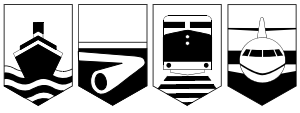
Transportation Safety Board of Canada

Departmental Performance Report

for the period ending
March 31, 2005

Charles H. Simpson
Acting Chairperson
Transportation Safety Board of Canada

Lucienne Robillard
President
Queen's Privy Council for Canada



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The Chairperson's Message

The past year has been marked by a number of important accomplishments for the Transportation Safety Board of Canada (TSB). We have achieved a significant reduction in the number of investigations in process and in the number of unpublished reports. We have expanded our communications activities. We have also made good progress on the development of a new investigation information management system.

Although we have not yet fully achieved all of our objectives as stated in the Report on Plans and Priorities, we are satisfied that the organization has made good progress on all of its commitments and that potential risks to our program have been reduced. More importantly, I am confident that we will succeed in completing the outstanding work over the next few months.

A substantial portion of this work was made possible by the incremental funding provided by Parliament over the past two years. Now that these temporary resources have expired, the management team is focussing its efforts on ensuring a good balance between the resources available and the uptake of new investigations. This will ensure that the organization does not overextend itself and that the high quality standards that Canadians expect are maintained in all of our work.

Once again this year, various indicators show that Canada maintains a very good transportation safety record. A review of transportation accident rates over the past 10 years reveals a progressive downward trend. We therefore believe that the efforts of the TSB toward advancing transportation safety, in concert with the work of many other organizations, are having a beneficial impact.

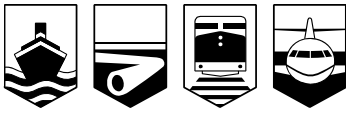
Canadians expect and demand a safe and sound transportation system. As we look to the future and the challenges that lie ahead, we are committed to sustaining our efforts and to contributing to a transportation system that is safe and reliable – a system upon which Canadians can rely and of which they are confident.

Section 1: Overview

1.1 Mandate and Mission

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*). Under this legislation, the TSB's only objective is the advancement of transportation safety in the marine, rail, pipeline and air transportation systems. This mandate is fulfilled by conducting independent investigations including, if necessary, public inquiries into selected 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. As a result, recommendations may be made to improve safety and reduce or eliminate risks to people, property and the environment. The TSB has the exclusive authority to make findings as to causes and contributing factors when it investigates a transportation occurrence.

Our mission: We conduct independent safety investigations and communicate risks in the transportation system.



The jurisdiction of the TSB includes all federally regulated transportation occurrences in or over Canada. 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 and the International Maritime Organization.

The TSB reports annually to Parliament on its activities, findings and recommendations through the President of the Queen's Privy Council. As such, the TSB is not part of any portfolio to which Transport Canada, the Canadian Coast Guard or the National Energy Board belong. The creation of the TSB as an independent agency eliminates any potential, real or perceived, for a conflict

of interest within government bodies regulating or operating transportation activities who are also investigating failures associated with their own regulations and operations.

1.2 Management Representation Statement

I submit, for tabling in Parliament, the 2004-2005 Departmental Performance Report (DPR) for the Transportation Safety Board of Canada.

This report has been prepared based on the reporting principles and other requirements contained in the *2004-2005 Departmental Performance Report Preparation Guide.* This report is based upon our approved accountability structure and represents, to the best of my knowledge, a comprehensive, balanced, and transparent picture of the organization's performance for fiscal year 2004-2005. It also reports finances based on approved numbers from the Estimates and the Public Accounts of Canada.

_____
Charles H. Simpson, Acting Chairperson

_____
Date

1.3 Operating Environment

The TSB operates within the context of the very large and complex Canadian transportation system (see the Transport Canada website at **www.tc.gc.ca/pol/en/report/anre2004/toc_e.htm** and the National Energy Board site at **www.neb.gc.ca/energy/index_e.htm** for details).

1.3.1 Key Co-Delivery Parties

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

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

- manufacturers;
- other organizations and agencies, such as coroners, police, 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 as providers of information or of 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 Canadian and foreign organizations involved in improving transportation safety nationally and internationally. While it operates at arm's length from other federal departments involved in the transportation field, it can only succeed in fulfilling its strategic outcome through the actions of others. The TSB presents findings and makes recommendations that call upon others to act, but it has no formal authority to regulate, direct or enforce specific actions. This implies ongoing dialogue, information sharing and strategic coordination with organizations such as Transport Canada, the National Energy Board and the Canadian Coast Guard.

Similarly, the TSB must engage in ongoing dialogue and information sharing with industry and foreign regulatory organizations. Through various means, the TSB must present compelling arguments that will convince these "agents of change" to take action in response to identified safety deficiencies. The TSB can therefore be deemed successful when others, such as regulators, operators and manufacturers, implement actions to mitigate risks using the TSB outputs.

The TSB has established memorandums of understanding with a number of 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 (e.g. assistance for the recovery of wreckage, the documentation of information and the examination or testing of components). The agreements also define operating practices to ensure coordination of activities and to avoid duplication and potential conflicts that could arise from the simultaneous implementation of various organizational mandates. Such agreements are currently in place with Transport Canada, National Defence, the Royal Canadian Mounted Police, the Canadian Coast Guard, Human Resources and Skills Development Canada, the National Energy Board and the National Research Council. Similarly, the TSB has established strategic cooperation alliances with provincial and territorial coroners/chief medical examiners.

Further alliances have been established with the TSB's counterpart agencies in other countries, such as the United States, Australia, the Netherlands, 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. The TSB is also an active participant in the International Transportation Safety Association (ITSA) and the Nordic Accident Investigation Group. As an internationally respected investigative agency, the TSB regularly shares its investigation techniques, methodologies and tools. For example, the Recorder Analysis and Playback System (RAPS), developed by the TSB for decoding and analysis of flight data recorders and cockpit voice recorders, has now been used for a number of years by more than 10 countries to aid in safety investigations. Similarly, the TSB has contributed to the training of safety 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 shares data and reports with sister organizations and participates in international work groups and studies to advance transportation safety.

1.3.2 Risks and Challenges

The TSB faces a number of risks and challenges that could have a potentially significant impact on the organization's ability to achieve its mandate. TSB managers are aware of these risks and challenges and are expected to take appropriate actions to mitigate the risks while ensuring the delivery of their mandate. The most important challenges are described in the following paragraphs.

1.3.2.1 Managing External Expectations

The TSB has a variety of stakeholders and clients with diverse information needs. Regulators and industry want information in order to fulfill their responsibilities in improving transportation safety. Next-of-kin want information about what happened to their loved ones in order to bring closure. Others want information from a business perspective. Regardless of the motive, all agree that they would like safety information to be made available earlier and more effectively. Furthermore, stakeholders and the public would like the TSB to undertake more safety investigations than what is currently done. The TSB is therefore challenged to find the right balance between the level of activity to be undertaken, potential safety payoffs and the resources available. This implies an ongoing review of products, services and processes to ensure that resources are invested in the best possible way to achieve the optimum results. The TSB must also communicate effectively with its stakeholders and the public in order to convey its priorities and its limited capacity. The TSB must ensure that reasonable expectations are set through appropriate communication.

1.3.2.2 Maintaining Operational Capability

The success of the TSB and its credibility as an organization depend largely on the expertise, professionalism and competence of its employees. Rapid technological changes in the transportation industry, along with the development of new materials, are making the task of investigation and safety analysis increasingly complex and specialized. The TSB must not only maintain an appropriate capital asset infrastructure, but must also keep up its technical expertise and knowledge base in order to maintain credibility within the industry. In recent years, the TSB has mounted a successful effort to “catch up” on essential training for employees and managers to ensure they have the knowledge and skills to meet mandatory job requirements. Nevertheless, the challenge of retaining technical currency requires careful planning backed by adequate financial resources.

1.3.2.3 Increasing Awareness to Influence Positive Changes

To achieve its mandate and to influence stakeholders to take actions that lead to positive changes in transportation safety, the TSB must present compelling arguments for change in its reports and other communication products. This requires a solid understanding amongst stakeholders and the public about who we are, what we do and how we contribute to transportation safety. We believe that improving awareness about the TSB and its work will better position the TSB to influence key change agents. To that end, the TSB has adopted a three-year Corporate Communications Plan, which is essentially a road map of how we want to improve communications. The Plan represents a more active approach to publicizing key safety messages to influence positive changes. However, the challenge lies in finding the right mix of activities within a limited pool of resources.

1.3.2.4 Implementing Government-wide Initiatives

Over the past year the Government has launched a number of government-wide initiatives and reviews that have had, and will continue to have, an impact on the TSB. For example, initiatives such as the proactive disclosure of information regarding travel and hospitality expenses, position reclassifications and contracts have resulted in new work for the TSB with no additional resources being provided. The series of Government Operations Reviews (e.g. shared corporate services, IT services, procurement, institutional governance) has also had a significant impact on workload. These reviews are now completed and decisions will soon be made by the Government. As the TSB proceeds with the implementation of the resulting changes, further impacts are expected. The implementation of Human Resources Management Modernization is an excellent example of centrally directed programs having an immediate and substantial

impact on TSB resources. The challenge is to continue to incorporate these cumulative requirements into daily activities within the resource envelope available, while maintaining a suitable balance between the fulfillment of the TSB's mandate and the implementation of the Government's overall agenda.

1.3.2.5 Balancing Resources and Results

The TSB, like all other government departments and agencies, must operate with a fixed resource base. Over time this base is eroded by numerous external factors such as inflation, new service fees and general price increases. The TSB must therefore contend with diminishing resources as time passes. Furthermore, the Government has directed that new requirements be funded through reallocation rather than through the provision of incremental funding. The resultant challenge is to maintain an appropriate balance in the level of operational activity in a context of increasing demand for services and diminishing resources.

For some time now, the TSB has been struggling with the issue of performance measurement. Progress has been made on the development of meaningful performance indicators. However, more work is required in this regard, particularly with respect to linking resources to results. Given that no two investigations are identical, and that some investigations lead to safety changes whereas others do not, it is very difficult to establish the return on investment in safety investigations. The direct and positive impact of TSB investigation activities can be readily demonstrated; conveying the value for money using traditional financial measures is, however, much more challenging.

1.4 Resources

The following tables summarize the total financial and human resources allocated to the TSB in 2004-2005, as well as the actual resources utilized for the delivery of the mandate. Section 3.2 of this report provides detailed information on the overall financial performance of the TSB.

Table 1: TSB Resources		
Total Financial Resources ($000)		
Planned Spending	Total Authorities	Actual Spending
33,724	35,562	35,550
Total Human Resources (Full-Time Equivalents)		
Planned	Actual	Difference
250	244	-6

1.5 Summary of Departmental Performance

In its 2004-2005 Report on Plans and Priorities, the TSB identified four priorities. All were described as strategic investments aimed at finding ways to enhance the TSB's relevance, its contribution to advancing transportation safety in Canada and internationally, and its strength from within. The first two priorities – Improving Service Delivery and Improving Communications – were directly linked to external products, while the other two – Sustainable Human Resources, and Information and Technology Management – were more internally focussed.

Overall, substantial progress was achieved against all priorities. However, not all objectives were fully achieved, primarily due to our limited human resources capacity. On many occasions throughout the year, managers were faced with the difficult choice of reallocating people from one project or investigation to another. Despite the challenges, positive results have been achieved and lessons have been learned with respect to project planning and resource allocation. Table 2 provides a quick overview of the results achieved this year.

Table 2: TSB Score Card

Strategic Outcome	Advance transportation safety, thereby reducing risks to people, property and the environment			
Priorities / Commitments	**Type**	**Planned Spending ($000)**	**Actual Spending ($000)**	**Current Status**
1) Improving Service Delivery	Ongoing	2,008	1,850	Successfully met
2) Improving Communications	New	156	94	Successfully met
3) Sustainable Human Resources	New	272	140	Not yet fully met
4) Information and Technology Management	Ongoing	1,097	1,183	Not yet fully met
5) Ongoing Activities	Ongoing	30,191	32,282	Successfully met

1.5.1 Improving Service Delivery

The TSB sought and obtained special incremental funding in 2003-2004 and 2004-2005 to address its perennial problem of a backlog of investigations in progress. Specific commitments were made to reduce the number of investigations in progress and to improve the average time in process. Excellent results have been achieved on both commitments. For example, the number of

investigations in progress decreased from 142 at the start of the fiscal year to a year-end total of 99. The average time to complete an investigation, from the time of the accident to publication of the official report, decreased to 619 days in 2004-2005 from 684 days in the previous year. A further decrease in the average time is expected in future, now that the backlog of old reports has been significantly reduced. Investments were made in investigator training workshops in order to improve their efficiency and effectiveness. TSB Manuals of Investigation were reviewed and updated. Section 2.9 provides more details on the results achieved against this priority.

1.5.2 Improving Communications

In 2004-2005, the TSB implemented its new corporate communications plan. A proactive public outreach program was also successfully implemented, providing opportunities for the Members of the Board, the Executive Director and other senior personnel to meet with various groups and discuss key safety messages. Progress was also made on publishing more reports and safety information on the TSB website. From an internal perspective, improvements were made to vertical and horizontal communications through the involvement of employees and managers in various working groups, as well as the publication of internal newsletters and communiqués. Sections 2.4 and 2.9 provide more details on the results achieved against this priority.

1.5.3 Sustainable Human Resources

Work continues to ensure that human resources are managed in a strategic and sustainable manner. Work has progressed on the review and modernization of our human resources management frameworks, and a number of new policies have been implemented. New tools to assist managers are being developed but have yet to be fully implemented. Although some training has been provided to employees and managers, more efforts are required in this regard. However, to date, the TSB has met all its obligations with respect to the implementation of the *Public Service Modernization Act*; all mandatory activities have been completed on time. Section 3.4 provides more details on the results achieved against this priority.

1.5.4 Information and Technology Management

New information management policies and guidelines were developed and implemented. Training sessions were provided to all staff across the country. New function-based corporate file plans were developed. Significant progress has been made on the development of the Transportation Investigation

Information Management System (TIIMS) despite difficulties encountered along the way that led to delays in piloting and implementation of system modules. Section 2.9 provides more details on the results achieved against this priority.

1.5.5 Ongoing Activities

In 2004-2005, the TSB succeeded in delivering the expected results from its ongoing activities. The number of new investigations started was maintained compared with previous years, and process improvements were implemented to ensure a timely completion of investigation reports. The ongoing dialogue was maintained with industry and key stakeholders. Strategic investments continued to be made in order to maintain the competencies of staff and the required technical infrastructure. Additional management improvement initiatives were also implemented, including the introduction of a new internal governance structure.

Obviously, the TSB cannot claim that the general reduction in transportation occurrences is solely related to its work. The safety and the security of the transportation system are a shared responsibility. The TSB works with governments, transportation industries, agencies, associations and international organizations to improve the system. It also collaborates with other government departments and agencies whose programs and services may be affected by transportation activities. It is virtually impossible to accurately measure the impact of the TSB on transportation safety. However, the TSB has certainly been successful in achieving its strategic outcome over the past year, as evidenced by the numerous safety actions taken by change agents within the transportation sector using the TSB's findings and outputs. These results are described in detail in section 2. Therefore, it can be asserted that the TSB is fulfilling its obligations within the Canadian transportation safety mosaic in a highly competent and professional manner.

Section 2: Detailed Analysis of Performance

2.1 Performance Management Framework

The TSB has developed and implemented an integrated performance management framework. This framework consists of five key documents. The five-year TSB Strategic Plan is used to set the strategic directions. The annual Business Plan is then used to set the short-term priorities and to guide the activities and resource allocation decisions for the coming year. The Report on Plans and Priorities, based on the Business Plan, defines the commitments to Parliament and Canadians. The Balanced Score Card defines specific performance indicators and is used by management to measure and monitor progress. Finally, the Departmental Performance Report closes the accountability loop by reporting to Parliament on the results achieved.

This has been a transition year for the TSB in terms of performance management, as we undertook to adapt our performance management framework in order to align it with the new Program Activity Architecture. This Departmental Performance Report is therefore based in part upon the new accountability structure. Detailed performance information is presented for each key service area of our main program activity.

