



*Global Aviation Information  
Network (GAIN)*

**Status of Safety Management Systems  
and Related Reporting Methodologies  
in GST Member Organizations**

**Prepared by:  
GAIN Government Support Team (GST)**

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## **Disclaimer**

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## **Foreword**

The Global Aviation Information Network is an industry-led international coalition of airlines, manufacturers, employee groups, governments and other aviation organizations formed to promote and facilitate the voluntary collection and sharing of safety information by and among users in the international aviation community to improve aviation safety.

The GAIN concept was proposed in May 1996 as a way to significantly improve aviation safety through the enhanced use of safety information. The GAIN philosophy is that the voluntary collection, analysis, and sharing of safety information using advanced technologies in a jeopardy free environment will illuminate safety concerns and permit identification and implementation of cost-effective mitigations.

The GAIN organization consists of a Steering Committee, three working groups, a Government Support Team (GST) and Program Office. The GAIN Steering Committee is composed of industry stakeholders that set high-level GAIN policy and guide the working groups and Program Office. The working groups are interdisciplinary industry/government teams that work GAIN issues within the charters established by the Steering Committee. The three working groups are: Working Group B: Analytical Methods and Tools, Working Group C: Global Information Sharing Systems and Working Group E: Flight Ops/ATC Ops Safety Information Sharing. The Government Support Team consists of representatives from government organizations that work together to foster GAIN goals and reduce impediments to sharing in their respective countries and regions. The Program Office provides technical and administrative support to the Steering Committee, working groups, and Government Support Team.

The GAIN Steering Committee established the GAIN Government Support Team (GST) in October 2000 to enlist the help of government organizations to further the goals of GAIN in areas for which governments are well-suited. Specifically, the Steering Committee felt that:

- Governments should encourage voluntary efforts to collect and share aviation safety information
- Governments should assure that their laws, regulations, and policies do not deter such collection and sharing activities
- Governments could foster increased participation in GAIN by regulatory authorities and other government agencies around the world.

The GST initially consisted of representatives of civil aviation authorities and accident investigation boards from seven countries that have been active in supporting GAIN and aviation safety over the years (Australia, Canada, France, Japan, New Zealand, United Kingdom, and United States), as well as two multi-governmental organizations, the International Civil Aviation Organizations (ICAO) and European Joint Aviation Authorities (JAA). GST representatives were subsequently added from the European Commission (EC), the Nordic Working Group (Denmark, Finland, Iceland, Norway and Sweden; represented on the GST by Sweden), and Italy (Ente Nazionale per l'Aviazione Civile or ENAC, the Italian Civil Aviation Authority).

The GST encourages government and industry organizations to establish safety management systems that emphasize the importance of non-punitive collection, analysis and sharing of safety information within their organizations.

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## **Introduction**

The Global Aviation Information Network (GAIN) Steering Committee and GAIN Government Support Team (GST) members agreed that the overall objective of the GST is to foster GAIN goals and reduce impediments to sharing. Three focus areas supporting this objective are as follows:

- 1) Promote and facilitate the non-punitive collection and sharing of safety among the worldwide aviation community;
- 2) Help reduce legal and organizational barriers that discourage the collection and sharing of safety information; and
- 3) Encourage government organizations to support the development and implementation of GAIN.

The second focus area relates to legal impediments such as civil litigation, regulatory sanctions, criminal proceedings and public disclosure that are major deterrents to improving aviation safety through enhanced safety information collection and sharing. Because of these impediments, reporters of safety information are reluctant to disclose anything other than what happened, fearing that any additional information, addressing why an accident, incident or safety event occurred, may be used against them, their organization or airline<sup>1</sup>.

In an effort to address these impediments, the GST was tasked with finding ways to encourage government and industry organizations to establish Safety Management Systems (SMS) that emphasize the importance of non-punitive collection, analysis and sharing of safety information within their organizations. In order to fulfill the task, the GST agreed that it would be a beneficial exercise to gather descriptions and experiences with SMS implementation within government organizations.

A survey was selected as the information gathering technique to easily compare and contrast the different understandings of what comprises an SMS according to the respondents, and their experiences with SMS implementation and promotion. The survey form is included as Appendix A. The aim was to identify those countries or organizations that have established safety management systems that emphasize the importance of non-punitive collection, analysis and sharing of safety information.

Thirteen questions were developed and forwarded to each GST member organization. The first portion of the survey relates to questions surrounding SMS and the second portion relates to a country's government mandatory and/or voluntary reporting methodologies.

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<sup>1</sup> GAIN Government Support Team (GST). *Reducing Legal Impediments to Collecting & Sharing Safety Information*. December 2001 ( i ).

Representatives of five GST organizations returned completed surveys:

- International Civil Aviation Organization (ICAO)
- Sweden Civil Aviation Administration
- Transport Canada
- United Kingdom Civil Aviation Authority (UK CAA)
- United States Federal Aviation Administration (FAA)

It should be noted that not all GST member organizations have an SMS. Also, the survey responses represent the views of the individuals who completed the surveys, and are not necessarily the views of the whole organization.

In addition to the returned surveys, other SMS references include:

- *Safety Management Systems for Flight Operations and Aircraft Maintenance Organizations: A Guide to Implementation*, Transport Canada
- *Aviation Safety Management — An Operators Guide to Building a Safety Program*, Civil Aviation Safety Authority Australia (CASA) (<http://www.casa.gov.au>)
- Safety Management System Blueprint: Japan Airlines (JAL), submitted through JCAB as an example of a developing SMS in Japan (Appendix B)
- Safety Management System: United Kingdom (UK) Civil Aviation Authority (CAA), Appendix D2.
- ICAO Annex 11 to the Convention of International Aviation, *Air Traffic Services*, Thirteenth Edition, July 2001, Section 2.26.

The purpose of this report is to share the descriptions and experiences of Safety Management Systems of those government organizations that participated in the survey.

## **Survey Findings**

### **SAFETY MANAGEMENT SYSTEMS**

#### SMS definitions:

SMS definitions vary from formally adopted definitions to no definition at all. Respondents from Canada and the United States define an SMS similarly as a process or approach to managing safety risks. Sweden's definition of an SMS is a system requiring all parts in the aviation industry to take part in the safety work. The United Kingdom Civil Aviation Authority's position regarding SMS is that there is no recognized standard in aviation for defining a typical SMS. ICAO has not yet developed a definition of an SMS.

#### SMS components and their effectiveness:

Transport Canada's SMS components include a comprehensive corporate approach to safety; a structure that is organized to effectively achieve its safety objectives; and systems to assess and improve upon regulatory compliance. SMS implementation is underway with certain large carriers and the effectiveness of their safety management systems will be evaluated.

Although the FAA is in the process of developing an SMS for Air Traffic Control, there are existing components within the agency similar to those within a formal SMS that call for a case-specific plan for risk analysis and risk assessment; hazard identification; analysis of hazard severity and likelihood; assessment; and decision. These programs are under continuous evaluation to determine their effectiveness.

Sweden CAA's components of an SMS are information collection systems and analysis both on an ad-hoc basis and through systematic trend analysis. Sweden believes that data collection and a responsive feedback mechanism are fundamental for system performance as well as the promotion of a blame-free environment.

Though the UK CAA defines components of an organization's SMS, they ascertain that organizations are to decide which components need to be developed. However, they stress that the simpler and clearer the SMS the better and that this should complement existing systems and procedures.

#### SMS promotion:

Safety management systems are being promoted to industry in a generally consistent manner amongst GST organizations. Safety seminars and briefing campaigns are being conducted to promote the benefits of SMS through a consultative process. Manuals, booklets, pamphlets and videos have been published in an effort to educate industry on SMS.

Government requirement of SMS implementation:

As reported by most of the respondents of the survey, SMS is currently required by regulation or moving towards a regulatory requirement for SMS implementation except in the United Kingdom where it is not required by the UK Government that the Civil Aviation Authority enforce SMS.

**GOVERNMENT REPORTING METHODOLOGIES**

Mandatory versus voluntary reporting programs:

With the exception of ICAO, which has a mandatory ADREP system for collecting accident and incident reports from Contracting States (in accordance with the reporting requirements in Chapter 6 of Annex 13, *Aircraft Accident and incident Investigation*), all of the other surveyed respondents reported having both mandatory and voluntary reporting systems in place.

