

Transportation Safety Board of Canada

Departmental Performance Report

For the period ending
March 31, 2007



Wendy A. Tadros
Chair
Transportation Safety Board of Canada



Rona Ambrose
President
Queen's Privy Council for Canada



Canada

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The Chair's Message

I am proud to assume the leadership of the Transportation Safety Board of Canada, an organization that is recognized worldwide for its professional competence and important contributions to transportation safety.

In a time when Canadians expect safe transportation, the TSB actively promotes a culture of safety by conducting independent accident investigations, by identifying safety deficiencies and by making recommendations we believe will advance safety in our marine, pipeline, rail and aviation sectors. One investigation at a time, the TSB has established its credibility with industry and regulators, and continues to build public awareness of its role in the transportation field and in the need for independent accident investigation. This past year, we managed to identify a wide range of safety deficiencies and to convey important safety messages to regulators and the transportation industry.

The TSB recognizes that, in order to be effective, we must demonstrate not only technical competency but relevance to Canadians. The TSB was challenged this year by the need to complete an increasing number of very complex investigations while at the same time significantly reducing the number of investigations in progress. We understand the need to reduce the average time it takes to complete an investigation while ensuring we maintain the high quality Canadians expect in all of our work. Our goal is to build upon well-established strengths while focusing on areas where improvements are required. This is a question of balancing the number of new investigations against the available resources.

While we did not fully achieve all of the objectives listed in the Report on Plans and Priorities, we have made progress in our priority investments to implement new ways of improving the TSB's contribution to promoting transportation safety and strengthening the organization's internal management. One of our accomplishments was the launching of a large part of the TSB Investigation and Information Management System. Although this tool is not yet entirely functional, it already enables us to better manage our business while meeting government information and technology management requirements.

Once again this year, various indicators show that Canada maintains a very good transportation safety record. For example, TSB recommendations continue to be positively received and some safety action is taken as a result of our work. Furthermore, a review of transportation accident rates over the past 10 years continues to reveal a progressive downward trend. We therefore believe that the contribution made by this organization in the reduction of risks in the Canadian and international transportation system, in concert with the work of many other organizations, is having a beneficial impact.

In submitting this report for tabling in Parliament and examining our accomplishments for the year, I believe that the TSB met the challenges that it faced and that the entire TSB team remained committed to promoting transportation safety for all Canadians.

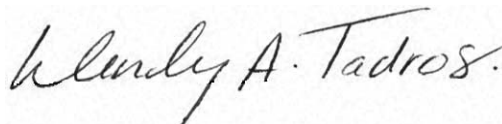
Section 1: Overview

1.1 Management Representation Statement

I submit, for tabling in Parliament, the 2006-2007 Departmental Performance Report for the Transportation Safety Board of Canada.

This document has been prepared based on the reporting principles contained in the *Guide for the Preparation of Part III of the 2006-2007 Estimates: Reports on Plans and Priorities and Departmental Performance Reports*:

- It adheres to the specific reporting requirements outlined in the Treasury Board Secretariat guidance;
- It is based on the department's Strategic Outcome and Program Activity Architecture that were approved by the Treasury Board;
- It presents consistent, comprehensive, balanced and reliable information;
- It provides a basis of accountability for the results achieved with the resources and authorities entrusted to it; and
- It reports finances based on approved numbers from the Estimates and the Public Accounts of Canada.



Wendy A. Tadros
Chair

1.2 Raison d'être

The Transportation Safety Board of Canada (TSB) is an independent agency created in 1990 by an Act of Parliament (*Canadian Transportation Accident Investigation and Safety Board Act*). It operates at arm's length from other government departments and agencies such as Transport Canada, the Department of Fisheries and Oceans, and the National Energy Board to ensure that there are no real or perceived conflicts of interest. Under the legislation, the TSB's only object is the advancement of transportation safety in the federally regulated elements of the marine, pipeline, rail and air transportation systems. This mandate is fulfilled by conducting independent investigations that can include, if necessary, public inquiries into transportation occurrences. The purpose of these investigations and inquiries is to make findings as to the causes and contributing factors of the occurrences and to identify safety deficiencies. Therefore, recommendations may be made to improve safety and reduce or eliminate risks to people, to property and to the environment. The TSB has the exclusive authority to make findings as to causes and contributing factors when it investigates a transportation occurrence.

The jurisdiction of the TSB includes all marine, pipeline, rail or aviation transportation occurrences in or over Canada that fall under federal jurisdiction. The TSB may also represent Canadian interests in foreign investigations of transportation accidents involving Canadian registered, licensed or manufactured ships, railway rolling stock or aircraft. In addition, the TSB carries out some of Canada's obligations related to transportation safety at the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO).

A transportation occurrence is any accident or incident associated with the operation of an aircraft, ship, railway rolling stock, or pipeline. It also includes any hazard that could, in the Board's opinion, induce an accident or incident if left unattended.



1.3 Operating Framework

The TSB is primarily funded by Parliament through a program expenditures vote and, as a departmental corporation, it has authority to spend revenues received during the year. The TSB operates within the context of Canada's very large, complex, dynamic and ever-changing transportation system. For more details on the operating context, see the Transport Canada website at www.tc.gc.ca/pol/en/Report/anre2006/toc_e.htm and the National Energy Board website at www.neb-one.gc.ca/clf-nsi/rpblctn/rprt/nnlrprt/2006/nnlrprt2006-eng.html.

Many individuals and groups cooperate with the TSB in the fulfillment of its mandate. During the course of an investigation, the TSB interacts directly with

- individuals such as survivors, witnesses and next-of-kin;
- operators;

- other organizations and agencies such as medical examiners, police, manufacturers, owners and insurance companies; and
- other federal government departments and agencies.

Their cooperation is essential to the conduct of the TSB's business, whether they contribute information or support services. For more details on the investigation process, visit the TSB website at www.tsb.gc.ca/en/investigation_process/index.asp.

The TSB is one of many organizations involved in improving transportation safety nationally and internationally. Even if the TSB is operating at arm's length from other federal departments in the transportation field, it cannot achieve its strategic outcome without the cooperation of the other organizations. The TSB presents findings and issues recommendations in such a manner that other organizations feel compelled to act but it has no formal authority to regulate, direct or enforce specific actions. Its success implies ongoing dialogue, information sharing and strategic coordination with organizations such as Transport Canada, the National Energy Board and the Canadian Coast Guard.

The TSB must also continuously be in contact with industry and foreign regulatory organizations, and exchange information with them. Through various means, the TSB must present compelling arguments that will convince these "change agents" to take the necessary action in response to identified safety deficiencies.

The TSB has established memoranda of understanding with other federal government departments for the coordination of activities and the provision of support services. These agreements provide the TSB with access to a range of support services that can rapidly supplement internal resources (for example, assistance in the recovery of a wreckage, the documentation of evidence, and the examination or testing of components). The agreements also define operating practices to ensure good coordination of activities and to avoid potential conflicts that could arise from the simultaneous implementation of various organizational mandates. Such agreements are currently in place with the Department of National Defence, the Royal Canadian Mounted Police, the Canadian Coast Guard, Human Resources and Social Development Canada, and the National Research Council. Similarly, the TSB has established strategic cooperation alliances with provincial and territorial medical examiners and with certain provincial government departments for rail occurrences that fall under their jurisdiction.

Further alliances have been established with the TSB's counterpart agencies in other countries such as the United States, Australia, the Netherlands, New Zealand, France, and the United Kingdom. The TSB cooperates on a reciprocal basis with foreign safety investigation agencies through the ad hoc exchange of specialized services or the provision of assistance as a means of coping with capacity gaps. As one of the world leaders in its field, the TSB regularly shares its investigation techniques, methodologies and tools with other organizations. For example, the Recorder Analysis and Playback System (RAPS), originally developed by the TSB for decoding and analyzing flight data recorders (FDRs) and cockpit voice recorders (CVRs), is now used for safety investigations in more than 10 countries. Similarly, the TSB has contributed to the

training of investigators from numerous countries, either by integrating foreign investigators into its in-house training programs or by sending senior staff to teach abroad. The TSB also gives information and copies of its reports to sister organizations, and participates in international working groups and studies to influence opinion within the transportation industry and to keep abreast of technological change.

1.4 Risks and Challenges

The TSB faces many risks and challenges that have a potentially significant impact on the organization's ability to achieve its mandate. Managers are aware of these risks and challenges and are expected to take appropriate action to mitigate the risks while ensuring the delivery of their mandate. The most important challenges for 2006-2007 are described in the following paragraphs.

Prioritizing and Managing the Workload

The TSB is facing a number of internal and external demands not only to sustain existing activities but also to undertake new initiatives to meet government change requirements, such as human resources modernization and procurement reform, and to mitigate risks in areas such as information technology security and business continuity planning. The challenge lies in achieving all of this within a limited resource base. The TSB must therefore find the right balance between the level of activity to be undertaken and the capacity of available human and financial resources. This implies an ongoing review of products, services and processes to ensure that resources are applied in the best possible way to achieve optimum results.

Maintaining a Knowledgeable and Professional Workforce

The TSB, like many organizations, faces a specific challenge with respect to its workforce. Many positions are "one deep" – meaning that there is only one person responsible for a specific task or function. Over the next few years, the TSB must continue to operate while many of its key employees move into retirement. The TSB must also contend with a high turnover rate in some of the functional support areas of Corporate Services due to the high demand for such specialists across the Public Service. The TSB must ensure that it is adequately prepared to fill any gaps and to secure the proper transfer of knowledge to new employees. The 2005 Public Service Employee Survey has provided the TSB with a current assessment of employee satisfaction and concerns. Sustained efforts will be required to respond to any employee concerns, including any issues related to career development and job classification.

Implementing and Sustaining the TSB Investigation and Information Management System

The TSB has invested substantial resources, time and effort in the development of an internal information system to better manage its business while meeting government requirements with respect to information management and technology. As the rollout of the Investigation and Information Management System is undertaken, the TSB will encounter specific challenges with respect to change management and temporarily increased workloads for some employees. These challenges will need to be addressed through training and ongoing reviews and monitoring of the operation of the system. Furthermore, significant work remains to be done to complete the development of the full functionality required. This residual work will have to be done in parallel with the initial rollout. In order to make the implementation and sustainability of the system a success, the management team must ensure that full employee buy-in and participation is achieved. Sustained investments will also be required to operate and maintain the new system work environment. Not meeting these challenges would result in the loss of resources invested to date and would have a significant impact on the delivery of products and services, given that the TSB has made a conscious decision not to revert to old tools and systems. Anything less than full adoption and use of the system would result in a loss of productivity and create inefficiencies in work processes.

Sustaining External Communications

The TSB has improved stakeholder awareness of the agency and its work, and has better positioned itself to influence key change agents to take actions that lead to improvements in transportation safety. For this planning period, the challenge will be to strike the best balance between enhanced external communication activities and changing stakeholder expectations. The TSB must ensure that external communication products and services are available, up-to-date and of a high quality in order to retain the levels of integrity and credibility required to achieve its mandate.

1.5 Resources

The following table summarizes the total financial and human resources allocated to the TSB in 2006-2007, as well as the actual resources utilized for the delivery of the mandate. Section 3 of this report provides detailed information on the overall financial results of the TSB and Appendix E presents the audited financial statements.

Financial Resources (in thousands of dollars)

2006-2007		
Planned Spending	Total Authorities	Actual Spending
30,909	31,667	30,884

Human Resources (full-time equivalents)

2006-2007		
Planned	Actual	Difference
234	226	8

1.6 Link to the Government of Canada Results

The following table shows how the TSB's only program activity and its related resources contribute to one of the results planned for the Government of Canada in the area of social affairs.

Expected Results	
Government of Canada Outcome Area	Social Affairs: safe and secure community.
Strategic Outcome	To advance transportation safety, thereby reducing risks to people, property and the environment.
Expected Results	Increased awareness of safety issues and a strengthened safety culture on the part of governments, industry and public.
Program Activity	To conduct safety investigations.
Expected Results	The timely implementation of safety actions by stakeholders to improve transportation safety for Canadians.

1.7 Departmental Performance Summary

In its 2006-2007 Report on Plans and Priorities, the TSB had identified five priorities. All were strategic investments aimed at enhancing the TSB's contribution to transportation safety in Canada and internationally and strengthening the organization from within.

Overall, progress was achieved against all priorities. However, not all objectives were fully achieved, due to our limited human resources capacity and events outside of our control. On many occasions throughout the year, managers were faced with the difficult choice of reallocating people from one project or investigation to another. The table below provides a quick overview of the results achieved this year against our priorities.

TSB Priorities				
TSB Priorities	Type	Performance Status	Planned Spending (in thousands of dollars)	Actual Spending (in thousands of dollars)
1) Continuous Improvement of Internal Processes and Practices	Ongoing	Meets expectations in part	550	480
2) Continuous Improvement of Human Resources Management	Ongoing	Meets expectations	0	0
3) Sustainable Communication Services and Products	Ongoing	Meets expectations in part	30	23
4) Business Continuity Planning	New	Meets expectations	145	122
5) Ongoing Development of Partnerships	Ongoing	Meets expectations in part	0	0

Continuous Improvement of Products and Services

In 2006-2007, the TSB deployed a large part of its Investigation and Information Management System, which follows central documentation principles and allows us to collaborate and share information and employ consistent procedures and processes across all sectors.

As the rollout of the system modules proceeded, we ensured that a robust change management strategy was in place to support users in the new way of conducting business. We also fostered a culture of continuous improvement by developing a long-term sustainability strategy for its operational processes, tools and systems. This strategy included end-user support, training and ongoing reviews. At the same, work continued on the development of outstanding modules. During the latter part of the year, as a result of a re-evaluation of user needs, the development emphasis shifted from the Report Production and Corporate Management modules to focus on development of the following modules: the Committees Gateway, the Workload Management Milestone and Phases, the Workload Management Monitoring Tools, the Investigation Management Dashboard and the Safety Communications Tracking System. Development in these areas is ongoing.

Continuous Improvement of Human Resources Management

The TSB continued focusing on the strategic management of human resources by effectively implementing the final phase of its human resources modernization initiatives. Many of TSB's activities related to the *Public Service Modernization Act* involved the monitoring of delegated managers' level of adherence to the central agencies and TSB policies and processes. To ensure the required level of understanding of the Act by all TSB employees, activities such as ongoing training to delegated managers and continued communication – in the form of information sessions, meetings and Information Bulletins – were conducted. The development and implementation of the human resources planning process within the department was also a crucial step towards supporting capacity, retention, knowledge transfer, succession and staffing activities for the coming years. During this exercise, each branch developed its respective Human Resources Plan, which was then used to feed into the overall Human Resources Plan at each of the Directorate levels. This resulted in an overall Human Resources Plan, which was incorporated into the TSB Business Plan for 2007-2008.

Sustainable Communication Services and Products

The TSB continues to raise public awareness about its mission and mandate in a number of ways. In 2006-2007, TSB staff and Board members participated in various conferences and technical meetings pertinent to transportation safety to keep abreast of technological change and to make presentations on safety issues of particular interest to the audiences. In addition, some of the remarks made by TSB employees during news conferences or interviews, as well as technical and feature articles they wrote have been published in specialized magazines. In these ways, the TSB has taken advantage of various forums as opportunities to share lessons learned from its investigations. An ambitious list has been assembled for the coming year to build on the work already done and to forge increased awareness among industry and the public.

As part of its strategy for releasing reports, five news conferences were convened in locations across Canada where significant accidents occurred. In order to ensure sustainability and currency, the Communications Division continued to review and revise its communications tools, products and processes.

To save time and money in the translation and revision process, while improving the quality and uniformity of TSB reports and other internal and external communication products, we purchased software that will allow all staff to have access next year to an electronic lexicon containing a centralized repository of TSB terms and definitions.

“During a news conference to release details of the investigation regarding the capsizing of the *Ryan's Commander* off the coast of Newfoundland and Labrador, TSB Chair, said that the lessons learned from the loss of this vessel, already had a huge impact on improving safety in the design of vessels and will continue to be the catalyst in improving a safety culture for years to come.”

Source : *The Navigator*, vol. 10, No.1, January 2007

Business Continuity Planning

The TSB has spent two years creating and implementing business continuity plans. To that end, we identified this year the essential services and the assets necessary to carry out our mandate. We have also conducted evaluations of the possible impact that service interruptions could have on our activities. Having completed these steps, we will be able to develop and test emergency operational plans and business resumption plans in the next fiscal year. These plans will include measures in the event of disasters affecting the TSB or of pandemics.

Ongoing Development of Partnership

The TSB works in partnership with numerous organizations in its operational and administrative activities. Over the past two fiscal years, we have conducted a strategic review of our partnerships, which has led to the development of a policy framework that includes guidelines for the establishment of new partnerships. This new framework, to be implemented over the course of the next fiscal year, will include a mechanism for periodic reviews and renewals of all new and existing partnership agreements.

Section 2: Analysis of Program Activity

2.1 Performance Management Framework

The TSB's actual performance management framework consists of five key documents. The five-year TSB Strategic Plan is used to set the strategic directions. The Report on Plans and Priorities outlines to parliamentarians and Canadians the results the organization plans to achieve with the resources entrusted to it. The annual Business Plan states the corporate priorities and the key initiatives and activities to support them. It also outlines the key priorities for each branch and division and the resource allocation decisions for the coming year. The Balanced Scorecard defines specific performance indicators and is used by management to measure and monitor progress. This Scorecard will however have to be revised to take into account the comments made by the Treasury Board Secretariat during its assessment of the TSB against the Management Accountability Framework. Finally, the Departmental Performance Report closes the accountability loop by reporting to Parliament on the results achieved.

2.2 Plans and Priorities Commitments

In its 2006-2007 Report on Plans and Priorities, the TSB targeted one strategic result through one program activity. The five priorities listed in Section 1.7 of this document are aimed at supporting and enhancing the TSB's ability to conduct safety investigations and communicate safety information.

In order to optimize the use of resources and to effectively respond to its stakeholders, the TSB has defined four key sectors of service based on the four transportation modes included in its mandate: marine, pipeline, rail and air. This approach enables alignment with the transportation industry and the way it operates.