2.1.1 Plans and Priorities Commitments

In its 2004-2005 Report on Plans and Priorities, the TSB defined one strategic outcome and a number of performance indicators. The following logic model identifies the linkages between the activities of the TSB and the achievement of its strategic outcome. The logic model is a road map showing the chain of results connecting resources and activities to outputs and to expected intermediate and final outcomes.

Table 3: TSB Logic Model
Strategic Outcome
Advance transportation safety, thereby reducing risks to people, property and the environment
Intermediate Outcomes
• Increased and justified public confidence in the safety of the transportation system • Timely implementation of appropriate safety actions • Increased awareness of safety issues and a strengthened safety culture on the part of government, industry and the public • Increased level of safety through the reduction of risks • Effective organizational performance

<table>
<tr><th colspan="4">Table 3: TSB Logic Model</th></tr>
<tr><td colspan="4">Immediate Outcomes</td></tr>
<tr><td colspan="4">• Identification and communication of safety deficiencies
• Safety actions taken by stakeholders
• Responses to safety recommendations
• Media pick-up and dissemination of safety messages</td></tr>
<tr><td colspan="4">Plans and Priorities</td></tr>
<tr><td colspan="4">• Improving service delivery
• Improving communications
• Sustainable human resources
• Information and technology management</td></tr>
<tr><td colspan="4">Activities, Outputs and Resources</td></tr>
<tr><td>Activities</td><td>Key Service Areas</td><td>Outputs</td><td>Actual Spending</td></tr>
<tr><td>Safety Investigations</td><td>• Marine
• Pipeline
• Rail
• Air</td><td>• Safety recommendations
• Safety advisories and information letters
• Investigation reports
• Statistical reports</td><td>$28.3 million and 189 full-time equivalents</td></tr>
<tr><td>Corporate Services</td><td></td><td>• Financial services
• Human resource services
• Information management services
• Informatics services</td><td>$7.3 million and 55 full-time equivalents</td></tr>
</table>

2.1.2 Measurement Methodology

The TSB has introduced a balanced score card, which will now be the main tool used to measure organizational performance. This score card tracks performance along four major perspectives: financial, client/stakeholder, internal business process, and learning and growth. Fiscal year 2004-2005 is the first year in which the TSB has used this tool. It is therefore expected that refinements will be required in future years to ensure that the balanced score card is fully tailored to the TSB's needs and that it provides a comprehensive performance picture. Adjustments may also be required to ensure proper alignment with the Treasury Board's new Management, Resources and Results Structure Policy.

Various methods are used to identify and capture performance information. Most of the data used in the analysis came from TSB information systems, supplemented by Transport Canada information where appropriate. Anecdotal evidence that illustrates the performance assessment was obtained from various

sources, such as stakeholder feedback, magazine articles, press clippings and individual testimonials. Where sources of information external to the TSB are used, they are identified.

As noted, some of the performance indicators are being used for the first time. Only very limited analysis of these measures can therefore be done at this time, given that only baseline data are currently available.

Proper care and attention to data quality and limitations were ensured throughout the production of this report. This report presents an accurate picture of the state of TSB business and affairs on March 31, 2005. The financial statements have been audited by the Auditor General of Canada, and her audit report is included in Appendix C. Other performance information is not currently subjected to an independent review or validation process.

2.2 Transportation Occurrences

In 2004, a total of 1,935 accidents and 1,476 incidents were reported in accordance with the TSB's regulations for mandatory reporting of occurrences.[1] The number of accidents in 2004 decreased by 2% from both the 1,973 accidents reported in 2003 and the 1999-2003 annual average of 1,978 accidents. The 1,476 reportable incidents in 2004 was up from the 1,390 reported in 2003 and the 1999-2003 average of 1,361. There were also 679 voluntary incident reports. Fatalities totalled 185 in 2004, up from 172 in 2003 but down from the 1999-2003 average of 202.

1. While the TSB's operations are for the 2004-2005 fiscal year, occurrence statistics are for the 2004 calendar year. Comparisons are generally to the last 5 or 10 years.

Figure 1: Occurrences Reported to the TSB

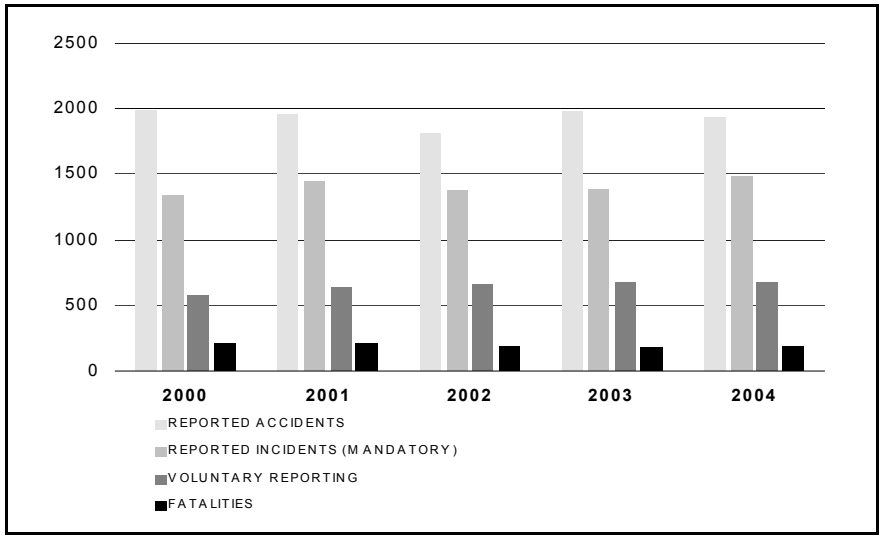


Table 4 presents data on accident rates by mode for the current year, as well as the five-year average. Keeping in mind that each has its own inherent limitations, these aggregate measures of activity provide a general point of reference on transportation safety. Overall, Canada continued to maintain a good safety record in 2004. The 2004 accident rates, per activity level for all modes, reflect a downward trend from the five-year average.

Table 4: Accident Rates in Transportation – 2004 Versus Previous Five-Year Average (1999-2003)

	Marine[1]	Pipeline[2]	Rail[3]	Air[4]
Accidents				
2004	3	0.5	2.8	6.5
2003	2.8	1.6	2.7	7.5
Five-Year Average	3.1	1.7	2.8	7.6

1 Canadian-flag shipping accidents for vessels of 15 grt 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 miles.
4 Canadian-registered aircraft accidents (excluding ultralights, gliders, balloons and gyrocopters) per 100,000 hours.

Reported accidents and incidents also provide indicators of the transportation system's safety performance and help focus efforts on those initiatives and activities that have high safety benefits. Table 5 presents the statistics on

transportation occurrences by mode, including comparisons with the five-year average. Taking into account the level of activity in each mode, the accident rates for 2004 continue to exhibit a general downward trend. Another indicator of the safety performance of the transportation system is the number of fatalities. In 2004, the air, marine and rail modes showed a decrease in fatalities from 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 5: Transportation Occurrences by Mode – 2004 Versus Previous Five-Year Average (1999-2003)

	Marine	Pipeline	Rail	Air
Accidents				
2004	491	7	1,129	308
2003	547	21	1,032	373
Five-Year Average	536	21	1,054	367
Fatalities				
2004	28	0	100	57
2003	17	0	79	76
Five-Year Average	28	0	94	81
Incidents				
2004	246	70	251	909
2003	223	38	295	834
Five-Year Average	218	36	317	795

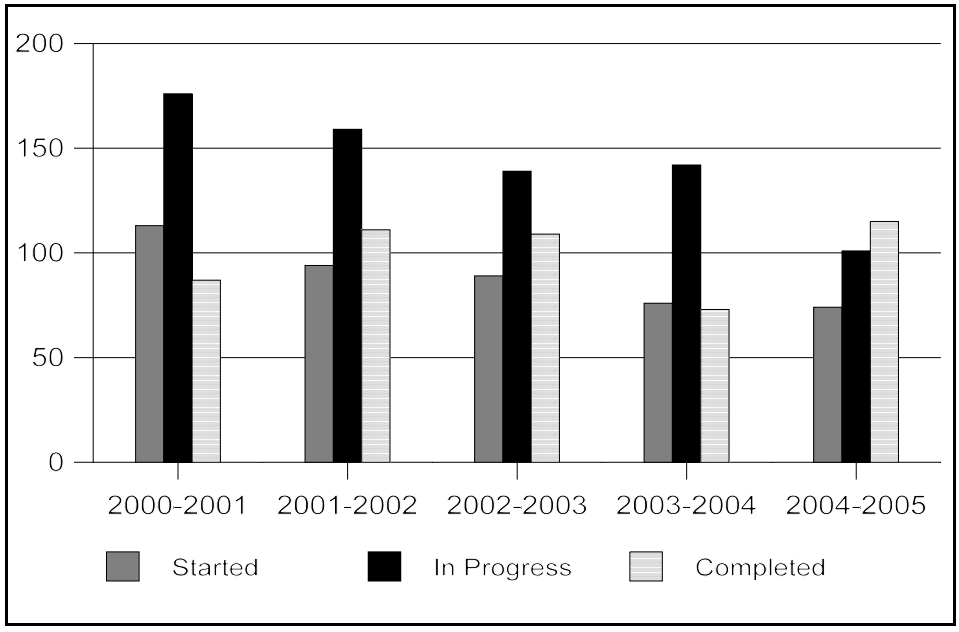
Despite fluctuations in the number of accidents and incidents reported on an annual basis, the trend over the past 10 years shows a progressive decline in accident rates in all modes (see the graphs in subsections 2.5 to 2.8). These reductions cannot be directly attributed to the efforts of any specific organization. Improvements in transportation safety are the result of the combined efforts of many participants including manufacturers, carriers, crews and regulators, as well as the TSB.

More comprehensive information is available on the TSB website at **www.tsb.gc.ca/en/stats/index.asp** or in Chapter 4 of the *Transportation in Canada 2004: Annual Report* published by Transport Canada. That publication is available at **www.tc.gc.ca/pol/en/anre/transportation_annual_report.htm**.

2.3 Investigations and Safety Action

All reported occurrences were assessed in accordance with the Board's Occurrence Classification Policy to identify those with the greatest potential for advancing transportation safety. Information on all reported occurrences was entered into the TSB database for historical record, trend analysis and safety deficiency validation purposes. In-depth investigations were undertaken for 74 of the approximately 4,000 occurrences reported to the TSB in fiscal year 2004-2005. In that same period, 115 investigations were completed, compared with 73 in the previous year.[2] The number of investigations in progress decreased to 99 at the end of the fiscal year from 142 at the start. The average time to complete an investigation decreased to 619 days in fiscal year 2004-2005 from 684 days in the previous year (see Table 6 for details).

Figure 2: Investigations Started / In Progress / Completed



Significant progress was made on reducing the backlog of very old investigation cases. Of the 99 investigations in progress at year-end, only 6 were more than two years old, representing a significant improvement over previous years. These results are directly attributable to the allocation of incremental investigation resources in order to focus efforts on the completion of complex investigations that were more than two years old and on a number of other

2. Investigations are considered complete after the final report has been issued.

initiatives aimed at improving performance over the longer term. These efforts should translate into measurable productivity gains in future years. More details on the improvement results achieved to March 31, 2005 are available in section 2.9.1 of this report.

Table 6: TSB Productivity

	Marine		Rail		Pipeline		Air		Total	
	2003-2004	2004-2005	2003-2004	2004-2005	2003-2004	2004-2005	2003-2004	2004-2005	2003-2004	2004-2005
Investigations started	14	16	14	14	0	0	47	44	75	74
Investigations completed	18	21	15	25	0	2	40	67	73	115
Average duration of completed investigations (number of days)	953	881	894	618	0	1,081	485	524	684	619

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.

In general, the TSB has been successful in identifying safety failures and in reducing risks in the transportation systems. TSB investigations result in reports identifying safety failures and, where appropriate, containing recommendations to reduce risks. Over this past year, in all cases where the TSB undertook an investigation, safety failures or factors contributing to the occurrence 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 2004-2005, in addition to investigation reports, the TSB issued a total of 59 safety outputs: 11 safety recommendations, 24 safety advisories and 24 safety information letters (see Table 7 for a breakdown by mode).

Table 7: Safety Outputs by the TSB			
	Recommendations	Safety Advisories	Safety Information Letters
Marine	4	9	8
Pipeline	0	0	0
Rail	3	6	10
Air	4	9	6
Total	11	24	24

Note: A total of six Safety Concerns were identified for Marine in 2004-2005.
A total of five Safety Concerns were identified for Pipeline in 2004-2005.
A total of four Safety Concerns were identified for Rail in 2004-2005.
A total of five Safety Concerns were identified for Air in 2004-2005.

These outputs led to concrete actions by other organizations that directly improved safety and/or reduced risks. For example, Transport Canada has targeted safety inspections, issued bulletins to inform industry about specific safety concerns, and introduced changes to safety regulations and procedures. Similarly, industry has reacted to the TSB's work by undertaking numerous safety actions, such as changes in operating practices and procedures, preventive modifications to equipment, replacement of parts, and the modification of training programs. Sections 2.5 to 2.8 provide specific examples of such safety actions that were taken for each mode during 2004-2005.

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 importance. Operators will often take immediate remedial action after discussion with TSB investigators (e.g. to clear the line of sight 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 TSB recommendations 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.

In 2004-2005, the TSB received responses to 18 safety recommendations. The Board assessed 3 responses as "fully satisfactory," 7 as having a "satisfactory intent" to address safety deficiencies identified in the recommendations, and 4 as "satisfactory in part." Further, 4 responses were assessed as "unsatisfactory." The results of this assessment process are shown in Table 8.

The Board has recently approved the posting on the TSB website of its initial assessment of the responses to all new safety recommendations. This new measure will be implemented during the 2005-2006 fiscal year and will provide the public with an indication of the safety actions taken in response to the TSB's recommendations.

Table 8: Board Assessment of Responses to Recommendations

2004-2005 (Year response received)	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	0	4	3	4	0	11
Pipeline	0	0	0	0	0	0
Rail	2	2	1	0	0	5
Air	1	1	0	0	2	4
Total	3	7	4	4	2	20

In 2004-2005, the TSB undertook a comprehensive reassessment of responses to all recommendations issued since its creation in 1990. All safety recommendations were reviewed. A number of them were categorized as inactive by the Board, requiring no further follow-up either because the safety deficiency has been rectified or because the residual risk is relatively low. The detailed reassessment of all active recommendations was completed by TSB staff, and the results were presented to the Board for further consideration. The Board has also approved the re-establishment of an annual reassessment process to ensure that structured follow-up is done on all outstanding recommendations in future. This process will provide a longer-term view of the results achieved from the TSB's safety recommendations.

2.4 Liaison, Cooperation and Knowledge Transfer

The TSB continues to promote awareness of safety issues and of a safety culture among transportation stakeholders. Every opportunity is taken to reiterate key messages and create awareness of safety issues. In 2004-2005, the TSB published 115 investigation reports, as well as monthly and annual statistical reports. Two issues of the *Reflexions* safety digest were published during fiscal

year 2004-2005. These digests contribute to the advancement of transportation safety by reflecting on the safety lessons learned from accident and incident investigations. They also provide an effective tool to disseminate the results of safety investigations to a broad audience.

The TSB maintains a proactive approach to the dissemination of information. Information is made readily available to industry, next-of-kin, the media and the public throughout the investigation process. Investigative staff are encouraged to maintain a dialogue with key stakeholders, including the early communication of safety issues that arise during the investigation. In an effort to satisfy both the public and the media's expectation for up-to-date, factual information, the TSB responded to 1,289 information requests received through its website and 528 media calls during the year, not including those inquiries handled at the scene of an accident or at a report release news conference. The TSB held six news conferences and issued 38 news releases. The TSB's Macro-analysis Division responded to 602 requests for complex transportation occurrence database information.

The TSB uses its website to increase awareness of safety issues and other transportation safety information. The site (**www.tsb.gc.ca**) received an average of more than 51,000 daily hits and 2,300 daily visits, a 24% increase in daily visits over the previous year. The visitors are Canadians and people from all around the world. The increased traffic on the site can be attributed to the ease of access and the expanded volume of information made available. The site has proven to be a cost-effective and timely way of disseminating information.