In Canada, there are mandatory reporting requirements under the Transportation Safety Board (TSB) Act, the Aeronautics Act and the Canadian Aviation Regulations (CARs). A voluntary reporting system also exists, within the TSB's SECURITAS program. Transport Canada also encourages operators to adopt flight operations quality assurance programs (FOQA). Transport Canada also formed a working group to look at developing a voluntary and non-punitive reporting program in Canada. The Working Group's report recommended the establishment of a voluntary reporting program, which has been accepted by the Canadian Aviation Regulation Advisory Council (CARAC) Technical Committee and the Civil Aviation Regulatory Committee (CARC).

In addition to its mandatory reporting requirements, the FAA has implemented several voluntary reporting programs such as FOQA, the Aviation Safety Action Program (ASAP), Aviation Safety Reporting System (ASRS) and the Voluntary Disclosure Reporting Program (VDRP).

The UK CAA has a Mandatory Occurrence Reporting Scheme (MORS). Voluntary reports are encouraged for those occurrences where reporting is not required.

The Swedish CAA has mandatory and voluntary reporting programs, which are derived from the same regulations that require a blame-free attitude against the reporters.

Scope of the data collected:

The respondents of the survey identify a wide range of safety-related data being collected, such as accident and incident data, maintenance related data, regulatory infractions, disruptions of any components of the air navigation system and contributing factors related to human error.

Collecting, analyzing and storing the data:

In Canada, under the TSB Act, mandatory accident data is collected and analyzed by the TSB. The TSB also provides this service for data received from the SECURITAS program. Within

Transport Canada, mandatory data is fed into several systems including the Civil Aviation Daily Occurrence Reporting System (CADORS) and the Computerized Airworthiness Information System (CAIS) and varying levels of analysis is done by a number of aviation disciplines.

The programs in the United States vary regarding who collects, analyzes and stores the data. ASAP data are collected and stored by the operator but the disposition of reports is determined through consensus by an event review committee consisting of one representative each from the FAA and company management and usually includes a third party, such as the employee's labor organization. FOQA data are collected and stored by the operator and an event review team comprised of representatives from company management and labor analyzes events that are potentially safety-related. The FAA can review FOQA data but is not usually involved in the analysis process. Reports under the VDRP are created by the operator and submitted to the FAA. ASRS data are collected and analyzed by the National Aeronautics and Space Administration (NASA) and are available to the public in de-identified form.

For Sweden CAA, UK CAA and ICAO, the responsibility of collecting, analyzing and storing the data belongs to them.

#### Confidentiality of reports:

Several of the surveyed respondents indicate the reporting systems have restricted access with authorized users. Data is also protected to the extent permitted under current exemptions to the Freedom of Information Act or Access to Information Acts in the various countries. Any data that are published are usually de-identified.

#### Strengths and Weaknesses of Existing Mandatory or Voluntary Reporting Methodologies:

Generally, the processes to gather information are working well, however, they are continually being evaluated in the respective organizations. Transport Canada and the UK CAA are looking at improving the data analysis component, whereas the FAA is looking to improve its information sharing capabilities between operators and themselves. Sweden identifies concerns with the media obtaining the reports. ICAO's concerns relate to the incomplete reports they obtain from states or the lack of reports altogether.

#### Circumstances for Protection from Enforcement Action:

The SMS concepts described by the survey respondents all stress the value of a free and uninhibited reporting culture, which requires that information collected not be used against the reporter in cases of unpremeditated or inadvertent violations. Under agreements established for the voluntary reporting programs described by the survey respondents, safety information collected under these programs will not be used in punitive enforcement or discipline actions by the employee's company or by the government authority, with certain exceptions. The specific information collection programs in various countries spell out these exceptions, which tend to include events involving alcohol or drug abuse, deliberate falsification, criminal acts, wilful or deliberate violations, or gross negligence.

This general concept of protection from enforcement is also supported by the UK CAA's MORs, even though it is a mandatory program.

Encouragement of Industry Participation:

The respondents indicate several methods of encouraging industry participation in the reporting process, including confidential handling of information, waiving of punitive sanctions, sharing safety information to reduce risks and industry education.

Conclusion:

From the information obtained through the survey, it is evident that the respondents are at different stages in the development and implementation of their Safety Management Systems. There are many good examples of best practices that GST countries and organizations may adapt and integrate into their own systems.

It should be emphasized that this report does not represent a global picture of SMS. Since only five GST member organizations are represented in this report, the findings are not meant to be a measure of international success with implementing SMS. Also, the survey responses represent the views of the individuals who completed the surveys, and are not necessarily the views of the whole organization for which they work.

It is important that government organizations encourage SMS in their respective national industries, develop examples and truly be SMS leaders.

Following are the completed surveys separated by question.

## **Survey Results**

**N.B. These next questions only apply if an SMS exists within the respective country.**

### **1) What is your definition of SMS?**

#### **Canada – Transport Canada**

Safety Management System (SMS) means a systematic, explicitly, comprehensive and proactive process for managing risks that integrates operations and technical systems with financial and human resource management to achieve safe operations and compliance with the *Canadian Aviation Regulations*.

#### **United States – FAA**

A Safety Management System is defined as the systematic management of risk associated with flight operations, related ground operations, and aircraft engineering and maintenance activities to achieve high levels of safety performance. In addition, an SMS sets out a company's safety policy and defines how it intends to manage safety as an integral part of its overall business plan. See Appendices C1-C3 for the FAA Order 8040.4.

#### **Sweden – Aviation Safety Authority**

A system requiring all parts in the aviation industry to take part in the safety work.

#### **United Kingdom – Civil Aviation Authority (CAA)**

The position of the United Kingdom Civil Aviation Authority (CAA) in regards to SMS is that there is no recognized standard in aviation for defining a typical SMS. The CAA has adapted best practice from other industries in order to provide guidelines for those parts of the aviation industry that wish to implement a formal SMS. In addition, they have published SMS Policy and Principle Guidelines so that there is a common understanding of SMS concepts. These guidelines are generic so that certain parts may only be applicable to particular sectors of the industry.

The CAA does not define SMS for organizations but provides guidance material on SMS Policy and Principles.

In addition, but quite separate to this, the CAA has developed its own Safety Regulation Management System (SRMS). The SRMS document is part of the CAA's management system and addresses our core regulatory activities. SRMS is intended to ensure CAA's safety responsibilities are identified, managed and discharged in a properly controlled and consistent manner so as to deliver safety improvement.

## **International Civil Aviation Organization (ICAO)**

Safety Management System - A system for the management of safety at aerodromes, including the organizational structure, responsibilities, procedures, processes and provisions for the implementation of aerodrome safety policies by an aerodrome operator, which provides for control of safety at, and the safe use of, the aerodrome."

## 2a) Provide a brief summary of your SMS program components.

### Canada – Transport Canada

To ensure standardization, the following components and elements provide the framework for the development of an SMS.

Components P	A comprehensive corporate approach to safety	A structure that is organized to effectively achieve its safety objectives	Systems to assess and improve upon regulatory compliance
Elements B	<ul style="list-style-type: none"> <li>• A description of the organization's safety philosophy and policies</li> <li>• Instruction to staff to ensure that the stated policies are complied with</li> <li>• A means of planning, controlling and measuring performance</li> <li>• A means of managing hazards and risks</li> <li>• A means of reporting safety deficiencies, accidents and incidents</li> <li>• A means of containing system failure and preparing for emergencies</li> <li>• A means of investigating and analyzing occurrences and safety deficiencies, and for disseminating the lessons learned</li> <li>• A means of documenting processes, decisions and actions</li> </ul>	<ul style="list-style-type: none"> <li>• Clear roles, responsibilities and accountabilities</li> <li>• A means of achieving coordination among organizational units</li> </ul>	<ul style="list-style-type: none"> <li>• An evaluation/quality assurance system to ensure that the organization is in compliance with its policies and procedures and that those procedures remain effective</li> <li>• A system to confirm the effectiveness of any corrective actions taken</li> </ul>

Transport Canada's *Safety Management Systems for Flight Operations and Aircraft Maintenance Organizations: A Guide to Implementation* (TP13881 E), identifies the following key features to the regulatory requirements:

- A safety management plan;
- Clear authorities, responsibilities and accountabilities for safety at all levels within the organization;
- Occurrence and hazard reporting;
- Data collection procedures;
- Incident analysis;
- Hazard identification and risk management;
- Documentation;
- Safety management training requirements; and
- Emergency response plan.

