools and processes to promote integration and management of safety at the program level
 - (ii) Facilitate alignment of TCCA priorities with significant safety risk areas
 - (d) Expected Outcome
 - (i) Policy development, rulemaking and oversight are focused on the highest risk areas of the aviation system.
- (3) The Strategic Safety Risk Management (SSRM) Framework is a Civil Aviation Directive (CAD) enabling the realization of this vision through the formalization of:
- (a) A Program level safety risk management approach, the Strategic Safety Risk Management process which is a series of six fundamental steps enabling risk assessment and treatment of significant safety risks.
 - (b) An enabling coordinating function facilitating the SSRM process, the SSRA Program, which coordinates management of the SSRM Framework, develops and implements responsive analytical tools and methodologies to enable proactive identification of critical and emerging safety risks to the civil aviation air transportation system, and that support establishment of risk priorities and identification of future hazards; and
 - (c) Critical linkages, interdependencies and interfaces between SSRA Program and other TCCA program areas in the management of the SSRM Process. Through capturing the program interrelationships, the SSRM Framework will ensure that the SSRM process supports TCCA decision-making and will enable proactive strategic safety risk management.
- (4) Reference documents:
- (a) [TCCA Program Manual](#)
 - (b) SSRA Program description (RDIMS No. 14195167)
 - (c) SSRA Program Project Charter (RDIMS No. 13588552)
 - (d) SSRM Framework CAD-QUA-018 (RDIMS 14145688)
 - (e) SSRA Data Design (RDIMS No. 14070586)

3.2 Safety Management System (SMS)—Requirements for the service providers

- (1) In 2007, TC formally stated a policy direction that the transportation industry “would henceforth be accountable for proactively and systematically addressing risks within transportation activities and that the primary tool for doing so, where possible and practicable, would be SMS.”
- (2) Over the last decade, TC has been applying Safety/Security Management System regulations to segments of its regulated companies in the aviation, marine, and rail sectors. Although a direct link cannot currently be drawn between the introduction of SMS/SeMS and transportation accident and incident rates, it is noteworthy that these rates have been declining despite continued growth in all transportation sectors.

- (3) A phased implementation program was put in place with the expectation that all aviation organizations were to be fully compliant by 2008. SMS regulations came into force in 2008 for large air operators and associated approved maintenance organizations, large certified airports and providers of air navigation services. For all remaining small certified airports, they came into force in 2009.
- (4) Aviation sector SMS references in the CARs currently subject to SMS:
 - (a) **Holders of an air operator certificate** (AOC) (aeroplanes and helicopters) authorized to conduct commercial air transport operations—CARs Part VII, Subpart 5 (705).
 - (b) **Approved Maintenance Organizations** (AMO)—CAR 573 providing services CAR 705 operators.
 - (c) **Aerodromes**—CAR 302
 - (d) **Air Traffic Services**—CAR 801
 - (e) **Private Operators**—CAR 604
- (5) Service providers required to implement SMS under the CARs must establish and maintain a SMS including:
 - (a) A safety policy;
 - (b) A process for setting goals for improving aviation safety and for measuring how those goals are attained;
 - (c) A process for identifying hazards to aviation safety and for evaluating and managing the associated risks;
 - (d) A process for ensuring that personnel are trained and competent to perform their duties;
 - (e) A process for internally reporting and analyzing hazards, incidents and accidents and for taking corrective actions to prevent their recurrence;
 - (f) A document containing SMS responsibilities;
 - (g) A quality assurance program;
 - (h) A process for conducting periodic reviews or audits of the safety management system and reviews or audits of the safety management system for cause; and
 - (i) Any additional requirements for the safety management system that are prescribed under the applicable Regulations.
- (6) Reference Documents:
 - a) AC 107-001, Guidance on SMS Development
 - b) TP 13739, Introduction to SMS
 - c) [TC Web Site Links—Easy Reference Guide of Safety Management System-related Documents](#)

3.2.1 Scalability

- (1) Canada's SMS implementation guidance encourages service providers to develop a safety management system adapted to the size, nature and complexity of the operations, activities, hazards and risks associated with the organization's operations.