Resources are therefore allocated and managed separately for each of these key service areas. The table below indicates planned and actual spending on financial and human resources for the key service areas in 2006-2007. Sections 2.7 to 2.10 provide detailed financial information on each key service area of our program activity.

TSB Resources by Key Service Area

Financial Resources (in thousands of dollars)		
	Planned Spending	Actual Spending
Marine	7,856	7,904
Pipeline	542	545
Rail	7,113	7,156
Air	18,683	18,797
Total	34,194	34,402
Human Resources (FTEs)		
Marine	51	49
Pipeline	4	4
Rail	49	48
Air	129	125
Total	234	226

2.3 Performance Measurement

The table below illustrates the connections between the TSB's strategic objective, its program activity, its program sub-activities and the results that Canadians can expect, as well as its current performance indicators.

Overview of TSB Program Activity Architecture and Performance Measurement Framework

Program Activity Architecture Level	Definition	Results	Indicators
Strategic Outcome	To advance transportation safety, thereby reducing risks to people, property and the environment	Increased awareness of safety issues and a strengthened safety culture on the part of governments, industry and public	<ul style="list-style-type: none"> • Implementation of the Outreach Program • Availability of safety information and other transportation safety information on the web • Stakeholder and client awareness of TSB profile and impact of its activities • Cost of Business Plan projects • Safety outputs issued

Program Activity Architecture Level	Definition	Results	Indicators
			<ul style="list-style-type: none"> • Assessment of responses to TSB recommendations
	Name	Expected Results	
Program Activity	Safety Investigations	Timely implementation of safety actions by stakeholders to improve transportation safety for Canadians	<ul style="list-style-type: none"> • Cost of Business Plan projects • Timely safety actions taken
Program Sub-Activities	<ol style="list-style-type: none"> 1. Air Investigations 2. Marine Investigations 3. Rail/Pipeline Investigations 4. Professional and Communications Services 	Identification and communication to stakeholders and the public of safety deficiencies in the transportation system	<ul style="list-style-type: none"> • Number of transportation occurrences • Number of investigations started, in process and completed • Duration of completed investigations • Net cost of completed investigations by sector • Average net cost per investigations completed • Number of investigations started and completed by investigator • Number of safety outputs issued • Number of safety actions taken

It should be noted that the data used in this report come from TSB information systems unless otherwise specified.

In 2006, the TSB underwent an initial assessment against the Management Accountability Framework (MAF). The observations made by the Treasury Board portfolio show that the Department would benefit from improving its Program Activity Architecture (PAA) by reviewing its strategic result to make it more measurable and more focused on TSB responsibilities. The new architecture should also enable the Department to strengthen the links between expected results and progress made toward achieving those results.

The Department will follow up on these comments in 2007-2008 with a view to implementing them in the 2008-2009 fiscal year. This will include reviewing the above table to bring it into line with the Department's new PAA and to incorporate all the information required under the *Management, Resources, and Results Structure Policy*.

2.4 Report on Transportation Occurrences

In 2006, a total of 1,921 accidents and 1,326 incidents were reported in accordance with the TSB's regulations for mandatory reporting of occurrences.* The number of accidents in 2006 decreased by 6 per cent from the 2,046 accidents reported in 2005 and by 1 per cent from the 2001-2005 annual average of 1,946 accidents. The number of reported incidents decreased to 1,326 in 2006, down from 1,371 in 2005 and the 2001-2005 average of 1,414. There were also 564 voluntary incident reports. Fatalities totalled 168 in 2006, down 20 from the 2005 total and 21 from the 2001-2005 average.

Figure 1: Occurrences Reported to the TSB

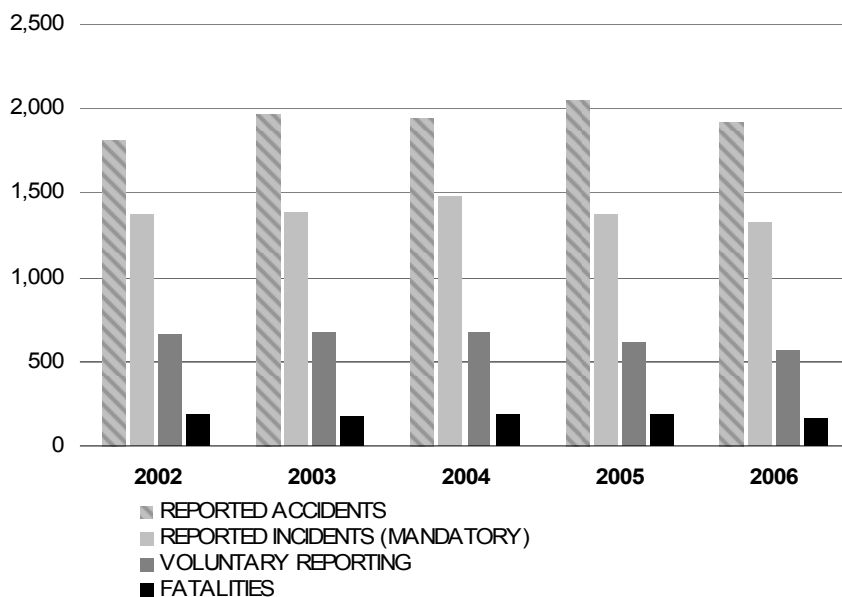


Table 1 presents data on accident rates by sector for the current year, as well as the five-year average. Even if these rates are based on limited data, activity level indicators provide a general point of reference on transportation safety. Overall, Canada continued to maintain a good safety record in 2006. The 2006 accident rates, per activity level for all sectors, reflect a downward trend from the five-year average.

* While the Board's operations are for the 2006-2007 fiscal year, occurrence statistics are for the 2006 calendar year. Please note that, in a live database, the occurrence data are constantly being updated. Consequently, the statistics can change slightly over time. Comparisons are generally to the last 5 or 10 years. For definitions of terms such as *accident*, *incident* and *occurrence*, see Appendix C.

Table 1: Accident Rates in Transportation by Sector in 2006 Compared to the Previous Five-Year Average (2001-2005)

	Marine¹	Pipeline²	Rail³	Air⁴
Accidents				
2006	3.3	0.6	2.4	6.2
2005	3.6	0.4	3.1	6.2
Five-Year Average	3.6	1.2	2.8	7.1
¹ Canadian-flag shipping accidents for vessels with a gross tonnage of 15 or more (excluding passenger vessels, passenger ferries and fishing vessels) per 1,000 movements				
² Per exajoule				
³ Accidents (other than crossing or trespasser accidents) that occur on a main track or spur per million main-track train-miles. Since April 1, 2005 the accidents that occurred on former BC Rail's network are included.				
⁴ Canadian-registered aircraft accidents (excluding ultralights, gliders, balloons and gyrocopters) per 100,000 hours.				

Reported accidents and incidents provide indicators of the transportation system's safety performance and help focus efforts on those initiatives and activities that have high safety benefits. Table 2 presents the statistics on transportation occurrences by sector, including comparisons with the five-year average. Taking into account the level of activity in each sector, the number of accidents for 2006 continued to exhibit a general downward trend in the marine, pipeline and air sectors, while the rail sector is still slightly above the average.

The number of incidents for 2006 also continued to exhibit a downward trend in the marine, rail and air sectors. The number is still higher than the average in the pipeline sector.

Another indicator of the safety performance of the transportation system is the number of fatalities. In 2006, the marine and rail sectors showed a decrease in fatalities compared to the five-year average, and the fatalities in the air sector were the same as the five-year average. A reduction in accidents and fatalities would be expected to positively influence the public's confidence in the safety of the transportation system.

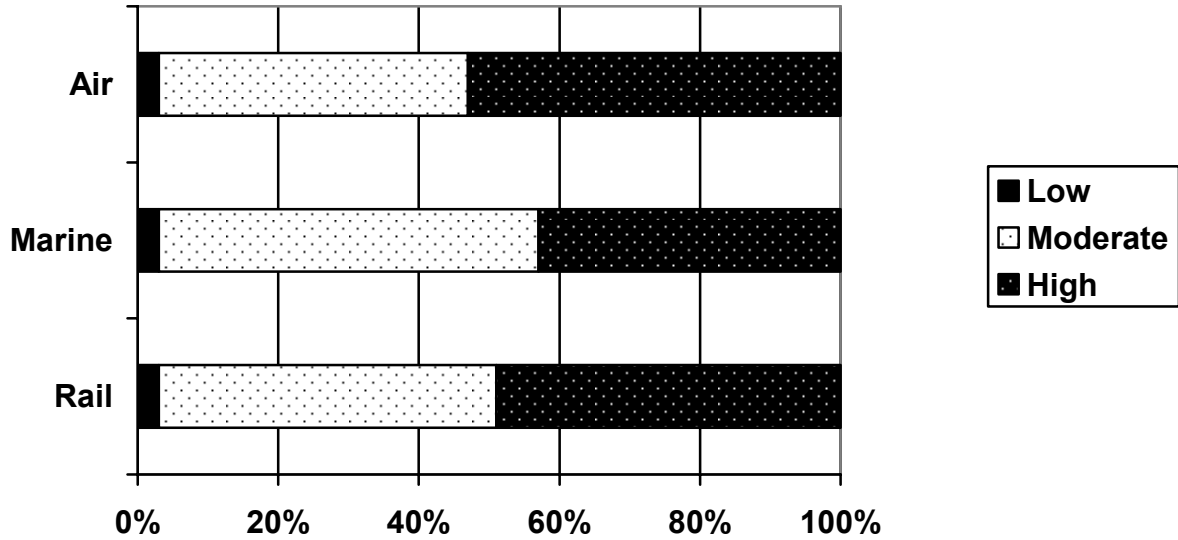
Table 2: Transportation Occurrences by Sector in 2006 Compared to the Previous Five-Year Average (2001-2005)

	Marine	Pipeline	Rail *	Air
Accidents				
2006	467	8	1,144	262
2005	489	5	1,247	258
Five-Year Average	506	15	1,091	275
Fatalities				
2006	18	0	95	52
2005	20	0	103	51
Five-Year Average	25	N/A	96	52
Incidents				
2006	212	63	226	823
2005	227	79	243	822
Five-Year Average	222	52	283	857
* Since April 1, 2005, occurrences on the former BC Rail's network are included in the number of occurrences.				

Despite fluctuations in the number of accidents and incidents reported on an annual basis, the trend over the past 10 years shows a progressive decline in accident rates in all transportation sectors (see the figures for each sector in sections 2.7 to 2.10). Therefore, Canada has one of the safest transportation systems in the world and continues to work diligently to improve it further. These improvements in transportation safety are the result of the combined efforts of many stakeholders including manufacturers, carriers, crews, regulators, and the TSB. All these efforts are also reflected in the results of a survey conducted by EKOS Research Associates in February 2007, which indicated that 97.3 per cent of those Canadians who had an opinion on the subject rated the air, rail and marine transportation systems as moderately or very safe and secure.

Figure 2: Level of Public Confidence in the Safety and Security of the Air, Rail and Marine Travel Modes

How would you rate the safety and security of each of the following modes of transportation?



Nota : Road statistics have been removed from the figure.

Source : EKOS Research Associates Inc., *Rethinking Government 2006*, Wave 4 Report, February 2007.

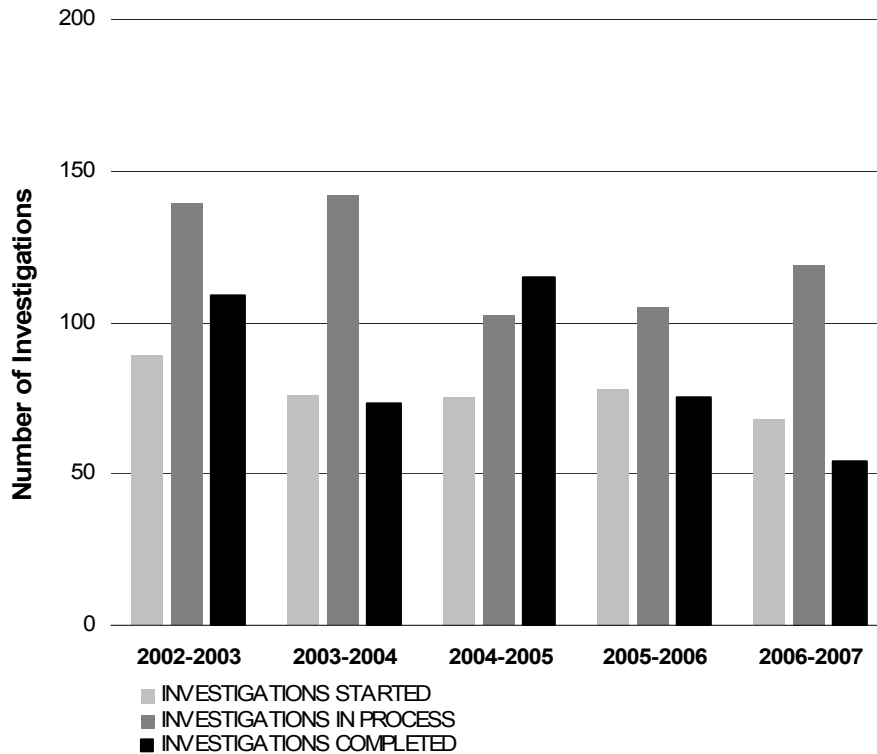
More comprehensive transportation safety information is available on the TSB website at www.tsb.gc.ca or in Chapter 4 of the *Transportation in Canada 2006: Annual Report* published by Transport Canada at www.tc.gc.ca/pol/en/Report/anre2006/Chpt-4e.htm.

2.5 Investigations and Safety Action

All reported occurrences were examined in accordance with the Board’s Occurrence Classification Policy to identify those with the greatest potential for advancing transportation safety. Information was entered into the TSB database for historical record, trend analysis and safety deficiency validation purposes. Investigations were undertaken for 68 of the approximately 4,000 occurrences reported to the TSB in fiscal year 2006-2007. In that same period, 57 investigations were completed, compared to 75 in the previous year.* Out of the 57 investigations completed, 44 per cent (25) had started more than two years ago. This backlog was more pronounced in the marine and rail sectors where respectively 78 per cent and 67 per cent of the investigations completed had started more than two years ago.

* Investigations are considered complete after the final report has been issued. See Appendix A for a list of reports released by the TSB in 2006-2007 by sector.

Figure 3: Investigations Started, in Process, and Completed



The number of investigations in process increased to 119 at the end of the fiscal year from 105 at the start. Average time to complete an investigation increased to 573 days in fiscal year 2006-2007 from 464 days in the previous year. Of the 119 investigations in progress at year end, 16 were more than two years old, 36 were between one and two years old, and 67 were less than one year old. The backlog is particularly pronounced in the marine sector, where 68.8 per cent of the investigations in progress were more than two years old.

While overall report timeliness has shown some improvements in recent years, there was a significant increase in 2006-2007. The reduction in the number of investigations completed and the increase in the average time to complete investigations were the result of a combination of factors. The increase in the number of major investigations, a concerted effort to complete older investigations as well as unanticipated management and staff shortages all contributed to this increase. The TSB has recently completed staffing of a number of key positions, including short-term hiring. This should allow it to improve its performance. In addition, the organization will undertake a full review of its operations in 2007-2008 to ensure optimal allocation of available resources for the achievement of its mandate and goals.

Table 3: TSB Productivity by Sector

	Marine		Pipeline		Rail		Air		Total	
	2005-2006	2006-2007	2005-2006	2006-2007	2005-2006	2006-2007	2005-2006	2006-2007	2005-2006	2006-2007
Investigations Started	17	8	2	1	9	18	50	41	78	68
Investigations Completed	12	8	1	1	9	12	53	36	75	57
Average Duration of Completed Investigations (Number of Days)	651	801	922	407	519	598	404	516	464	573
Note: Results can fluctuate significantly from year to year due to a number of factors such as staff turnover, the complexity of investigations and the investigation of major occurrences.										

Overall, the TSB has been successful in identifying safety deficiencies and in reducing risks in the transportation system. TSB investigations result in reports identifying safety deficiencies and, where appropriate, containing recommendations to reduce risks. Over this past year, in all cases where the TSB undertook an investigation, safety deficiencies or contributing factors were identified and communicated. These results reflect careful application of the TSB's Occurrence Classification Policy in deciding whether to investigate, and a thorough implementation of the investigation methodology. This systematic approach ensures that TSB investigation resources are invested in areas with the greatest potential safety payoffs.

In 2006-2007, in addition to investigation reports, the TSB issued a total of 61 safety outputs: 6 recommendations, 32 safety advisories and 23 safety information letters (see Table 4 for a breakdown by sector).

Table 4: Safety Outputs by the TSB

Sector	Recommendations*	Safety Advisories	Safety Information Letters
Marine	0	8	8
Pipeline	0	0	1
Rail	2	8	2
Air	4	16	12
TOTAL	6	32	23
Note: In 2006-2007, a total of 3 marine safety concerns, 3 rail safety concerns and 6 air safety concerns were identified.			

Safety information is also provided informally to key stakeholders throughout the investigation process, permitting them to take immediate safety actions where appropriate. It is common practice for industry and government to take safety actions during the course of TSB investigations. Such safety actions range widely in scope and

* For definitions of terms such as *recommendation*, *safety advisory* and *safety information*, see Appendix C.

importance. Operators will often take immediate remedial action after discussion with TSB investigators (for example, to clear the sight-lines at a railway crossing by trimming bushes and vegetation). Regulators such as Transport Canada and the Federal Aviation Administration in the United States regularly issue mandatory directives requiring inspections and/or component replacement based on the TSB's preliminary findings. In such situations, rather than issuing recommendations, the TSB can then report on the corrective actions already taken by industry and government agencies.

In accordance with the *Canadian Transportation Accident Investigation and Safety Board Act*, a federal minister who is notified of a TSB recommendation must, within 90 days, advise the Board in writing of any action taken or proposed to be taken in response, or the reasons for not taking action. The Board considers each response, assessing the extent to which the related safety deficiency was addressed. When a recommendation generates responses from within and outside Canada, the Board's assessment is based primarily on the Canadian response. Assessment of industry and government organization responses to recommendations made after January 1, 2005 can be found on the TSB website (www.tsb.gc.ca).