## **United States – FAA**

A summary of the program components is outlined in the attached FAA Order 8040.4 (Appendices C-1, C-2, C-3).

## **Sweden – Aviation Safety Authority**

The concept means closed loops in the information flow as well as for the actions within both small parts of the organizations and the outer loop involving the authorities. Components are information collection systems and analysis both on ad-hoc basis and systematic trend analysis. The output is a fact/risk based safety surveillance methodology.

## **United Kingdom – Civil Aviation Authority**

The CAA Policy and Principles define the components of an organization's SMS. These have been derived from a variety of disastrous accidents where management failures were cited as a significant contributory factor (i.e. factors which made the accident more likely to occur).

In developing an SMS to manage all the safety risks associated with aircraft production, maintenance or operation, it needs to be constantly borne in mind that the risks being managed are those associated with causing or contributing to an aircraft accident or serious incident. Workplace risks should be managed following the guidance of the UK Health and Safety Executive (HSE) and are outside the scope of the UK CAA's regulatory authority.

It is probably undesirable that an organization should attempt to introduce a complete SMS in a short timescale. However, the definition of an organization's SMS Policy & Principles, signed off by the Management Board, and the senior managers' safety accountabilities should be the initial task. It is then for the organization to decide which components need to be developed.

## **International Civil Aviation Organization (ICAO)**

ICAO does not have an SMS program.

## **2b) Explain what works and what does not work well.**

### **Canada – Transport Canada**

Canada's proposed SMS regulations are performance based; as such, each operator will interpret the regulation in a different way. This works well for operators because it gives them the flexibility to determine what their own requirements are and to tailor their system to meet their own unique needs. Transport Canada provides a framework and the operator builds upon this.

SMS implementation is underway with certain large carriers and the effectiveness of their safety management systems will be evaluated.

### **United States – FAA**

These programs are under continuous evaluation to determine their effectiveness.

### **Sweden – Aviation Safety Authority**

Data collection and fast feedback to reporters is fundamental for the system performance as well as a blame free environment.

It can be difficult to distribute analysis results in a way to be adopted by the users. This requires an extensive marketing of the SMS concept even within the authority.

### **United Kingdom – Civil Aviation Authority (CAA)**

The complexity of an SMS must be proportionate to the activity undertaken by the organization. The simpler and clearer the SMS the better.

### **International Civil Aviation Organization (ICAO)**

ICAO does not have an SMS program.

### **3) Describe how SMS is being promoted to industry.**

#### **Canada – Transport Canada**

SMS has been the theme of three Canadian Aviation Safety Seminars (CASS) where numerous presentations and workshops on the subject have been given. TC has implemented an SMS Briefing Campaign that includes any one or all of the following:

- a module on SMS Concepts and Principles;
- a module on SMS Regulatory Requirements;
- a case study; and
- a facilitated session aimed at identifying issues related to regulatory requirements and/or implementation.

In addition:

- Transport Canada has developed a booklet entitled "Introduction to Safety Management Systems" (TP 13739 E) has been produced, distributed and posted to the web;
- a pamphlet entitled "Score your Safety Culture" (TP 13844 E) has also been produced, distributed, posted to the web and incorporated in Safety News Letters; and
- a booklet entitled "Safety Management Systems for Flight Operations and Aircraft Maintenance Organizations" (TP13881 E) has also been produced and distributed widely.
- Transport Canada will host the annual UK CAA/FAA/TC conference on Safety Management in Aviation Maintenance in Toronto from September 16 to 18, 2003.

#### **United States – FAA**

SMS are being promoted through the implementation of ATOS - the Air Transportation Oversight System -, which is managed by AFS 900 in Dulles, VA, as well as for the Agency as a whole by the Office of System Safety, ASY 300. AFS-900 is tasked with implementing a System Safety/Risk Management based air carrier surveillance program. ATOS Phase One involves the ten largest US carriers and is in its fourth year. ATOS Phase Two is already underway and will incorporate the remaining air carriers. Much of the efforts of AFS-900 and ASY 300 involve educating industry personnel on System Safety technology and the benefits of a formalized and structured risk management program.

#### **Sweden – Aviation Safety Authority**

Sweden ASA is running regular safety seminars with the industry key groups in order to establish an open dialogue and active marketing. Safety programs and recommendations are highlighted from analysis performed by the authority and illustrate the performance of the SMS.

#### **United Kingdom – Civil Aviation Authority (CAA)**

SMS has been promoted by CAA-UK's three major Divisions (i.e. Aerodromes & ATC, Operations and Design & Production) over the past four years according to how they see the need in their particular areas of responsibility. In all areas, some organizations have been more

receptive than others. Many organizations have been concerned about the cost of incorporating SMS, especially when they already have established quality assurance system operating.

Much effort has been devoted to promoting the concept of SMS as current best practice. This has been done by a series of 'Road Shows' where CAA Divisions make presentations in UK Regions to senior managers from local organizations. These have been supported by documents produced by Divisions to describe SMS, e.g. CAP 712 - SMS for Commercial Air Transport Operations, May 2001.

The promotion of SMS in aviation has been influenced by developments in other UK transport and industrial sectors over the past 10 to 15 years. A number of major accidents have focused management's attention on the vulnerability of an organization or an individual to their potential legal liability. In the UK, legislation may change to introduce a new criminal law offence of Corporate Killing to replace the current law on involuntary manslaughter. Under the proposed new offence, an organization could face unlimited fines and directors could be disqualified or face imprisonment. The presence of an effective SMS has been promoted as potential defence against such crimes.

### **International Civil Aviation Organization (ICAO)**

Will be addressed in the 2<sup>nd</sup> edition of the Accident Prevention Manual (under development).

## **4) Does the government require industry to implement SMS?**

### **Canada – Transport Canada**

Yes it will. Notice of Proposed Amendments (NPAs) have been developed and vetted by industry representatives, under the auspices of the Canadian Aviation Regulation Advisory Council (CARAC) process and have been submitted to Justice for final drafting.

It's anticipated that Canada will have regulations in place for large air operators and approved maintenance organizations with specific ratings by Spring 2004.

### **United States – FAA**

Some components of an SMS are required by regulation.

### **Sweden – Aviation Safety Authority**

Yes, it is a requirement both in JAR OPS 1 and local regulations.

### **United Kingdom – Civil Aviation Authority (CAA)**

The CAA is not required by the UK Government to enforce SMS.

However, in other industrial sectors, safety regimes have been mandated. For example, a safety case regime was recommended by Lord Cullen after the Piper Alpha oil-rig disaster in 1988 to manage offshore safety. The concept was similar to existing provisions for dealing with onshore major hazard sites and has, more recently, been applied to rail companies. The UK Health and Safety Executive (HSE), primarily to protect workers, have promoted the safety case regime. A safety case is produced by industry for approval by HSE and is required under Statute.

A safety case typically addresses major hazards and should, therefore, form part of an overall Safety Management System.

### **International Civil Aviation Organization (ICAO)**

Under ICAO Annex 11 and Annex 14, SMS will be required for Airport and ATS providers in future.

**The following questions are related to your country's mandatory or voluntary reporting methodologies.**

**5) Does there exist a mandatory or voluntary reporting program?**

**Canada – Transport Canada**

Canada has both voluntary and mandatory reporting programs. Under the Transportation Safety Board (TSB) Act, there is a mandatory requirement to report accidents; under the Aeronautics Act, CAR 807 requires mandatory reporting by ATS Certificate holders to report items contained in the Civil Aviation Daily Occurrence Reporting System (CADORS) Manual. There is also a requirement in CAR 591 for mandatory reporting of Service Difficulties relating to aeronautical parts. The purpose is to collect and analyze data for incidents related to type design, where airworthiness and safety issues are brought into question.