3.2.2 SMS – Aircraft, aircraft engine or propeller design organizations

- (1) Canadian design organizations that have taken increasing responsibility for their own product safety and compliance with regulations have, upon request, been granted a Ministerial delegation for certain functions related to the design approval of their products. The Ministerial delegation reflects that the design organization has complied with Chapter 505 of the *Airworthiness Manual* (AWM), which includes having established an effective airworthiness control system to manage safety, has the necessary organizational structures, accountability, responsibilities, policies and procedures in place to assure a safe and compliant design.
- (2) TCCA accepts the International Industry Standard, SM-0001– *Implementing a Safety Management System in Design, Manufacturing and Maintenance Organizations*, Issue A, 17 September 2018, as a means of acceptable voluntary compliance with the SMS for design organizations standards of ICAO Annex 19. A design organization may voluntarily request SMS recognition in accordance with this international industry standard. Once the voluntary SMS program has been assessed and recognized as having met the intent of SM-0001, a Letter of Acceptance is used to demonstrate that TCCA has accepted the voluntary SMS as meeting the intent of the International Standard SM-0001.
- (3) Reference Documents:
 - a. [Subpart 21 to Part V of the Canadian Aviation Regulations](#)
 - b. [Chapter 505 of the Airworthiness Manual](#)
 - c. [SM-0001 - International Industry Standard – Implementing a Safety Management System in Design, Manufacturing and Maintenance Organizations](#)
 - d. [RESERVED](#)
 - e. [RESERVED](#)

3.2.3 SMS for small operators (AOC, ATO/FTU, and AMO)

- (1) As one of TC's priority initiatives, the SMS policy review seeks to identify issues and opportunities to support innovation and economic growth, consult with aviation subject matter experts (SMEs) and stakeholders in order to provide recommendations to modernize current SMS requirements.

While Canada strives to be compliant with Annex 19 requirements, more work is needed to support SMS adoption by other operators. Aircraft design and manufacturing organizations (including engines and propellers) are required to adopt SMS in order to meet ICAO requirements. Many have voluntarily adopted SMS pending any formal regulatory requirements.

In addition, Aviation Training Organizations (ATOs) receive SMS guidance material from TC to support implementation policies. Operators conducting international commercial air transport under Parts 704 (Commuter), 703 (Air Taxi) and 702 (Aerial Work) and their associated AMOs providing services to these operators, are also required to comply with Annex 19 and have a SMS.
- (2) Reference Documents:
 - (a) TP 14135, SMS for Small Aviation Operations
 - (b) AC 107-002, Safety Management System Development Guide for smaller Aviation Organizations (RDIMS #11200215)

4.0 Chapter 4—State safety assurance

- (1) TC conducts surveillance of the aviation system to monitor the aviation industry for compliance with the regulatory framework. The Department does this through a risk-based approach primarily through assessments and inspections and, when necessary, audits and enforcement action.
- (2) National Aircraft Certification conducts surveillance of industry delegates via project certification activities, in addition to the surveillance of aircraft /aeronautical products in respect to deficiencies.
- (3) Process Inspections (PIs) are the primary ways that TC evaluates ongoing compliance and the level of effectiveness with regulatory requirements as per the SMS.
- (4) Civil Aviation Medicine assesses individuals in safety sensitive positions. In this perspective, it conducts surveillance on the population of pilots and air traffic controllers. Civil Aviation Medicine also monitors the examination work of the Civil Aviation Medical Examiners.