TSB library staff participated in the formation of the Canadian Transportation Research Gateway, a collection of Internet resources on transportation research in Canada. The Gateway was formed through a collaboration of the libraries of the Canadian Transportation Agency, Transport Canada, the Transportation Development Centre, the Transportation Association of Canada and the TSB.

Marine staff continued to participate on various International Maritime Organization (IMO) committees and subcommittees, and particularly in the Human Element and Casualty Analysis working groups and correspondence groups. The TSB has contributed to the identification and validation of marine safety issues for IMO committees and assisted in the development and subsequent amendments of the IMO Code for the investigation of marine casualties and incidents. The TSB is a founding member of the Marine Accident Investigators' International Forum and this year made presentations at the meeting in South Africa. Marine staff were again requested to present a marine accident investigation course, sponsored by the IMO and held at the International Maritime Academy in Trieste, Italy. A monthly column about noteworthy Canadian marine investigations is prepared for the *Marine Engineers Review*, a noted United Kingdom publication. Informatics hosted a site for the Marine

Accident Investigators' International Forum, where they posted the results of a survey on the implementation of the IMO Code for the investigation of marine casualties and incidents.

Given the high number of fishing accidents reported to the TSB (approximately half of the shipping accidents reported involve fishing vessels), the TSB is also involved in an initiative to promote a safety culture in the west coast marine community, particularly among operators of small vessels and fishing vessels. The Inter-Agency Marine Action Group brings together agencies from both the federal and provincial governments and industry, and provides an opportunity to collaborate to promote safety awareness, provide safety education and foster safe operating practices. The objective is to effect behavioural change within the marine community and thereby reduce the incidence of marine-related accidents and fatalities. During 2004-2005, a dozen presentations were made to the regional fishing community and various safety promotional materials were distributed. Particular efforts were made to translate, publish and distribute safety information cards in Vietnamese to more effectively communicate with a large segment of the regional marine community in their mother tongue.

Air staff completed its support to the Gabinete de Prevenção e Investigação de Acidentes com Aeronaves, the accident investigation authority of Portugal, in its release of the final investigation report on the 2001 Air Transat accident in the Azores. Air staff also attended the 2004 International Society of Air Safety Investigators Conference and presented a discussion paper on the theme "Investigate, Communicate, Educate: Are We Doing Things Right?" The TSB participated as part of the Canadian delegation at the International Civil Aviation Organization (ICAO) 35th Assembly. It consulted with the Director General of the Swedish Board of Accident Investigation on the fundamentals of national legislation for accident investigation authorities. The TSB briefed the Republic of Congo Civil Aviation Administration delegation on Canada's approach to accident safety investigation. It participated in the Flight Safety Foundation International Safety Symposium and held meetings with France's Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation Civile on international investigations and inter-agency procedures. The TSB also participated in the 21st meeting of the Group of Experts on Accident Investigation of the European Civil Aviation Conference. Air Branch investigators continued to represent the TSB as accredited representatives in numerous foreign accident investigations involving Canadian-manufactured, designed or certified products, or when Canadian passengers had been exposed to risk.

Engineering staff participated in the Accident Investigation Recorders Working Group held in Washington in June 2004, the Recorders Analysis and Playback System Users Conference in Ottawa in June 2004, and the Flight Data Recorder Parameter Working Group. A TSB staff member has been designated the Canadian representative for the ICAO Flight Recorder Panel. Engineering staff

examined aircraft instruments for investigations carried out by Zimbabwe and Japan. Staff also attended engine tear-down at Pratt & Whitney as an accredited representative for Italy and helped the U.S. National Transportation Safety Board in failure analysis.

Rail staff made a presentation on organizational and cultural impacts on safety at the International Rail Safety Conference in Perth, Australia. Staff also attended the International Pipeline Conference in Calgary. At both the Perth and Calgary events, attendees came from a wide range of countries. Formal meetings were held with the South African rail regulator in Ottawa and with the new British Rail Accident Investigation Branch of the Department of Transport, the British rail regulator, and the Health and Safety Executive. These discussions were wide-ranging, covering regulatory and investigative philosophies and processes, as well as issues related to operational approaches to investigation. Finally, the TSB established a link to a new Internet domain for the International Rail Safety Conference. This will make the majority of papers that have been presented at the conference over the years available to a wider audience.

Pipeline staff held formal and informal discussions with regulatory, industry and investigative bodies at an international conference with their counterparts from South America, Asia and North America. The Manager of Pipeline has been corresponding with his counterpart in Brazil, providing details on the regulatory and investigative regime in Canada.

Human Performance staff participated in human factors working groups at international transportation meetings, including IMO meetings in London and ICAO meetings in Montréal. They attended the ICAO Threat and Error Management Symposium in Seattle and the Associated Professional Sleep Societies Conference in Philadelphia. Human Performance staff also delivered the Human Factors in Investigations course to external participants, including provincial and federal investigative and regulatory bodies (Department of National Defence, National Energy Board, Transport Canada – Rail, and Workers' Compensation Board of British Columbia), industry (Air Line Pilots Association, Canadian Pacific Railway, Quebec North Shore and Labrador Railway Company) and academia (University of British Columbia).

Macro-analysis staff participated in the ICAO's Safety Indicators Study Group. The Macro-analysis Division also provided statistical reports to international agencies and industries.

Although it is difficult to measure the results of TSB activity in this area, tangible signs point toward a certain degree of effectiveness in achieving the desired outcome. For instance, the demand for TSB safety information continues to increase year after year. 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.

2.5 Marine Sector

2.5.1 Annual Statistics

In 2004, 491 marine accidents were reported to the TSB in 2004, a decrease of 10% from the 2003 total of 547 and of 8% from the 1999-2003 average of 536. Marine fatalities totalled 28 in 2004, up from 17 in 2003 but equal to the 1999-2003 average.

Shipping accidents, which comprised 90% of marine accidents, reached a 29-year low of 441 in 2004, down from 481 in 2003 and the five-year average of 475. 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 50 in 2004, a 24% decrease from the 2003 total of 66 and an 18% decrease from the five-year average of 61.

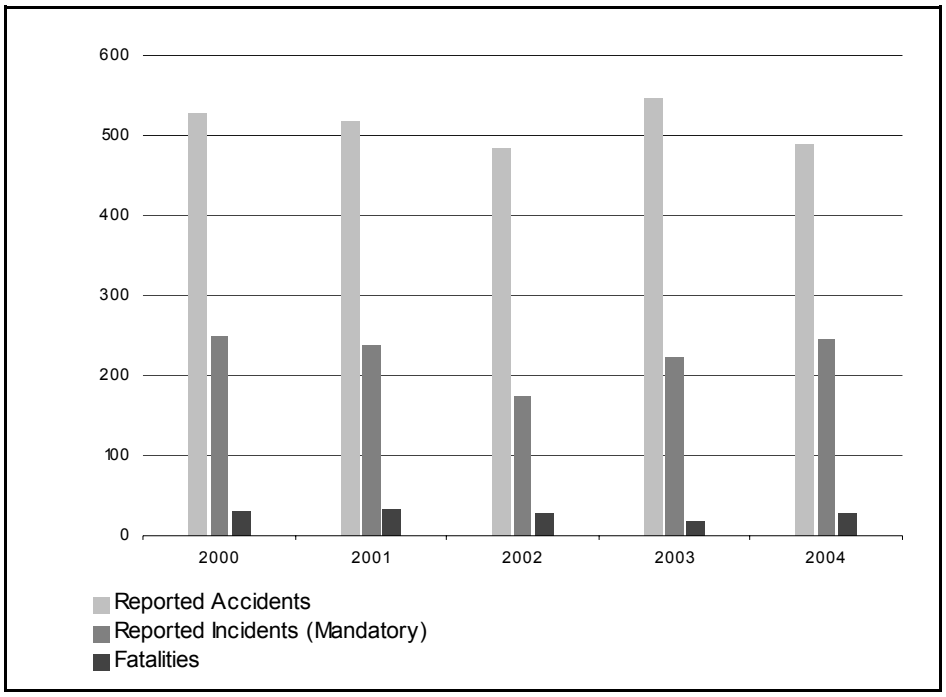
Marine activity for Canadian commercial non-fishing vessels increased by 8% from the 1999-2003 average, resulting in a 3% decrease in the accident rate from 3.1 to 3.0 accidents per 1,000 movements. Although marine activity for foreign commercial non-fishing vessels remained relatively unchanged compared to the 1999-2003 average, accidents decreased, yielding a 26% reduction in the accident rate from 1.9 to 1.4 accidents per 1,000 movements.

In 2004, shipping accidents resulted in 22 fatalities, up from 9 in 2003 and the five-year average of 15. Accidents aboard ship resulted in 6 fatalities, down from 8 in 2003 and the five-year average of 13.

Twenty-one vessels were reported lost in 2004, down from 38 in 2003 and the five-year average of 41.

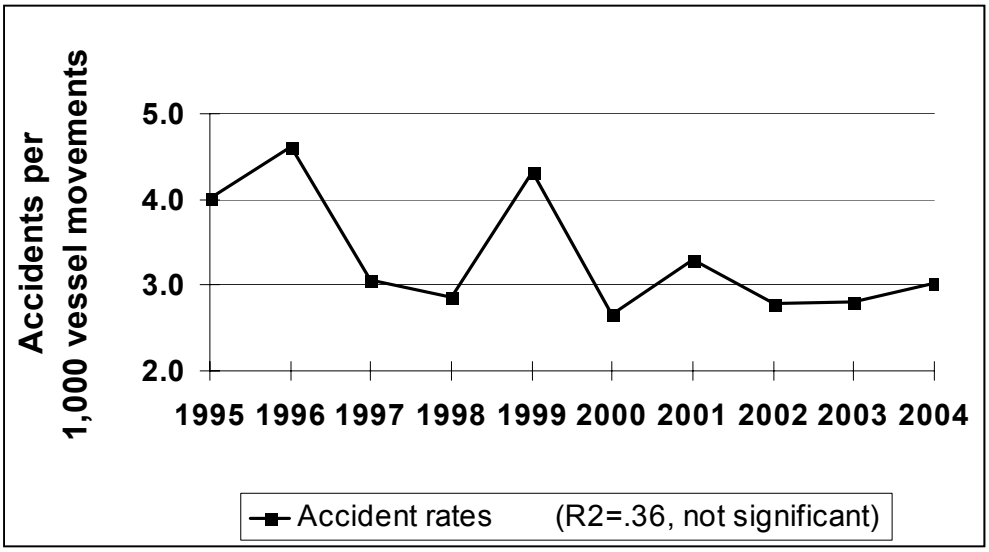
In 2004, 246 marine incidents were reported in accordance with TSB mandatory reporting requirements. This represents a 10% increase from the 2003 total of 223 and a 16% increase from the five-year average of 212. This increase consisted mainly of mechanical failures and close-quarters situations.

Figure 3: Marine Occurrences and Fatalities



One indicator of marine transportation safety in Canada is the Canadian-flag shipping accident rate. Although this accident rate has increased from 2.8 accidents per 1,000 movements in 2003 to 3.0 in 2004, there has been a decrease over the past 10 years. This downward trend, however, is not statistically significant.

Figure 4: Canadian-Flag Shipping Accident Rates



2.5.2 Investigations

Sixteen new marine investigations were started in 2004-2005 and 21 investigations were completed. This represents an increase in both the investigations started and completed during the past two years. The increase is directly linked to the allocation of incremental resources to help address the backlog of work in progress. The average duration of completed investigations dropped to 881 days compared to 953 the year before, but remained significantly higher than in previous years. This is attributable to the concentrated efforts made to complete older cases. It is expected that the average time in process will drop further in future years, once the caseload is more current. A complete list of all marine investigations started and all marine reports released in 2004-2005 is available on the TSB website (**www.tsb.gc.ca**).

Table 9: Marine Productivity

	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
Investigations started	23	16	13	14	16
Investigations completed	31	18	15	18	21
Average duration of completed investigations (number of days)	639	817	703	953	881
Recommendations	9	5	5	7	4
Safety advisories	6	12	7	6	9
Safety information letters	12	11	14	11	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.

One of the investigations completed this year, the sinking of the *Lady Duck* amphibious vehicle, required a much higher level of investment and effort than average. The *Lady Duck* took on water while on the Ottawa River during a combined land and waterborne tour. The vehicle sank rapidly by the bow in eight metres of water. Four of the 12 people on board were trapped inside the sinking vehicle and drowned. The investigation revealed that, amongst other things, the watertight integrity of the hull was compromised due to continuous leakage from the drive shaft bearing, shell plating fractures in way of the forward and after wheel wells, and where the front wheel steering linkage penetrated the hull. The TSB issued four safety recommendations as a result of this investigation (see section 2.5.4.1 for details).

2.5.3 Link to Resources Utilized

Table 10 provides a picture of the net cost to Canadians of marine investigations. Although net costs have increased slightly compared to the previous year, the average net cost per investigation completed has dropped. The numbers of investigations started and completed per investigator have both increased slightly compared to 2003-2004.

Table 10: Marine Resources

	2003-2004		2004-2005	
	FTE	$000	FTE	$000
Actual costs – Marine Branch	26	2,878	27	2,975
Internal professional and communication services costs	16	2,060	19	2,090
Corporate Services costs	10	1,324	14	1,315
Contributions to employee benefit plans		770		803
Services received without charge		681		748
Net cost of Marine investigations	**52**	**7,713**	**60**	**7,931**

Indicators	2003-2004	2004-2005
Number of Marine investigators	22	23
Average net cost per investigation completed	$428,500	$377,667
Investigations started per investigator	0.64	0.70
Investigations completed per investigator	0.82	0.91

2.5.4 Safety Actions Taken

Four new marine safety recommendations were issued in 2004-2005. To date, safety actions have been undertaken on three of these recommendations and an unsatisfactory response was received on the fourth one. The TSB has also completed an assessment of responses to marine recommendations issued in 2003-2004. The results of these assessments are contained in Appendix A.

2.5.4.1 Marine Recommendations Issued in 2004-2005

Ottawa River, Quebec – 23 June 2002 **Sinking and Loss of Life – Passenger Vehicle *Lady Duck***			**Report No. M02C0030**
Recommendation	**Response**	**Board Assessment of Response**	**Safety Action Taken**
M04-01 The Department of Transport take steps to ensure that small passenger vessel enterprises have a safety management system.	Transport Canada (TC) agrees with the intent of the recommendation. TC is reviewing the feasibility of implementing safety management systems for operators of Canadian domestic vessels and is supporting the voluntary adoption of such systems by domestic operators.	Satisfactory intent	The review is scheduled to be completed by mid-2005. If the results indicate that safety management systems are warranted and feasible for any given sector of the domestic marine industry, TC will, in consultation with industry, determine the best approach to effectively implement such regulatory requirements.
M04-02 The Department of Transport expedite the development of a regulatory framework that is easily understood and applicable to all small passenger vessels and their operation.	TC agrees with the intent of the recommendation. The new *Canada Shipping Act, 2001* and associated regulations are scheduled to come into force by the end of 2006. Several measures were taken by TC to facilitate the comprehension and application, by owners and operators, of small passenger vessel safety requirements; however, they had already been taken into consideration by the Board when its recommendation was issued.	Unsatisfactory	There is no indication that the development of a regulatory framework that is easily understood and applicable to all small passenger vessels and their operation will be expedited earlier than 2006.
M04-03 The Department of Transport ensure that small passenger vessels incorporate sufficient inherent buoyancy and/or other design features to permit safe, timely and unimpeded evacuation of passengers and crew in the event of an emergency.	TC agrees with the intent of the recommendation. TC commissioned a study on the design, construction and operation of the amphibious vehicles operating in Canada. TC will continue to promote and enforce existing requirements that aim to equip passengers and crew to respond quickly and effectively to emergencies.	Satisfactory intent	A February 2005 draft report of the study included 13 recommended ways to enhance the safety of amphibious vehicles. TC is examining the report and will share it with Canadian amphibious vessel operators to discuss and consider any future requirements.
M04-04 The National Search and Rescue Secretariat, in collaboration with local authorities and organizations, promote the establishment of a system to monitor distress calls and to effectively coordinate Search and Rescue responses to vessel emergency situations on the Ottawa River between Ottawa and Carillon.	NSS accepts and concurs with the recommendation. NSS will pursue meetings with the relevant authorities to implement the recommendation.	Satisfactory in part	A working group has been set up by NSS and meetings held with other authorities to review the monitoring of distress calls. However, the coordination of search and rescue has yet to be addressed.