In terms of voluntary reporting schemes Canada's Transportation Safety Board has a voluntary reporting program SECURITAS. SECURITAS is a multi-modal, voluntary reporting program run by the Transportation Safety Board (TSB). Anyone can report into SECURITAS; it is not limited to aviation industry employees. Generally, reports fall into three categories: unsafe conditions, inadequate regulations and unsafe procedures or practices.

Transport Canada has also encouraged operators to adopt flight operations quality assurance programs (FOQA) and has issued an advisory circular relating to the protection of FOQA data. Transport Canada has also encouraged the development of internal reporting schemes on a voluntary basis and has regulated this requirement in air transport category operators through flight safety program legislation.

In addition, Transport Canada formed a working group looking at the development of a voluntary and non-punitive reporting program in Canada. The Working Group's report recommended the establishment of a voluntary reporting program and has been accepted by the Canadian Aviation Regulation Advisory Council (CARAC) Technical Committee and the Civil Aviation Regulatory Committee (CARC).

**United States – FAA**

The program incorporates both mandatory and voluntary self-disclosure programs. Voluntary reporting programs in the U.S. include the Aviation Safety Action Program (ASAP), the Flight Operational Quality Assurance Program (FOQA), and the Voluntary Disclosure Reporting Program (VDRP).

**Sweden – Aviation Safety Authority**

Yes, in fact there are both from the same regulations, which require a blame free attitude against the reporters.

**United Kingdom – Civil Aviation Authority (CAA)**

The UK has a Mandatory Occurrence Reporting Scheme (MORS). This scheme accepts both Mandatory and Voluntary reports. See details in Appendix D.

**International Civil Aviation Organization (ICAO)**

Mandatory (ADREP)

## **6) What is the scope of the data that is collected?**

### **Canada – Transport Canada**

Very broad. There are many areas including:

- aircraft and aircraft system malfunctions or abnormalities;
- malfunction/abnormalities/disruptions of any component of the air navigation system including aerodromes and weather-related services;
- alleged contraventions; and
- accidents/incidents, etc.

See Appendix E for the list of reportable items contained in Annex A of the CADORS manual.

### **United States – FAA**

The scope of the data involves both regulatory infractions and specific maintenance functions. Data is also collected by programs such as FOQA, which involves performance of the airplane and the pilots obtained on individual flights, and aggregate trends compiled from that information; ASAP entails employee self-reporting of adverse safety events, including possible violations of the regulations by the reporting employee. VDRP entails written reports by certificated air carriers and repair stations of possible violations by those entities of the regulations.

### **Sweden – Aviation Safety Authority**

All safety related occurrences are collected i.e. from deviation reports to serious incidents/accidents. Briefly it gives a risk/fact based audit/inspection system and objective support to regulations and changes.

### **United Kingdom – Civil Aviation Authority (CAA)**

See details in Appendix D.

### **International Civil Aviation Organization (ICAO)**

States are required to provide ADREP Reports for accidents to aircraft over 2250 kg and investigated incidents to aircraft over 5700 kg. Also, copies of Final Reports for accidents and investigated incidents to aircraft over 5 700 kg must be provided.

## **7) Who collects and analyses the data?**

### **Canada – Transport Canada**

The data is collected by the Transport Canada Regional System Safety Offices. The data is fed into the Civil Aviation Daily Occurrence Reporting System (CADORS) and maintained by the Strategies and Integration (SI) Directorate in coordination with Civil Aviation Directorate.

Varying levels of analysis is done by a number of aviation disciplines for various reasons:

- Custodians of regulatory programs conduct micro-level analysis in their areas of concern with a view to identifying trends in the environment for which they might take rule-making or regulatory oversight action;
- System Safety HQ conducts macro-level analysis to identify emerging hazards and trends; and
- System Safety Regions conduct micro-level analysis to identify emerging hazards and trends within their respective regions.

The Continuing Airworthiness Division of the Aircraft Certification Branch collects and analyses Service Difficulty Reports (SDR) data. The Transportation Safety Board of Canada provides this service for data received in the SECURITAS program.

### **United States – FAA**

Varies by program. ASAP information is collected by the operator and analyzed by an event review team comprised of one representative from company management, one representative from the FAA, and, if applicable, one representative from the employee group's labour association. De-identified ASAP data is retained in an operator maintained database. FOQA data is collected by the operator and analyzed by a FOQA event review team comprised of representatives from company management and labour, but not the FAA. Operators typically maintain de-identified FOQA data in a database for a limited period of time. Operators of approved FOQA programs must periodically brief the FAA on observed safety trends from FOQA, including corrective actions taken or warranted, if any. VDRP data is collected directly by the FAA from the operator. The FAA is just beginning to develop a national system for collection and analysis of VDRP data, which at present is collected and analyzed only by the local FAA office responsible for direct oversight of the operator.

### **Sweden – Aviation Safety Authority**

In Sweden the Aviation Safety Authority is doing both tasks.

### **United Kingdom – Civil Aviation Authority (CAA)**

See Appendix D.

### **International Civil Aviation Organization (ICAO)**

ICAO ADREP system.

## **8) Where does the data reside?**

### **Canada – Transport Canada**

The Transportation Safety Board, and two organizations within Transport Canada: the Strategies and Integration Directorate, and Continuing Airworthiness Division, Civil Aviation Directorate.

### **United States – FAA**

ASAP and FOQA data reside with the operator at the present time. In the future, aggregate trend information from those programs may reside with the FAA, after protection from the release of such information is established by a FAA Order issued in accordance with 14 CFR Part 193. ASRS data resides at NASA, and VDRP data resides with the FAA.

### **Sweden – Aviation Safety Authority**

In local databases, shortly using the new EU system ECCAIRS 4.0, containing the new ADREP 2000 taxonomy.

### **United Kingdom – Civil Aviation Authority (CAA)**

See Appendix D.

### **International Civil Aviation Organization (ICAO)**

ICAO HQ Montreal.

## **9) How is reporting kept confidential?**

### **Canada – Transport Canada**

The CADORS database is accessible by all Transport Canada employees. Access is also granted to authorized stakeholders for research purposes. Otherwise, all outside requests for CADORS data must be coordinated through Transport Canada's Access to Information and Privacy group.

SECURITAS data is de-identified by the TSB, which, as an independent body, can provide confidentiality to the reporter. Reports are received at a dedicated postal box number accessible only by specifically designated staff. Reports are processed in a secure area.

SDR data is not confidential.

### **United States – FAA**

At present, ASAP & FOQA data do not reside with the FAA, so that confidentiality of data in the possession of the FAA is not an issue. In the near future, any such data shared with the FAA will be protected under Part 193. Confidentiality is not an issue for ASRS data because NASA immediately de-identifies the data. VDRP data is protected to the extent permitted under U.S. law under current exemptions to FOIA, and will be further protected by a planned designation under 14 CFR Part 193 in the near future.

### **Sweden – Aviation Safety Authority**

The database can only be accessed by the authority staff. Data published are de-identified. Single reports however are available to the public by hard copy from the postal registration system in accordance with the Swedish law.

### **United Kingdom – Civil Aviation Authority (CAA)**

See Appendix D.

### **International Civil Aviation Organization (ICAO)**

Access to data restricted to ICAO AIG staff. Information only provided to authorized recipients in Contracting States for the purposes of accident prevention.

## **10) Explain what works well and what does not work well.**

### **Canada – Transport Canada**

What works well is that a high level of confidence exists in data reported by ANS Certificate Holders. Within Transport Canada, Civil Aviation data collection and custodianship of the CADORS Manual by a Directorate separate from Civil Aviation authority is under evaluation; and Transport Canada is continually improving its analysis capabilities.

### **United States – FAA**

These programs are under continuous evaluation to determine their effectiveness but all of these programs are currently working well. What is lacking is a system for sharing safety related data between operators, as well as more systematically with the FAA. The FAA is working in partnership with industry on these voluntary programs to establish a mutually acceptable venue for wider sharing of this information.