4.1 Surveillance policy

- (1) TCCA surveillance activities fall into four categories:
 - (a) **Systems Level:** Systems-level surveillance is conducted to seek assurance that enterprise systems are operating as intended and are effective at achieving operational objectives in accordance with regulatory requirements.
 - (b) **Process Level:** Process-level surveillance evaluates the processes used by an enterprise to accomplish operational objectives while still assessing the enterprise through the lens of the systems approach to safety. Process-level surveillance is conducted using process inspections (PI) and is the current primary tool. Further surveillance is conducted by the **Process Validation Inspection (PVI)** if required.
 - (c) **Targeted Inspection:** Targeted Inspections are a flexible oversight approach that mixes compliance monitoring with gathering evaluative information to gain contextual knowledge on a certain issue or topic. They allow TCCA to determine operator compliance levels while also collecting data that helps TCCA understand how operators interpret and implement rules, or to understand what factors, elements, or conditions may be missing and/or contributing to unacceptable results. They are a way to collect data that supports evaluation questions and methodologies, as well as to investigate risk severity and identify potential risk mitigation options. Results from targeted inspections support strategic direction through data collection, analysis, observations and recommendations.
 - (d) **Compliance Inspection:** Compliance inspections are designed to verify that a product or an activity meets applicable regulatory requirement(s) or design standard(s). A compliance inspection assesses only whether an output meets an identified standard. It does not evaluate the effectiveness of related processes or systems.
- (2) TCCA surveillance planning falls under two categories:
 - (a) **Planned Surveillance:** Planned surveillance activities are conducted at predetermined intervals as outlined in the National Oversight Plan (NOP).
 - (b) **Reactive Surveillance:** Reactive surveillance includes all inspection activities that are not captured on the National Oversight Plan. It allows TCCA to respond to specific information or events.
- (3) Reference Documents:
 - (a) CAD SUR-008, Surveillance Policy

- (b) SI SUR-001, Surveillance Procedures
- (c) SI SUR 028, Surveillance Planning Instructions

4.2 Mandatory safety reporting

- (1) The *Canadian Transportation Accident Investigation and Safety Board Act* establishes the requirements for the mandatory reporting of aviation safety occurrences. The [Transportation Safety Board Regulations](#) specifies what constitutes a reportable occurrence, who must report it, and the required information needed to complete the report.
- (2) The [Transportation Safety Board of Canada](#) Web site provides further information needed to file safety occurrence reports.

4.3 Occurrence reporting system

- (1) Fundamental to assessing safety risks in the aviation system is the analysis of accident and incident data to determine the likelihood and consequences of unsafe events (e.g. frequency of events) and related outcomes including fatality and injury rates. A further analysis of occurrence data can yield precursor information about “close call” incidents that did not lead to serious consequences, can be less obvious, but have cumulative effects (e.g. increased incidents of loss of separation/air proximity that did not lead to mid-air collision accidents).
- (2) Accident and incident data is collected in TCCA’s Civil Aviation Daily Occurrence Reporting System (CADORS), which categorizes aviation events by occurrence type, sector, consequence, phase of flight etc. Strategic analysis of occurrence data involves a comprehensive review of occurrences to determine data trends/anomalies, isolate those data variables to find potential correlations (e.g. by sector, phase of flight, aircraft type), and identify recurring safety issues/events/hazards.
- (3) Reference Documents:
 - (a) [Search Civil Aviation Daily Occurrence Reporting System \(CADORS\)](#)
 - (b) TP 4044, CADORS Manual

4.4 Voluntary/confidential incident reporting system

- (1) The public have access (24/7) to toll-free telephone, fax, email and internet methods to report emergencies, incidents, or any threat to aviation and public safety.
- (2) The Aviation Operations Centre (AOC) is the emergency operations centre for civil aviation emergency preparedness activities and reporting the following types of occurrences:
 - (a) An aviation incident;
 - (b) An aviation security incident;
 - (c) An incident affecting airport or aerodrome safety;
 - (d) A drone incident; and
 - (e) An incident at a cellular tower or other aviation obstacle.
- (3) Reference Documents:
 - (a) [Canadian Transport Emergency Centre \(CANUTEC\)](#)
 - (b) [Transportation of dangerous goods—requirement to report a dangerous goods accident](#)
 - (c) [2016 Emergency Response Guidebook](#)

- (d) [Emergency Response Assistance Plan](#)
- (e) [Canadian Transportation Agency](#)