In response to the Transportation Safety Board's report and recommendations released in February 2006 following a non-fatal engine room fire on the BC Ferries *Queen of Surrey* in British Columbia, Transport Canada today committed to reviewing international marine regulations and standards for fixed fire-extinguishing systems to ensure that future regulations meet or exceed international standards.

"Transport Canada's top priority for Canadian ferries is to develop and maintain regulations that help ensure the safe passage of people and goods," said the Minister of Transport, Infrastructure and Communities.

Source: News Release, No. H032/06, May 9, 2006, Transport Canada

Table 5: Board Assessment of Responses to Recommendations

Responses Received in Fiscal Year 2006-2007	Fully Satisfactory Attention to Safety Deficiency	Satisfactory Intent to Address Safety Deficiency	Attention to Safety Deficiency Satisfactory in Part	Unsatisfactory Attention to Safety Deficiency	To be Assessed	TOTAL
Marine	1	0	2	0	0	3
Pipeline	0	0	0	0	0	0
Rail	0	0	0	0	2	2
Air	2	3	2	0	3	10
TOTAL	3	3	4	0	5	15

2.6 Communicating Transportation Safety to Canadians and the Transportation Community

One of the central challenges in advancing transportation safety has been convincing the many actors in the industry that change is necessary to lessen the risk. This has led the TSB to adopt a number of tools to convey the findings achieved through investigations. During the past year, the TSB identified a number of safety deficiencies and delivered key safety messages to the public, industry and regulators. As in past years, that approach has proved to be quite effective and continues to be supported to increase effectiveness. In an effort to improve the uptake of its recommendations, the TSB has begun to target its safety messages to narrower and more specialized audiences who are in a position to act directly. The Outreach Program was developed to promote safety where specific departments, elected officials and industry leaders have an important role to play. To that end, the TSB has identified the need to become more active with its Outreach Program and is striving to increase the number of outreach opportunities that are undertaken each year by the Chair, Board members, senior executives and staff. We anticipate that this effort will be rewarded in years to come as we expand the reach of our messages and the safety of Canada's transportation system continues to improve.

In June 2006, a new Executive Director of the TSB was appointed. One of his first challenges was to meet with representatives from the transportation industry and other interested parties. Over four months, the Executive Director met with various airline companies, rail operators, manufacturers, transportation associations, airport authorities, and medical examiners. He made a presentation to the Railway Association of Canada and attended a number of safety association meetings and conferences.

TSB staff and Board members also participated in various conferences and technical meetings pertinent to transportation safety to keep abreast of technological change and to make presentations on safety issues of particular interest to the audiences. To complement these meetings, the TSB wrote and distributed technical and feature articles that have been published in specialized magazines. In these ways, the TSB has taken advantage of various forums as opportunities to share lessons learned from its investigations.

The TSB published 57 investigation reports in 2006-2007, as well as monthly and annual statistical reports, and continues to maintain a proactive approach to the dissemination of information. Pertinent information is made readily available to industry, next-of-kin, the media and the public throughout the investigation process. Investigators are encouraged to maintain a dialogue with key stakeholders, including the early communication of safety issues that arise during investigations. The TSB tries to satisfy both the public and the media's expectation for up-to-date factual information. In 2006-2007, 631 subscribers joined its website for a total of 2,065 subscribers, and the TSB responded to 749 information requests received through its website and 643 media calls, not including those inquiries handled at an accident site or at a report release news conference. The

TSB attended 3 outreach events, held 6 news conferences and issued 19 news releases. The TSB Macro-Analysis Division responded to 370 requests for complex transportation occurrence database information.

The TSB also uses its website to increase awareness of safety issues and other transportation safety information. The TSB website (www.tsb.gc.ca) received an average of more than 92,930 daily hits and 6,409 daily visits, a 32 per cent increase in daily visits over the previous year. The visitors are Canadians and people from all around the world. This increased traffic over the years, shown in Table 6 below, can partly be attributed to the media coverage given to certain accidents, the press releases issued by the TSB, the ease of access to the site and the vast amount of information found there. Although it is difficult to measure the results of TSB activity in this area, tangible signs continue to point toward a certain degree of effectiveness in achieving the desired outcome. Stakeholders and the media make use of TSB safety messages in their activities. There is a sustained level of interest, both in Canada and around the world, in TSB techniques and methodologies.

Table 6: Number of Requests for Information Received by the TSB

	2003-2004	2004-2005	2005-2006	2006-2007
Website:				
• Daily hits	49,000	51,000	86,700	92,930
• Daily visits	1,860	2,300	4,870	6,409
• Requests for information	1,357	1,289	1,284	749
Media calls	424	528	431	643
Requests for complex database information	632	602	593	370

2.7 Marine Sector

2.7.1 Annual Statistics

In all, 467 marine accidents were reported to the TSB in 2006, a 4 per cent decrease from the 2005 total of 489 and an 8 per cent decrease from the 2001-2005 average of 506. Marine fatalities totalled 18 in 2006, down from both the 2005 total of 20 and the 2001-2005 average of 25.

Shipping accidents, which comprised 90 per cent of marine accidents, reached a 30-year low of 419 in 2006, down from 444 in 2005 and from the five-year average of 455. Nearly half of all vessels involved in shipping accidents were fishing vessels. Accidents to persons aboard ship, which include falls, electrocution, and other types of injuries requiring hospitalization, totalled 48 in 2006, a 7 per cent increase from the 2005 total of 45 but a 6 per cent decrease from the five-year average of 51.

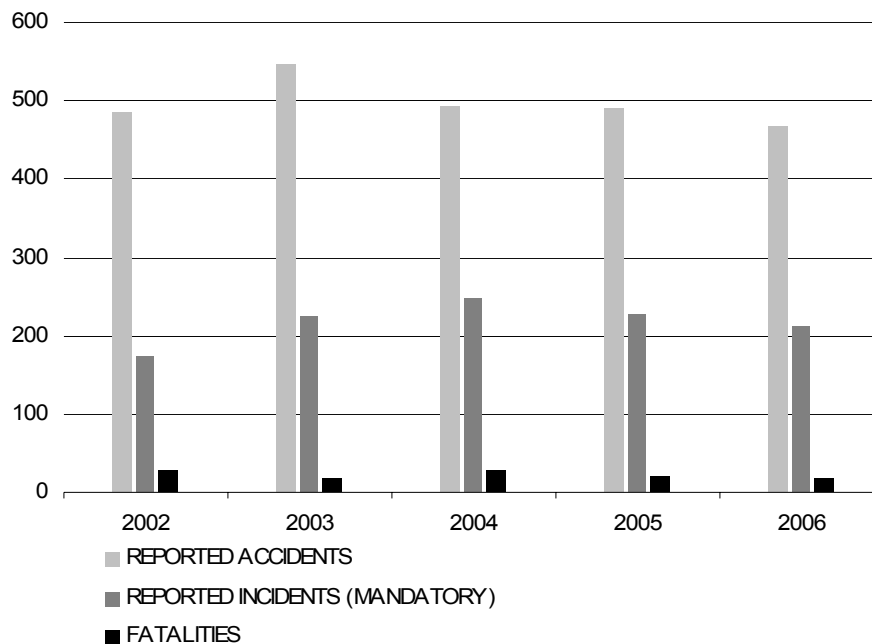
Marine activity for Canadian commercial non-fishing vessels (excluding passenger vessels and cruise ships) increased by 1 per cent from the 2001-2005 average, resulting in a 7 per cent decrease in the accident rate from 3.6 to 3.3 accidents per 1,000 movements. Although marine activity for foreign commercial non-fishing vessels remained relatively unchanged compared to the 2001-2005 average, accidents increased, yielding an 11 per cent increase in the accident rate from 1.6 to 1.8 accidents per 1,000 movements.

In 2006, shipping accidents resulted in 12 fatalities, down from 13 in 2005 and the five-year average of 16. Accidents aboard ship resulted in 6 fatalities, down 1 from the 2005 total and down 3 from the five-year average.

Thirty-one vessels were reported lost in 2006, up from the 2005 total of 26 but down from the five-year average of 34.

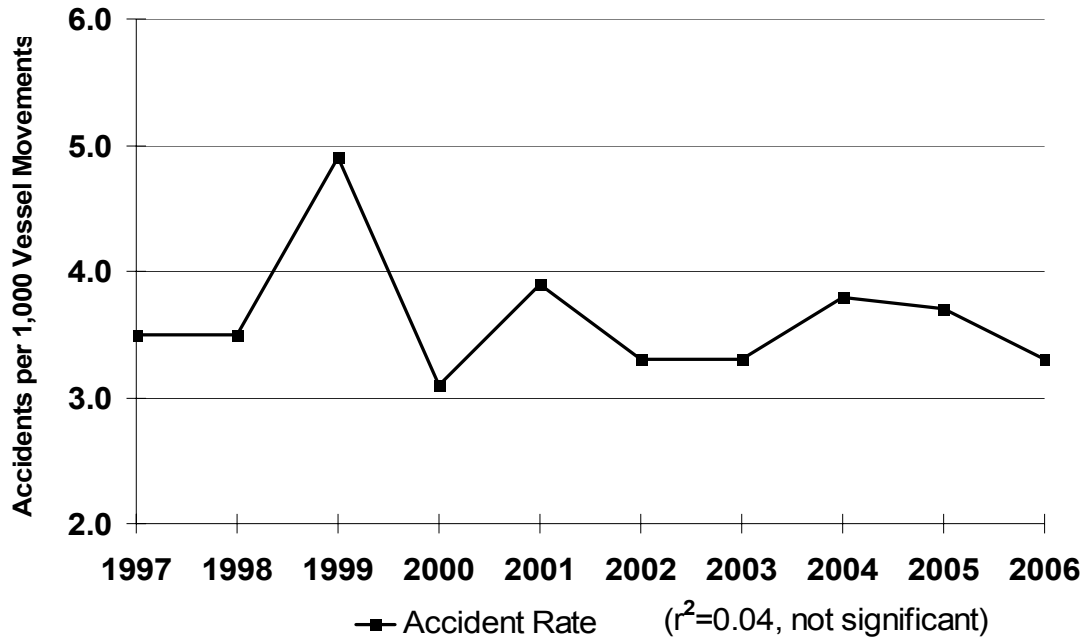
In 2006, 212 marine incidents were reported to the TSB in accordance with the mandatory reporting requirements. This represents a 7 per cent decrease from the 2005 total of 227 and a 5 per cent decrease from the five-year average of 222.

Figure 4: Marine Occurrences and Fatalities



One indicator of marine safety in Canada is the Canadian-flag shipping accident rate. This accident rate has decreased from 3.7 accidents per 1,000 movements in 2005 to 3.3 in 2006. No significant statistical trend was found.

Figure 5: Canadian-Flag Shipping Accident Rates



2.7.2 Investigations

In 2006-2007, 8 marine investigations were started and 8 investigations were completed. This represents a decrease (from 12 to 8) in the number of investigations completed compared to 2005-2006. The decrease is still linked to the delay in staffing vacant positions. The average duration of completed investigations increased to 801 days, compared to 651 days the year before and an average of 797 days between 2002-2003 and 2005-2006. This is attributable to concerted efforts to complete older investigations. A complete list of all marine reports released in 2006-2007 can be found in Appendix A.

Table 7: Marine Productivity

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007
Investigations Started	13	14	16	17	8
Investigations Completed	15	18	21	12	8
Average Duration of Completed Investigations (Number of Days)	703	953	881	651	801
Recommendations	5	7	4	6	0
Safety Advisories	7	6	9	5	8
Safety Information Letters	14	11	8	8	8
Note: Results can fluctuate significantly from year to year due to a number of factors such as staff turnover, the complexity of investigations and the investigation of major occurrences.					

2.7.3 Link to Resources Utilized

Table 8 shows the net costs of marine investigations for Canadians. Net costs increased over the previous fiscal year. The average net cost per completed investigation increased by 62.5 per cent due to various factors, including the costs of the operations undertaken during the large-scale investigation of the sinking of the *Queen of the North* ferry off the coast of Prince Rupert, British Columbia, as well as overtime worked to compensate for a lack of investigators. The average duration of completed investigations also increased, and the number of investigations undertaken and completed by investigator decreased over 2005-2006 by 53 per cent and 34 per cent respectively. This is also attributable to the ongoing complex investigation and a decision to limit the number of new investigations in this sector until the backlog has been dealt with.

Table 8: Marine Resources

	2005-2006		2006-2007	
	FTEs	In thousands of dollars	FTEs	In thousands of dollars
Actual Costs – Marine	22.9	2,797	22.9	3,130
Internal Professional and Communication Service Costs	17.7	1,823	16.1	1,840
Corporate Services Costs	10.7	1,196	10.3	1,343
Contributions to Employee Benefit Plans		781		782
Services Received Without Charge		696		808
Net Cost of Investigations	51.3	7,294	49.3	7,904
Indicators	2005-2006		2006-2007	
Number of Investigators	20.4		20.6	
Average Net Cost per Investigation Completed	\$607,820		\$987,946	
Investigations Started by Investigator	0.83		0.39	
Investigations Completed by Investigator	0.59		0.44	

2.7.4 Safety Actions Taken

No marine safety recommendations were issued in 2006-2007.

The Marine Branch assessed responses to 3 recommendations issued in 2005-2006 (details can be found in Appendix B) and reassessed responses to 42 published recommendations issued in previous years. With Board approval, 9 recommendations went from active to inactive status and 33 recommendations remained active. The Board's reassessments were communicated to the appropriate change agent(s) for information and action.

2.7.4.1 Other Marine Safety Actions

BC Ferries implemented additional procedures to ensure that bridge officers and quartermasters are familiarized with new bridge equipment. TSB Marine Safety Advisory 07/06 on the adequacy of crew familiarization with equipment was sent to BC Ferries following the sinking of the ferry *Queen of the North* (TSB Occurrence M06W0052).

BC Ferries implemented a new procedure for establishing passenger manifests to ensure that the passengers on board its vessels on northern routes are accurately reflected in the passenger manifests maintained ashore. TSB Marine Safety Advisory 09/06 on the adequacy of current guidelines for creating ferry passenger manifests was sent to Transport Canada (TC) and copied to BC Ferries following the sinking of the ferry *Queen of the North* (TSB Occurrence M06W0052).

TC met with industry and government representatives to discuss updating current port procedures for the handling of dangerous cargo at the Port of Saguenay, Quebec. A small explosion had occurred on board a vessel unloading a cargo of explosives (TSB Occurrence M06L0045). TC decided to deploy an inspector to the site when notified of a shipment of dangerous cargo at the port. Also, TC informed the Swedish and German port authorities involved (where the vessel was loaded) of the incident and of the handling and loading of the cargo at the port of loading. TSB Marine Safety Advisory 08/06 on the inadequate explosive cargo handling practices was sent to TC and the Port of Saguenay.

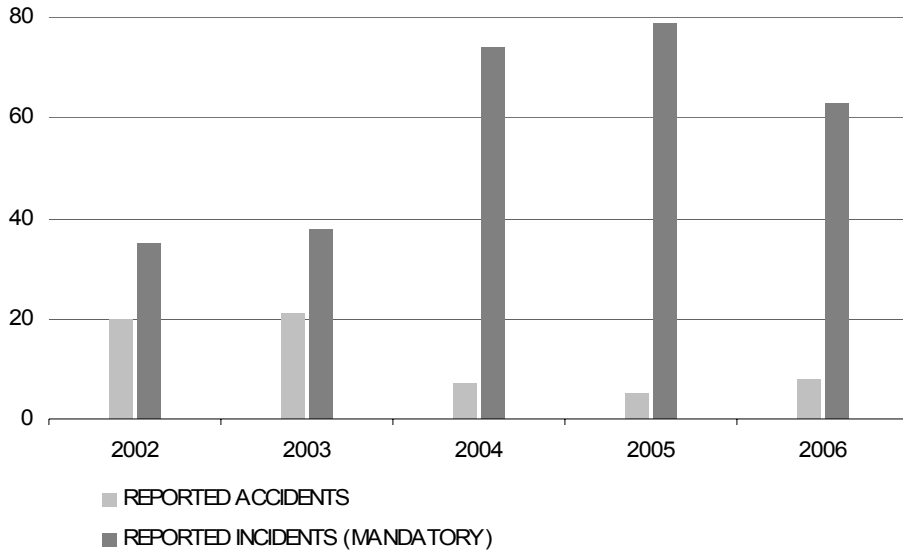
2.8 Pipeline Sector

2.8.1 Annual Statistics

In 2006, 8 pipeline accidents were reported to the TSB, up from the 2005 total of 5 but down from the 2001-2005 average of 15. Pipeline activity is estimated to have increased by 2 per cent from the previous year. The last fatal pipeline accident in the portion of the industry under federal jurisdiction occurred in 1988, and the last accident involving serious injury occurred in 2000.

In 2006, 63 pipeline incidents were reported to the TSB in accordance with the mandatory reporting requirements, down from 79 in 2005 but up from the five-year average of 52. In all, 88 per cent of those incidents involved uncontained or uncontrolled release of small quantities of gas, oil and high-vapour-pressure products.

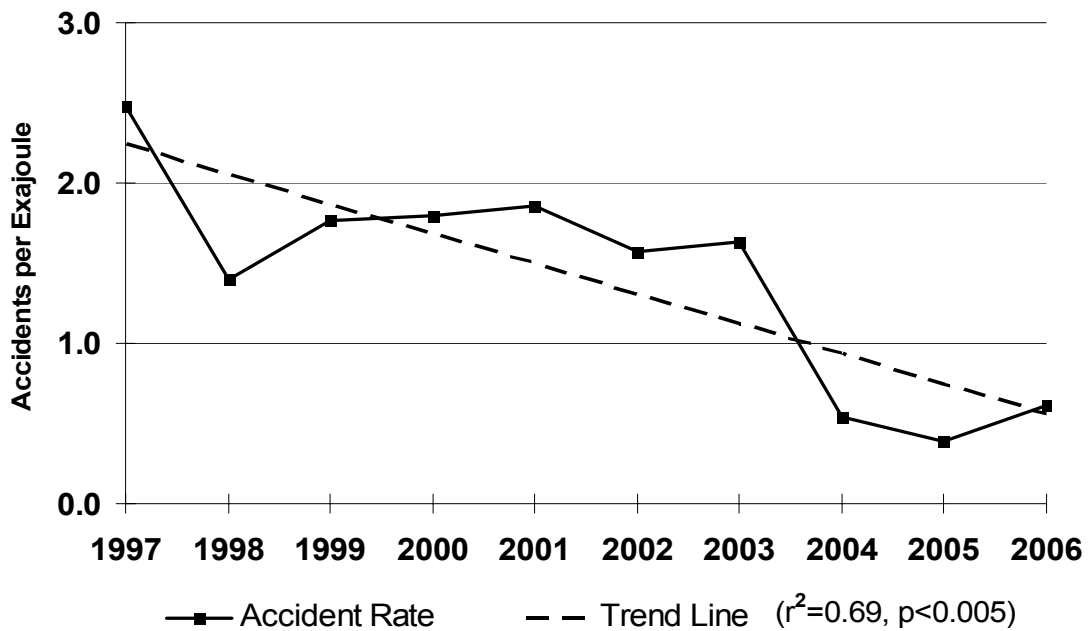
Figure 6: Pipeline Occurrences



* No pipeline fatality has been reported since 1988.