### **Sweden – Aviation Safety Authority**

There have only been a few cases where mass media has read through hard copy reports and published findings of their judgments. It has not happen yet that persons have been accused officially in mass media. Companies are mostly the targets for such publications, which of course can hamper the system, but has not been experienced yet.

### **United Kingdom – Civil Aviation Authority (CAA)**

To operate MORS employs 16 staff within the Safety investigation and data department. This is a substantial but necessary resource to handle the volume of reporting. A difficulty with MORS, as with any database collecting diverse information, is the accurate and consistent recording of occurrences in a form that permits reliable data retrieval at a later date. Another challenge is the effective analysis of the data received. To help the analysis process, a risk-grading scheme has been developed so that high-risk events can more easily be identified and acted upon.

### **International Civil Aviation Organization (ICAO)**

Problems: Incomplete or non-reporting by some States. Inadequate reporting by States using accident data systems (Australia, Canada, US) resulting from incompatibility of recorded data. Success: ability to analyze data on short notice, long history (data going back to 1970), almost complete coverage of recent major accidents resulting from the use of various informal data sources to trace non-reported accidents.

## **11) Under what circumstances should immunity be granted from enforcement action or disciplinary procedures?**

### **Canada – Transport Canada**

The voluntary and non-punitive reporting programs Working Group recommended that the criteria for immunity be as follows:

- The event did not involve a wilful or deliberate offence;
- The event did not involve criminal activity, e.g. the falsification of documents;
- The event did not involve expiration of license or lack of qualification;
- The event did not involve gross negligence;
- The individual involved in the event filed a report within 10 days of the occurrence;
- The event was not an accident as defined by the Canadian Transportation Accident Investigation and Safety Board (CTAISB) Act.

### **United States – FAA**

This concept of deliberate or unintentional and undesirable actions is covered by the FAA enforcement and self-disclosure program described in FAA Order 2150.3A. With certain exceptions (e.g., alcohol, drugs, deliberate falsification, criminal acts), information from ASAP reports is protected from punitive enforcement or discipline by FAA and company policy, respectively, the specifics of which are stipulated in a memorandum of understanding, which must be signed by all parties. No more than FAA administrative action may be taken for events accepted under ASAP. Use of information from approved FOQA programs is protected from enforcement by 14 CFR, Part 13.401 (FOQA Rule), and from disciplinary action by company/labour side agreements. With certain exceptions, the FAA cannot take enforcement action for an occurrence for which a timely ASRS report is submitted. Information from VDRP is protected from enforcement by FAA policy - the FAA will only take administrative action for events accepted under the program.

### **Sweden – Aviation Safety Authority**

A change in the access should be considered if there is a serious degradation in reporting willingness as a result from publication.

### **United Kingdom – Civil Aviation Authority (CAA)**

CAP 382 (the guide to MORS) states 'The Authority gives an assurance that its primary concern is to secure free and uninhibited reporting and that it will not be its policy to institute proceedings in respect of unpremeditated or inadvertent breaches of the law which come to its attention only because they have been reported under the Scheme, except in cases involving dereliction of duty amounting to gross negligence'.

The UK CAA Chairman undersigns this statement. The UK generally enjoys a good reporting culture. This has probably come about by our adherence to the above policy in an open and reasonable manner.

### **International Civil Aviation Organization (ICAO)**

ICAO has no enforcement provisions over member States.

## **12) How is your country's aviation industry encouraged to participate in the reporting process?**

### **Canada – Transport Canada**

Transport Canada is encouraging the development of internal company reporting programs and FOQA programs, in advance of the SMS regulatory requirements.

In addition, the voluntary and non-punitive reporting programs Working Group recommend the following guidelines should be applied to the voluntary reporting program to encourage industry participation:

- Immunity from enforcement action;
- Ensure that people understand the benefits of submitting information;
- Share trends, information, research, human factors issues;
- User friendly, easy to report, easy to use;
- Provide feedback to reports, members of the aviation community and government;
- The voluntary reporting program should state clearly what is and isn't reportable.

### **United States – FAA**

The aviation industry is encouraged to participate in the reporting process through confidential handling of the information for reducing likelihood of reoccurrence and the waiving of punitive sanctions against the violator in areas of inadvertent non-compliance.

### **Sweden – Aviation Safety Authority**

Safety seminars are being run with the industry regularly presenting analysis feedback from the reports as well as Web publishing of results of the reporting.

### **United Kingdom – Civil Aviation Authority (CAA)**

The MORS is a mandatory requirement. Our various inspectors and surveyors will be looking out for the non-reporting of safety occurrences as part of their normal safety oversight duties.

### **International Civil Aviation Organization (ICAO)**

Not applicable – reporting is done by States to ICAO.

### **13) What is the best interrelationship between the implementation of safety management programs in the aviation industry and voluntary and non-punitive reporting programs?**

#### **Canada – Transport Canada**

Under an SMS, a company must establish ways and means of verifying compliance with regulatory requirements. In addition, the company must document its activities/actions/decisions in this regard.

Companies should involve the regulator in reporting and discussion on its level of compliance and its plans to correct problems/deficiencies. Upholding the principle of fairness, the regulator, in turn, must provide the company with immunity from enforcement action, provided that the event did not involve wilful or deliberate intent and that the company's proposed corrective action plan will bring the company back into compliance and is, in fact, implemented.

Should a company self-report and follow through with the proposed and accepted corrective action plan, then it should be provided with immunity. If a company does not live up to its commitment, then the regulator must intervene as appropriate in keeping with its conditional immunity policy developed in line with the criteria outlined in question 11.

SMS and voluntary reporting programs are considered complimentary. Individuals are encouraged to report to their own internal reporting programs before reporting to a national voluntary reporting program. It is recognized that a company is in the best position to deal with internal issues. However, Transport Canada is recommending that companies submit de-identified data to a national program with a view to identifying national trends.

#### **United States – FAA**

For these voluntary programs to work effectively, buy-in and inculcation of a safety culture on the part of the operator are essential. Operators should be encouraged to share de-identified safety data from voluntary programs with each other and with the regulatory body. Such information can be used to augment any data from required safety management programs, particularly with regard to identification of risks, and assessment of the extent to which risk mitigation efforts are achieving their desired goals. Such information should be used to establish a partnership approach to risk mitigation. However, regulatory bodies must take care to assure that with respect to voluntary safety programs, no operator or employee is subject to adverse regulatory action as a result of participation in the programs.

#### **Sweden – Aviation Safety Authority**

In many countries it is the basis for implementation of an SMS system where the authority is a part.

## **United Kingdom – Civil Aviation Authority (CAA)**

A SMS requires safety risks to be managed effectively. This calls for hazards to be reported, recorded, identified and responded to as necessary. Organizations should develop their own reporting arrangements as well as the other management processes. In the UK, airlines such as British Airways have developed BASIS, which is a non-mandatory reporting process for their own use. BASIS is not intended to be used by the Regulator. A reporting system such as BASIS is an essential part of SMS.

## **International Civil Aviation Organization (ICAO)**

Not applicable.