4.5 Service Difficulty Reporting (SDR) system

- (1) The purpose of TC's SDR system is to collect, analyze, record and disseminate data concerning those defects and malfunctions which have resulted in, or are likely to result in, a safety hazard to an aircraft or its occupants. The reported information aims to support the regulatory activities required to improve the level of flight safety. Canada fulfils the requirements of ICAO Annex 8 under the SDR program. In doing so, Canada shares SDR data with the organizations responsible for the type design worldwide. Under (2)(c), Canada also fulfils another ICAO Annex 8 requirement by issuing mandatory corrective action information to ICAO member states for its state of design products.
- (2) To this end TC will:
 - (a) Assess each report for airworthiness safety implications, both in itself and in relation to previous similar reports;
 - (b) Use the data collected nationally to establish trends that would not be apparent regionally or to individual operators;
 - (c) Issue specific advice or instructions to particular sections of the aviation community through appropriate channels.

5.0 Chapter 5—Safety data collection and processing systems

5.1 Data sharing and the protection of safety information

- (1) State civil aviation authorities are increasingly seeking to leverage data collection and analysis to support a range of safety purposes, including safety management, safety oversight and safety performance. To these ends, States have established a variety of data collection tools, including mandatory and voluntary safety reporting systems, to ensure an adequate supply of data and information. Certain States have also entered into bilateral or multilateral agreements for the purpose of exchanging and/or sharing the information that they collect.
- (2) An effective safety reporting environment depends on the willingness of the sources to report data and information regarding their errors and experiences. In general, sources are likely to remain willing to voluntarily provide such data and information if they can be confident that it will be used exclusively for the purpose of maintaining or improving aviation safety. Conversely, the use or disclosure of reported data or information for other purposes, including punitive or disciplinary, is likely to discourage sources from reporting and cause a decline in the future availability of critical safety data and safety information.
- (3) TCCA is developing a roadmap for implementing ICAO provisions on sharing and protecting safety data, safety information and related sources, based on the considerations included in ICAO Annex 19, the [Access to Information Act](#) and other relevant Canadian legislation, regulations and policies.
- (4) Reference Documents:
 - (a) White Paper on the protection of safety information (RDIMS No. 13984964)

5.2 Databases and Governance

- (1) TCCA is a data-rich environment, with more than 60 databases, which house a plethora of safety information (e.g. CADORS, NACIS, BII, Operator List Search, CAWIS, BSIS, CCARCs, EMS,

RDIMS). Despite the existence of these databases, there remain a number of challenges across the organization related to data accessibility, linkages, gaps/limitations, integrity/consistency, and normalization issues that do not easily facilitate strategic safety risk analysis (i.e. safety data is currently not organized as an enabler to support risk-based decision-making).

- (2) To support a more strategic, data-driven and evidence-based approach to aviation safety risk analysis and decision-making, NCAMX (March 2018) supported a recommendation from the SSRA Steering Committee suggesting that TCCA needed to establish a TCCA-wide data strategy to inform TCCA's collection, use, integration and management of data/information to better support achievement of strategic outcomes.
- (3) TC's Data Governance Committee is co-chaired by DGs Digital Service and Transportation and Economic Analysis.

5.3 Aviation safety body of knowledge and other data considerations

- (1) **Transportation Safety Board:** Findings and safety issues identified in TSB investigation reports as well as TSB Watchlist items and TSB recommendations can be leveraged in support of risk analysis activities.
- (2) **SSP partners:** Aviation safety data collected and shared by other State partners in SSP such as NSS, DND and NAV CANADA.
- (3) **Use of global data sources:** International data sources, and research on aviation issues and trends from other States and organizations may be useful in complementing occurrence data, given the relatively low rate of accidents in Canada. ICAO has launched the Safety Information Monitoring System (SIMS), a web-based information system that generates indicators through applications to support the SSP and SMS. SIMS is a safety data collection and processing system for use by States. Consideration may also be given to leveraging ICAO's integrated iStars, the Aviation Safety Information Analysis and Sharing (ASIAS) system (FAA), Aviation Data Exchange (AVDEX), and other relevant data sources to support "round out" analysis and provide additional analysis insights.
- (4) **Subject-matter expert input:** Consultative mechanisms will be developed to gather internal and external subject-matter expert input and perspectives in order to complete the risk picture and provide context to strengthen analysis.
- (5) **Industry data:** To assess safety risks comprehensively, accessing flight data monitoring information (and operational expertise) from industry sources can provide a greater picture of potential hazards that have not yet lead to accidents. This data would support analysis potentially on vulnerabilities leading to an occurrence. TCCA has begun early engagement with industry partners on pursuing a collaborative safety data sharing program (e.g. National Airlines Council of Canada (NACC), International Air Transport Association (IATA)).

