



Transportation Safety Board of Canada

Performance Report

For the period ending
March 31, 2001

Canada

Improved Reporting to Parliament Pilot Document

Each year, the government prepares Estimates in support of its request to Parliament for authority to spend public monies. This request is formalized through the tabling of appropriation bills in Parliament.

The Estimates of the Government of Canada are structured in several parts. Beginning with an overview of total government spending in Part I, the documents become increasingly more specific. Part II outlines spending according to departments, agencies and programs and contains the proposed wording of the conditions governing spending which Parliament will be asked to approve.

The *Report on Plans and Priorities* provides additional detail on each department and its programs primarily in terms of more strategically oriented planning and results information with a focus on outcomes.

The *Departmental Performance Report* provides a focus on results-based accountability by reporting on accomplishments achieved against the performance expectations and results commitments as set out in the spring *Report on Plans and Priorities*.

The Estimates, along with the Minister of Finance's Budget, reflect the government's annual budget planning and resource allocation priorities. In combination with the subsequent reporting of financial results in the Public Accounts and of accomplishments achieved in Departmental Performance Reports, this material helps Parliament hold the government to account for the allocation and management of funds.

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Foreword

In the spring of 2000 the President of the Treasury Board tabled in Parliament the document “Results for Canadians: A Management Framework for the Government of Canada”. This document sets a clear agenda for improving and modernising management practices in federal departments and agencies.

Four key management commitments form the basis for this vision of how the Government will deliver their services and benefits to Canadians in the new millennium. In this vision, departments and agencies recognise that they exist to serve Canadians and that a “citizen focus” shapes all activities, programs and services. This vision commits the government of Canada to manage its business by the highest public service values. Responsible spending means spending wisely on the things that matter to Canadians. And finally, this vision sets a clear focus on results – the impact and effects of programs.

Departmental performance reports play a key role in the cycle of planning, monitoring, evaluating, and reporting of results through ministers to Parliament and citizens. Earlier this year, departments and agencies were encouraged to prepare their reports following certain principles. Based on these principles, an effective report provides a coherent and balanced picture of performance that is brief and to the point. It focuses on results – benefits to Canadians – not on activities. It sets the department’s performance in context and associates performance with earlier commitments, explaining any changes. Supporting the need for responsible spending, it clearly links resources to results. Finally the report is credible because it substantiates the performance information with appropriate methodologies and relevant data.

In performance reports, departments strive to respond to the ongoing and evolving information needs of parliamentarians and Canadians. The input of parliamentarians and other readers can do much to improve these reports over time. The reader is encouraged to assess the performance of the organization according to the principles outlined above, and provide comments to the department or agency that will help it in the next cycle of planning and reporting.

This report is accessible electronically from the Treasury Board of Canada Secretariat Internet site:

<http://www.tbs-sct.gc.ca/rma/dpr/dpre.asp>

Comments or questions can be directed to this Internet site or to:

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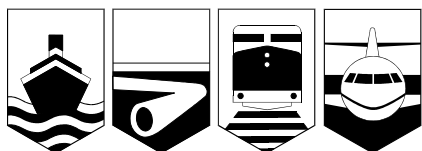
Transportation Safety Board of Canada

Departmental Performance Report

for the Period Ending
31 March 2001

Charles Simpson
Interim Chairperson
Transportation Safety Board of
Canada

Stéphane Dion
President
Queen's Privy Council for Canada



Canada[!]

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Section 1: The Chairperson's Message

This year, our Departmental Performance Report reflects progress and achievements in a number of key areas. However, 2000–2001 was also a year of change, which culminated in the decision of our Chairperson, Benoît Bouchard, to retire in August 2001.

During his tenure, Mr. Bouchard did much to raise the profile of the Transportation Safety Board of Canada (TSB) across this country and internationally. One of his last official acts was the release of three aviation safety recommendations dealing with aircraft material flammability standards. These recommendations are among the results of the Board's continuing investigation into the crash of Swissair Flight 111 in September 1998.