## APPENDIX A

### GAIN Government Support Team SURVEY of SAFETY MANAGEMENT SYSTEMS (SMS)

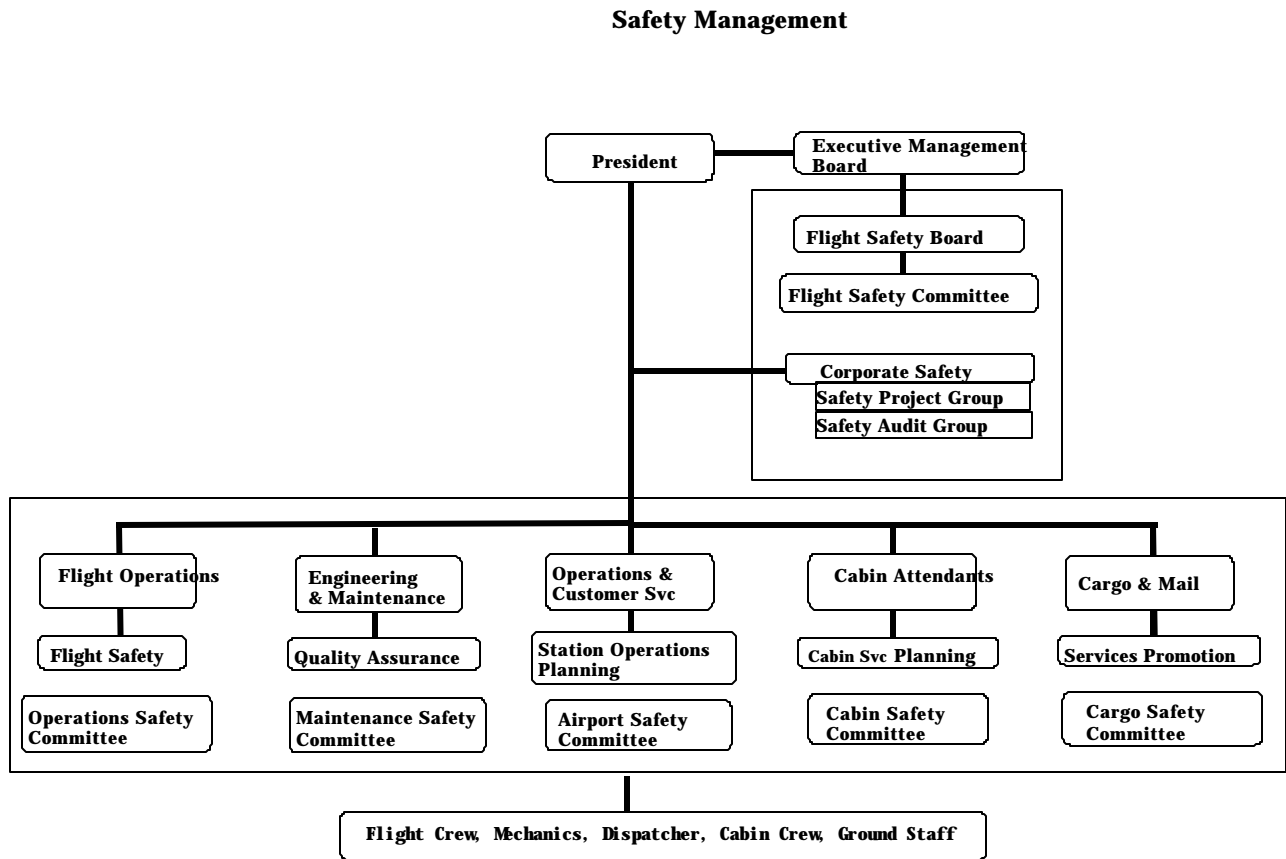
**Please note: These questions pertain to your country or organization.**

<b>Country/Organization:</b>		
<b>These next questions only apply if an SMS exists within your country.</b>		
1	What is your definition of SMS?	
2a	Provide a brief summary of your SMS program components.	
2b	Explain what works and what does not work well.	
3	Describe how SMS is being promoted to industry.	
4	Does the government require industry to implement SMS?	
<b>The following questions are related to your country's mandatory or voluntary reporting methodologies.</b>		
5	Does there exist a mandatory or voluntary reporting program?	
6	What is the scope of the data that is collected?	
7	Who collects and analyses the data?	
8	Where does the data reside?	
9	How is reporting kept confidential?	
10	Explain what works well and what does not work well.	
11	Under what circumstances should immunity be granted from enforcement action or disciplinary procedures?	
12	How is your country's aviation industry encouraged to participate in the reporting process?	
13	What is the best interrelationship between the implementation of safety management programs in the aviation industry and voluntary and non-punitive reporting programs?	



## APPENDIX B

### Japan Airlines (JAL) Safety Management Structure (blueprint)



## APPENDIX C-1

<b>Order</b>	U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION	<b>8040.4</b>
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6/26/98

SUBJ: SAFETY RISK MANAGEMENT

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1. **PURPOSE.** This order establishes the safety risk management policy and prescribes procedures for implementing safety risk management as a decision making tool within the Federal Aviation Administration (FAA). This order establishes the Safety Risk Management Committee.

2. **DISTRIBUTION.** This order is distributed to the division level in the Washington headquarters, regions, and centres, with limited distribution to all field offices and facilities.

3. **DEFINITIONS.** Appendix 1, Definitions, contains definitions used in this order.

4. **SCOPE.** This order requires the application of a flexible but formalized safety risk management process for all high-consequence decisions, except in situations deemed by the Administrator to be an emergency. A high-consequence decision is one that either creates or could be reasonably estimated to result in a statistical increase or decrease, as determined by the program office, in personal injuries and/or loss of life and health, a change in property values, loss of or damage to property, costs or savings, or other economic impacts valued at \$100,000,000 or more per annum. The objective of this policy is to formalize a common sense approach to risk management and safety risk analysis/assessment in FAA decision-making. This order is not intended to interfere with regulatory processes and activities. Each program office will interpret, establish, and execute the policy contained herein consistent with its role and responsibility. The Safety Risk Management Committee will consist of technical personnel with risk assessment expertise and be available for guidance across all FAA programs.

5. **SAFETY RISK MANAGEMENT POLICY.** The FAA shall use a formal, disciplined, and documented decision-making process to address safety risks in relation to high-consequence decisions impacting the complete product life cycle. The critical information resulting from a safety risk management process can thereby be effectively communicated in an objective and unbiased manner to decision-makers, and from decision-makers to the public. All decision-making authorities within the FAA shall maintain safety risk management expertise appropriate to their operations, and shall perform and document the safety risk management process prior to issuing the high-consequence decision. The choice of methodologies to support risk management efforts remains the responsibility of each program office. The decision-making authority shall determine the documentation format. The approach to safety risk management is composed of the following steps:

a. Plan. A case-specific plan for risk analysis and risk assessment shall be predetermined in adequate detail for appropriate review and agreement by the decision-making authority prior to commitment of resources. The plan shall additionally describe criteria for acceptable risk.

b. Hazard Identification. The specific safety hazard or list of hazards to be addressed by the safety risk management plan shall be explicitly identified to prevent ambiguity in subsequent analysis and assessment.

c. Analysis. Both elements of risk (hazard severity and likelihood of occurrence) shall be characterized. The inability to quantify and/or lack of historical data on a particular hazard does not exclude the hazard from this requirement. If the seriousness of a hazard can be expected to increase over the effective life of the decision, this should be noted. Additionally, both elements should be estimated for each hazard being analyzed, even if historical and/or quantitative data is not available.

d. Assessment. The combined impact of the risk elements in paragraph 5c shall be compared to acceptability criteria and the results provided for decision-making.

e. Decision. The risk management decision shall consider the risk assessment results conducted in accordance with paragraph 5d. Risk assessment results may be used to compare and contrast alternative options.

## **6. PRINCIPLES FOR SAFETY RISK ASSESSMENT AND RISK CHARACTERIZATION.**

In characterizing risk, one must comply with each of the following:

a. General. Safety risk assessments, to the maximum extent feasible:

- (1) Are scientifically objective.
- (2) Are unbiased.
- (3) Include all relevant data available.
- (4) Employ default or conservative assumptions only if situation-specific information is not reasonably available. The basis of these assumptions must be clearly identified.
- (5) Distinguish clearly as to what risks would be affected by the decision and what risks would not.
- (6) Are reasonably detailed and accurate.
- (7) Relate to current risk or the risk resulting from not adopting the proposal being considered.
- (8) Allow for unknown and/or unquantifiable risks.

b. Principles. The principles to be applied when preparing safety risk assessments are:

- (1) Each risk assessment should first analyze the two elements of risk: severity of the hazard and likelihood of occurrence. Risk assessment is then performed by comparing the combined effect of their characteristics to acceptable criteria as determined in the plan (paragraph 5a).
- (2) A risk assessment may be qualitative and/or quantitative. To the maximum extent practicable, these risk assessments will be quantitative.

- (3) The selection of a risk assessment methodology should be flexible.
- (4) Basic assumptions should be documented or, if only bounds can be estimated reliably, the range encompassed should be described.
- (5) Significant risk assessment assumptions, inferences, or models should:
  - (a) Describe any model used in the risk assessment and make explicit the assumptions incorporated in the model.
  - (b) Identify any policy or value judgments.
  - (c) Explain the basis for choices.
  - (d) Indicate the extent that the model and the assumptions incorporated have been validated by or conflict with empirical data.
- (6) All safety risk assessments should include or summarize the information of paragraphs 6a(3) and 6a(4) as well as 6b(4) and 6b(5). This record should be maintained by the organization performing the assessment in accordance with Order 1350.15B, Records Organization, Transfer, and Destruction Standards.