5.3.1 Data linkages to other projects

- (1) **Business Intelligence Infrastructure (BII)**
 - (a) The Business Intelligence Infrastructure (BII) modernizes how analysts, decision-makers and industry officials perform their vital work by providing detailed, customized reports and analyses from a single source. Civil Aviation must have the capacity to proactively identify deficiencies and hazards in order to effectively estimate and evaluate risk levels to determine risk controls and intervention strategies.
 - (b) BII has achieved quantifiable results to improve data integration and analysis in Civil Aviation. It is the product of a key commitment by TC in response to an opportunity listed in a May 2008 report by the Office of the Auditor General. In this report, the Auditor

General advised TC to put in place a means to capture all information relevant to oversight of civil aviation safety in an integrated manner.

- (c) BII supports ICAO Annex 19 SSP Standards by facilitating the creation of a framework to support data-driven evidence-based decision-making. This enhances the effectiveness of the development and delivery of a risk-based regulatory oversight program.
- (d) The BII project objective is to develop an infrastructure and data architecture that provides the tools required for all of Civil Aviation and TC, to produce and deliver comprehensive analysis and reporting in a more cost effective, efficient and accessible manner.
- (e) Reference Documents:
 - (i) BII Corporate Reports (RDIMS No. 12660294)
 - (ii) BII Introduction Presentation (RDIMS No. 14060793)

(2) **Analytics Centre of Expertise (ACE)**

- (a) ACE Services is an enablement program focused on ensuring data specialists across the Department conduct analysis with as few challenges as possible. ACE offers the following services:
 - (i) Guidance and advisory services
 - (ii) Support and Training
 - (iii) Analysis product development and delivery
 - (iv) Operations
- (b) **Data Lake:** The purpose of the Data Lake is to pool and manage data relevant to the transportation sector with the help of industry stakeholders. This is achieved by:
 - (i) Building on existing data warehouses
 - (ii) Migration of silo data holdings
 - (iii) Data investment strategy
 - (iv) Discovery pipelines
 - (v) Integrated dashboards
 - (vi) Proof of concepts
 - (vii) Data science pathfinders
- (c) Reference Documents:
 - (i) TC response to GoC Data Strategy (RDIMS No. 14827005)
 - (ii) Data Lake overview presentation (RDIMS No. 14655221)
 - (iii) Transport Canada Data Lake Subject Area Map (RDIMS No. 14756377)

6.0 Chapter 6—State safety training and promotion

- (1) Effective safety training and promotion initiatives are essential to support the core operational objectives of Canada's SSP. As part of its missions and responsibilities, TC provides various types of safety-related training and actively communicates safety information to employees to support the development of a culture that fosters an effective and efficient SSP.

- (2) In addition, TC provides information and guidance and communicates safety information to support a positive safety culture among aviation service providers.

6.1 Internal training, communication of safety information

- (1) TC provides various types of safety-related training to its employees and actively communicates safety information to its workforce. More information and improved training options will be available as a result of SSP development.