2.5.4.2 Other Marine Safety Actions Taken

Canada submitted a paper entitled “Measures to Prevent Brittle Fracture in Ships” to the 48th Session of the International Maritime Organization Design and Equipment Sub-Committee. The paper brings attention to the risks to vessels constructed with steel of unqualified fracture toughness operating in cold water such as the North Atlantic and requests consideration of the development of a “goal-based” standard to ensure that steel vessels are constructed such that their side shells are of known toughness. The toughness of the steel would be adequate under all expected circumstances such that a reasonable damage tolerance could be predicted and relied upon.

The Canadian General Standards Board is considering an amendment to its current standard for a “Marine Abandonment Immersion Suit System” to emphasize, at the point of sale, that survivability depends upon the suit remaining watertight and that it must fit securely to prevent entry of water.

Transport Canada has indicated its intention to pursue an amendment to the *Life Saving Equipment Regulations* that all passenger vessels equipped with life rafts should have provision for such life rafts to float free in the event of a sinking.

Transport Canada and the St. Lawrence Seaway intend to establish a joint task force to address concerns associated with a number of incidents regarding tug and barge operations.

Transport Canada conducted visual inspections of the steering gears of two passenger hydrofoils, with a commitment to carry out further detailed inspections during the off-season.

Transport Canada will review with the owner of a passenger vessel the organization of the stowage area for adult and children life jackets to facilitate their distribution.

The owner of a small ro-ro ferry is looking at ways to better secure ferries to the dock when embarking and disembarking vehicles. Although not required by regulations to provide crowd control training, he has made preliminary arrangements with a nautical institute to do so, targeting on-board personnel.

Transport Canada intends to require persons who are assigned passenger safety-related duties on passenger and ro-ro passenger vessels (greater than 500 tons engaged in voyages beyond sheltered waters) to have successfully completed a training course in passenger ship safety management.

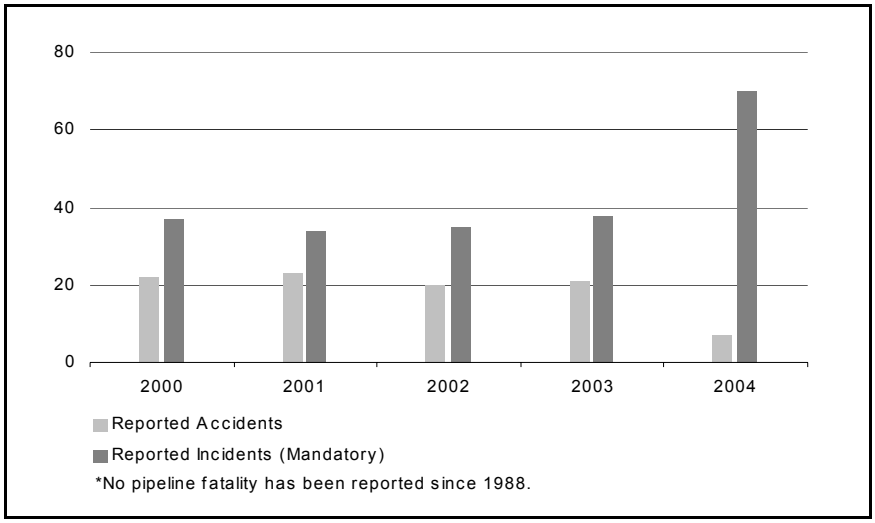
2.6 Pipeline Sector

2.6.1 Annual Statistics

Seven pipeline accidents were reported to the TSB in 2004, down from both the 2003 total and the 1999-2003 average of 21. All accidents in 2004 occurred at facilities such as pump stations, compressor stations and gas-processing plants. Pipeline activity is estimated to have increased by 4% over 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.

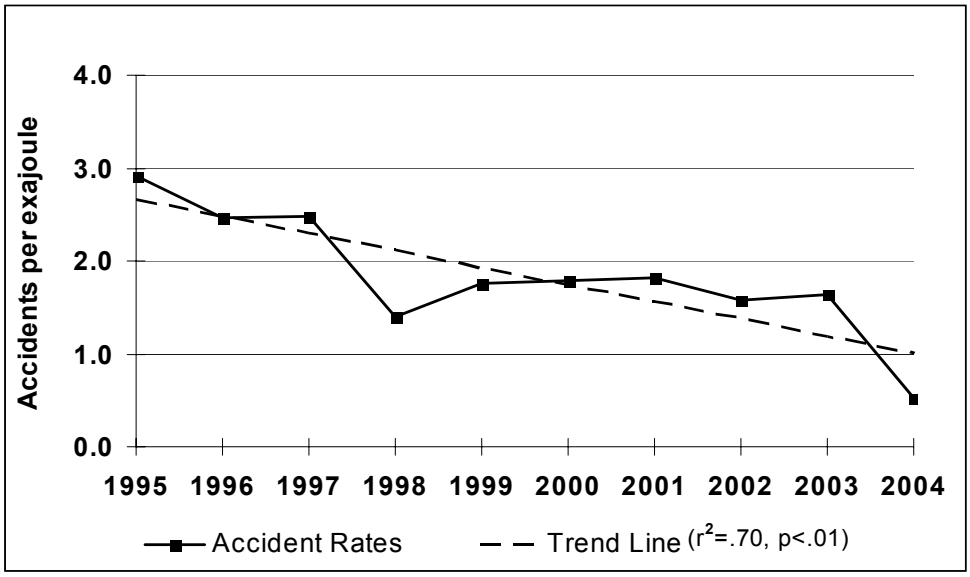
In 2004, 70 pipeline incidents were reported in accordance with TSB mandatory reporting requirements, up from 38 in 2003 and from the five-year average of 37. Eighty-one percent of those incidents involved uncontained or uncontrolled release of small quantities of gas, oil and high-vapour-pressure products.

Figure 5: Pipeline Occurrences



One indicator of pipeline transportation safety in Canada is the pipeline accident rate. This rate decreased to 0.5 pipeline accidents per exajoule in 2004, down from 1.64 in 2003 and the 1999-2003 average of 1.72. The trend line also indicates a clear downward direction.

Figure 6: Pipeline Accident Rates



2.6.2 Investigations

There were no new pipeline investigations started in 2004-2005 and two investigations were completed. These investigations led to the identification of multiple safety concerns. The average duration of completed investigations has increased to 1,081 days, compared to 410 in 2002-2003. This is attributable to the complexity of the investigations completed and to the fact that one of the two pipeline investigator positions was vacant for the full year. A complete list of all pipeline reports released in 2004-2005 is available on the TSB website (**www.tsb.gc.ca**).

Table 11: Pipeline Productivity

	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
Investigations started	3	1	2	0	0
Investigations completed	0	3	2	0	2
Average duration of completed investigations (number of days)	0	531	410	0	1,081
Recommendations	0	0	0	0	0
Safety advisories	0	2	0	0	0
Safety information letters	1	0	1	0	0

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.

2.6.3 Link to Resources Utilized

Table 12 provides a picture of the net cost to Canadians of pipeline investigations. The average cost per investigation completed is $264,000. No comparative cost data are available as no investigations were completed in 2003-2004.

Table 12: Pipeline Resources

	2003-2004		2004-2005	
	FTE	$000	FTE	$000
Actual costs – Pipeline Branch	2	229	1	198
Internal professional and communication services costs	2	164	1	139
Corporate Services costs	1	105	1	88
Contributions to employee benefit plans		61		53
Services received without charge		54		50
Net cost of Pipeline investigations	**5**	**613**	**3**	**528**

Indicators	2003-2004	2004-2005
Number of Pipeline investigators	2	1
Average net cost per investigation completed	$0	$264,000
Investigations started per investigator	0.00	2.00
Investigations completed per investigator	0.00	2.00

2.6.4 Safety Actions Taken

No new pipeline safety recommendations were issued in 2004-2005. However, five pipeline safety concerns were issued.

Safety actions continue to be taken by industry based upon TSB safety information. For instance, the TSB investigated further to an explosion at the East Hereford Compressor Station on the Gazoduc TQM Inc. pipeline system. The investigation revealed that the current Canadian standards regarding sealing requirements for cables do not address safety issues associated with sealing cable ends against continuous pressure buildup. This led to the creation of a working group to amend the *Canadian Electrical Code* to address safety issues associated with sealing cable ends against continuous pressure buildup.

2.7 Rail Sector

2.7.1 Annual Statistics

A total of 1,129 rail accidents were reported to the TSB in 2004, a 9% increase from last year's total of 1,032 and a 7% increase from the 1999-2003 average of 1,054. Rail activity has been relatively constant over the last six years, averaging 89.7 million train-miles annually. The accident rate increased to 12.5 accidents per million train-miles in 2004, compared to 11.5 in 2003 and the 1999-2003 average rate of 11.8. Rail-related fatalities totalled 100 in 2004, compared to 79 in 2003 and the five-year average of 94. This increase consisted mainly of trespasser fatalities, with 67 in 2004, up from 45 in 2003 and the five-year average of 53.

There was a significant increase in accidents in two areas. First, trespasser accidents showed a 52% increase over 2003, from 65 to 99, and a 27% increase over the five-year average of 78. Second, non-main-track derailments showed a 14% increase over 2003, from 389 to 444, and a 16% increase from the five-year average of 382.

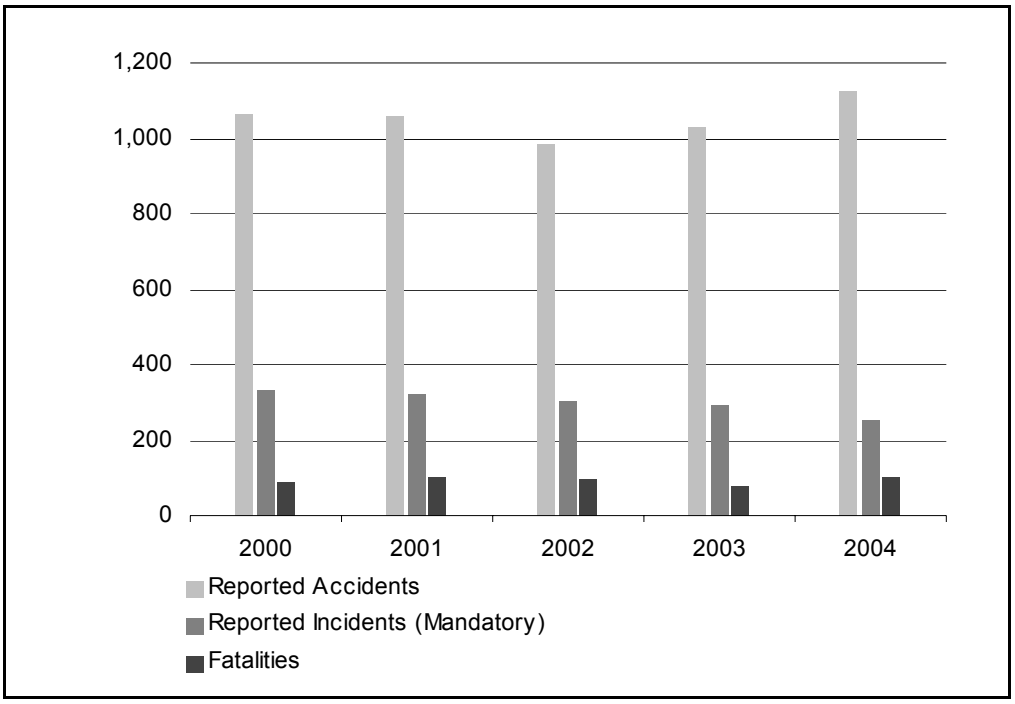
Five main-track collisions occurred in 2004, compared to six in 2003 and the five-year average of eight. In 2004, there were 152 main-track derailments, comparable to the 149 in 2003, but a 21% increase from the five-year average of 126. Non-main-track collisions numbered 114 in 2004, up from 104 in 2003 and the five-year average of 103.

In 2004, crossing accidents decreased to 237 from the 2003 total of 250 and the five-year average of 267. Crossing-related fatalities numbered 25, compared to 28 in 2003 and the five-year average of 37.

In 2004, 210 accidents involved railcars carrying or having recently carried dangerous goods, a 7% decrease from both the 2003 total and the five-year average of 225. Five of these accidents resulted in a release of product.

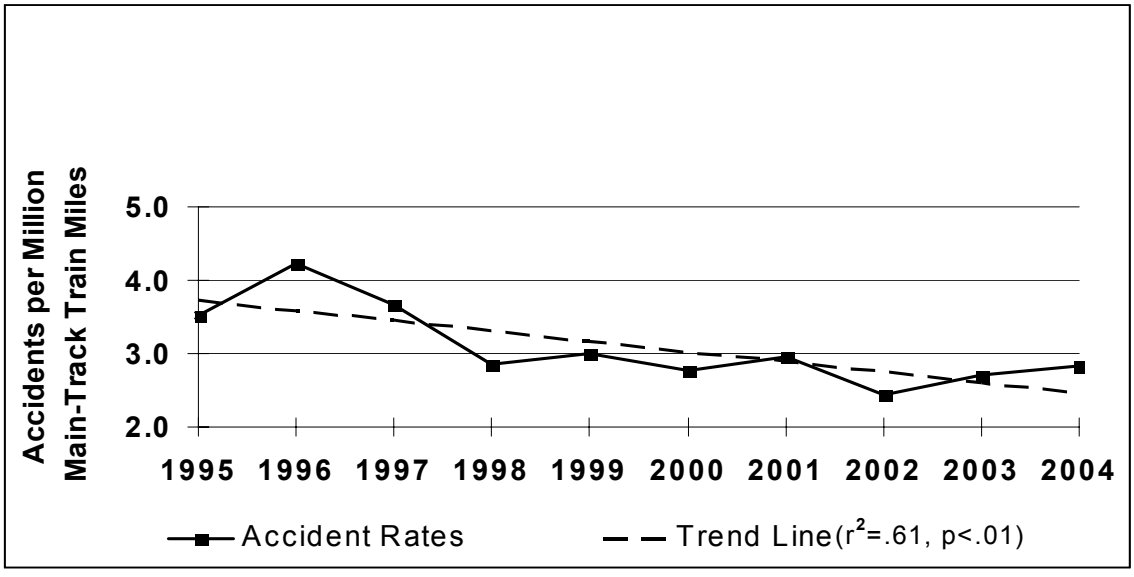
In 2004, rail incidents reported under TSB mandatory reporting requirements reached a 22-year low of 252, down from 295 in 2003 and from the five-year average of 317. Dangerous goods leakers not related to train accidents annually account for the largest proportion of total incidents. In 2004, dangerous goods leakers decreased to 132 from the 2003 total of 151 and from the five-year average of 173.

Figure 7: Rail Occurrences and Fatalities



One indicator of rail transportation safety in Canada is the Canadian railway main-track accident rate. Although this accident rate has increased slightly from 2.7 accidents per million main-track miles in 2003 to 2.8 in 2004, there has been a notable decrease over the past 10 years. The trend line also indicates a clear downward direction.

Figure 8: Canadian Railway Main-Track Accident Rates



2.7.2 Investigations

Fourteen new rail investigations were started in 2004-2005 and 25 investigations were completed. This represents a significant increase in the number of investigations completed compared to the previous year. The increase is directly linked to the allocation of incremental resources to help address the backlog of work in progress. The average duration of completed investigations dropped to 618 days compared to 894 the year before. This also represents a significant reduction in comparison to the past four years. The reduction is attributable to the concentrated efforts made to complete very old cases. A complete list of all rail investigations started and all rail reports released in 2004-2005 is available on the TSB website (**www.tsb.gc.ca**).

Table 13: Rail Productivity

	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
Investigations started	20	12	18	14	14
Investigations completed	10	16	22	15	25
Average duration of completed investigations (number of days)	843	708	755	894	618
Recommendations	8	4	5	4	3
Safety advisories	4	7	6	7	6
Safety information letters	2	8	9	11	10

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 14 provides a picture of the net cost to Canadians of rail investigations. The average cost per investigation completed has dropped considerably compared to the previous year, due primarily to the higher output produced with only a marginal increase in resources. The number of investigations started per investigator has remained relatively stable, whereas the number of investigations completed per investigator has increased significantly compared to 2003-2004.