One indicator of pipeline transportation safety in Canada is the pipeline accident rate. This rate increased to 0.6 pipeline accidents per exajoule in 2006, up from 0.4 in 2005 but down from the 2001-2005 average of 1.2. The trend line indicates a clear downward direction.

Figure 7: Pipeline Accident Rates



2.8.2 Investigations

In 2006-2007, one pipeline investigation was started and one investigation was completed. The completed investigation required 407 days, a significant decrease from the 922 days required in 2005-2006 (the latter was a very complex investigation that required a high degree of effort to gather and analyze the data). Details regarding the pipeline report released in 2006-2007 can be found in Appendix A.

Table 9: Pipeline Productivity

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007
Investigations Started	2	0	0	2	1
Investigations Completed	2	0	2	1	1
Average Duration of Completed Investigations (Number of Days)	410	0	1,081	922	407
Recommendations	0	0	0	0	0
Safety Advisories	0	0	0	0	0
Safety Information Letters	1	0	0	0	1
Note: Results can fluctuate significantly from year to year due to a number of factors such as staff turnover, the complexity of investigations and the investigation of major occurrences.					

2.8.3 Link to Resources Utilized

Table 10 provides a picture of the net cost to Canadians of pipeline investigations. The net cost of pipeline investigations increased slightly compared to 2005-2006. One investigation was started and one was completed during the year.

Table 10: Pipeline Resources

	2005-2006		2006-2007	
	FTEs	In thousands of dollars	FTEs	In thousands of dollars
Actual Costs – Pipeline	2.0	203	2.0	216
Internal Professional and Communication Service Costs	1.5	133	1.4	127
Corporate Services Costs	0.9	87	0.9	93
Contributions to Employee Benefit Plans		57		54
Services Received Without Charge		51		56
Net Cost of Investigations	4.4	531	4.3	545
Indicators				
	2005-2006		2006-2007	
Number of Investigators	1.8		2.0	
Average Net Cost per Investigation Completed	\$530,584		\$545,422	
Investigations Started by Investigator	1.11		0.5	
Investigations Completed by Investigator	0.56		0.5	

2.8.4 Safety Actions Taken

No pipeline safety recommendations were issued in 2006-2007.

2.8.4.1 Other Pipeline Safety Actions

In response to the Pipeline Safety Information letter, the National Energy Board issued a Safety Advisory to all companies under its jurisdiction, as well as to the Canadian Energy Pipeline Association, the Canadian Association of Petroleum Producers and provincial regulators. The Safety Advisory outlined safety issues related to potential employee injury from ejection of pipeline pigs that have been lodged in receiving traps. Additionally, it itemized actions for organizations to take to address that risk in the future.

2.9 Rail Sector

2.9.1 Annual Statistics

A total of 1,144 rail accidents were reported to the TSB in 2006, an 8 per cent decrease from the 2005 total of 1,247 but a 5 per cent increase from the 2001-2005 average of 1,091. Rail activity is estimated to be comparable to 2005 and to have increased by 4 per cent over the five-year average. The accident rate decreased to 11.9 accidents per million train-miles in 2006, compared to 13.0 in 2005 and the five-year average rate of 11.9. Rail-related fatalities totalled 95 in 2006, compared to 103 in 2005 and the five-year average of 96.

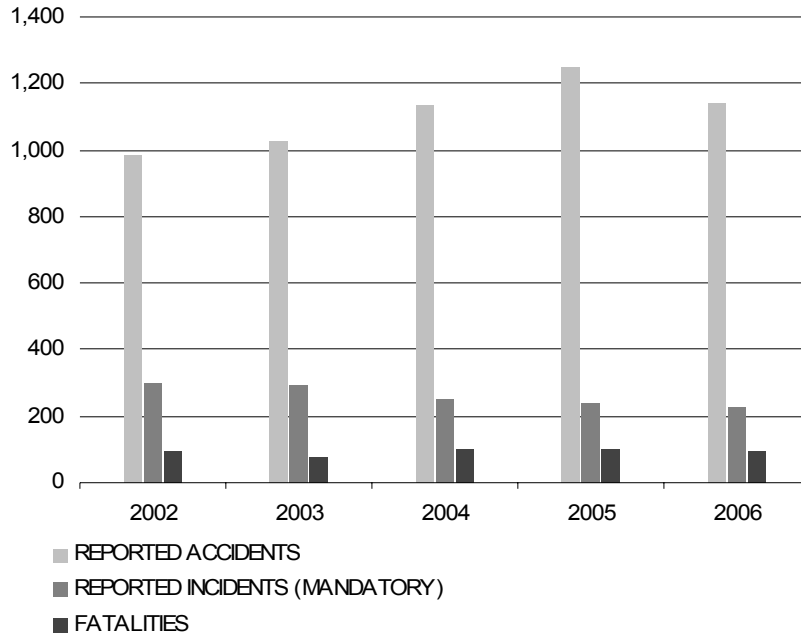
Three main-track collisions occurred in 2006, compared to six in 2005 and the five-year average of six. In 2006, there were 133 main-track derailments, a decrease of 31 per cent from the 2005 total of 194 and 10 per cent from the five-year average of 148. Non-main-track derailments decreased to 480 in 2006 from 540 in 2005, but increased from the five-year average of 422.

In 2006, crossing accidents decreased to 248 from the 2005 total of 269 and from the five-year average of 260. Crossing-related fatalities numbered 28, down from 37 in 2005 and the five-year average of 35. Trespasser accidents decreased by 8 per cent to 59 in 2006 from 64 in 2005, but increased by 4 per cent over the five-year average of 57. With a total of 94 fatalities in 2006, trespasser accidents continue to account for the majority of rail fatalities.

In 2006, 181 rail accidents involved dangerous goods (this also includes crossing accidents in which the motor vehicle is carrying a dangerous good), down from 214 in 2005 and from the five-year average of 215. Three of these accidents resulted in a release of product.

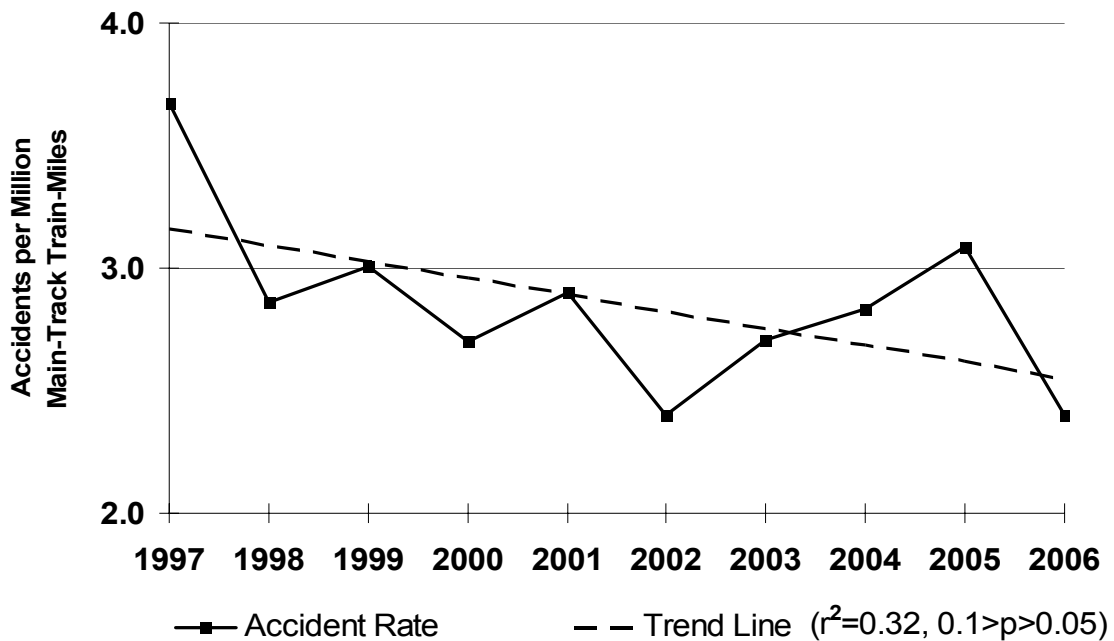
In 2006, rail incidents reported to the TSB in accordance with the mandatory reporting requirements reached a 24-year low of 226, down from 243 in 2005 and the five-year average of 283. For the first time, movements exceeding limits of authority incidents (101) comprised the largest proportion of the 226 reportable incidents, surpassing dangerous goods leaker incidents (86).

Figure 8: Rail Occurrences and Fatalities



One indicator of rail transportation safety in Canada is the main-track accident rate. This rate decreased from 3.1 accidents per million main-track train-miles in 2005 to 2.4 in 2006. Over the past 10 years, the downward trend approaches statistical significance.

Figure 9: Main-Track Accident Rates



2.9.2 Investigations

A total of 18 rail investigations were undertaken in 2006-2007 compared to 9 the previous year. The number of investigations completed also slightly increased from 9 to 12 this fiscal year. The average duration of completed investigations increased to 598 days compared to 519 days the year before. A complete list of all rail reports released in 2006-2007 can be found in Appendix A.

Table 11: Rail Productivity

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007
Investigations Started	18	14	14	9	18
Investigations Completed	22	15	25	9	12
Average Duration of Completed Investigations (Number of Days)	755	894	618	519	598
Recommendations	5	4	3	0	2
Safety Advisories	6	7	6	9	8
Safety Information Letters	9	11	10	8	2
Note: Results can fluctuate significantly from year to year due to a number of factors such as staff turnover, the complexity of investigations and the investigation of major occurrences.					

2.9.3 Link to Resources Utilized

Table 12 provides a picture of the net cost to Canadians of rail investigations. The net cost of rail investigations increased slightly compared to the previous year. The average net cost per investigation completed decreased by 22.4 per cent compared to the previous year. The number of investigations started by investigator doubled and the number of investigations completed by investigator increased by 42 per cent. These differences can be attributed to the fact that many of the investigations completed were started in previous years.

Table 12: Rail Resources

	2005-2006		2006-2007	
	FTEs	In thousands of dollars	FTEs	In thousands of dollars
Actual Costs – Rail	22.7	2,652	22.1	2,834
Internal Professional and Communication Service Costs	17.5	1,728	15.5	1,666
Corporate Services Costs	10.6	1,134	13.0	1,216
Contributions to Employee Benefit Plans		741		708
Services Received Without Charge		660		732
Net Cost of Investigations	50.8	6,916	50.6	7,156
Indicators	2005-2006		2006-2007	
Number of Investigators	20.0		18.95	
Average Net Cost per Investigation Completed	\$768,444		\$596,345	
Investigations Started by Investigator	0.45		0.95	
Investigations Completed by Investigator	0.45		0.64	

2.9.4 Safety Actions Taken

Two rail safety recommendations were issued in 2006-2007.

The Rail Branch reassessed responses to 118 recommendations issued in previous years. With Board approval, 29 recommendations went from active to inactive status and 23 recommendations remained active. The Board's reassessments were communicated to the appropriate change agent(s) for information and action.

2.9.4.1 Rail Recommendations Issued in 2006-2007

Main-Track Derailment, Canadian Pacific Railway Train, Whitby, Ontario, 14 January 2004	
Report No. R04T0008	
RECOMMENDATION	R06-01 The Department of Transport work with the Railway Association of Canada to implement rail traffic control protocols and training that will recognize periods of high workload and make safety paramount.
RESPONSE	Transport Canada (TC) agrees in principle with the recommendation and will work with the industry in the context of this recommendation and other related regulatory initiatives.
BOARD ASSESSMENT OF RESPONSE	To be reported next fiscal year
BOARD ASSESSMENT RATING	Pending

Pedestrian Fatality, Canadian National Train, Brockville, Ontario, 17 February 2005	
Report No. R05T0030	
RECOMMENDATION	R06-02 The Department of Transport assess the risk to pedestrians at all multi-track main-line crossings, make its assessment public and implement a program, in conjunction with stakeholders, to mitigate the risk of second-train pedestrian accidents.
RESPONSE	TC disagrees with the recommendation, challenging the analysis and describing various initiatives taken at many locations. TC must balance a multitude of competing interests when determining how to improve rail safety.
BOARD ASSESSMENT OF RESPONSE	To be reported next fiscal year
BOARD ASSESSMENT RATING	Pending

2.9.4.2 Other Rail Safety Actions

In response to Rail Safety Advisory 03/06 (TSB Occurrence R06T0022), Canadian National (CN) and Canadian Pacific Railway (CPR) accelerated the inspection and removal from service of certain wheel sets that had been identified as having a risk for developing a loose wheel condition.

In response to Rail Safety Advisory 06/06 (TSB Occurrence R06V0136), CN took action with a “blitz” campaign to test locomotive check valves, and defective valves were replaced. Additionally, the mandatory replacement frequency for these valves was increased.

In response to two other Rail Safety Advisories (07/06 and 08/06) concerning TSB Occurrence R06V0183, Transport Canada (TC) issued two Notices under Section 31 of the *Railway Safety Act* to the White Pass & Yukon Route railway on 12 separate operational/equipment issues requiring explanations on how the issues would be resolved.

In response to a Rail Safety Information letter (02/06), CPR took action to ensure that emergency response communications protocols between the Ontario Provincial Police and the company were enhanced and that training procedures were developed and communicated.

In response to Rail Safety Information letter 03/06 (TSB Occurrence R05C0082), TC indicated that future audits will put more emphasis on locomotive side bearing clearance and bolster bowl liner condition.

In response to Rail Safety Information letter 04/06 (TSB Occurrence R05C0082), TC indicated that future inspections and audits will put more emphasis on the inspection of locomotive truck bolster stops.

2.10 Air Sector

2.10.1 Annual Statistics

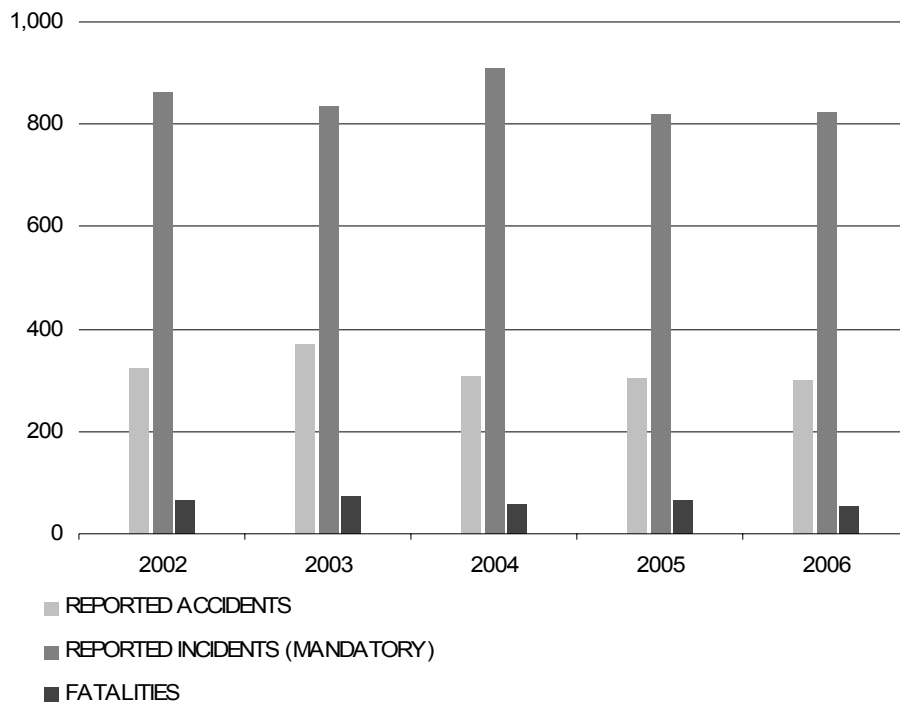
Canadian-registered aircraft, other than ultralights, were involved in 262 reported accidents in 2006, a 2 per cent increase from the 2005 total of 258 but a 5 per cent decrease from the 2001-2005 average of 275. The estimate of flying activity for 2006 is 4,161,000 hours, yielding an accident rate of 6.2 accidents per 100,000 flying hours, unchanged from the 2005 rate but down from the five-year rate of 7.1. Canadian-registered aircraft, other than ultralights, were involved in 31 fatal occurrences with 52 fatalities in 2006, comparable to the 34 fatal occurrences with 51 fatalities in 2005 and the five-year average of 31 fatal occurrences with 52 fatalities. A total of 15 fatal occurrences involved commercial aircraft (6 aeroplanes and 9 helicopters), and 12 of the remaining 16 fatal occurrences involved privately operated aeroplanes.

The number of accidents involving ultralights decreased to 27 in 2006 from 31 in 2005, and the number of fatal accidents decreased substantially to 1 in 2006 from 5 in 2005.

The number of foreign-registered aircraft accidents in Canada decreased to 14 in 2006 from 18 in 2005. Fatal accidents decreased to 2 in 2006 from 6 in 2005.