6.1.1 Internal SSP, SMS and safety training

- (1) TCCA communicates with employees in a variety of ways, including, but not limited to, training, events/conferences, workshops, broadcast email messages, GC social media (GCcollab, GCpedia), organizational newsletters, and other printed publications.
- (2) A few examples of publicly available documents are:
 - (a) AC 107-001, Safety Management System
 - (b) [TP 14693](#), Civil Aviation Integrated Management System Standard
 - (c) TP 15430, SSP Brochure
- (3) Another element of SSP is the role of leadership. TCCA leaders take an active role in communicating with and engaging employees by:
 - (a) Using town hall meetings to update employees on current activities and accomplishments;
 - (b) Conducting site visits to Regional offices throughout the country;
 - (c) Sending newsletters
- (4) **Multimodal Integrated Technical Training (MITT)**
 - (a) MITT provides greater alignment, integration and standardization of technical training across Safety and Security.
 - (b) By offering technical training to its clients, MITT advocates a global vision on the Canadian transportation system by teaching operational functions that are common to all modes. This is made possible through the establishment of core training activities which all new targeted employees must do in order to meet the requirements associated with the first phase of their learning continuum.
 - (c) This approach helps the new employee acquire a solid knowledge base on which to build their competencies. In turn, this leads them to understand the relevance of their functions within the Department, and how they contribute to national and multimodal consistency, which is key to the protection and maintenance of the Canadian transportation system.

6.1.2 Delegated officer training and authorization

(1) SSP training

- (a) All employees receive safety management (SSP and SMS) training to align with their involvement in technical programs and levels of delegated authority.

(2) Canadian Aviation Directive ADM-005

- (a) The purpose of CAD ADM-005 is to establish the required Civil Aviation learning programs for the following employees:

- (i) Employees who *develop* regulatory programs and standards as their primary role. This includes, but is not limited to, employees who work in legal, and standards development.
- (ii) Employees who *deliver* regulatory programs and services as their primary role. This includes, but is not limited to, employees who work as inspectors, officers, and other service providers involved in the delivery of programs and services i.e. the issuance and maintenance of authorizations (permits, licenses and certifications) and oversight (includes all surveillance activities).
- (iii) Employees who *support* regulatory programs and services as their primary role. This includes, but is not limited to, human resources, communications, finance, information management, information technology, auditors, planners, management, training and administrative services.
- (iv) Employees with managerial responsibilities.

(3) **Consolidated Record of Authorities (CRA)**

- (a) The TCCA Consolidated Record of Authorities document provides the breakdown of the authorities that the inspectors and officers are empowered to exercise. More specifically, it identifies (and limits) the oversight and certification authorities associated with the various inspector and officer positions, for which the work description includes the creation, performance or support of oversight activities.
- (b) The inspector or officer who is appointed to a TCCA position may be granted with a complete or partial authority (also called restricted authority), as assessed by their manager. The factors considered to assess the scope of the powers granted are the work description attached to the position occupied as well as the knowledge, competencies, experience and training of the employee occupying a given position. The powers, duties and functions exercised by a TCCA employee are also subject to any conditions deemed necessary for safety, protection of persons and/or property.
- (c) Restrictions are applied on a case-by-case basis. When an employee does not possess all the knowledge, competencies, experience and training required to fully exercise the authorities assigned to his/her position, the Director/manager restricts his/her authorities. These restrictions are removed when the employee meets the conditions needed to fully exercise the authorities assigned to his/her position.
- (d) Ministerial authorities (and limitations) assigned to the inspector or officer are formalized in a standard TCCA Memorandum. This Memorandum is a living document and must always reflect the current authorities (and limitations) that apply to the employee.

(4) Reference Documents:

- (a) CAD ADM-005, Required Training for Civil Aviation Employees
- (b) TCCA Consolidated Record of Authorities (RDIMS No. 8496544)
- (c) MSI 24, Delegation of Authority
- (d) MSI 25, On-the-job-training

6.1.3 Communication of safety information

(1) Policies, Procedures and Guidance Material

- (a) TCCA has developed a Documentation Framework that provides the TCCA Inspectorate staff with all the tools they need to meet the responsibilities of their delegated duties.

- (b) The contents of the Documentation Framework are electronically stored and catalogued in RDIMS on the secure TC network. Inspectorate staff can access the Documentation Framework library through the CADC intranet interface or on the Reference Centre loaded on tablets in the event there is no internet connectivity during a site surveillance visit.