Table 14: Rail Resources				
	2003-2004		2004-2005	
	FTE	$000	FTE	$000
Actual costs – Rail Branch	21	2,402	22	2,595
Internal professional and communication services costs	16	1,719	16	1,823
Corporate Services costs	10	1,105	11	1,147
Contributions to employee benefit plans		643		701
Services received without charge		568		652
Net cost of Rail investigations	**47**	**6,437**	**49**	**6,918**

Indicators	2003-2004	2004-2005
Number of Rail investigators	18	19
Average net cost per investigation completed	$429,133	$276,720
Investigations started per investigator	0.78	0.74
Investigations completed per investigator	0.83	1.32

2.7.4 Safety Actions Taken

The TSB issued three rail safety recommendations in 2004-2005. In all three cases, satisfactory intent or fully satisfactory responses have already been received from stakeholders (see section 2.7.4.1 for details).

The TSB has also completed an assessment of responses to rail recommendations issued in 2003-2004. The results of these assessments are contained in Appendix A.

2.7.4.1 Rail Recommendations Issued in 2004-2005

Napodogan Subdivision, New Brunswick – 6 October 2001 Crossing Accident – Canadian National			**Report No. R01M0061**
Recommendation	**Response**	**Board Assessment of Response**	**Safety Action Taken**
R04-01 Transport Canada encourage the railway companies to implement technologies and/or methods of train control to assure that in-train forces generated during emergency braking are consistent with safe train operation.	Transport Canada accepted the Board's recommendation. TC encouraged the railways to implement new technologies that contribute to safer train operations.	Fully satisfactory	The railway industry is equipping fleets of locomotives and tail-end devices with the new technology.

Recommendation	Response	Board Assessment of Response	Safety Action Taken
R04-02 The Department of Transport, in consultation with the provinces and the trucking industry, review and update, as necessary, educational and training material for drivers with respect to the risks associated with a heavy vehicle negotiating a public passive railway crossing.	Transport Canada agrees with the Board and raised the need to review this material with the Canadian Council of Motor Transport Administrators Standing Committee on Drivers and Vehicles. Reaction from the provinces has not yet come to fruition.	Satisfactory intent	Transport Canada, with the Railway Association of Canada, produced and distributed safety material, including videos, instructors' guides and safety quizzes, concerning safety at crossings for truck, bus and emergency drivers.
R04-03 The Department of Transport, in consultation with other federal, provincial and municipal agencies, implement consistent training requirements that ensure emergency first responders remain competent to respond to rail accidents involving dangerous goods.	Transport Canada shares the TSB's concern for the safety of emergency responders. TC sent a letter attaching the TSB's report to provincial and territorial representatives requesting review and consideration.	Fully satisfactory	Transport Canada has made progress on the issue with the responsible change agents. TC has already started receiving positive feedback to the letter.

2.7.4.2 Other Rail Safety Actions Taken

Subsequent to the derailment of a passenger train due to a broken rail, the TSB issued Rail Safety Advisory 02/04 to the regulator and the industry. The Advisory raised a concern over the use of vintage open hearth rail on main track where passenger trains operate and dangerous goods are carried. Open hearth process has a known propensity to form transverse defects in rail because of impurity inclusions in the steel. The Goderich-Exeter Railway Company advised Transport Canada that it had removed all open hearth rail from the jointed rail portion of the Guelph Subdivision.

Canadian Pacific Railway (CPR) modified its General Operating Instructions in an effort to improve situational awareness for locomotive engineers regarding hot box detectors (HBDs). Section 5, Item 21.2 requires the engineer to set the locomotive distance measuring device as soon as the train reaches the HBD location, and for the crew to verbally confirm with one another any HBD announcements received.

CPR, jointly with Canadian National (CN), has installed a track-side acoustic detector system on CN's Yale Subdivision (directional running zone). This device, the only one its kind in Canada, is being tested to determine whether this technology can identify defective bearings on a predictive basis before they fail or overheat.

CPR has updated its computer system to provide the correct axle count information for Meyler cars in Expressway service.

CPR implemented a bearing temperature trending process on its coal loop in British Columbia. By connecting the HBDs to a central system, CPR performs trending analysis to proactively set out cars with suspect bearings. CPR is reviewing the option of extending this bearing trending process to other locations.

As a result of the potential failure to protect or repair improperly identified track geometry defects, Transport Canada issued a Notice pursuant to section 31 of the *Railway Safety Act*. CN responded that the previously incorrectly identified defects had been protected or corrected, and that the company had initiated the following additional actions:

- All defect settings on the test car were audited to ensure compliance with *Railway Track Safety Rules* standards.
- A daily procedure was developed and implemented that requires test car operators to review and validate defect parameter settings and track class before testing operations.
- Since the derailment, two additional test car runs were scheduled over the Bala Subdivision. All defects identified during these tests were properly protected and corrected.
- Two additional inspections using contracted track geometry vehicles with gauge restraint technology were scheduled on the Bala Subdivision.

A derailment occurred (TSB report No. R03Q0022) when the car body on the E platform of loaded container car CN 677048 collapsed onto the main track due to fatigue at a high-stress location where a missing weld had gone undetected during inspection and repair practices. The TSB sent Rail Safety Advisory 03/03, *Inspection of CN 677 series Doublestack Intermodal Rail Cars*, to Transport Canada. CN issued instructions to all its field inspection forces to visually inspect all cars in the CN 677 series.

Subsequent to a derailment (TSB report No. R03D0042) of a freight train proceeding at 26 mph in a 10 mph zone, the St. Lawrence & Atlantic Railroad reduced train speeds to 10 mph in all urban areas it serves. The frequency of ongoing inspections by the internal rail defect detection cars and of track geometry testing has been increased to twice annually. Transport Canada conducted an audit of methods and evaluated the track condition in the

Sherbrooke Subdivision. TC also conducted train speed checks using radar in areas where speed limits are in effect.

Subsequent to TSB Occurrence No. R03T0080, CPR modified the software on all wayside detectors such that, while passing the detector, the alarm tone is immediately followed by a radio announcement identifying the nature of the defect (e.g. dragging equipment, hot box or hot wheel). CPR's General Operating Instructions involving train inspections and hot box detectors have been revised.

CPR completed a tie replacement program on the Belleville Subdivision.

2.8 Air Sector

2.8.1 Annual Statistics

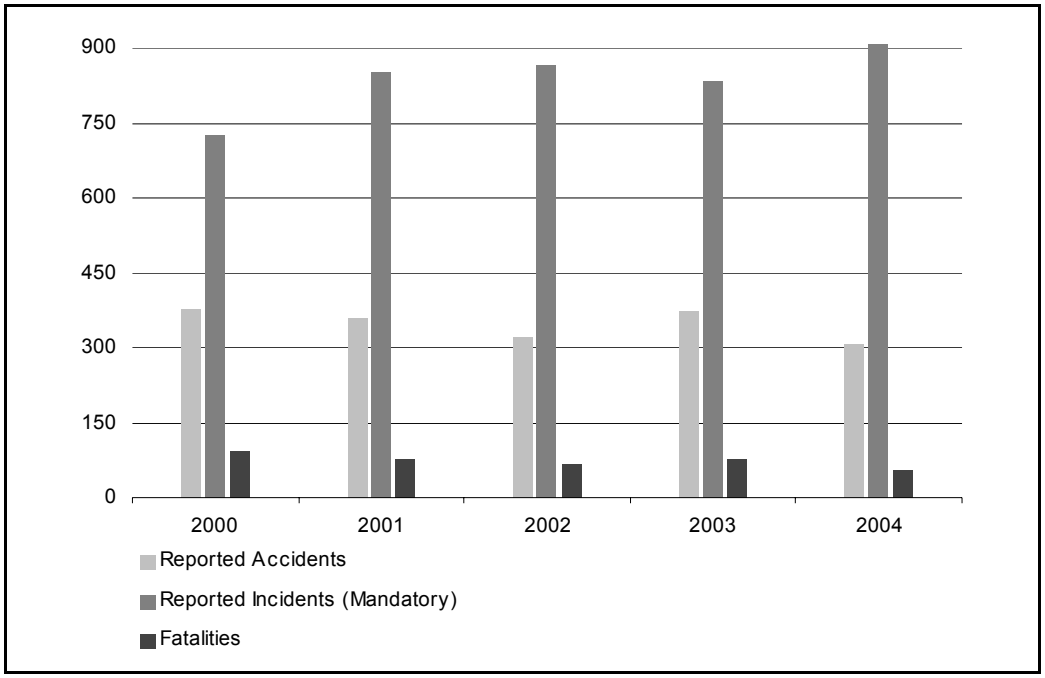
Canadian-registered aircraft, other than ultralights, were involved in 252 reported accidents in 2004, a 15% decrease from the 2003 figure of 295 and a 17% decrease from the 1999-2003 average of 305. The estimate of 2004 flying activity is 3,809,000 hours, yielding an accident rate of 6.6 accidents per 100,000 flying hours, down from the 2003 rate of 7.8 and the five-year rate of 7.9. Canadian-registered aircraft, other than ultralights, were involved in 24 fatal occurrences with 37 fatalities in 2004, fewer than the five-year average of 33 fatal occurrences with 60 fatalities. More than half of the fatal occurrences involved privately operated aircraft, and 4 of the remaining 9 fatal occurrences involved helicopters.

The number of accidents involving ultralights decreased to 36 in 2004 from 46 in 2003, and the number of fatal accidents decreased slightly to 6 in 2004 from 7 in 2003.

The number of foreign-registered aircraft involved in accidents in Canada decreased to 20 in 2004 from 30 in 2003. Fatal accidents also decreased to 3 with 10 fatalities in 2004 from 6 with 8 fatalities in 2003.

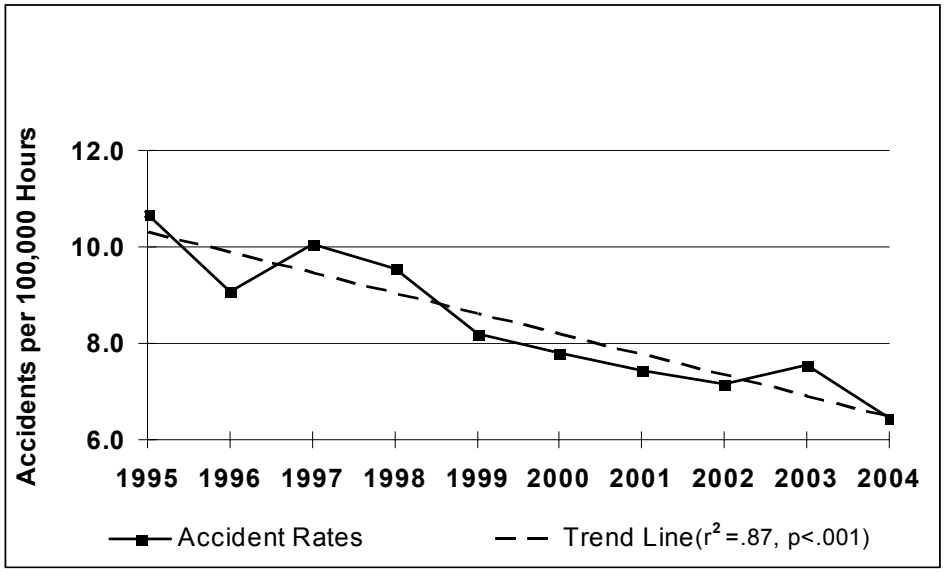
In 2004, a total of 907 incidents were reported in accordance with TSB mandatory reporting requirements. This represents a 9% increase from the 2003 total of 834 and a 14% increase from the 1999-2003 average of 795.

Figure 9: Air Occurrences and Fatalities



One indicator of air transportation safety in Canada is the accident rate for Canadian-registered aircraft. This rate has decreased from 7.5 accidents per 100,000 hours in 2003 to 6.5 in 2004. A similar decrease is also observed compared to the five-year average. The overall general trend line also indicates a clear downward direction over the past 10 years.

Figure 10: Canadian-Registered Aircraft Accident Rates



2.8.2 Investigations

A total of 44 new air investigations were started in 2004-2005 and 67 investigations were completed. This represents a significant increase in the number of investigations completed compared to the previous year, and an all-time low with respect to new investigations started. The increase in investigations completed is directly linked to the allocation of incremental resources to help address the backlog of work in progress. The average duration of completed investigations has increased to 524 days, compared to 485 the year before. This is attributable to the concentrated efforts made to complete older cases. A complete list of all air investigations started and all air reports released in 2004-2005 is available on the TSB website (**www.tsb.gc.ca**).

Table 15: Air Productivity

	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
Investigations started	69	65	56	47	44
Investigations completed	49	74	70	40	67
Average duration of completed investigations (number of days)	522	505	494	485	524
Recommendations	12	7	17	0	4
Safety advisories	11	14	13	9	9
Safety information letters	9	8	6	8	6

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.

This year, the TSB undertook a major investigation into the crash of an MK Airlines Boeing 747-244BC during takeoff from Runway 24 at Halifax, Nova Scotia. Considerable resources were required for this investigation, and the TSB sought incremental funding from Parliament through Supplementary Estimates. To date, more than $700,000 has been spent on this investigation. The initial phase of the investigation raised a concern about the accuracy of published runway slope information. The aerodrome information for Halifax was reviewed as part of the accident investigation, and it was discovered that the slope information for Runway 24 published in Canadian flight information publications is incorrect. Transport Canada subsequently issued a Notice of Proposed Amendment to the Canadian Aviation Regulation Advisory Council to strengthen and streamline the aerodrome data verification process as a result of advice contained in TSB Safety Advisory A040059.

2.8.3 Link to Resources Utilized

Table 16 provides a picture of the net cost to Canadians of air investigations. The average cost per investigation completed has dropped considerably compared to the previous year, due primarily to the higher output produced with virtually the same resource level. The number of investigations started per investigator has also dropped slightly, whereas the number of investigations completed per investigator has increased significantly compared to 2003-2004.

Table 16: Air Resources

	2003-2004		2004-2005	
	FTE	$000	FTE	$000
Actual costs – Air Branch	57	7,612	59	7,567
Internal professional and communication services costs	45	5,448	42	5,316
Corporate Services costs	27	3,501	30	3,345
Contributions to employee benefit plans		2,037		2,043
Services received without charge		1,801		1,902
Net cost of Air investigations	**129**	**20,399**	**131**	**20,173**

Indicators	2003-2004	2004-2005
Number of Air investigators	53	54
Average net cost per investigation completed	$509,975	$301,090
Investigations started per investigator	0.89	0.81
Investigations completed per investigator	0.75	1.24

2.8.4 Safety Actions Taken

Four new air safety recommendations were issued in 2004-2005. To date, safety actions have been undertaken on two of these recommendations and responses are pending on the other two.

2.8.4.1 Air Recommendations Issued in 2004-2005

Pelee Island, Ontario – 17 January 2004 **Collision with Terrain, Georgian Express**			**Occurrence No. A04H0001**
Recommendation	**Response**	**Board Assessment of Response**	**Safety Action Taken**
A04-01 The Department of Transport require that actual passenger weights be used for aircraft involved in commercial or air taxi operations with a capacity of nine passengers or fewer.	Transport Canada's response stated that current regulations make it clear that air operators are to ensure that their aircraft are flown within the limits of the weight and balance envelope and that the standards provide options that may be used but do not override the regulatory requirement to remain within the weight limits of the aircraft. TC continues to review the standards with a view to improving the direction provided. One option that is under consideration is the use of actual weights for all operations conducted under subpart 3 (Air Taxi Operations) of Part VII (Commercial Air Services) in the *Canadian Air Regulations*. Once TC's review, including a risk assessment, is complete, a Notice of Proposed Amendments (if required) will be developed and submitted to the Canadian Aviation Regulation Advisory Council for consultation.	Satisfactory intent	None
A04-02 The Department of Transport re-evaluate the standard weights for passengers and carry-on baggage and adjust them for all aircraft to reflect the current realities.	TC re-evaluated the standard weights for passengers and carry-on baggage and adjusted them for all aircraft to reflect the current realities. A *Commercial & Business Aviation Advisory Circular* (CBAAC 0235) and Policy Letter were issued in October 2004, and the *Aeronautical Information Publication* (A.I.P. Canada) published weights were amended on 20 January 2005. Operators whose approved weight and balance control program is based on the A.I.P. Canada weights will need to amend their programs to reflect these new weights.	Fully satisfactory	A *Commercial & Business Aviation Advisory Circular* (CBAAC 0235) and Policy Letter were issued in October, and the A.I.P. Canada published weights were amended on 20 January 2005.