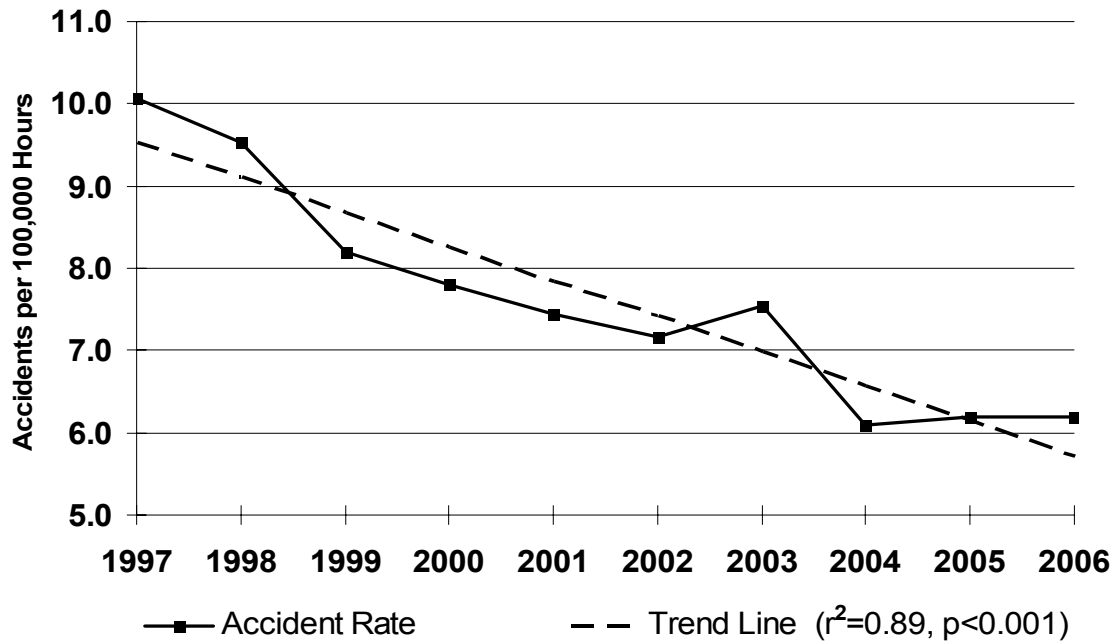
In 2006, a total of 823 incidents were reported to the TSB in accordance with the mandatory reporting requirements. This is comparable to the 2005 total of 822 and is a 4 per cent decrease from the 2001-2005 average of 857.

Figure 10: Air Occurrences and Fatalities



One indicator of air transportation safety in Canada is the accident rate for Canadian-registered aircraft. In 2006, this rate remained unchanged from the 2005 rate of 6.2 accidents per 100,000 hours, but was below the five-year average of 7.1. The trend line also shows a downward direction over the past 10 years.

Figure 11: Canadian-Registered Aircraft Accident Rates



2.10.2 Investigations

A total of 41 air investigations were started in 2006-2007 and 36 investigations were completed. This represents a decrease in the number of investigations started compared to the previous year (50) and in the number of investigations completed (53). The average duration of completed investigations increased to 516 days, compared to 404 days the year before. This is attributable to concentrated efforts to complete older investigations. A complete list of all air reports released in 2006-2007 can be found in Appendix A.

Table 13: Air Productivity

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007
Investigations Started	56	47	44	50	41
Investigations Completed	70	40	67	53	36
Average Duration of Completed Investigations (Number of Days)	494	485	524	404	516
Recommendations	17	0	4	6	4
Safety Advisories	13	9	9	7	16
Safety Information Letters	6	8	6	5	12

Note: Results can fluctuate significantly from year to year due to a number of factors such as staff turnover, the complexity of investigations and the investigation of major occurrences.

2.10.3 Link to Resources Utilized

Table 14 provides a picture of the net cost to Canadians of air investigations. Compared to the previous year, the net cost of investigations decreased slightly. However, the average net cost per investigation completed increased by 39.3 per cent because of the scope of the investigations conducted in Canada, as well as the increased costs associated with supporting foreign investigations involving Canadian-certified operators and products. The number of investigations started and completed per investigator decreased respectively by 21.7 per cent and 35 per cent.

Table 14: Air Resources

	2005-2006		2006-2007	
	FTEs	In thousands of dollars	FTEs	In thousands of dollars
Actual Costs – Air	56.9	7,617	58.1	7,444
Internal Professional and Communication Service Costs	43.8	4,963	40.8	4,377
Corporate Services Costs	26.5	3,258	26.1	3,194
Contributions to Employee Benefit Plans		2,128		1,859
Services Received Without Charge		1,896		1,922
Net Cost of Investigations	127.2	19,861	125.1	18,797
Indicators				
	2005-2006		2006-2007	
Number of Investigators	51.7		54.0	
Average Net Cost per Investigation Completed	\$374,741		\$522,135	
Investigations Started by Investigator	0.97		0.76	
Investigations Completed by Investigator	1.03		0.67	

2.10.4 Safety Actions Taken

Four air safety recommendations were issued in 2006-2007. One response was assessed as Satisfactory Intent, and initial assessments are pending for the other three.

The Air Branch assessed responses to 6 recommendations issued in 2005-2006 (details can be found in Appendix B) and reassessed responses to 35 recommendations issued in previous years. With Board approval, 7 recommendations went from active to inactive

status. At the end of fiscal year 2006-2007, there were 37 active recommendations. The Board's reassessments were communicated to the appropriate change agent(s) for information and action.

2.10.4.1 Air Recommendations Issued in 2006-2007

Reduced Power at Take-off and Collision with Terrain, MK Airlines Limited, Boeing 747-422SF, Halifax International Airport, Nova Scotia, 14 October 2004	
Report No. A04H0004	
RECOMMENDATION	<p>A06-07</p> <p>The Department of Transport, in conjunction with the International Civil Aviation Organization, the Federal Aviation Administration, the European Aviation Safety Agency, and other regulatory organizations, establish a requirement for transport category aircraft to be equipped with a take-off performance monitoring system that would provide flight crews with an accurate and timely indication of inadequate take-off performance.</p>
RESPONSE	<p>Transport Canada (TC) agrees that, if a take-off performance monitoring system (TPMS) could be designed to function as intended, it could provide a significant safety benefit. However, TC believes that, in order for civil aviation authorities to establish a requirement for aircraft to be equipped with a TPMS, an acceptable system would have to exist. TC is not aware of any certified system that is available at this time to meet this recommendation.</p> <p>TC states that it is conceivable that such a system could be designed with current technology. However, a significant effort would be required by private industry and researchers to establish appropriate design criteria, to perform detailed design and system development, and then to conduct significant testing to ensure high reliability before acceptance. In addition, design criteria and standards would also require harmonization with other civil aviation authorities.</p> <p>TC's letter also states that, at this time, TC cannot establish a requirement for aircraft to be equipped with a TPMS but will revisit this issue when a certifiable product is developed.</p>

Reduced Power at Take-off and Collision with Terrain, MK Airlines Limited, Boeing 747-422SF, Halifax International Airport, Nova Scotia, 14 October 2004	
Report No. A04H0004	
BOARD ASSESSMENT OF RESPONSE	In its response, TC states that it cannot establish a requirement for a TPMS because it does not know of any certified system available to the industry. However, TC notes TSB's suggestion that research into TPMS technology would be beneficial and consequently has formed a cross-disciplinary project team to look into this subject. TC describes what work has already been accomplished by the project team and outlines details of its action plan, which includes establishing what remains to be done before a certifiable TPMS could be made available, consulting with industry to gauge their interest in a TPMS solution, and working with industry to bring about a certifiable system. Additionally, TC invites TSB's participation in its preliminary research project team.
BOARD ASSESSMENT RATING	Satisfactory Intent

Post-Impact Fires Resulting from Small-Aircraft Accidents, Safety Issues Investigation	
Report No. SII A05-01	
RECOMMENDATION	A06-08 Transport Canada, together with the Federal Aviation Administration and other foreign regulators, revise the cost-benefit analysis for Notice of Proposed Rule Making 85-7A using Canadian post-impact fire statistics and current value of statistical life rates, and with consideration to the newest advances in post-impact fire prevention technology.
RESPONSE	Under review
BOARD ASSESSMENT OF RESPONSE	To be reported next fiscal year
BOARD ASSESSMENT RATING	Pending

**Post-Impact Fires Resulting from Small-Aircraft Accidents,
Safety Issues Investigation**

Report No. SII A05-01

RECOMMENDATION	<p>A06-09</p> <p>To reduce the number of post-impact fires in impact-survivable accidents involving new production aeroplanes weighing less than 5700 kg, Transport Canada, the Federal Aviation Administration, and other foreign regulators include in new aeroplane type design standards:</p> <ul style="list-style-type: none"> - methods to reduce the risk of hot items becoming ignition sources; - technology designed to inert the battery and electrical systems at impact to eliminate high-temperature electrical arcing as a potential ignition source; - requirements for protective or sacrificial insulating materials in locations that are vulnerable to friction heating and sparking during accidents to eliminate friction sparking as a potential ignition source; - requirements for fuel system crashworthiness; - requirements for fuel tanks to be located as far as possible from the occupied areas of the aircraft and for fuel lines to be routed outside the occupied areas of the aircraft to increase the distance between the occupants and the fuel; and - improved standards for exits, restraint systems, and seats to enhance survivability and opportunities for occupant escape.
RESPONSE	Under review
BOARD ASSESSMENT OF RESPONSE	To be reported next fiscal year
BOARD ASSESSMENT RATING	Pending

Post-Impact Fires Resulting from Small-Aircraft Accidents, Safety Issues Investigation	
Report No. SII A05-01	
RECOMMENDATION	<p>A06-10</p> <p>To reduce the number of post-impact fires in impact-survivable accidents involving existing production aircraft weighing less than 5700 kg, Transport Canada, the Federal Aviation Administration, and other foreign regulators conduct risk assessments to determine the feasibility of retrofitting aircraft with the following:</p> <ul style="list-style-type: none"> - selected technology to eliminate hot items as a potential ignition source; - technology designed to inert the battery and electrical systems at impact to eliminate high-temperature electrical arcing as a potential ignition source; - protective or sacrificial insulating materials in locations that are vulnerable to friction heating and sparking during accidents to eliminate friction sparking as a potential ignition source; and - selected fuel system crashworthiness components that retain fuel.
RESPONSE	Under review
BOARD ASSESSMENT OF RESPONSE	To be reported next fiscal year
BOARD ASSESSMENT RATING	Pending

2.10.4.2 Other Air Safety Actions

As a result of Recommendation A04-02 from investigation A04H0001, Transport Canada (TC) re-evaluated the standard weights for passengers and carry-on baggage and adjusted them for all aircraft to reflect current realities. The Federal Aviation Administration (FAA) issued Airworthiness Directive (AD) 2005-07-01 for the Cessna 208 and 208B aircraft. This AD was issued as a result of several accidents and incidents involving Cessna 208 and 208B operating in icing conditions, including this occurrence. The purpose of the AD was to ensure that pilots have enough information to prevent loss of control of the aircraft while in flight during icing conditions.

Following the receipt of TSB Safety Advisory A040058, generated by TSB investigation A04H0004, TC advised that it was developing and would soon dispatch a Commercial and Business Aviation Advisory letter concerning the need for accurate aircraft load control. As well, as a result of TSB Safety Advisory A040059 on erroneous runway slope information, TC sent an Aerodrome Safety Urgent Bulletin to airports and registered aerodromes reminding them of the need to verify published data.

During a TSB risk of collision investigation (A04Q0089), NAV CANADA undertook a major rewrite of the basic visual flight rules air traffic control training course delivered at its training facility and implemented the new curriculum. Emergency procedures are taught in instructor-led classroom activities that include the associated phraseology. Non-compliance situations by a pilot are taught in the classroom, and are practised in a number of exercises in the dynamic 360-degree airport simulator throughout the course.

During the progress of a TSB investigation into a risk of collision incident at Vancouver International Airport, British Columbia (A04P0397), the Vancouver International Airport tower manager issued an Operations Bulletin to remind controllers to adhere to the *Air Traffic Control Manual of Operations* (ATC MANOPS) direction to state the name of the intersection or taxiway when issuing taxi to position instructions or take-off clearances from an intersection. NAV CANADA proposed an amendment to Section RAC 4.2.8 of the *Aeronautical Information Manual* (AIM), which would recommend that pilots include their location with the runway number when requesting take-off clearance.

Pursuant to Safety Advisory A050012 (A05Q0024), TC indicated that it would examine the possibility of adding information on the level of runway certification to the Canada Flight Supplement, which would provide more information and details to pilots regarding any change to the certification status of a given runway.

Following occurrence investigation A05O0112 and the subsequent audit by TC, Rapid Aircraft Repair Inc. hired a Director of Quality Assurance and designated this person as the person responsible for maintenance. The company amended its Quality Assurance Program to ensure closer scrutiny in all aspects of maintenance than was previously possible; implemented a process for regular discussions on process control; implemented

the process of a full-control travel check before disassembly; implemented additional training on human factors, improving the reporting of potential problems; and began implementing a safety management system.

Following the commencement of an investigation concerning an inadvertent stick shaker at high altitude (A05W0109), Bombardier Aerospace issued a message to all operators of the CRJ705/900 variants of the CL-65 emphasizing that flight operations should not be conducted below minimum drag speed as defined in the General Speed Section of the Flight Planning Cruise Control Manual for the aircraft type. Air Canada Jazz introduced a nine-module “High Altitude and High Speed Training” program for all CRJ705 pilots. TC published Commercial and Business Aviation Advisory Circular 0247 providing guidance and recommendations to operators for stall recovery training and checking, with the goal of ensuring that flight crews recognize early indications of an approach to a stall and apply the appropriate recovery actions to prevent an aeroplane from entering a stall or upset.

Following a power loss and collision with terrain investigation (A05O0125), the aircraft kit manufacturer posted aircraft information to the technical website used by international owners describing the dangers of using a particular stick grip to actuate trim and flaps.

As a result of TSB investigation A05O0147 (collision with water), the TSB determined that the pilot was able to manoeuvre into the right seat after the aircraft became inverted, but was unable to exit the aircraft. TC undertook a risk assessment, “Egress from Submerged Floatplanes,” to identify the risks related to egress from submerged seaplanes and to identify the most effective means of mitigating those risks.

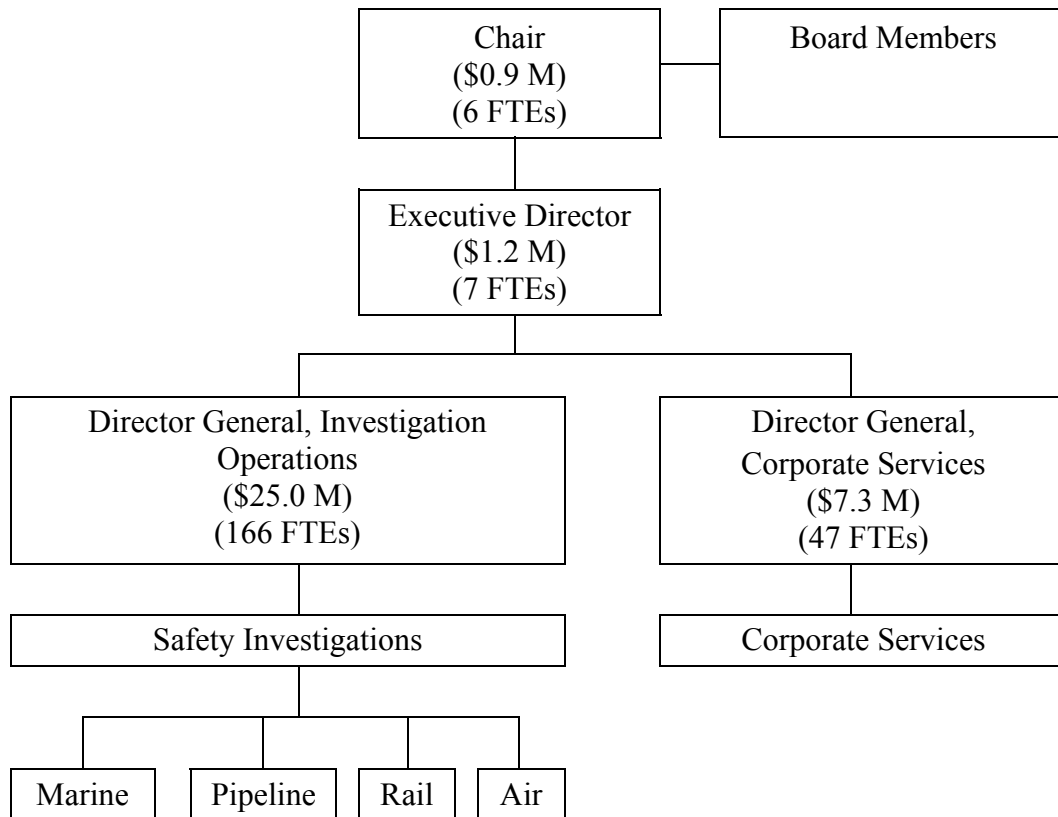
Following the investigation into a helicopter in-flight break-up (A05P0269), Columbia Helicopters Incorporated advised all Boeing 107 helicopter crews of the recurrent procedures to check the operation and serviceability of the speed trim actuator switches. Boeing Aerospace Support–Philadelphia issued Service Bulletin 107-67-1001, requesting that all operators of Model 107 helicopters (BV and KV) and 107 derivatives inspect and functionally test the longitudinal cyclic trim actuator limit switches. Boeing recommended that this test be accomplished before the next flight and before each subsequent flight until further notice.

Section 3: Supplementary Information

3.1 Organizational Structure

The TSB's Program Activity Architecture identifies a single program activity: safety investigations. The TSB reports annually to Parliament on its activities, findings and recommendations through the President of the Queen's Privy Council. The Chair, assisted by the Executive Director and the Director General, Investigation Operations, is responsible for all activities associated with this program activity. The Director General, Corporate Services, is responsible for the provision of the full range of corporate services in support of departmental operations.

Figure 12: Program Activity Accountability Structure



The Chair and Executive Director contribute to the program activity through the provision of leadership and vision, as well as the strategic management of all activities of the TSB. They also contribute by establishing strategic alliances with key stakeholders, client groups and change agents, and by communicating key safety messages through stakeholder outreach activities. Reporting to the Executive Director, the Communications Division ensures that communications are integrated into all phases of program planning, development, implementation and management.