**7. ANALYSIS OF RISK REDUCTION BENEFITS AND COSTS.** For each high-consequence decision, the following tasks shall be performed:

- a. Compare the results of a risk assessment for each risk-reduction alternative considered, including no action, in order to rank each risk assessment for decision-making purposes. The assessment will consider future conditions, e.g., increased traffic volume.
- b. Assess the costs and the safety risk reduction or other benefits associated with implementation of, and compliance with, an alternative under final consideration.

**8. SUBSTITUTION RISKS.** Safety risk assessments of proposed changes to high-consequence decisions shall include a statement of substitution risks. Substitution risks shall be included in the risk assessment documentation.

**9. SAFETY RISK MANAGEMENT COMMITTEE.** This order establishes the Safety Risk Management Committee. Appendix 2, Safety Risk Management Committee, contains the committee charter. The committee shall provide a service to any FAA organization for safety risk management planning, as outlined in appendix 2, when requested by the responsible program office. It also meets periodically (e.g., two to four times per year) to exchange risk management ideas and information. The committee will provide advice and counsel to the Office of System Safety, the Assistant Administrator for System Safety, and other management officials when requested.

Jane F. Garvey  
Administrator

## **APPENDIX C-2**

### **DEFINITIONS**

1. **COSTS.** Direct and indirect costs to the United States Government, State, local, and tribal governments, international trade impacts, and the private sector.
2. **EMERGENCY.** A circumstance that requires immediate action to be taken.
3. **HAZARD.** Condition, event, or circumstance that could lead to or contribute to an unplanned or undesired event.
4. **HAZARD IDENTIFICATION.** Identification of a substance, activity, or condition as potentially posing a risk to human health or safety.
5. **HIGH-CONSEQUENCE DECISION.** Decision that either creates or could be reasonably estimated to result in a statistical increase or decrease in personal injuries and/or loss of life and health, a change in property values, loss of or damage to property, costs or savings, or other economic impacts valued at \$100,000,000 or more per annum.
6. **PRODUCT LIFE CYCLE.** The entire sequence from pre-certification activities through those associated with removal from service.
7. **MISHAP.** Unplanned event, or series of events, that results in death, injury, occupational illness, or damage to or loss of equipment or property.
8. **RISK.** Expression of the impact of an undesired event in terms of event severity and event likelihood.
9. **RISK ASSESSMENT.**
  - a. Process of identifying hazards and quantifying or qualifying the degree of risk they pose for exposed individuals, populations, or resources; and/or
  - b. Document containing the explanation of how the assessment process is applied to individual activities or conditions.
10. **RISK CHARACTERIZATION.** Identification or evaluation of the two components of risk, i.e., undesired event severity and likelihood of occurrence.
11. **RISK MANAGEMENT.** Management activity ensuring that risk is identified and eliminated or controlled within established program risk parameters.
12. **SAFETY RISK.** Expression of the probability and impact of an undesired event in terms of hazard severity and hazard likelihood.
13. **SUBSTITUTION RISK.** Additional risk to human health or safety, to include property risk, from an action designed to reduce some other risk(s).

## **APPENDIX C-3**

### **SAFETY RISK MANAGEMENT COMMITTEE**

1. **PURPOSE.** The Safety Risk Management Committee provides a communication and support team to supplement the overall risk analysis capability and efficiency of key FAA organizations.

2. **RESPONSIBILITIES.** The Committee supports FAA safety risk management activities. It provides advice and guidance, upon request from responsible program offices, to help them fulfill their authority and responsibility to incorporate safety risk management as a decision-making tool. It serves as an internal vehicle for risk management process communication, for coordination of risk analysis methods, and for use of common practices where appropriate. This includes, but is not limited to:

- a. Continuing the internal exchange of risk management information among key FAA organizations.
- b. Fostering the exchange of risk management ideas and information with other government agencies and industry to avoid duplication of effort.
- c. Providing risk analysis/management advice and guidance.
- d. Identifying and recommending needed enhancements to FAA risk analysis/management capabilities and/or efficiencies upon request.
- e. Maintaining a risk management resources directory that includes:
  - (1) FAA risk methodologies productively employed,
  - (2) Specific internal risk analysis/management expertise by methodology or tool and organizational contact point(s), and
  - (3) A central contact point for resource identification assistance.
- f. Encouraging the establishment of an international directory of aviation safety information resources via the Internet.
- g. Assisting in the identification of suitable risk analysis tools and initiate appropriate training in the use of these tools.

3. **COMPOSITION.** The Safety Risk Management Committee is composed of safety and risk management professionals representing all Associate/Assistant Administrators and the Offices of the Chief Counsel, Civil Rights, Government and Industry Affairs, and Public Affairs. The Assistant Administrator for System Safety will designate an individual to chair the committee. The chairperson is responsible for providing written notice of all meetings to committee members and, in coordination with the executive secretary, keeping minutes of the meetings.

4. **ASSIGNMENTS.** The Safety Risk Management Committee may form ad hoc working groups to address specific issues when requested by the responsible program office. Composition of those

working groups will consist of member representatives from across the FAA. Working groups will be disbanded upon completion of their task. The Office of System Safety shall provide the position of executive secretary of the committee. The Office of System Safety shall also furnish other administrative support.

5. FUNDING. Resources for support staff and working group activities will be provided as determined by the Assistant Administrator for System Safety. Unless otherwise stated, each member is responsible for his/her own costs associated with committee membership.

## **APPENDIX D-1**

### **Summary of MORS – Mandatory Occurrence Reporting Scheme**

#### ***Operated by the UK Civil Aviation Authority***

**Voluntary or Mandatory Reporting Program:** Mandatory, with provision for information revealing the identity of the source to be removed if confidentiality is requested. Voluntary reports are encouraged in respect of those occurrences, which do not fall within the remit of the scheme.

**Purpose of Program:**

1. To provide the UK aviation community with safety information as determined from accidents and incidents.
2. To investigate where necessary and thereafter, when appropriate, to ensure that corrective action is or has been taken, if necessary, either by the reporting organisation or the CAA itself.

**Description of Program:** The primary responsibility for safety rests with the management of the organisations involved (Manufacturers, Operators and Maintenance Organisations). The CAA's responsibility is to provide the regulatory framework within which the industry must work and thereafter to monitor performance to be satisfied that required standards are set and maintained. The Occurrence Reporting Scheme is an established part of the CAA's monitoring function and is complementary to the normal day-to-day procedures and systems (e.g. AOC, Company approvals, etc).

The overall objective of the CAA in operating this scheme is to use the reported information to improve the level of flight safety and not to attribute blame. Article 117 of the Air Navigation Order 2000 makes mandatory occurrence reporting mandatory. It is administered under the terms of CAP382 "The Mandatory Occurrence Reporting Scheme". The MOR scheme has been running since 1976 and has a total of more than 120000 records in its associated database.

The Safety Data Unit (SDU) of the Safety Investigation and Data Department (SIDDD) of the CAA is responsible for managing the MOR scheme. All reports are sent to the SDU, where they are booked in, assessed and processed. MORs are categorised as Open (for investigation), Closed on Receipt (reportable but not investigated by the CAA) or Grade E (reports which, generally speaking, fall outside the remit of the scheme). Investigations are monitored by specialist departments within the CAA who ensure that appropriate action is being taken as necessary. Occurrences are only "Closed" when the specialist department and the SDU are satisfied that the investigation is complete and all necessary actions have been taken. Closed and Closed on Receipt occurrences can be opened again if further information becomes available which indicates the necessity of doing so. Specific details of all occurrences, including supplementary information and the basis of closure, are entered onto an MOR database.