Timmins, Ontario 40 nm W – 20 October 2002 **Engine Power Loss in Flight – Cathay Pacific Airways Airbus A340-300**			**Report No. A02P0261**
Recommendation	**Response**	**Board Assessment of Response**	**Safety Action Taken**
A04-03 The Direction Générale de l'Aviation Civile and the Federal Aviation Administration issue airworthiness directives to require the implementation of all CFM56-5 series jet engine service bulletins whose purpose is to incorporate software updates designed to ensure that, in the event of a permanent magnet alternator failure, the electronic control unit will revert to aircraft power.	In a letter received on 2 March 2005, the Federal Aviation Administration (FAA) aknowledges receipt of the recommendation and advises that it has been forwarded to the appropriate office for staffing. The letter advises that the TSB will be informed of the resolution of the TSB recommendation. The Direction Générale de l'Aviation Civile (DGAC) has not yet responded.	Pending	

Recommendation	Response	Board Assessment of Response	Safety Action Taken
A04-04 The Department of Transport ensure the continued airworthiness of Canadian-registered aircraft fitted with the CFM56-5 series engine by developing an appropriate safety assurance strategy to make certain that, in the event of a permanent magnet alternator failure, the electronic control unit will revert to aircraft power.	Transport Canada's response stated that it confirmed, through communication with the Canadian aviation industry, that all Canadian aircraft presently affected by CFM Service Bulletin 73-0126 will have their electronic control unit software upgraded to version C.3.J by March 2005; therefore, Transport Canada is not planning on taking any further action.	Pending	

2.8.4.2 Other Air Safety Actions Taken

Calgary Airport Authority has responded to Safety Information Letter A040061-1 by requesting that NAV CANADA file a Notice to Airmen outlining revised Landing Distances Available for Land and Hold Short Operations. The *Canada Flight Supplement* and the *Canada Air Pilot* documents will follow at the next amendment cycle.

Transport Canada published an article in their *Aviation Safety Letter*, Issue 1/2005, highlighting the details of an occurrence reported to them concerning the throttle arrangement of Beech 90s.

Transport Canada included an article in the *Aviation Safety Maintainer* on the topic of scheduled lubrication intervals after being advised by the TSB of an occurrence involving a Beech 1900D.

Transport Canada took action to advise the Type Certificate Holder for the Piper PA-18-150 that certain weight and balance information available to Piper PA-18 owners and operators in Canada may be in error.

Transport Canada issued a Notice of Proposed Amendment to the Canadian Aviation Regulation Advisory Council to strengthen and streamline the aerodrome data verification process as a result of advice from the TSB in Safety Advisory A040059 concerning information discovered during the investigation into the MK 747 accident in Halifax.

Air Canada initiated an internal awareness campaign concerning visual approach guidance and published a description of the TSB investigation into an approach to the wrong airport. Enhancements were made to the Flight Operations Manual with respect to visual approach guidance.

The RCMP Air Services made arrangements for all pilots who did not have a current proficiency check ride to have one done. The operations manual has been amended to reflect a requirement for their helicopter pilots to have a proficiency check ride every two years and a route check on alternate years.

The Transport Canada Civil Aviation Medicine Branch has initiated a project with the TSB to re-examine accidents involving known or suspected cardiac incapacitation during the past 10 years. Following this review, more frequent or extensive testing may be proposed.

Robinson Helicopter Company issued an updated service bulletin (SB-78A) that included background information regarding a recent accident and the risk of excessive teetering of the main rotor, should the brackets fail. That service bulletin requested that owners, operators and service centres determine if SB-78A was complied with and, if not, to proceed with the instructions for SB-78A.The U.S. Federal Aviation Administration plans to issue a Notice of Proposed Rulemaking Airworthiness Directive to mandate the installation of the manufacturer's higher-strength teeter stop brackets.

NAV CANADA increased the ability of Calgary Tower and Edmonton Flight Information Centre personnel to search computer records for positive information on aircraft arrival and departure, with options for search by registration or time frame. In addition, the Edmonton Area Control Centre shift managers and the Edmonton air traffic operations specialist now have access to the same computer records for search capabilities. A similar system is being beta-tested in two centres and will be considered for national deployment.

As a result of a loss of separation occurrence, NAV CANADA has added one controller on the day shift to avoid the situation in which one controller works more than one data board. Toronto Area Control Centre and Cleveland Air Route Traffic Control Center held discussions that resulted in the staffing of additional full-time day and evening data controllers in both units to manually pass hand-off data.

As a result of a water bombing occurrence, and commencing with its 2004 annual pilot training course, Air Spray Ltd. has placed additional emphasis on human factors and emergency manoeuvring in mountainous areas. Particular attention has been given to the deceptive nature of mountainous terrain at high sun angles, and the deceptive illusionary nature of mountain flying continues to be stressed in its training programs.

Following a low fuel situation over the Pacific Ocean, Kelowna Flightcraft Air Charter Ltd. has purchased up-to-date North American data cards from Garmin for all Apollo 820 GPSs installed in its Convair 580 aircraft.

Following a collision with terrain occurrence, Transport Canada produced a Service Difficulty Alert (AL-2003-07, dated 2003-07-17) indicating that the installation procedures for the horizontal stabilizer actuator in the King Air maintenance manual are being reassessed.

As a result of an in-flight fire and precautionary landing, Boeing has undertaken a program to redesign the window terminal block to eliminate the screw connection. All Boeing 747, 757, 767 and 777 windows delivered thereafter, either on new aircraft or as spares, will have the new terminals installed. The intent is to eliminate concerns with arcing at the window power terminals.

2.9 Responding to Resource Pressures

In 2002-2003, the TSB received Parliamentary approval for short-term funding to respond to specific resource pressures. This funding was intended to reduce the backlog of investigations in progress, renew information management and replace rusted-out capital assets. It was provided over a period of approximately 27 months, starting in late 2002-2003 and ending on March 31, 2005. In seeking approval for these funds, the TSB committed to achieving specific results (see Table 17). The remaining pages in this section provide a summary of results achieved against each commitment and serve to close the accountability loop back to Parliament for the incremental funding it provided.

Table 17: Resource Pressure Commitments

Commitments		Results Achieved	
Improving the quality and timeliness of TSB products			
Total Authorities	$3.4 million and 26 FTE	Actual	$2.5 million and 17 FTE
Reduce the number of investigations in progress to fewer than 100		Successfully met	
Improve the average time in process by 10% (or approximately 60 days)		Not yet fully met	
Significantly reduce the backlog of unpublished class 3 reports		Successfully met	
Free up experienced staff to work on initiatives to improve future performance and balance activities with available resources		Successfully met	

Table 17: Resource Pressure Commitments			
Commitments		**Results Achieved**	
Renewing the management of information			
Total Authorities	$1.1 million and 2 FTE	Actual	$1.4 million and 6 FTE[1]
Develop and implement employee information management training and awareness tools		Successfully met	
Upgrade the records management system and improve the filing system		Not yet fully met	
Develop new architecture and an integrated suite of next-generation systems to support business needs		Not yet fully met	
Replacing capital assets			
Total Authorities	$1.0 million	Actual	$1.0 million
Replace a specific list of assets and implement a multi-year capital asset replacement plan		Exceeded	

[1] The TSB has invested an additional $0.3 million from its own base budget to increase the total authorities received for this initiative.

2.9.1 Improving the Quality and Timeliness of TSB Products

The TSB obtained approval for temporary incremental resources to reduce the number of investigations in progress to fewer than 100 and to improve the mean time in process by 10% (or approximately 60 days) by the end of fiscal year 2004-2005. As part of a broader human resources strategy, staff hired with these incremental resources were viewed as potential replacements for staff expected to depart over the next few years. These incremental resources also permitted current, more experienced staff to contribute to a full range of longer-term initiatives to improve performance in the future, including training, quality assurance, and development of modern tools and procedures to aid investigative staff. These incremental resources were allocated to appropriate managers, and a management-level steering committee was established to provide governance for this activity. Mechanisms were put in place to track new investigations and measure results of improvements in processes. This enabled management to ensure that process improvements were having the desired effects on results.

The number of investigations in progress was reduced from 158 in January 2003 to 99 in March 2005. This was achieved through improvements in business processes, improved investigator training, and the judicious decision-making of managers on the initiation of new investigations. Overall, the number of new investigations started since 2003-2004 was reduced as planned in previous Reports on Plans and Priorities. Balance was achieved between the number of

new investigations started and the number of investigations completed during the year. Efforts are now being made in operational planning to maintain this balanced level of activity.

The average time to complete investigations currently stands at 619 days, a level comparable to that of January 2003. The TSB has not yet succeeded in reducing the average time by 10%, as per its commitment, primarily due to a conscious decision to focus on investigations that are more than two years old. Significant progress has been achieved in this regard, and the backlog of older cases was reduced from 16 to 6. However, this success also meant that the average completion time temporarily increased. With the backlog of old cases significantly reduced, it is now expected that the average time in process will drop significantly in future years.

For the past number of years, the TSB had limited the distribution of its investigation reports to a small targeted audience of key stakeholders directly affected by the investigation findings. Most reports were therefore not published for broad public access, seriously limiting the communication of safety messages. At the beginning of 2003-2004, the TSB had a backlog of 192 unpublished reports for the period of 2000 to 2003. As of April 2005, the number of unpublished reports was reduced to 40, of which only 3 dated back more than one year. This is a significant accomplishment, especially given that 115 new investigation reports were completed in 2004-2005. A total of 340 reports were translated, edited, formatted and published on the TSB website over the past two years. Plans are now in place to ensure that all future investigation reports are published on the website shortly after their completion.

While addressing the workload backlog, the TSB has also allocated investigation and management resources to lay the foundation for performance improvements over the longer term. The following are examples of investment activities aimed at sustained future performance improvement:

- Training programs have been developed and delivered in three areas: “Investigation Report Writing,” “Responding to Comments by Designated Reviewers,” and “Safety Communications.”
- Rail and marine investigation branches have conducted investigators workshops to improve work practices and processes.
- Marine and air investigation branches have conducted managers workshops to strengthen investigation management processes.
- Experienced investigators and managers have been working on the information management improvement project team (see section 2.9.2 for details).

2.9.2 Renewing the Management of Information

The TSB undertook several information management (IM) improvement activities aimed at initiating cultural change and awareness that “good IM makes good business sense.” In addition to developing new policy and guidelines, the TSB designed and provided a half-day IM training session to all staff across the country. These sessions were aimed at raising awareness of both government-wide requirements and TSB-specific practices associated with records management and Access to Information and Privacy requirements. Similar sessions are now offered to new TSB employees on an ongoing basis.

New function-based corporate file plans have been developed for both the investigation activities and the corporate services activities. These new file plans will be implemented over the coming year. This will ensure that corporate memory is managed effectively and that the organization is well positioned for transition to an electronic records management environment.

The multi-year Transportation Investigation Information Management System (TIIMS) project was launched to modernize and improve information management products, services and productivity tools available to TSB staff and managers. In 2003-2004, various business models, an enterprise architectural blueprint and a prototype of a team-oriented investigation management environment were developed using the Government of Canada Strategic Reference Model as a foundation. Additional achievements included the development of a risk management strategy, cost-benefit analysis, return on investment study and detailed project plan, as well as the creation of a detailed project charter document.

In 2004-2005, three key modules of the new system were designed and developed: the investigation document filing and scanning module, the safety analysis workbench module, and the workload management workbench module. Work was also started on the development of the report production workbench module. Although good progress was made over the past two years, some delays were encountered and work did not progress as rapidly as originally expected. The delays were primarily due to conflicts with other operational priorities and to the complexity of the tasks to be completed. Work plans were therefore revised and adjusted to reflect a more realistic timeline.

A significant amount of work remains to be done before TIIMS can be considered completed and successful. However, work has progressed to the stage where a number of modules are now in pilot testing and their implementation is expected before the end of 2005-2006. The TSB management team is therefore optimistic that the project will succeed in delivering the expected benefits.

2.9.3 Replacing Capital Assets

The TSB was facing a significant capital asset “rust-out” as investments in this area were significantly reduced over the past 10 years to cope with budget cuts and other resource pressures. A list of specific assets requiring urgent replacement was compiled and submitted to the Treasury Board Secretariat. Funding was approved to replace these assets. All assets identified have been replaced, including an electron scanning microscope valued at approximately half a million dollars. These replacements were done at an overall lower cost than originally estimated. The remaining funds were therefore used to replace additional assets also due for replacement in the near term. Since 2003-2004, the TSB has developed annual capital asset replacement plans and is currently finalizing the implementation of a multi-year capital asset replacement process.

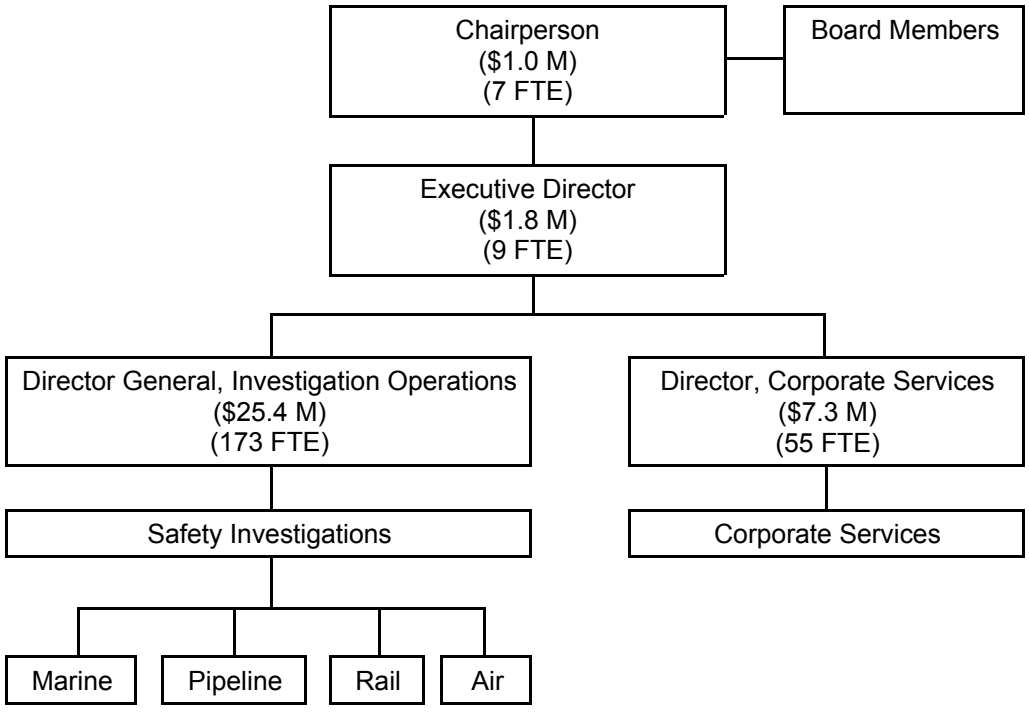
Section 3: Supplementary Information

3.1 Organizational Structure

In 2004-2005, the TSB developed and received Treasury Board approval for its new Program Activity Architecture. This Architecture identifies two program activities: safety investigations and corporate services. The TSB subsequently implemented an internal reorganization in order to fully align its organizational structure with the Program Activity Architecture. The new organizational structure provides for clear responsibility and accountability for each program activity and for each key service area within the safety investigations program activity. Along with this reorganization, the TSB also implemented a new internal governance structure that strengthens decision making, devolves accountabilities and authorities, and accommodates input from middle management into key priority-setting processes.

The TSB reports annually to Parliament on its activities, findings and recommendations through the President of the Queen's Privy Council. The Chairperson, assisted by the Executive Director and the Director General, Investigation Operations, is responsible and accountable for all activities associated with the safety investigations program activity. The Director, Corporate Services, is responsible and accountable for the corporate services program activity in support of departmental operations.