Members of the Board contribute to the program activity through the review, approval and public communication of occurrence reports and safety recommendations. The Board also contributes to the communication of key safety messages through focused stakeholder outreach activities.

The Investigation Operations Directorate contributes to the program activity through the investigation of occurrences. It does so by assessing all occurrences and investigating those with the greatest potential for reduction of risks. The Directorate's work is focused on the collection and analysis of information, the drafting of reports and recommendations, the tracking and assessment of safety actions taken, data and trend analysis, as well as ongoing communication with the transportation safety community. The Directorate maintains a highly qualified staff of investigators who are experts in marine, pipeline, rail or aviation operations, engineering and other specialists, and investigation support staff.

The Corporate Services Directorate contributes to the program activity through the provision of sound corporate planning, as well as provision of financial, human resources, information management, information technology, administrative and materiel management services. The Directorate also contributes by promoting modern management practices and ensuring that the TSB complies with all government policies and directives.

3.2 Financial Information

These tables provide a summary of the financial resources allocated to the TSB as well as details on the actual resources utilized for the delivery of the mandate.

The following table explains the way Parliament voted resources to the TSB and in essence replicates the summary table listed in the Main Estimates.

Financial Table 1: Voted and Statutory Items

(in thousands of dollars)		2006-2007			
Vote	Vote Wording	Main Estimates	Planned Spending	Authorities	Actual Spending
	Canadian Transportation Accident Investigation and Safety Board				
10	Program expenses	25,486	27,257	28,256	27,473
(S)	Contributions to employee benefit plans	3,652	3,652	3,403	3,403
(S)	Re-spendable revenues	0	0	8	8
	Total Department	29,138	30,909	31,667	30,884
Total authorities are Main Estimates plus Supplementary Estimates.					

The following table provides a detailed breakdown of the changes to the total authorities during the course of the year.

Authorities	Amount (in thousands of dollars)
Main Estimates	29,138
Adjustments :	
- Supplementary Estimates – Vote 10a ⁽¹⁾	1,674
- Treasury Board Transfer – Vote 15 ⁽²⁾	1,096
(S) Year-end adjustment to employee benefits plan	(249)
(S) Respondable revenues	8
Total Authorities	31,667

(1) Details regarding this adjustment can be found in the paragraph below.

(2) This adjustment offsets the salary increases provided under new collective agreements.

Through the Supplementary Estimates, the TSB was granted additional spending authorities of \$1,674,000. This amount includes an allocation of \$1,046,000 to cover the costs associated with investigations into the following: the sinking of the *Queen of the North* ferry in British Columbia; the loss of the rudder by the Air Transat flight en route from Cuba to Canada; and train derailments in Lévis, Quebec, McBride, Alberta, and Lillooet, British Columbia. This amount also includes a carry forward of \$758,000 from the organization's 2005-2006 operating budget. The Treasury Board reduced the available funds by \$69,672 to offset the expenditures in excess of the organization's 2005-2006 spending authorities. It also deducted \$60,000 as the contribution to the reductions announced in Budget 2005 as a result of the procurement review conducted by the Expenditures Review Committee.

In addition to the funds available from the Supplementary Estimates, the Treasury Board authorized an adjustment of \$1,096,000 to cover the salary increases granted under the collective agreements. However, it deducted \$249,000 from the funds as an adjustment to employee benefit plan contributions. After all of these transactions, TSB budgetary authorities totalled \$31,667,000. In 2006-2007, the TSB used \$30,884,000 of the permitted authorities. TSB's complete audited financial statements are provided in Appendix E.

The following table provides a comparison of the Main Estimates, planned spending, total authorities, and actual spending for the most recently completed fiscal year, as well as historical figures for actual spending by the TSB.

**Financial Table 2: Comparison of Planned to Actual Spending
(Full-Time Equivalents Included)**

Program Activities (in thousands of dollars)	2004-2005 Actual	2005-2006 Actual	2006-2007			
			Main Estimates	Planned Spending	Total Authorities	Actual
Safety Investigations	25,562	24,865	24,017	25,477	25,130	24,484
Corporate Services	6,637	6,434	5,121	5,432	6,537	6,400
Total	32,199	31,299	29,138	30,909	31,667	30,884
Plus: Cost of services received without charge	3,351	3,303	3,236	3,285	3,518	3,518
Total departmental spending	35,550	34,602	32,374	34,194	35,185	34,402
Full-time equivalents	244	234	240	234	N/A	226

Total authorities are Main Estimates plus Supplementary Estimates.

Overall, actual expenditures for 2006-2007 were lower than the expenditures in 2005-2006. This slight decrease is attributed mainly to a reduction of \$0.4 million in expenditures for the completion of major safety investigations. As in 2005-2006, expenditures for 2006-2007 seem lower than those for 2004-2005. However, in 2004-2005, the TSB received special short-term funding from Parliament in the amount of \$2.1 million to address specific resource pressures. If these special expenditures are excluded, the actual expenditures for 2006-2007 are higher than in 2004-2005. As in 2005-2006, this increase is mainly due to employee salary increases set out in the new collective agreements.

The following tables show the services received without charge by the TSB and the user fees that it collected.

Financial Table 3: Services Received Without Charge

(in thousands of dollars)	2006-2007
Accommodation provided by Public Works and Government Services Canada	1,850
Contributions covering employer's share of employees' insurance premiums and expenditures paid by Treasury Board	1,593
Audit services provided by the Office of the Auditor General	60
Workers' compensation coverage provided by Human Resources and Social Development Canada	15
Total of services received without charge	3,518

Financial Table 4: User Fees

User Fees	Fee Type	Fee-setting Authority	Date Last Modified	2005-2006 Actual Revenue	2006-2007 Actual Revenue
Fees charged for the processing of access request files under the <i>Access to Information Act (ATIA)</i>	Other products and services (O)	<i>Access to Information Act</i>	1992	\$2,625.61	\$160.00

Performance Standard	Performance Results	Stakeholder Consultation
Response provided within 30 days following receipt of request; the response time may be extended pursuant to section 9 of the ATIA. Notice of extension to be sent within 30 days after receipt of request.	For results, see the 2006-2007 <i>Annual Report to Parliament on the Management of the Access to Information Act and the Privacy Act</i> on the TSB website at www.tsb.gc.ca/en/publications/index.asp#atip .	The service standard is established by the <i>Access to Information Act</i> and the <i>Access to Information Regulations</i> . Consultations with stakeholders were undertaken by the Department of Justice and the Treasury Board Secretariat for amendments done in 1986 and 1992.

3.3 Response to Parliamentary Committees, Audits and Evaluations

During the reporting period, there were no Parliamentary Committee recommendations addressed specifically to the TSB. The Auditor General conducted an audit of the TSB financial statements and issued an unqualified opinion. A copy of the Auditor General’s Audit Report appears in Appendix E.

In 2006-2007, the TSB completed three internal audit projects. It first completed an audit of hospitality expenses and formulated its response and action plan. The audit report and management response were posted on the website. The auditors concluded that the TSB met government standards and that there were no major problems. However, recommendations were made with regard to staff training, updates to internal procedures and record keeping. Over the course of the year, the TSB undertook two other internal audit projects concerning the optimization of resources in the fieldwork component of the Air France investigation and the availability of work tools in both official languages. These two projects were completed by the end of the fiscal year and were submitted to management for the development of responses and action plans for 2007-2008. In both cases, the auditors indicated no major concerns, but they nevertheless made some recommendations for improving operating procedures. These two audit reports and their associated action plans should be published shortly. The three audit reports as well as corresponding management responses will be posted on the TSB website at www.tsb.gc.ca/en/common/disclosure/audit/overview.asp.

During the fiscal year, the TSB received the monitoring report on the position classification file review conducted in 2005-2006 by the Canada Public Service Agency. According to the report, the TSB must review and update the descriptions and

classifications of certain positions and improve certain internal procedures. TSB management has prepared a response to the Agency's report. The Agency's report and the TSB's response will be posted on the Agency's website within the next few months.

In addition, in 2006-2007, the Treasury Board Secretariat conducted an evaluation of the TSB under the Management Accountability Framework. The TSB has been notified of the results of this evaluation and management is currently preparing a response, which will be submitted to the Treasury Board Secretariat. The results of this evaluation will be published by the Treasury Board Secretariat.

3.4 Other Information and Contacts

The TSB reports publicly on all its investigations. Most investigation reports published since 1995 are available on the TSB website. The TSB also publishes periodic statistical reports for each of the four transportation sectors, which are also available on the website. The TSB publishes an Annual Report to Parliament, which is available in paper format by request and on the TSB website. Previous years' Reports on Plans and Priorities and Departmental Performance Reports and miscellaneous additional information are also available on the TSB website (www.tsb.gc.ca).

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Appendices

Appendix A – Reports Released by the TSB in 2006-2007 by Sector

Appendix B – Assessment of Responses to Recommendations Issued in 2005-2006

Appendix C – Glossary

Appendix D – Links to Other Organizations Involved in Transportation Safety

Appendix E – Audited Financial Statements

Appendix A – Reports Released by the TSB in 2006-2007 by Sector

Marine Reports Released in 2006-2007

DATE	LOCATION	VESSEL(S)	TYPE	EVENT	REPORT NO.
2003.12.06	Off Saint-Jean, Île d'Orléans, Que.	<i>Yong Kang</i>	Bulk carrier	Grounding	M03L0148
2003.12.20	Fraser River near Mission, B.C.	<i>Mistral</i> <i>Packmore 4000</i> <i>Tiger Shaman</i>	Pleasure craft Barge Tug	Collision	M03W0265
2004.01.11	Horseshoe Bay Terminal, B.C.	<i>Queen of Surrey</i> <i>Charles H. Cates V</i>	Roll-on/roll-off vehicle/passenger ferry Assist tug	Collision	M04W0006
2004.01.23	Sand Cove, N.B.	<i>Lo-Da-Kash</i>	Small fishing	Sinking and loss of life	M04M0002
2004.06.17	Off Natashquan, Que.	<i>Persistence I</i>	Fishing	Flooding	M04L0065
2004.09.19	Cape Bonavista, N.L., 5 nm E	<i>Ryan's Commander</i>	Small fishing	Capsizing and loss of life	M04N0086
2005.06.03	South Shore Canal, St. Lawrence Seaway, Que.	<i>Federal Sakura</i>	Bulk carrier	Striking	M05C0019
2005.06.29	Off Savary Island, Northern Georgia Strait, B.C.	<i>Morning Sunrise</i>	Fishing	Sinking	M05W0110

Pipeline Report Released in 2006-2007

DATE	LOCATION	COMPANY	EVENT	REPORT NO.
2005.10.18	Near Empress, Alta.	Foothills Pipe Lines Ltd.	Programmable logic controller failure	P05H0061

Rail Reports Released in 2006-2007

DATE	LOCATION	COMPANY	EVENT	REPORT NO.
2004.01.14	Whitby, Ont.	Canadian Pacific Railway	Main-track derailment	R04T0008
2004.07.08	Bend, B.C.	Canadian National	Uncontrolled movement of railway rolling stock	R04V0100
2004.07.25	Burton, Ont.	Canadian National	Derailment	R04T0161
2004.10.06	Castleford, Ont.	Canadian Pacific Railway	Crossing collision	R04H0014
2004.10.24	Near Blackie, Alta.	Canadian Pacific Railway	Crossing accident	R04C0110
2005.01.12	Winnipeg, Man.	Canadian National	Derailment	R05W0014
2005.02.17	Brockville, Ont.	Canadian National	Pedestrian fatality	R05T0030
2005.02.23	Saint-Cyrille, Que.	Canadian National	Main-track derailment	R05Q0010
2005.05.02	Maxville, Ont.	Ottawa Central Railway	Runaway and main-track train collision	R05H0011
2005.07.04	Prescott, Ont.	Canadian National	Main-track derailment	R05H0013
2006.05.15	Lac Bouchette, Que.	Canadian National	Main-track train derailment	R06Q0046
Various	Various	Canadian Pacific Railway	Safety Issues Investigation, Analysis of secondary main-line derailments and the relationship to bulk tonnage traffic	SII R05-01

Air Reports Released in 2006-2007

DATE	LOCATION	COMPANY	EVENT	REPORT NO.
2004.01.17	Pelee Island, Ont.	Cessna 208B Caravan	Loss of control	A04H0001
2004.06.11	Bob Quinn Airstrip, B.C.	MD Helicopters (Hughes) 369D	Engine power loss	A04P0206
2004.06.13	Québec/Jean Lesage International Airport, Que.	Airbus A320 and Cessna 172	Risk of collision	A04Q0089
2004.08.19	Saint John Airport, N.B.	Piper PA-31-350 (Navajo)	Collision with terrain	A04A0099
2004.08.31	Greater Moncton International Airport, N.B.	Boeing 727	Runway excursion	A04A0110
2004.10.14	Halifax International Airport, N.S.	Boeing 747-244SF	Reduced power at take-off and collision with terrain	A04H0004

DATE	LOCATION	COMPANY	EVENT	REPORT NO.
2004.10.29	Vancouver International Airport, B.C.	Britten Norman BN2P Islander and de Havilland DHC-8	Risk of collision	A04P0397
2004.12.01	Saint-Georges, Que.	Beech B300 (Super King Air)	Runway excursion on landing	A04Q0188
2004.12.19	Gaspé Airport, Que.	Piper PA-31-350	Landing beside the runway	A04Q0196
2005.01.24	La Grande-4, Que., 60 nm SE	Eurocopter AS 350 BA (helicopter)	Collision with terrain	A05Q0008
2005.02.21	Bromont Airport, Que.	Hawker Siddeley HS 125-600A	Landing beside the runway	A05Q0024
2005.06.02	Toronto/Lester B. Pearson International Airport, Ont.	Raytheon/Hawker 800XP	Misrigged elevator trim tabs	A05O0112
2005.06.07	Tofino, B.C., 5 nm W	Bombardier DHC-8-402	Loss of oil pressure on two engines	A05P0132
2005.06.10	Lethbridge, Alta., 41 nm SE	Bombardier CRJ705	Inadvertent stick shaker at high altitude	A05W0109
2005.06.10	Richards Landing, Ont.	Bell 212 (helicopter)	Main rotor blade failure	A05O0115
2005.06.15	Abbotsford, B.C., 15 nm N	Bombardier DHC-8-402	In-flight engine shutdown	A05P0137
2005.06.18	Thompson, Man.	Stinson 108-1	Hard landing and aircraft overturned	A05C0109
2005.06.19	Abbotsford International Airport, B.C., 2 nm S	Two Piper PA-44-180 Seminole	Air proximity – safety not assured	A05P0143
2005.06.25	Oshawa Airport, Ont.	SeaRey (amphibious)	Power loss and collision with terrain	A05O0125
2005.07.10	Sudbury, Ont.	Bell 204B (helicopter)	Difficulty to control	A05O0142
2005.07.18	Constance Lake, Ont.	Cessna A185F (seaplane)	Collision with water	A05O0147
2005.07.18	Orillia, Ont., 5 nm E	Cessna 185F (seaplane)	Engine power loss	A05O0146
2005.08.02	Terrace, B.C., 35 nm NW	MD Helicopters MD500D	Loss of control	A05P0184
2005.08.22	Mount Burns, Alta.	Cessna 180H	Controlled flight into terrain	A05W0176
2005.09.01	Schefferville, Que., 20 nm NW	de Havilland DHC-2 Beaver (seaplane)	Flight into adverse weather and collision with terrain	A05Q0157
2005.09.29	Lac Ouimet, Que.	Cessna 185 (seaplane)	Capsizing at take-off	A05Q0178
2005.09.30	Kashechewan, Ont.	Piper PA-31 (Navajo)	Controlled flight into terrain	A05O0225
2005.10.06	Winnipeg, Man.	Cessna 208B Caravan	Loss of control and collision with terrain	A05C0187
2005.11.03	South Bentick Arm, B.C.	Boeing Vertol BV-107-II (helicopter)	In-flight break-up	A05P0269

DATE	LOCATION	COMPANY	EVENT	REPORT NO.
2005.11.15	Hamilton Airport, Ont.	Gulfstream 100	Runway overrun	A05O0257
2005.11.20	Brantford, Ont.	Ryan Aeronautical Navion B	Loss of control and collision with terrain	A05O0258
2005.12.07	Marystown, N.L., 2.5 nm E	Messerschmitt-Bolkow-Blohm (MBB) BO105 (helicopter)	Collision with water	A05A0155
2005.12.19	Edmonton, Alta., 70 nm N	Boeing 737-700 and Bombardier CL-600-2B19	Loss of separation	A05W0248
2005.12.26	Winnipeg International Airport, Man.	Airbus A319-112	Runway excursion	A05C0222
2006.03.08	Powell River, B.C.	Piper PA-31-350 (Chieftain)	Runway overrun and collision with terrain	A06P0036
Various	Various	Various	Safety Issues Investigation, Post-impact fires resulting from small-aircraft accidents	SII A05-01

Appendix B – Assessment of Responses to Recommendations Issued in 2005-2006

Marine Recommendations

<p>Capsizing and Loss of Life, Small Fishing Vessel <i>Ryan's Commander</i>, off Cape Bonavista, Newfoundland and Labrador, 19 September 2004</p> <p>Report No. M04N0086</p>	
RECOMMENDATION	<p>M05-04</p> <p>The Department of Transport ensure that the Board's previous recommendations M03-05 and M03-06 are immediately implemented.</p>
RESPONSE	<p>The Minister of Transport, Infrastructure and Communities agrees with the intent of the recommendation. Until such time as the new Fishing Vessel Safety Regulations come into force, Transport Canada (TC) has established an interim measure for determining, based on a list of risk factors, whether a small fishing vessel requires a stability booklet. This interim measure will take effect immediately, and will also serve to remind vessel owners of their responsibility to make safe operational decisions that ensure an adequate margin of safety.</p>
BOARD ASSESSMENT OF RESPONSE	<p>TC issued Ship Safety Bulletin 04/2006 (<i>Safety of Small Fishing Vessels: Information to Owners/Masters about Stability Booklets</i>). The bulletin describes the interim safety measure and the process for determining whether a small fishing vessel requires a stability booklet and what to do if it does. The bulletin applies to all owners and operators of fishing vessels, new and existing, that are between 15 and 150 gross tons, or not more than 24.4 m in length.</p>
BOARD ASSESSMENT RATING	Fully Satisfactory