All MOR reports made to the CAA are circulated within the SRG. The category of any report can be challenged, either by CAA personnel or by the reporter and the report re-categorised. Summaries of all reports are produced on a monthly basis and widely circulated to industry via Monthly Listings. When the SDU identifies potential problems, either by frequency of report or safety risk involved, it will alert the appropriate specialist department. In addition, the SDU carries out specific retrievals of database information on request by legitimate sources and frequent use is made of the database to support safety investigations or resolution of safety problems.

**Source of Data: MORS** gathers data from the following sources:

- Mandatory Occurrence reports.
- Voluntary Occurrence reports.
- Accident reports.

**Users of Data:**

**Internal** – within the CAA for information, investigation and analysis. UK Safety Performance Indicators are presented to a Safety Steering Committee on a quarterly basis, to the CAA Board and are included in the annual report. Annually a Safety Plan is produced. This plan is supported by analysis conducted on data provided by MORS.

**External** – the CAA provides MORS information on a regular basis via reports (such as Monthly Listings). It will also provide information when requested to any persons or organisations that require data for flight safety purposes. Most information provided externally is subject to minor disidentification, unless specific data is justified and available.

**Future Plans for Program:**

Efforts are being made to accommodate electronic reporting of incidents as well as electronic dissemination of data.

Reporting methods and procedures will be aligned in accordance with European requirements in respect of incident reporting.

**Point of Contact:**

Name: Tim Whittle  
Phone: 0044 1293 57 3211  
Email: [sdd@srg.caa.co.uk](mailto:sdd@srg.caa.co.uk)  
Website: [www.caa.co.uk](http://www.caa.co.uk)

## **APPENDIX D-2**

### **Information on Safety Management System (SMS) published by UK CAA**

There is no recognised standard in aviation for defining a typical Safety Management System (SMS). So it has been necessary to adapt best practice from other industries in order to provide guidelines for those parts of the aviation industry that wish to implement a formal SMS.

CAA UK has drawn up a number of SMS Policy and Principles aimed at providing a simple SMS framework supported by clear definitions.

With respect to the topic of SMS, here is some information that CAA UK has published:

SMS Guidance Leaflet: Guidance for Developing and Auditing a Formal Safety Management System:

<http://www.caa.co.uk/publications/publicationdetails.asp?id=529>

CAP 712: Safety Management Systems for Commercial Air Transport Operations:

<http://www.caa.co.uk/publications/publicationdetails.asp?id=236>

ATSIN 4: The implementation of Safety Management Systems (SMS):

<http://www.caa.co.uk/publications/publicationdetails.asp?id=274>

CAP 730: Safety Management Systems for Air Traffic Management:

<http://www.caa.co.uk/publications/publicationdetails.asp?id=516>

## **APPENDIX E**

### **Transport Canada's Civil Aviation Daily Occurrence Reporting System (CADORS) Manual - ANNEX A CADORS REPORTABLE OCCURRENCES**

#### **1. Aircraft Accident**

Any aviation occurrence resulting directly from the operation of a aircraft where:

- A. A person, other than a stowaway, sustains a serious injury or fatal injury, that is not self-inflicted or inflicted by another person or caused by natural causes, as a result of that person:
  - (i) being in the aircraft,
  - (ii) coming into direct contact with any part of the aircraft, including any part that may have become detached from the aircraft, or
  - (iii) being directly exposed to the jet blast/propeller wash of the aircraft;
- B. The aircraft sustains damage or structural failure adversely affecting the structural strength, performance or flight characteristics of the aircraft normally requiring major repair or replacement of any affected component part, other than damage or failure that is limited to:
  - (i) the engine, its cowlings or its accessories,
  - (ii) the propellers, wing tips, antennae, tires, brakes or fairings, or
  - (iii) small dents or puncture holes in the aircraft skin;
- C. The aircraft is missing or is completely inaccessible,

#### **2. Aircraft Incident**

Any occurrence involving an aircraft where:

- A. An engine fails;
- B. Smoke or fire occurs, other than an engine fire that is contained within the engine and does not result in engine failure or damage to other component parts of the aircraft;
- C. Difficulties in controlling the aircraft in flight are encountered due to any aircraft system malfunction, weather phenomena, wake turbulence, operations outside the approved flight envelope or uncontrolled vibrations;
- D. The aircraft fails to remain within the landing or takeoff area, lands with one or more landing gear retracted or drags a wing tip or engine pod;

- E. Any crew member is unable to perform his/her flight duties as a result of incapacitation;
  - F. Decompression, explosive or otherwise, occurs that necessitates an emergency descent;
  - G. A fuel shortage occurs that necessitates a diversion or requires approach and landing priority at the destination of the aircraft;
  - H. The aircraft is refuelled with the incorrect type of fuel or contaminated fuel;
  - I. A collision or risk of collision with any other aircraft or with any vehicle, terrain or obstacle occurs, including a collision or risk of collision that may be related to air traffic control procedures or equipment failures;
  - J. The aircraft receives a Traffic Alert and Collision Avoidance System (TCAS) Resolution Advisory;
  - K. A flight crew member declares an emergency (such as medical), or indicates any degree of emergency that requires priority handling by an air traffic control unit or the standing by of crash, fire fighting or rescue services; or,
  - L. Toxic gases or corrosive materials leak from any area aboard the aircraft;
  - M. A transmission gearbox malfunction occurs; or,
  - N. A slung load is released unintentionally or as a precautionary or emergency measure from the aircraft;
3. Unauthorized incursion or operating irregularity involving vehicles, pedestrians or animals,
  4. Failure of a navigational aid, approach aid, communications system, airport lighting, power failure or any other system breakdown which has an adverse effect upon flight safety or a major impact upon operations,
  5. Criminal action - hijacking bomb threat, riot, sabotage, or a breach of aviation/airport security,
  6. Unavailability of a runway due to snow, ice, flood, obstruction or foreign object that results in a major impact on airport operations,
  7. Bird strikes,
  8. Missing aircraft reports, Search and Rescue action (RCC launch, ELT activations, communications searches),

9. Significant building and equipment fire or other major damage on airport property or TC remote sites,
10. Labour action affecting operational capability,
11. Item dropped from aircraft,
12. Regulatory infractions,
13. Environment emergencies such as significant fuel spill, hazardous chemical or radioactive spill on airport property,
14. Accidental death or serious injury to employees or members of the public while on airport or TC property,
15. ATS operating irregularities, and
16. Any occurrence, which deviates from normal operating procedures, may generate a high degree of public interest/concern, or could be of direct interest to specific foreign air authorities.

## **APPENDIX F**

### **Summary of SECURITAS – The TSB Confidential Reporting System *Operated by Transportation Safety Board of Canada (TSB)***

**Mandatory or Voluntary Reporting Program:** Voluntary and Confidential

**Purpose of Program:** To provide a non-punitive and confidential method of obtaining safety information and promoting an atmosphere to facilitate effective reporting of such safety information.

**Description of Program:** SECURITAS is a multi-modal confidential reporting program intended to receive voluntary reports on safety concerns in the marine, rail and air modes of transportation. It provides a means by which persons with safety concerns can report incidents and potentially unsafe acts or conditions relating to the Canadian transportation system that would not normally be reported through other channels. Data compiled from reports may support TSB studies and analyses on safety-related matters such as operating procedures, training, human performance and equipment suitability. Analysis of the reported concerns can help identify widespread safety deficiencies. Reported information can lead to the TSB making formal recommendations to the Minister of Transport or other appropriate departments for safety action. By pooling data from the reports with other accident/incident reports, studies and analyses, and by sharing it with other agencies and countries, greater insight into national and global transportation safety issues is gained.

**Source of Data:** Anyone with a safety concern, including those who wish to have their identity protected. The information is provided on a confidential basis by flight crew, air traffic controllers, maintenance personnel, passengers and other persons with aviation safety concerns.

**Users of Data:** When a reported concern is validated as a safety deficiency, the TSB normally forwards the information, often with suggested corrective action, to the appropriate regulatory authority or air traffic services organization. However, there are occasions, depending on who can best effect corrective action, when specific transportation organizations, companies and/or agencies are the primary recipients of the TSB's observations and analysis. No action will be taken that might compromise the identity of the reporter.

**Future Plans for Program:** Increased resourcing for SECURITAS is being studied in order to enhance response times.