Figure 11: Program Activity Accountability Structure



The Chairperson and Executive Director contribute to the advancement of transportation safety 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 advancement of transportation safety 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 stakeholder outreach activities.

The Investigation Operations Directorate contributes to the advancement of transportation safety 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 focusses 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 aviation, marine, rail or pipeline operations, engineering and other specialists, and investigation support staff.

The Corporate Services Branch contributes to the advancement of transportation safety through the provision of sound corporate planning, and of financial, human resources, information management, information technology, administrative and materiel management services. The Branch also contributes by promoting modern management practices and ensuring that the TSB complies with all Government policies and directives.

3.2 Financial Performance

The TSB started the year with authorities of $30.1 million. Supplementary Estimates in the amount of $1.9 million were then approved for the carry-forward of the previous year's lapse and two specific projects. Transfers in the amount of $0.5 million were received from Treasury Board votes for collective bargaining adjustments, thereby increasing total authorities to $32.5 million. Treasury Board adjusted downward the TSB authorities for contributions to employee benefit plans in order to better reflect forecasted costs. Re-spendable revenues provided an additional $0.2 million increase, thereby bringing total authorities to a final amount of $32.2 million. In 2004-2005, the TSB spent almost all of its authorities, lapsing only $12,000 from its operating budget. Complete audited financial statements are enclosed in Appendix C.

Financial Table 1: Voted and Statutory Items

This table explains the way Parliament voted resources to the TSB and basically replicates the summary table listed in the Main Estimates.

($ thousands)		2004-2005			
Vote	**Vote Wording**	**Main Estimates**	**Planned Spending**	**Total Authorities**	**Actual**
	Canadian Transportation Accident Investigation and Safety Board				
20	Operating expenditures	26,017	26,339	28,425	28,413
(S)	Contributions to employee benefit plans	4,038	4,038	3,600	3,600
(S)	Re-spendable revenues			186	186
	Total Department	**30,055**	**30,377**	**32,211**	**32,199**
Note: Total Authorities are Main Estimates plus Supplementary Estimates plus other authorities.					

Financial Table 2: Detailed Breakdown of 2004-2005 Total Authorities

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

Authorities	**Amount** ($ thousands)
Main Estimates	30,055
Supplementary Estimates A - Carry-forward of previous year's lapse	 1,115
Supplementary Estimates B - MK Airlines investigation - Management of Government Information	 642 140
Transfers from Treasury Board - Vote 15 – collective bargaining - Vote 5 – collective bargaining	 381 130
Re-Spendable Revenues - Proceeds from disposal of surplus Crown assets - Revenues as per section 29.1 of *Financial Administration Act*	 34 152
Year-end adjustment to employee benefit plans	-438
Total Authorities	**32,211**

Financial Table 3: Comparison of Planned to Actual Spending

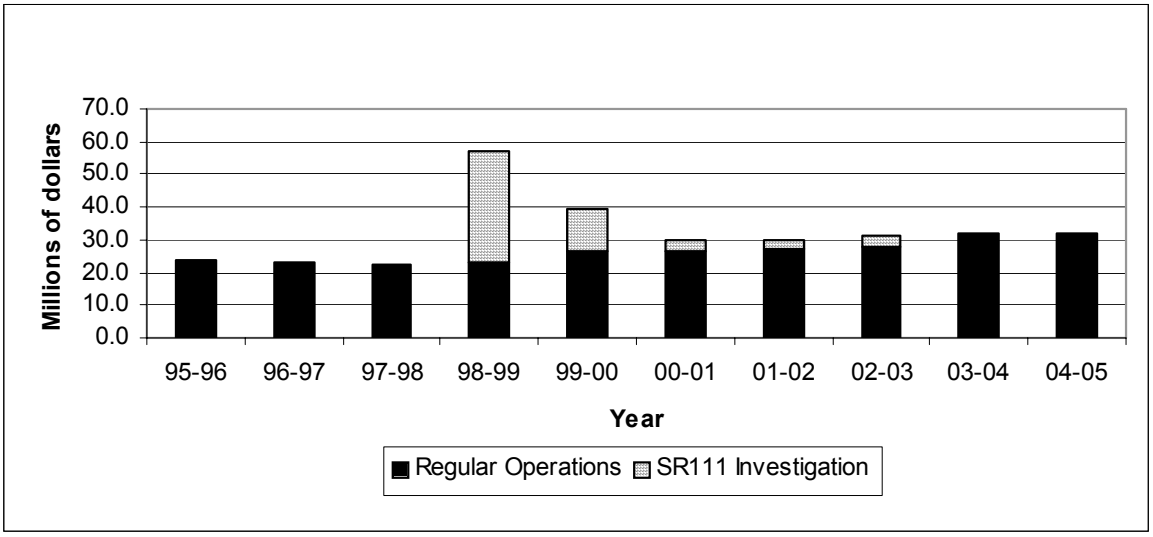
This table provides a comparison of the Main Estimates, planned spending, total authorities, and actual spending for the most recently completed fiscal year, as well as historical figures for actual spending by the TSB.

($ thousands)	2002-2003 Actual	2003-2004 Actual	2004-2005			
			Main Estimates	Planned Spending	Total Authorities	Actual
Safety investigations	24,648	25,284	23,523	23,845	25,569	25,562
Corporate services	6,628	6,773	6,532	6,532	6,642	6,637
Total	**31,276**	**32,057**	**30,055**	**30,377**	**32,211**	**32,199**
Plus: Cost of services received without charge	3,008	3,105	3,347	3,347	3,351	3,351
Net Cost of Department	**34,284**	**35,162**	**33,402**	**33,724**	**35,562**	**35,550**
Full-Time Equivalents	**214**	**227**	**250**	**250**	**250**	**244**

Total authorities and actual expenditures for 2004-2005 are higher than planned spending due to incremental costs for new collective agreements signed during the year, the carry-forward of the previous year's lapse and the receipt of special funding for the MK Airlines investigation and the special project on the Management of Government Information.

Over the past 10 years, TSB spending has increased progressively each year primarily due to increases in employee salaries and to the execution of special projects for which short-term funding was received (see Figure 12 below). During the period of 1998-1999 to 2002-2003, significant costs were incurred for the Swissair Flight 111 (SR111) investigation, totalling approximately $57 million. In 1998-1999 and 1999-2000, SR111 investigation costs were $34.0 million and $13.4 million respectively. In 2000-2001, 2001-2002 and 2002-2003, SR111 investigation costs averaged approximately $3.3 million per year. Financial results for the period of 2002-2003 to 2004-2005 also include spending related to the short-term funding received from Parliament to address specific resource pressures. These expenditures total $0.2 million, $2.4 million and $2.1 million respectively. Total planned spending for 2005-2006 and future years is estimated at approximately $28 million, representing a net reduction of about $2 million in the annual budget.

Figure 12: TSB Historical Spending



Financial Table 4: Net Cost of Department

This table shows the net cost of the TSB. It begins with the actual spending and adds services received without charge to arrive at the net cost of the department to Canadians.

($ thousands)	**2004-2005**
Total actual spending	32,199
Plus: Services received without charge	
Accommodation provided by Public Works and Government Services Canada	1,800
Contributions covering employer's share of employees' insurance premiums and expenditures paid by Treasury Board Secretariat	1,502
Workers' compensation coverage provided by Human Resources and Skills Development Canada	18
Audit services provided by the Office of the Auditor General	31
	3,351
2004-2005 Net Cost of Department	**35,550**

Although the net cost of the department has increased somewhat over the past number of years, the total expenditures of the TSB represent an approximate cost of $1.10 per Canadian citizen. For this amount, Canada maintains the capability to investigate major failures in four different modes of the national transportation system.

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 is enclosed in Appendix C. There were no other external audits or evaluations of the TSB in 2004-2005.

In 2004-2005, the TSB completed two internal audits. The first audit, completed in April 2004, focussed on internal communications within the TSB. The second audit, completed in March 2005, focussed on TSB contracting and procurement practices. Both audit reports and the relevant management responses are posted on the TSB website at **www.tsb.gc.ca/en/common/disclosure/audit/2004_2005/index.asp**.

3.4 Human Resources Modernization

In 2003-2004, the TSB completed the development of competency profiles and learning standards for all its occupational groups. A new automated tool was also acquired and implemented to facilitate the task of developing individual learning plans for all employees. To date, this new tool has not been fully utilized, as managers and employees continue to resort to their traditional ways to plan and manage learning and development activities. Renewed efforts will be required to effect changes. In 2004-2005, the TSB invested approximately $1.1 million, or 3.8% of its total operating costs, in employee training and education. In future years, the TSB expects to maintain its high level of investment in employee learning but will ensure that these investments are better targeted through the use of the new tool available to employees and managers.

The approval by Parliament of the *Public Service Modernization Act* has an impact on all federal institutions, including the TSB. This new legislation, aimed at modernizing the management of human resources in the Public Service, is being implemented over a two-year period. The TSB reviewed the potential implications of the legislation and ensured that resources were set aside in its 2004-2005 and 2005-2006 budgets to facilitate the implementation of the required changes.

In 2004-2005, a labour-management consultation framework was developed and implemented. Four departmental labour relations policies were reviewed and updated to reflect the requirements of the new legislation. A new informal conflict management system was also implemented. Work was initiated on the development of a staffing framework whereby delegation could be provided to managers throughout the organization, and on the training of managers on values-based staffing. Work was also started on the development of a revised performance management and evaluation system. TSB representatives have also participated in a number of interdepartmental working groups led by the

Public Service Human Resources Management Agency of Canada to develop policies, guidelines and tools for departments and agencies.

Overall, good progress has been made toward the modernization of human resources management. All requirements of the *Public Service Modernization Act* have been met as per the implementation schedule provided by the Public Service Human Resources Management Agency of Canada. New tools and modern policies are being made available to managers and employees. However, significant efforts will be required to complete the work and implement changes in order to fully modernize human resources management within the TSB.

3.5 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 modes, which are also available on the site. Finally, the TSB publishes an annual report to Parliament and a periodic safety magazine entitled *Reflexions,* which are available in printed form upon 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**).

For further information, please contact us:

Communications Division
Transportation Safety Board of Canada
Place du Centre
200 Promenade du Portage
4th Floor
Gatineau, Quebec
K1A 1K8

E-mail: communications@tsb.gc.ca
Telephone: (819) 994-3741
Fax: (819) 997-2239

Appendices

A: Assessment of Responses to Recommendations Issued in 2003-2004

B: Links to Other Organizations Involved in Transportation Safety

C: Audited Financial Statements

Appendix A
Assessment of Responses to Recommendations Issued in 2003-2004

Marine Recommendations

Allanburg, Ontario – 11 August 2001 **Report No. M01C0054**
Fire on Board at Bridge 11 – Bulk Carrier *Windoc*

Recommendation	Response	Board Assessment of Response	Safety Action Taken
M02-04 The Department of Transport ensure that overall preparedness is appropriate for responding to vessel-related emergencies within the Seaway.	The Board is waiting for further follow-up information from Transport Canada (TC) concerning the response.	Pending	To be reported next fiscal year

Bruce Mines Wharf, Georgian Bay, Ontario – 1 June 2000 **Report No. M00C0026**
Structural Failure – Bulk Carrier *Algowood*

Recommendation	Response	Board Assessment of Response	Safety Action Taken
M03-01 The Department of Transport require that masters on all Canadian bulk carriers of 150 m in length and over have continuous access to on-board or company shore-based hull stress monitoring systems to help ensure that maximum allowable hull girder stresses are not exceeded.	TC is in the process of developing new Cargo Regulations that are intended to address operational requirements including cargo/ballasting loading and distribution for bulk carrier vessels operating both domestically and internationally. TC intends to introduce provisions requiring that, prior to loading a bulk carrier, the master be in possession of comprehensive information on the vessel's stability and on the distribution of cargo for the standard loading conditions.	Satisfactory intent	TC indicated that further consultations with the industry have to be undertaken. Although draft new Cargo Regulations do not specifically require masters to have continuous access to a monitoring system, TC anticipates that the proposed requirements for more careful tracking of loading operations will lead to the need for fitting of loading instruments.

Off Havre-Saint-Pierre, Quebec – 29 September 2001 **Report No. M01L0112**
Major Water Ingress – Scallop Dragger *Alex B.1*

Recommendation	Response	Board Assessment of Response	Safety Action Taken
M03-02 Transport Canada, in coordination with Fisheries and Oceans Canada, fisher associations and training institutions, develop a national strategy for establishing, maintaining and promoting a safety culture within the fishing industry.	TC indicated that it has consulted with the Department of Fisheries and Oceans (DFO), Canadian Coast Guard (CCG), the Canadian Council of Professional Fish Harvesters (CCPFH) and training institutes with regard to information or programs involving a safety culture. An update of several initiatives underway by others to address safety was provided.	Satisfactory in part	The results of a study by the CCPFH, which included a profile of accidents at sea and proposed strategies for their prevention, are expected by the end of May 2005. DFO is considering linking issuance of licences to vessel inspections.

Cap Tourmente, Quebec – 9 November 1999 **Report No. M99L0126**
Grounding and Constructive Total Loss – Bulk Carrier *Alcor*

Recommendation	Response	Board Assessment of Response	Safety Action Taken
M03-03 The Department of Transport, the Department of Fisheries and Oceans, and Canadian pilotage authorities, in consultation with marine interests, develop, implement and exercise contingency plans to ensure that risks associated with navigation-related emergencies are adequately addressed.	TC agrees with the recommendation. TC and DFO/CCG indicated that measures are being taken in the Laurentian Region to identify improvements relating to alerting of the various players and that exercises are being proposed for testing the coordination and management of responses to navigation-related incidents. The Laurentian Pilotage Authority, which will be invited by TC and DFO/CCG to participate, has indicated its intention to participate.	Satisfactory in part	The "lessons learned" as a result of the measures being undertaken in DFO/CCG Laurentian Region will be shared with other regions for their use as required.

Pitt River Highway Bridge, British Columbia – 18 December 2000 **Report No. M00W0303**
Striking of a Bridge – Tugboat *Miller Richmond* and Barges *Miller 201* and *Miller 206*

Recommendation	Response	Board Assessment of Response	Safety Action Taken
M03-04 The Fraser River Port Authority and the provincial Ministry of Transportation, in collaboration with the bridge tenders and vessel operators, review and, if necessary, amend their current policies, practices and procedures, and ensure implementation so that the safety of vessels, bridges and bridge traffic is not compromised.	A joint committee is to be established to review and amend, as necessary, and ensure implementation of current policies, practices and procedures related to bridge and marine traffic and bridge operations.	Satisfactory intent	A sub-committee of the Fraser River Port Authority Bridge Work Group was established to examine vessel/bridge operations. The Port Authority will also draft bridge procedures for the subcommittee's consideration.

Off Entrance to Fraser River, British Columbia – 13 August 2002 **Report No. M02W0147**
Capsizing and Loss of Life – Small Fishing Vessel *Cap Rouge II*

Recommendation	Response	Board Assessment of Response	Safety Action Taken
M03-05 The Department of Transport require all new inspected small fishing vessels of closed construction to submit stability data for approval.	TC indicated that it is considering targeting, for the purposes of a stability assessment, fishing vessels that are considered to be at risk regarding their stability. Any new requirements to address fishing vessel stability concerns must follow the due regulatory development process and are expected to be incorporated into the new Fishing Vessel Safety Regulations, scheduled to come into force by the end of 2006.	Unsatisfactory	The intent of the recommendation was that, until such time as the new small fishing vessel safety regulations are introduced, interim measures be taken to address the safety risk. There is no indication that prior to such time as the new regulations are introduced the measures described in the recommendation will be implemented.