<p>Engine Room Fire and Subsequent Failure of the CO₂ Distribution Manifold, Ro-Ro Passenger Ferry <i>Queen of Surrey</i>, Queen Charlotte Channel, British Columbia, 12 May 2003</p> <p>Report No. M03W0073</p>	
<p>RECOMMENDATION</p>	<p>M05-05</p> <p>The Department of Transport, in conjunction with other stakeholders, review Canadian and international marine regulations respecting fixed fire-extinguishing systems to ensure that their design, maintenance, inspection, and testing regimes effectively demonstrate continued structural and functional integrity.</p>
<p>RESPONSE</p>	<p>The Minister of Transport, Infrastructure and Communities agrees with this recommendation. As part of the regulatory reform regime initiative, TC will review international marine regulations and standards respecting fixed fire-extinguishing system design, maintenance, inspection, and testing. The goal of this review will be aimed at determining whether the proposed Fire Safety Regulations will involve additional requirements to address potential deficiencies that may arise with fixed smothering system installations. The review will assess all aspects of maintenance, testing, and inspections to demonstrate continued structural and functional integrity. These regulations are scheduled to come into force in 2007.</p>
<p>BOARD ASSESSMENT OF RESPONSE</p>	<p>It is anticipated that TC will undertake a review as indicated in its initial response to verify that the proposed regulations meet all necessary requirements. TC has begun work to develop the proposed Fire Safety Regulations.</p>
<p>BOARD ASSESSMENT RATING</p>	<p>Satisfactory in Part</p>
<p>RECOMMENDATION</p>	<p>M05-06</p> <p>The Department of Transport require Canadian passenger vessels over 500 gross tonnage to meet a standard of structural fire protection that ensures a level of safety equivalent to International Convention for the Safety of Life at Sea (SOLAS)-compliant vessels.</p>

Engine Room Fire and Subsequent Failure of the CO₂ Distribution Manifold, Ro-Ro Passenger Ferry <i>Queen of Surrey</i>, Queen Charlotte Channel, British Columbia, 12 May 2003	
Report No. M03W0073	
RESPONSE	The Minister of Transport, Infrastructure and Communities agrees with the intent of this recommendation. The proposed Fire Safety Regulations will require that new passenger vessels over 150 gross tons meet and in some areas exceed the SOLAS standards for structural fire protection. The proposed regulations will also address modifications made to existing vessels. As a result, any major modification will have to comply with the most recent requirements for structural fire protection.
BOARD ASSESSMENT OF RESPONSE	It is anticipated that TC will undertake a review as indicated in its initial response to verify that the proposed regulations meet all necessary requirements. TC has begun work to develop the proposed Fire Safety Regulations.
BOARD ASSESSMENT RATING	Satisfactory in Part

Air Recommendations

Cessna 208 Operation into Icing Conditions, Morningstar Air Express Inc., Winnipeg, Manitoba, 06 October 2005	
Occurrence No. A05C0187	
RECOMMENDATION	A06-01 The Department of Transport take action to restrict the dispatch of Canadian Cessna 208, 208A, and 208B aircraft into forecast icing meteorological conditions exceeding “light,” and prohibit the continued operation in these conditions, until the airworthiness of the aircraft to operate in such conditions is demonstrated.

Cessna 208 Operation into Icing Conditions, Morningstar Air Express Inc., Winnipeg, Manitoba, 06 October 2005	
Occurrence No. A05C0187	
RESPONSE	<p>To address the subject of Cessna 208 operation into icing conditions, the Federal Aviation Administration (FAA) issued Airworthiness Directive (AD) 2006-06-06 on 10 March 2006. This mandatory corrective action allows dispatch into forecast icing meteorological conditions exceeding “light,” but requires pilots to exit moderate or more severe icing conditions if such conditions are encountered in flight. Cues are provided to enable pilots to determine when they must depart the icing conditions. The AD discusses the actions necessary to remove the restrictions imposed for flight in icing conditions. The FAA AD became effective 24 March 2006.</p> <p>On 24 January 2006, Transport Canada (TC) issued Service Difficulty Alert 2006-01. Service Difficulty Alert 2006-01R1 was released on 01 February 2006 and the latest revision 2006-01R2 was released on 24 March 2006.</p> <p>TC also reviewed FAA AD 2006-06-06. The Department supports the FAA’s determination that these actions are necessary for safe operation. FAA AD 2006-06-06 has been accepted and is mandatory in Canada.</p>
BOARD ASSESSMENT OF RESPONSE	<p>TC has essentially adopted the response from the FAA, who issued AD 2006-06-06. Action taken by the FAA will reduce, but not substantially reduce or eliminate, the deficiency raised in Board Recommendation A06-01. The response from TC does not address the issue of restricting the dispatch of the Cessna 208 into icing conditions forecast to exceed “light.”</p>
BOARD ASSESSMENT RATING	<p>Satisfactory in Part</p>
RECOMMENDATION	<p>A06-02</p> <p>The Department of Transport require that Canadian Cessna 208 operators maintain a minimum operating airspeed of 120 knots during icing conditions and exit icing conditions as soon as performance degradations prevent the aircraft from maintaining 120 knots.</p>

Cessna 208 Operation into Icing Conditions, Morningstar Air Express Inc., Winnipeg, Manitoba, 06 October 2005	
Occurrence No. A05C0187	
RESPONSE	<p>To address the subject of Cessna 208 operation into icing conditions, the FAA issued AD 2006-06-06 on 10 March 2006. FAA AD 2006-06-06 was issued to implement the content of this recommendation. This mandatory corrective action specifies the minimum speed in icing conditions of 120 knots indicated airspeed (KIAS) in the flaps UP condition, and requires that the pilot depart icing conditions if 120 KIAS cannot be maintained in level flight.</p> <p>On 24 January 2006, TC issued Service Difficulty Alert 2006-01. Service Difficulty Alert 2006-01R1 was released on 01 February 2006 and the latest revision 2006-01R2 was released on 24 March 2006.</p> <p>TC also reviewed FAA AD 2006-06-06. The Department supported the FAA's determination that these actions are necessary for safe operation. FAA AD 2006-06-06 has been accepted and is mandatory in Canada.</p> <p>TC agreed with Recommendation A06-02. TC reviewed FAA AD 2006-06-06, accepted the AD, and it is now mandatory in Canada.</p>
BOARD ASSESSMENT OF RESPONSE	In its response, TC adopted the action of the FAA, which issued AD 2006 06-06. Action taken by the FAA will substantially reduce or eliminate the deficiency raised in Board Recommendation A06-02.
BOARD ASSESSMENT RATING	Fully Satisfactory
RECOMMENDATION	<p>A06-03</p> <p>The Federal Aviation Administration take action to revise the certification of Cessna 208, 208A, and 208B aircraft to prohibit flight into forecast or in actual icing meteorological conditions exceeding "light," until the airworthiness of the aircraft to operate in such conditions is demonstrated.</p>

Cessna 208 Operation into Icing Conditions, Morningstar Air Express Inc., Winnipeg, Manitoba, 06 October 2005	
Occurrence No. A05C0187	
RESPONSE	On 27 September 2006, the Board received a letter dated 18 September 2006 in which the FAA responded to Recommendation A06-03. The response stated that the FAA agreed with the intent of the recommendation, and has taken action by issuing AD 2006-06-06, which limits the operation of Cessna 208 and 208B in icing conditions. The response also indicated that the FAA assessed its response as fully meeting the intent of this TSB recommendation.
BOARD ASSESSMENT OF RESPONSE	FAA AD 2006-06-06 will require that pilots exit moderate or more severe icing conditions, when such conditions are encountered. In addition, AD 2006-06-06 provides a definition of icing conditions of moderate or greater intensity as they apply to the Cessna 208 and 208B type, identifies several cues to enable pilots to determine when they must depart such icing conditions, and provides guidance on how to exit icing conditions exceeding “light.” Notwithstanding, the results of the FAA flight tests and review of accident data have not demonstrated that a Cessna 208 or 208B can successfully exit from such icing conditions. Effectively, the action taken by the FAA still allows the dispatch of aircraft into forecast icing conditions exceeding “light.” The FAA action taken will reduce, but will not substantially reduce or eliminate, the deficiency raised in Board Recommendation A06-03.
BOARD ASSESSMENT RATING	Satisfactory in Part
RECOMMENDATION	A06-04 The Federal Aviation Administration require that Cessna 208 operators maintain a minimum operating airspeed of 120 knots during icing conditions and exit icing conditions as soon as performance degradations prevent the aircraft from maintaining 120 knots.

**Cessna 208 Operation into Icing Conditions, Morningstar Air Express Inc.,
Winnipeg, Manitoba, 06 October 2005**

Occurrence No. A05C0187

RESPONSE	<p>Although the FAA has not yet provided the TSB with a direct response regarding its actions taken in response to TSB Recommendation A06-04, the FAA letter dated 13 March 2006, in response to National Transportation Safety Board Recommendation A-06-01, is pertinent to the risks identified in TSB Recommendation A06-04. To address the subject of Cessna 208 operation into icing conditions, the FAA issued AD 2006-06-06 on 10 March 2006. FAA AD 2006-06-06 was issued to implement the content of this recommendation. This mandatory corrective action specifies the minimum speed in icing conditions of 120 KIAS in the flaps UP condition, and requires that the pilot depart icing conditions if 120 KIAS cannot be maintained in level flight.</p> <p>On 19 May 2006, the FAA advised the TSB that Recommendation A06-04 had been forwarded to the Wichita Aircraft Certification Office for review and evaluation. The FAA Office of Accident Investigation is waiting for a reply from the Wichita Aircraft Certification Office.</p>
BOARD ASSESSMENT OF RESPONSE	FAA AD 2006-06-06 effectively mandates that 120 KIAS be the minimum Cessna 208 speed for flight in icing conditions as recommended in TSB Recommendation A06-04. The action taken by the FAA will substantially reduce or eliminate the deficiency raised in Board Recommendation A06-04.
BOARD ASSESSMENT RATING	Fully Satisfactory

<p>Rudder Separation in Flight, Air Transat, Airbus 310-308, Varadero, Cuba, 06 March 2005</p> <p>Occurrence No. A05F0047</p>	
<p>RECOMMENDATION</p>	<p>A06-05</p> <p>The Department of Transport, in coordination with other involved regulatory authorities and industry, urgently develop and implement an inspection program that will allow early and consistent detection of damage to the rudder assembly of aircraft equipped with part number A55471500 series rudders.</p>
<p>RESPONSE</p>	<p>In its 14 June 2006 letter, TC provided the following comments:</p> <ul style="list-style-type: none"> - TC concurs with the TSB suggestion that the current A310-300 inspection program may not be adequate to provide timely detection of defects to the rudder assembly. This may be caused by either inappropriate inspection intervals or inadequate inspection techniques. - At the time of this occurrence, composite materials in general were, from a maintenance perspective, believed to have a no-damage growth design philosophy. It was also believed that, from a fatigue point of view, more frequent inspections of composite materials would not prove to be more effective. In addition, these concepts were an industry-accepted philosophy during the development of maintenance programs using the Maintenance Review Board (MRB) process. - As a result of this occurrence, and the additional findings based on the Airbus All Operators Telex, TC now believes that there is potential for damage growth. Following this determination, the Department inspected additional Canadian-registered A310-300 series aircraft in order to evaluate the effectiveness of the current Airbus maintenance program. <p>The following corrective actions are currently being taken by TC:</p> <ul style="list-style-type: none"> - TC will send a letter to Airbus Industries and the Direction Générale de l'Aviation Civile (DGAC) of France detailing the results of our additional inspection on a Canadian-registered A310-300 series aircraft.

Rudder Separation in Flight, Air Transat, Airbus 310-308, Varadero, Cuba, 06 March 2005	
Occurrence No. A05F0047	
	<ul style="list-style-type: none"> - TC will recommend that a detailed inspection of the drainage path of the rudder for blockage be added to the current inspection program to ensure that there is adequate drainage. - TC will request that Airbus Industries review the current inspection program for the vertical stabilizer and rudder assembly for the A300/A310 aircraft series. - Because a tap test, a scheduled inspection of the rudder required at the time of the occurrence, is potentially not effective in determining smaller areas of delamination or disbond of composite materials, TC is currently working with the National Research Council of Canada to identify suitable inspection techniques that will detect failures in composite materials. - To better identify failures in composite material, TC will coordinate with the International MRB Policy Board to review the logic used in developing maintenance programs.
BOARD ASSESSMENT OF RESPONSE	<p>In its 14 June 2006 response, TC stated that it is currently working with the National Research Council of Canada to identify suitable inspection techniques that will detect failures in composite materials. TC will recommend that a detailed inspection of the drainage path of the rudder for blockage be added to the current inspection program to ensure that there is adequate drainage. TC will also request that Airbus Industries review the current inspection program for the vertical stabilizer and rudder assembly for the A300/A310 aircraft series, and will work with the International MRB Policy Board to review the logic used in developing maintenance programs.</p>
BOARD ASSESSMENT RATING	<p>Satisfactory Intent</p>
RECOMMENDATION	<p>A06-06</p> <p>The European Aviation Safety Agency, in coordination with other involved regulatory authorities and industry, urgently develop and implement an inspection program that will allow early and consistent detection of damage to the rudder assembly of aircraft equipped with part number A55471500 series rudders.</p>

Rudder Separation in Flight, Air Transat, Airbus 310-308, Varadero, Cuba, 06 March 2005	
Occurrence No. A05F0047	
RESPONSE	<p>In its response, the European Aviation Safety Agency (EASA) stated that it agreed with the Board recommendation and that AD 2006-0066 issued on 24 March 2006 requiring a mandatory one-time inspection satisfactorily addressed the Board recommendation.</p> <p>On 21 December 2006, following a TSB conference call with the EASA, the latter stated that all elements that may have potentially caused the damage growth were still being investigated. Furthermore, the EASA stated that, within the continued airworthiness process and in cooperation with Airbus Industries, it continues its efforts to determine the most appropriate corrective actions. Subsequently, the EASA will consider mandating those actions, including amending the maintenance program to require repetitive inspections.</p>
BOARD ASSESSMENT OF RESPONSE	<p>Although the EASA agreed with the Board recommendation, AD 2006-0066 referenced in its 22 November 2006 response does not provide for a repetitive inspection cycle that will allow early and consistent detection of damage, as is implied in the core of Recommendation A06-06. Nevertheless, the TSB assessed that the EASA is well positioned to take a leadership role within the industry in advocating for the development and integration of an inspection program dealing with composite materials. On that basis, the 20 December 2006 conference call was initiated.</p> <p>The 17 January 2007 response reflects EASA's commitment to continue to develop corrective actions that may include amending the maintenance program to require repetitive checks.</p>
BOARD ASSESSMENT RATING	Satisfactory Intent

Appendix C – Glossary

Accident	in general, a transportation occurrence that involves serious personal injury or death, or significant damage to property, in particular to the extent that safe operations are affected (for a more precise definition, see the <i>Transportation Safety Board Regulations</i>)
Incident	in general, a transportation occurrence whose consequences are less serious than those of an accident, or that could potentially have resulted in an accident (for a more precise definition, see the <i>Transportation Safety Board Regulations</i>)
Occurrence	a transportation accident or incident
Recommendation	a formal way to draw attention to systemic safety issues, normally warranting ministerial attention
Safety Advisory	a less formal means for communicating lesser safety deficiencies to officials within and outside the government
Safety Information Letter	a letter that communicates safety-related information, often concerning local safety hazards, to government and corporate officials

Appendix D – Links to Other Organizations Involved in Transportation Safety

More information on transportation safety in Canada is available from other federal government agencies who play a role in this area. The Internet addresses for the main organizations are as follows:

Transport Canada	www.tc.gc.ca
National Energy Board	www.neb.gc.ca
Canadian Coast Guard	www.ccg-gcc.gc.ca
Canadian Transportation Agency	www.cta-otc.gc.ca
Royal Canadian Mounted Police	www.rcmp-grc.gc.ca
Human Resources and Social Development Canada	www.hrsdc.gc.ca
National Defence	www.dnd.ca

Information on transportation safety in selected countries is available on the following Internet sites:

United States

National Transportation Safety Board	www.nts.gov
Federal Aviation Administration	www.faa.gov

Australia

Australian Transport Safety Bureau.....	www.atsb.gov.au
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France

Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation Civile.....	www.bea-fr.org
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United Kingdom

Air Accidents Investigation Branch.....	www.aaib.dft.gov.uk
Marine Accident Investigation Branch	www.maib.dft.gov.uk

International

International Civil Aviation Organization	www.icao.org
International Maritime Organization	www.imo.org
International Transportation Safety Association	www.itsasafety.org

Appendix E – Audited Financial Statements

Transportation Safety Board of Canada Statement of Management Responsibility

Responsibility for the integrity and objectivity of the accompanying financial statements for the year ended March 31, 2007 and all information contained in these statements rests with management of the Transportation Safety Board of Canada (TSB). These financial statements have been prepared by management in accordance with Treasury Board accounting policies which are consistent with Canadian generally accepted accounting principles for the public sector and year-end instructions issued by the Office of the Comptroller General.

Management is responsible for the integrity and objectivity of the information in these financial statements. Some of the information in the financial statements is based on management's best estimates and judgement and gives due consideration to materiality. To fulfil its accounting and reporting responsibilities, management maintains a set of accounts that provides a centralized record of the TSB's financial transactions. Financial information submitted to the *Public Accounts of Canada* and included in the TSB's *Departmental Performance Report* is consistent with these financial statements.

Management maintains a system of financial management and internal control designed to provide reasonable assurance that financial information is reliable, that assets are safeguarded and that transactions are in accordance with the *Financial Administration Act*, are executed in accordance with prescribed regulations, within Parliamentary authorities, and are properly recorded to maintain accountability of Government funds. Management also seeks to ensure the objectivity and integrity of data in its financial statements by careful selection, training and development of qualified staff, by organizational arrangements that provide appropriate divisions of responsibility, and by communication programs aimed at ensuring that regulations, policies, standards and managerial authorities are understood throughout the TSB.