6.2 External support, training, communication of safety information

- (1) A successful SSP hinges on effective communication strategies and plans that facilitate a common understanding of the future vision of safety management across State SSP partners; promote commitment; motivate people to become actively engaged; and share lessons learned.

6.2.1 External safety management support

(2) Industry collaboration

- (a) TCCA has numerous ongoing government/industry collaboration efforts aimed at exchanging safety information with service providers. Efforts are dictated by the changing needs of sectors or regions and are aligned with departmental and GoC's priorities. For example:
 - (i) TCCA leads the Canadian Aviation Regulation Advisory Council (CARAC)
 - (ii) TCCA hosts numerous annual forums to engage aviation professionals, from industry executives to operations personnel alike, for example, the Canadian Aviation Safety Collaboration Forum
 - (iii) TCCA continues to be engaged in safety promotion and education campaigns that are run on a multi-year cycle
 - (iv) TCCA is a member of numerous regional aviation safety groups, specifically in the Pan-American region in an effort to mitigate and reduce aviation safety risks in Canada, across our region, and around the world.

(3) International engagement

- (a) TCCA provides leadership and support to a number of international bodies and works in cooperation with other civil aviation authorities with the aim of improving aviation safety and ensuring the global harmonization of safety management.
- (b) Each year, TCCA provides technical assistance and training to regulators in other countries, and is continually seeking to expand the network of collaborative partners.

(4) ICAO and global initiatives

- (a) TCCA is an active member of ICAO, and contributes as follows:
 - (i) SMPSafety Management Panel (SMP) and working groups
 - (ii) Global Aviation Safety Plan study group
 - (iii) ICAO Regional Aviation Safety Group (RASG)
 - (iv) ICAO High-Level Symposiums
 - (v) Conferences and Assemblies to advance aviation safety

(5) Safety Management International Collaboration Group (SM ICG)

- (a) SM ICG is a joint cooperation between many regulatory authorities to promote a common understanding of SMS, SSP and other safety management principles and requirements,

facilitating their implementation across the international aviation community. Members of the SM ICG:

- (i) Collaborate on common SMS/SSP topics of interest
 - (ii) Share lessons learned
 - (iii) Encourage the progression of a harmonized SMS
 - (iv) Share products with the aviation community
 - (v) Collaborate with internal organizations such as ICAO and civil aviation authorities that have implemented or are implementing SSP/SMS
- (b) TCCA is a founding member of [SM ICG](#) and maintains membership on the steering committee.
- (c) SM ICG products are published on SKYbrary.

6.2.2 External SMS and SSP training/education facilitation

- (1) TCCA does not offer external training. The SSP Fundamentals on-line training course module however is available to an external audience through the GoC TCCA webpage.

6.2.3 External (public) communication and dissemination of safety information

- (1) To supplement interpretation of the *Aeronautics Act* and the *Canadian Aviation Regulations*, Canada has developed a comprehensive library of guidance material to assist industry and non-governmental organizations.
- (2) This includes Advisory Circulars (ACs), Approved Check Pilot (ACP) Bulletins, Airworthiness Manual Advisories (AMAs), Aerodrome Safety Bulletins (ASBs), Aerodrome Safety Circulars (ASCs), Aerodrome Safety Functional Directives (ASDs), Commercial and Business Aviation Advisory Circulars (CBAACs), General Aviation Advisory Circulars (GAACs) and Maintenance and Manufacturing (MAC) Advisory Circulars.
- (3) In addition to the Advisory Material and Circulars, TCCA publishes Safety Alerts, Safety Notices and TC Publications (TPs), and the Aviation Safety Letter (ASL) to ensure industry is current with all safety information. The Safety Alerts and Notices include Service Difficulty Alerts (ALs), Airworthiness Notices (ANs), Service Difficulty Advisories (AVs), and Civil Aviation Safety Alerts (CASAs), –Canadian Aviation Service Difficulty Reports (Feedback).

Annex A

[RDIMS-#17407000-OPI FOR SUBSECTIONS OF SSPM AND ICAO SSP PQ](#)