Off Entrance to Fraser River, British Columbia – 13 August 2002 Capsizing and Loss of Life – Small Fishing Vessel *Cap Rouge II*			Report No. M02W0147
Recommendation	**Response**	**Board Assessment of Response**	**Safety Action Taken**
M03-06 The Department of Transport require all existing inspected small fishing vessels currently without any approved stability data be subjected to a roll period test and a corresponding freeboard verification not later than their next scheduled quadrennial inspection.	TC indicated that it is considering targeting, for the purposes of a stability assessment, fishing vessels that are considered to be at risk regarding their stability. Any new requirements to address fishing vessel stability concerns must follow the due regulatory development process and are expected to be incorporated in the new Fishing Vessel Safety Regulations, scheduled to come into force by the end of 2006.	Unsatisfactory	The intent of the recommendation was that, until such time as the new small fishing vessel safety regulations are introduced, interim measures be taken to address the safety risk. There is no indication that prior to such time as the new regulations are introduced the measures described in the recommendation will be implemented.
M03-07 The Department of Transport, in collaboration with the fishing community, reduce unsafe practices by means of a code of best practices for small fishing vessels, including loading and stability, and that its adoption be encouraged through effective education and awareness programs.	TC outlined a number of initiatives that the Department has taken to address safety within the fishing community. TC indicated that it is discussing with the Department of Fisheries and Oceans and stakeholders more efficient means of communication between government and fish harvesters.	Unsatisfactory	There was no indication of any initiative to develop a code of best practices for small fishing vessels.

Rail Recommendations

Fraser Subdivision, near McBride, British Columbia – 14 May 2003 Timber Bridge Collapsed under a Train – Canadian National			Report No. R03V0083
Recommendation	**Response**	**Board Assessment of Response**	**Safety Action Taken**
R03-04 Canadian National verify the condition of its timber bridges and ensure their continued safety with effective inspection and maintenance programs.	Canadian National (CN) did not completely accept the Board's recommendation.	Satisfactory in part	CN has verified the condition of its timber bridges and is developing a computerized inspection and maintenance tracking system for bridges.
R03-05 Transport Canada incorporate in its compliance reviews a comparison of railway working procedures and practices with railway inspection and maintenance records.	TC accepted the recommendation and indicated that the Safety Management System audit program is being aggressively developed.	Satisfactory intent	TC is developing an auditing practice to assess the efficacy of CN's Safety Management System for inspection and maintenance of bridges.

Appendix B
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 Skills 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.ntsb.gov
- Federal Aviation Administration . . . . . www.faa.gov

Australia
- Australian Transport Safety Bureau . . . . . www.atsb.gov.au

France
- Bureau d'Enquêtes et d'Analyses pour la sécurité de l'Aviation Civile . www.bea-fr.org

United Kingdom
- Air Accidents Investigation Branch . . . . . www.aaib.dft.gov.uk
- Marine Accidents Investigation Branch . . . . . www.maib.dft.gov.uk

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

Appendix C
Audited Financial Statements

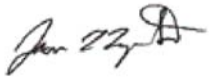
Canadian Transportation Accident Investigation and Safety Board
Management Responsibility for Financial Statements

Responsibility for the integrity and objectivity of the accompanying financial statements for the year ended March 31, 2005 and all information contained in this report rests with management of the Canadian Transportation Accident Investigation and Safety Board (CTAISB).

These financial statements have been prepared by management in accordance with accounting standards issued by the Treasury Board of Canada Secretariat, which are consistent with Canadian generally accepted accounting principles for the public sector, using management's best estimates and judgements where appropriate. These statements should be read within the context of the significant accounting policies set out in the Notes.

Management has developed and maintains books, records, internal controls and management practices designed to provide reasonable assurance that the Board's assets are safeguarded and controlled, resources are managed economically and efficiently in the attainment of corporate objectives, and that transactions are in accordance with the *Financial Administration Act* and regulations as well as other applicable government policies and statutory requirements.

The transactions and financial statements of the CTAISB have been audited by the Auditor General of Canada, the appointed independent auditor for the Board.



Charles H. Simpson
Acting Chairman

Jean L. Laporte, CGA
Senior Financial Officer

Gatineau, Canada
June 1, 2005

Auditor General of Canada
Vérificatrice générale du Canada

AUDITOR'S REPORT

To the Chairman of the Canadian Transportation Accident Investigation and Safety Board
and to the President of the Queen's Privy Council for Canada

I have audited the statement of financial position of the Canadian Transportation Accident Investigation and Safety Board as at March 31, 2005 and the statements of operations and net assets and cash flows 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, 2005 and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

Sylvain Ricard

Sylvain Ricard, CA
Principal
for the Auditor General of Canada

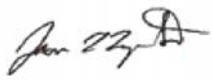
Ottawa, Canada
June 1, 2005

Canadian Transportation Accident Investigation and Safety Board
Statement of Financial Position
As at March 31
(in thousands of dollars)

		2005	2004
ASSETS			
	Financial Assets		
	Due from the CRF	$ 2,374	$ 2,775
	Receivables and Advances (Note 4)	637	96
	Total Financial Assets	**3,011**	**2,871**
	Non-Financial Assets		
	Prepayments	39	32
	Inventories not for Re-Sale	118	115
	Property and Equipment (Note 5)	4,683	4,312
	Total Non-Financial Assets	**4,840**	**4,459**
Total Assets		**$ 7,851**	**$ 7,330**
LIABILITIES			
	Accounts Payable and Accrued Liabilities	$ 2,819	$ 2,786
	Accrual for Employee Vacation and Overtime	981	960
	Employee Severance Benefits	3,766	3,402
	Total Liabilities	**7,566**	**7,148**
NET ASSETS		**285**	**182**
Total Liabilities and Net Assets		**$ 7,851**	**$ 7,330**

Contingent Liabilities and Commitments (Notes 9 and 10 respectively)

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



Charles H. Simpson
Acting Chairman

Jean L. Laporte, CGA
Senior Financial Officer

Gatineau, Canada
June 1, 2005

Canadian Transportation Accident Investigation and Safety Board
Statement of Operations and Net Assets
for the year ended March 31
(in thousands of dollars)

	2005	2004
Revenues		
Sales of Goods and Services	$ 156	$ 15
Other Non-Tax Revenues	8	11
Total Revenues	**164**	**26**
Expenses		
Salaries and Wages	20,349	19,897
Employee Benefit Plans	5,437	4,982
Professional and Special Services	3,028	3,505
Transportation and Communications	2,181	2,011
Accommodation	1,800	1,745
Amortization	1,118	1,104
Utilities, Materials and Supplies	590	622
Purchased Repair and Upkeep	565	600
Information	222	304
Rentals	135	75
Construction and/or Acquisition of Machinery and Equipment	109	70
Miscellaneous Expenses	9	18
Loss on Disposal of Property and Equipment	3	197
Total Expenses	**35,546**	**35,130**
Net Operating Results	**(35,382)**	**(35,104)**
Other Income (Note 6)	225	196
Other Expenses (Note 6)	225	196
Net Results	**(35,382)**	**(35,104)**
Net Assets, Beginning of Year	**182**	**769**
Net Cash Provided by Government (Note 3c)	**32,535**	**31,789**
Change in Due from the CRF	**(401)**	**(377)**
Services Provided Without Charge (Note 8)	**3,351**	**3,105**
Net Assets, End of Year	**$ 285**	**$ 182**

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

Canadian Transportation Accident Investigation and Safety Board
Statement of Cash Flow
for the year ended March 31
(in thousands of dollars)

	2005	2004
Operating Activities		
Net Results	**$ 35,382**	**$ 35,104**
Non-Cash Items Included in Net Results		
Services Provided Without Charge (Note 8)	3,351	3,105
Amortization of Property and Equipment	1,118	1,104
Employee Severance Benefits	364	160
Loss on Disposal of Property and Equipment	3	197
	4,836	**4,566**
Statement of Financial Position Adjustments		
Change in Liabilities	53	(481)
Change in Cash, Receivables and Advances, Prepayments and Inventories not for Re-Sale	(544)	807
	(491)	326
Cash Used in Operating Activities	**31,037**	**30,212**
Investing Activities		
Acquisitions of Property and Equipment	1,498	1,577
Cash Used in Investing Activities	**1,498**	**1,577**
Net Cash Provided by Government (Note 3c)	**$ 32,535**	**$ 31,789**

The accompanying notes form an integral part of these 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 more commonly known by the name Transportation Safety Board of Canada, or simply the TSB. The objective of the CTAISB 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 CTAISB may conduct studies into more general matters pertaining to transportation safety. The CTAISB has the exclusive authority to make findings as to causes and contributing factors when it investigates a transportation occurrence. The CTAISB'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 accounting standards issued by the Treasury Board of Canada Secretariat which are consistent with Canadian generally accepted accounting principles for the public sector.

(a) Parliamentary appropriations – the CTAISB is primarily financed by the Government of Canada through Parliamentary appropriations. Appropriations provided to the CTAISB do not parallel financial reporting according to Canadian generally accepted accounting principles. They are based in large part on cash flow requirements. Consequently, items recognized in the Statement of Operations and in the Statement of Financial Position are not necessarily the same as those provided through appropriations from Parliament. Note 3a) to these financial statements provides information regarding the source and disposition of these authorities. Note 3b) provides a high-level reconciliation between the two bases of reporting. Note 3c) presents the reconciliation to Net Cash Provided by Government.

(b) Due from the CRF – as a departmental corporation, the CTAISB operates within the Consolidated Revenue Fund (CRF) administered by the Receiver General for Canada. All cash receipts are deposited to the CRF and all cash disbursements made by the CTAISB are paid from the CRF. Due from the CRF represents the amount of cash that the CTAISB is entitled to draw from the CRF, without further appropriations, in order to discharge its liabilities.

(c) Revenues – these are accounted for in the period in which the underlying transaction occurs that gives rise to the revenues.

(d) Employee severance benefits – are calculated using information derived from the results of the actuarially determined liability for employee severance benefits for the Government as a whole. Employee severance benefits on cessation of employment represent obligations of the CTAISB that are normally funded in future years as they are paid.

(e) Vacation pay and overtime – are expensed in the year that the entitlement occurs.

(f) Contributions to pension plans – are recognized in the period that the contributions are made. The calculation of contributions is an estimate based on a government-wide average adjusted annually. Actuarial surpluses or deficiencies are not recorded in the CTAISB's books but are recognized in the consolidated financial statements of the Government of Canada.

(g) Services provided without charge – are recorded as operating expenses. Note 8 provides estimates of the more significant types of services provided to the CTAISB without charge.

(h) Receivables – these are stated at amounts expected to be ultimately realized. An allowance is made for receivables where recovery is considered uncertain.

(i) Inventories not for re-sale – these items are held for future program delivery and are 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.

(j) Property and equipment – all assets plus leasehold improvements having an initial cost of $2,000 or more are recorded at their acquisition cost. Amortization of property and equipment is done on a straight-line basis over the estimated useful life of the capital 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 useful life or term of the lease

(k) Foreign currency transactions – transactions involving foreign currencies are translated into Canadian dollar equivalents using rates of exchange in effect at the time of those transactions. Monetary assets and liabilities denominated in foreign currencies are translated using exchange rates in effect at year-end.

(l) Measurement uncertainty – the preparation of financial statements 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 property and equipment, employee severance benefits and the assessment of contingent liabilities.

3. Parliamentary Appropriations

a) Reconciliation of Parliamentary Appropriations Voted to Authorities Used

(in thousands of dollars)	2005	2004
Parliamentary Appropriations Voted:		
Vote 20 – CTAISB Operating expenditures	$ 26,017	$ -
Vote 15 – CTAISB Operating expenditures	-	22,304
Supplementary Vote 20a	1115	-
Supplementary Vote 20b	782	-
Supplementary Vote 15b	-	4,889
Transfer from Treasury Board – Vote 15	381	2,139
Transfer from Treasury Board – Vote 10	-	163
Transfer from Treasury Board – Vote 5	130	-
Total Parliamentary Appropriations Voted	**28,425**	**29,495**
Less: Lapsed Appropriations	12	1,045
Total Appropriations Voted Used	**28,413**	**28,450**
Statutory Authority: Contribution to employee benefit plans	3600	3,511
Total Appropriations Used	**32,013**	**31,961**
Other Statutory Authorities:		
Spending of proceeds from disposal of surplus Crown assets	34	96
Spending of revenues as per FAA section 29.1	152	-
Total Statutory Authorities Used	**186**	**96**
Total Authorities Used	**$ 32,199**	**$ 32,057**

b) Reconciliation of Net Results to Appropriations Used

(in thousands of dollars)	2005	2004
Net Operating Results	**$ 35,382**	**$ 35,104**
Adjustments for Items Not Affecting Appropriations		
Less		
Services Provided Without Charge	3,351	3,105
Amortization	1,118	1,104
Employee Severance Benefits	364	160
Prepayments	30	37
Inventory Used	26	43
Vacation Pay	22	50
Justice Canada Legal Services	19	14
Loss on Disposal of Property and Equipment	3	197
	4,933	**4,710**
Add		
PAYE Adjustment	19	-
Non-tax Revenue	8	49
Refund of Prior Year's Expenditures	5	9
	32	**58**
Adjustments for Items Affecting Appropriations		
Add		
Acquisition of Property and Equipment	1,498	1,577
Prepaids	39	-
Inventory Purchased	29	28
	1,566	**1,605**
Less		
Proceeds from the Disposal of Surplus Crown Assets	34	96
	34	**96**
Total Appropriations Used	**$ 32,013**	**$ 31,961**

c) Reconciliation to Net Cash Provided by Government

(in thousands of dollars)	2005	2004
Net cash provided by government	**$ 32,535**	**$ 31,789**
Revenues	164	26
Net change in non-cash working capital balance charged to the vote	(686)	146
Total Appropriations Used	**$ 32,013**	**$ 31,961**

4. Receivables and Advances

(in thousands of dollars)	2005	2004
Other Government Departments	$ 445	$ 12
External Parties	152	-
GST refundable	32	76
Advances to Employees	8	8
Total	**$ 637**	**$ 96**

5. Property and Equipment

(in thousands of dollars)

Asset Class	Historical Cost March 31, 2004	Additions	Disposals	Accumulated Amortization March 31, 2005	Net Book Value March 31, 2005	Net Book Value March 31, 2004
Buildings	$ 2,715	$ 76	$ -	$ 1,932	$ 859	$ 895
Furniture	1,051	28	-	729	350	385
Office equipment	336	5	36	265	40	58
Laboratory equipment	2,419	63	142	1,635	705	749
Informatics hardware	3,834	388	971	2,111	1,140	1,314
Informatics software (purchased)	462	71	-	371	162	242
Informatics software (in development)	-	867	-	-	867	-
Motor vehicles	837	-	-	372	465	553
Other vehicles	149	-	32	26	91	102
Leasehold improvements	34	-	-	30	4	14
Total	**$ 11,837**	**$ 1,498**	**$ 1,181**	**$ 7,471**	**$ 4,683**	**$ 4,312**

6. Other Income / Expenses

The CTAISB 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.

7. Related Party Transactions

The CTAISB is related in terms of common ownership to all Government of Canada departments, agencies and Crown corporations. The CTAISB enters into transactions with these entities in the normal course of business and on normal trade terms applicable to all individuals and enterprises except that certain services, as defined in note 2(g), are provided without charge. These services are described in Note 8.

8. Services Provided Without Charge

During the year, the CTAISB received services that were obtained without charge from other government departments and agencies for a total of $3,351,000 ($3,105,000 in 2004). These are recorded at their estimated costs in the financial statements as follows:

Services Provided Without Charge (in thousands of dollars)

Department	Type of Services	2005	2004
Public Works and Government Services Canada	Accommodation, accommodation alteration and other services	$ 1,800	$ 1,745
Treasury Board of Canada	Employer's contributions to the health insurance plans	1,502	1,295
Office of the Auditor General of Canada	External audit	31	49
Human Resources and Skills Development Canada	Administration of workers' compensation	18	16
Total		**$ 3,351**	**$ 3,105**

9. Contingent Liabilities

In the normal course of its operations, the CTAISB 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 Board's financial statements.

For the year ended March 31, 2005, there are various outstanding legal actions against the CTAISB. No liability has been recorded in the financial statements since management of the CTAISB considers them unlikely to be successful.

10. Commitments

The nature of the CTAISB's activities results in some large multi-year contracts and obligations whereby the CTAISB will be committed to make some future payments when the services/goods are rendered. Presently, such commitments apply only to the next two years. Major commitments that can be reasonably estimated are as follows:

	Commitments		
(in thousands of dollars)	2006	2007	Total
Acquisition of Goods and Services	**$756**	**$107**	**$863**