The financial statements of the TSB have been audited by the Auditor General of Canada, the independent auditor for the Government of Canada.



Wendy A. Tadros
Chair



Jean L. Laporte, CGA
Senior Financial Officer

Gatineau, Canada
July 13, 2007



AUDITOR'S REPORT

To the Chair of the Transportation Safety Board of Canada
and to the President of the Queen's Privy Council for Canada

I have audited the statement of financial position of the Transportation Safety Board of Canada as at March 31, 2007 and the statements of operations, equity of Canada and cash flow for the year then ended. These financial statements are the responsibility of the Board's management. My responsibility is to express an opinion on these financial statements based on my audit.

I conducted my audit in accordance with Canadian generally accepted auditing standards. Those standards require that I plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In my opinion, these financial statements present fairly, in all material respects, the financial position of the Board as at March 31, 2007 and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

Alain Boucher, CA
Principal
for the Auditor General of Canada

Ottawa, Canada
July 13, 2007

Transportation Safety Board of Canada
Statement of Financial Position
At March 31

(in thousands of dollars)

	<u>2007</u>	<u>2006</u>
ASSETS		
Financial assets		
Due from the Consolidated Revenue Fund	\$ 1,812	\$ 2,290
Accounts receivable and advances (Note 4)	329	59
Total financial assets	<u>2,141</u>	<u>2,349</u>
Non-financial assets		
Prepaid expenses	53	52
Inventory	80	130
Tangible capital assets (Note 5)	5,062	5,225
Total non-financial assets	<u>5,195</u>	<u>5,407</u>
Total assets	<u>\$ 7,336</u>	<u>\$ 7,756</u>
Liabilities		
Accounts payable and accrued liabilities	\$ 2,099	\$ 2,296
Vacation pay and compensatory leave	1,045	1,125
Employee severance benefits (Note 6)	4,020	3,860
Total liabilities	<u>7,164</u>	<u>7,281</u>
Equity of Canada	172	475
Total liabilities and equity of Canada	<u>\$ 7,336</u>	<u>\$ 7,756</u>

Contingent liabilities and contractual obligations (Notes 7 and 8 respectively)

The accompanying notes form an integral part of these financial statements.


Wendy A. Tadros
Chair


Jean L. Laporte, CGA
Senior Financial Officer

Gatineau, Canada
July 13, 2007

Transportation Safety Board of Canada
Statement of Operations
For the Year Ended March 31
(in thousands of dollars)

	<u>2007</u>	<u>2006</u>
Expenses		
Salaries and wages	\$ 20,266	\$ 19,890
Employee benefits	5,151	5,119
Professional and special services	3,031	2,814
Transportation and communications	2,017	2,179
Accommodation	1,850	1,821
Amortization	998	995
Repairs and maintenance	626	532
Utilities, materials, supplies and equipment	427	523
Information	150	232
Rentals	117	118
Other expenses	55	13
Total Expenses	<u>34,688</u>	<u>34,236</u>
Revenues		
Other non-tax revenues	11	66
Sales of goods and services	7	9
Total Revenues	<u>18</u>	<u>75</u>
Net Cost of Operations before administration of cost-shared activities	<u>34,670</u>	<u>34,161</u>
Other Expenses (Note 9c)	338	279
Other Income (Note 9c)	370	279
Net Cost of Operations	<u><u>\$ 34,638</u></u>	<u><u>\$ 34,161</u></u>

The accompanying notes form an integral part of these financial statements.

**Transportation Safety Board of Canada
Statement of Equity of Canada
For the Year Ended March 31**

(in thousands of dollars)

	<u>2007</u>	<u>2006</u>
Equity of Canada, beginning of year	\$ 475	\$ 285
Net cost of operations	(34,638)	(34,161)
Net cash provided by Government	31,294	31,132
Change in due from the Consolidated Revenue Fund	(477)	(84)
Services received without charge by other government departments (Note 9)	<u>3,518</u>	<u>3,303</u>
Equity of Canada, end of year	<u>\$ 172</u>	<u>\$ 475</u>

The accompanying notes form an integral part of these financial statements.

Transportation Safety Board of Canada
Statement of Cash Flow
For the Year Ended March 31
(in thousands of dollars)

	<u>2007</u>	<u>2006</u>
Operating activities		
Net cost of operations	\$ 34,638	\$ 34,161
Non-cash items:		
Services provided without charge by other government departments	(3,518)	(3,303)
Amortization of tangible capital assets	(998)	(995)
Loss on disposal and write-down of tangible capital assets	(5)	(24)
	<u>(4,521)</u>	<u>(4,322)</u>
Variations in Statement of Financial Position:		
Increase (decrease) in accounts receivable and advances	270	(578)
Increase in prepaid expenses	1	13
Increase (decrease) in inventory	(50)	12
Decrease in liabilities	116	285
Cash used by operating activities	<u>30,454</u>	<u>29,571</u>
Capital investment activities		
Acquisitions of tangible capital assets	842	1,590
Proceeds from disposal of tangible capital assets	(2)	(29)
Cash used by capital investment activities	<u>840</u>	<u>1,561</u>
Net cash provided by Government of Canada	<u>(\$ 31,294)</u>	<u>(\$ 31,132)</u>

The accompanying notes form an integral part of these financial statements.

Transportation Safety Board of Canada Notes to the Financial Statements

1. Authority and Objectives

The Canadian Transportation Accident Investigation and Safety Board (CTAISB) was established in 1990 under the *Canadian Transportation Accident Investigation and Safety Board Act* and is a departmental corporation named in Schedule II to the *Financial Administration Act*. In its day-to-day activities the CTAISB is also known by the name Transportation Safety Board of Canada, or simply the TSB. The objective of the TSB is to advance transportation safety. It seeks to identify safety deficiencies in transportation occurrences and to make recommendations designed to eliminate or reduce any such safety deficiencies. In addition to investigations, including where necessary public inquiries into selected occurrences, the TSB may conduct studies into more general matters pertaining to transportation safety. The TSB has the exclusive authority to make findings as to causes and contributing factors when it investigates a transportation occurrence. The TSB's operating expenditures are funded by a budgetary lapsing authority whereas contributions to employee benefit plans are funded by statutory authorities.

2. Summary of Significant Accounting Policies

The financial statements have been prepared in accordance with Treasury Board accounting policies which are consistent with Canadian generally accepted accounting principles for the public sector and year-end instructions issued by the Office of the Comptroller General.

Significant accounting policies are as follows:

(a) Parliamentary appropriations - the TSB is financed by the Government of Canada through Parliamentary appropriations. Appropriations provided to the TSB do not parallel financial reporting according to Canadian generally accepted accounting principles since appropriations are primarily based on cash flow requirements. Consequently, items recognized in the statement of operations and the statement of financial position are not necessarily the same as those provided through appropriations from Parliament. Note 3 provides a high-level reconciliation between the two bases of reporting.

(b) Net Cash Provided by Government - The TSB operates within the Consolidated Revenue Fund (CRF), which is administered by the Receiver General for Canada. All cash received by the TSB is deposited to the CRF and all cash disbursements made by the TSB are paid from the CRF. The net cash provided by Government is the difference between all cash receipts and all cash disbursements including transactions between departments of the federal government.

(c) Due from the Consolidated Revenue Fund – represents the amount of cash that the TSB is entitled to draw from the CRF, without further appropriations, in order to discharge its liabilities.

(d) Revenues - Revenues are accounted for in the period in which the underlying transaction or event occurred that gave rise to the revenues.

(e) Expenses - Expenses are recorded on an accrual basis:

Vacation pay and compensatory leave are expensed as the benefits accrue to employees under their respective terms of employment.

Services provided without charge by other government departments are recorded as operating expenses at their estimated cost.

(f) Employee future benefits

Pension benefits: Eligible employees participate in the Public Service Pension Plan, a multiemployer plan administered by the Government of Canada. The TSB's contributions to the Plan are charged to expenses in the year incurred and represent the total TSB obligation to the Plan. Current legislation does not require the TSB to make contributions for any actuarial deficiencies of the Plan.

Severance benefits: Employees are entitled to severance benefits under labour contracts or conditions of employment. These benefits are accrued as employees render the services necessary to earn them. The obligation relating to the benefits earned by employees is calculated using information derived from the results of the actuarially determined liability for employee severance benefits for the Government as a whole.

(g) Accounts receivables are stated at amounts expected to be ultimately realized; a provision is made for receivables where recovery is considered uncertain.

(h) Inventories – Inventories consists of parts, material and supplies held for future program delivery and not intended for re-sale. They are valued at cost. If they no longer have service potential, they are valued at the lower of cost or net realizable value.

(i) Tangible capital assets - All tangible capital assets and leasehold improvements having an initial cost of \$2,000 or more are recorded at their acquisition cost.

Amortization of tangible capital assets is done on a straight-line basis over the estimated useful life of the asset as follows:

Asset class	Amortization period
Buildings	30 years
Furniture	10 years
Office equipment	5 years
Laboratory equipment	10 years
Informatics hardware	4 years
Informatics software (purchased)	3 years
Informatics software (in house developed)	10 years
Motor vehicles	7 years
Other vehicles	15 years
Leasehold improvements	Lesser of the remaining term of the lease or useful life of the improvement

(j) Measurement uncertainty - The preparation of these financial statements in accordance with Treasury Board accounting policies which are consistent with Canadian generally accepted accounting principles for the public sector and year-end instructions issued by the Office of the Comptroller General, requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses reported in the financial statements. At the time of preparation of these statements, management believes the estimates and assumptions to be reasonable. The most significant items where estimates are used are the useful lives of tangible capital assets, the assumptions underlying the employee severance benefits liability and the assessment of contingent liabilities. Actual results could significantly differ from those estimated. Management's estimates are reviewed periodically and, as adjustments become necessary, they are recorded in the financial statements in the year they become known.

3. Parliamentary Appropriations

The TSB receives its funding through annual Parliamentary appropriations. Items recognized in the Statement of Operations and the Statement of Financial Position in one year may be funded through Parliamentary appropriations in prior, current or future years. Accordingly, the TSB has different net results of operations for the year on a government funding basis than on an accrual accounting basis. The differences are reconciled in the following tables:

(a) Reconciliation of net cost of operations to current year appropriations used:

	<u>2007</u>	<u>2006</u>
	(in thousands of dollars)	
Net cost of operations	\$ 34,638	\$ 34,161
Adjustments for items affecting net cost of operations but not affecting appropriations:		
Less:		
Services provided without charge	3,518	3,303
Amortization of tangible capital assets	998	995
Vacation pay and compensatory leave	-	144
Employee severance benefits	160	94
Other	5	24
	<u>4,681</u>	<u>4,560</u>
Add:		
Vacation pay and compensatory leave	80	-
Non-tax revenue	43	53
Refund of previous years expenses	11	30
	<u>134</u>	<u>83</u>
Adjustments for items not affecting net cost of operations but affecting appropriations:		
Less:		
Inventory used (purchased)	50	(12)
	<u>50</u>	<u>(12)</u>
Add:		
Acquisition of tangible capital assets	842	1,590
Prepaid expenses	1	13
	<u>843</u>	<u>1,603</u>
Current year appropriations used	\$ 30,884	\$ 31,299

(b) Appropriations provided and used

	<u>2007</u>	<u>2006</u>
	(in thousands of dollars)	
Vote 10 - CTAISB Operating expenditures	\$ 25,486	\$ 24,039
Governor General's special warrants #2	-	1,288
Governor General's special warrants #3	-	2,015
Supplementary Vote 10a	1,674	-
Transfer from Treasury Board - Vote 15	1,096	-
Spending of revenues as per FAA section 29.1	4	6
Statutory amounts:		
Contribution to employee benefit plans	3,403	3,707
Spending of proceeds from disposal of surplus Crown assets	4	30
Plus or minus:		
(Lapsed)or over-expended appropriations: Operating	(783)	214
Current year appropriations used	<u>\$ 30,884</u>	<u>\$ 31,299</u>

c) Reconciliation of net cash provided by Government to current year appropriations used

	<u>2007</u>	<u>2006</u>
	(in thousands of dollars)	
Net cash provided by Government	\$ 31,294	\$ 31,132
Non-tax revenue	43	53
Change in net position in the Consolidated Revenue Fund		
(Increase) decrease in accounts receivable and advances	(270)	578
(Increase) in prepaid expenses	(1)	(13)
Decrease (Increase) in inventory	50	(12)
(Decrease) in accounts payable and accrued liabilities	(197)	(523)
(Decrease) Increase in accrued vacation pay and compensatory leave	(80)	144
Other adjustments	45	(60)
Current year appropriations used	<u>\$ 30,884</u>	<u>\$ 31,299</u>

4. Accounts Receivable and Advances

	2007	2006
	(in thousands of dollars)	
Receivables from other Federal Government departments and agencies	\$ 316	\$ 42
Receivables from external parties	5	9
Employee advances	8	8
Total	\$ 329	\$ 59

5. Tangible Capital Assets

(in thousands of dollars)

Capital Asset Class	Historical Cost March 31, 2006	Acquisitions	Work in progress transfers	Disposals and write-offs	Accumulated Amortization March 31, 2007	Net Book Value March 31, 2007	Net Book Value March 31, 2006
Buildings	\$ 2,854	\$ -	\$ -	\$ -	\$ 2,165	\$ 689	\$ 806
Furniture	1,117	169	-	305	481	500	415
Office equipment	275	9	-	72	209	3	28
Laboratory equipment	2,381	26	-	-	1,819	588	640
Informatics hardware	3,351	193	-	130	2,820	594	836
Informatics software (purchased)	579	91	-	-	534	136	110
Informatics software (in house developed)	-	-	2,002	-	117	1,885	-
Informatics software (in development)	1,918	354	(2,002)	-	-	270	1,918
Motor vehicles	837	-	-	-	516	321	388
Other vehicles	103	-	-	-	27	76	82
Leasehold improvements	34	-	-	-	34	-	2
Total	\$ 13,449	\$ 842	\$ -	\$ 507	\$ 8,722	\$ 5,062	\$ 5,225

6. Employee Benefits

(a) Pension benefits: The TSB's employees participate in the Public Service Pension Plan which is sponsored and administered by the Government of Canada. Pension benefits accrue up to a maximum period of 35 years at a rate of 2 percent per year of pensionable service, times the average of the best five consecutive years of earnings. The benefits are integrated with Canada/Quebec Pension Plans benefits and they are indexed to inflation.

Both the employees and the TSB contribute to the cost of the Plan. The 2006-07 expense amounts to \$2,508,000 (\$2,743,000 in 2005-06), which represents approximately 2.6 times the contributions by employees.

The TSB's responsibility with regard to the Plan is limited to its contributions. Actuarial surpluses or

deficiencies are recognized in the financial statements of the Government of Canada, as the Plan's sponsor.

(b) Severance benefits: The TSB provides severance benefits to its employees based on eligibility, years of service and final salary. These severance benefits are not pre-funded. Benefits will be paid from future appropriations. Information about the severance benefits, measured as at March 31, is as follows:

	<u>2007</u>	<u>2006</u>
	(in thousands of dollars)	
Accrued benefit obligation, beginning of year	\$ 3,860	\$ 3,766
Expense for the year	608	241
Benefits paid during the year	(448)	(147)
Accrued benefit obligation, end of year	<u>\$ 4,020</u>	<u>\$ 3,860</u>

7. Contingent Liabilities

In the normal course of its operations, the TSB becomes involved in various legal actions. Some of these potential liabilities may become actual liabilities when one or more future events occur or fail to occur. To the extent that the future event is likely to occur or fail to occur, and a reasonable estimate of the loss can be made, an estimated liability is accrued and an expense recorded on the TSB's financial statements.

As at March 31, 2007, there are various outstanding legal actions against the TSB. No liability has been recorded in the financial statements since management of the TSB considers them unlikely to be successful.

8. Contractual Obligations

The nature of the TSB's activities can result in some large multi-year contracts and obligations whereby the TSB will be obligated to make future payments when the services/goods are received.

Significant contractual obligations that can be reasonably estimated are summarized as follows:

(in thousands of dollars)	<u>2008</u>	<u>2009</u>	<u>Total</u>
Acquisition of goods and services	\$ 1,546	\$ 252	\$ 1,798

9. Related Party Transactions

The TSB is related as a result of common ownership to all Government of Canada departments, agencies and Crown corporations. The TSB enters into transactions with these entities in the normal course of business and on normal trade terms. Also, during the year, the TSB received services which were obtained without charge from other Government departments as presented in part (a).

(a) Services provided without charge:

During the year the TSB received without charge from other departments, accommodation, administration of worker's compensation, the employer's contribution to health and dental insurance plans, and external audit services. These services without charge have been recognized in the TSB's Statement of Operations as follows:

	<u>2007</u>	<u>2006</u>
	(in thousands of dollars)	
Accommodation	\$ 1,850	\$ 1,821
Employer's contribution to health and dental insurance plans	1,593	1,425
External audit services	60	40
Administration of worker's compensation	15	16
Total	<u>\$ 3,518</u>	<u>\$ 3,303</u>

The Government has structured some of its administrative activities for efficiency and cost-effectiveness purposes so that one department performs these on behalf of all without charge. The costs of these services, which include payroll and cheque issuance services provided by Public Works and Government Services Canada, are not included as an expense in the TSB's Statement of Operations given that a reasonable amount for those types of services cannot be determined.

(b) Payables outstanding at year-end with related parties:

	<u>2007</u>	<u>2006</u>
	(in thousands of dollars)	
Accounts payable to other government departments and agencies	\$ 197	\$ 364

(c) Administration of costs-shared activities:

The TSB is responsible for coordinating the financial management of funds for the networks of small federal agencies. The revenues consist of contributions from all agencies to the cost sharing. The expenses are the disbursements made on behalf of the group. Each government department will report its respective portion of expenses in its financial statements. During the year, TSB administered \$370,000 in revenues (\$283,000 in 2005-06) and disbursed \$338,000 in expenses (\$279,000 in 2005-06). This year revenues exceeded expenditures by approximately \$32,000. Due to the low value of this balance the excess revenues were not returned to contributing agencies, but were simply credited to the Consolidated Revenue Fund.