The complex and challenging investigation that has followed that tragedy continues to affect the way the Board carries out its business.

These are demanding times for the TSB, given the importance of the transportation system in Canada and the emphasis that Canadians place on transportation safety. Industry consolidation and globalization, improvements and developments in technology, the expectations of next-of-kin, and the real-time needs of the media are just some of the daunting issues we face.

In 2000–2001 we issued a variety of safety recommendations, safety advisories and information letters. These actions, many of which preceded the final reports of investigations, led to timely concrete action that directly improved safety and/or reduced risks in Canada and abroad.

In the past year, the TSB achieved its key strategic outcomes. We have been successful in identifying safety failures and in reducing risks in the Canadian transportation system. The Board continues to have a strong impact on transportation safety in all parts of the country, and internationally.

Our clients are generally very satisfied with our work, and the media sees the TSB as an expert organization with credible results. The transportation industry in Canada has also developed a high level of confidence in the work of the TSB. Overall, the TSB is recognized as an authoritative, unbiased resource in the area of transportation safety, at both the national and international levels.

In the coming months, we will continue to develop performance indicators that will more accurately reflect the impact of the Board on Canadian transportation safety.

Providing adequate investigative coverage and timely safety products within the current resource envelope remains our largest challenge and principal preoccupation.

Our Board members and staff are dedicated to advancing transportation safety. We will continue to work towards increasing the public visibility of our activities, and towards enhancing understanding of our work by Canadians.

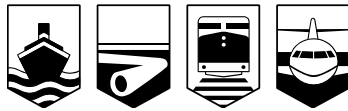
The Transportation Safety Board is committed to getting the job done well. The safety of the transportation system and of the travelling Canadian public depends on it.

Section 2: Strategic Context

2.1 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 federally regulated elements of the marine, rail, pipeline, and air transportation systems. This mandate is fulfilled by conducting independent investigations including, when necessary, public inquiries into transportation occurrences. The purpose of these investigations and inquiries is to make findings as to the causes and contributing factors of the occurrences and to identify safety deficiencies which in turn may result in recommendations designed 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: to advance transportation safety.



The jurisdiction of the TSB includes all transportation occurrences in or over Canada. The Board also represents Canadian interests in foreign investigations of transportation accidents involving ships, railway rolling stock, or aircraft registered, licensed, or manufactured in Canada. In addition, the Board carries out some of Canada's transportation safety obligations to the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO).

2.2 Key Co-delivery Partners:

The TSB reports annually to Parliament on its activities, findings, and recommendations through the President of the Queen's Privy Council, and as such is not part of the Transport Canada portfolio, although it is not uncommon for Canadians to associate the TSB with Transport Canada. The creation of the TSB as an independent agency eliminated any potential for a conflict of interest within government bodies regulating or operating transportation activities while also investigating the failures associated with

their own regulations and operations. The legislation gives the TSB the exclusive authority to make findings as to causes and contributing factors when it investigates a transportation occurrence. Other departments (such as Transport Canada and the National Energy Board) may, however, investigate for any other purposes. The TSB's investigative process is explained in Appendix A.

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, next-of-kin, and operators, with other organizations and agencies, such as coroners, police, manufacturers, owners, and insurance companies, and with other federal government departments and agencies. The cooperation of all these individuals and organizations is essential to the conduct of the TSB's business.

The TSB has no authority to implement changes; its mandate is limited to the identification of safety deficiencies and the communication of credible safety messages and persuasive arguments to influence change. The TSB can therefore be deemed successful when others, such as regulators, operators, and manufacturers, implement actions to mitigate risks. As such, the TSB is one of many Canadian and foreign organizations involved in improving transportation safety. The charts in Appendix B illustrate the many groups with whom the TSB interacts in the course of its investigations.

2.3 Social and Economic Factors

The TSB operates within the context of the very large and complex Canadian transportation system (see Transport Canada Internet site at www.tc.gc.ca for details). This system is very dynamic and in a constant state of change, resulting in particular challenges for the TSB.

2.3.1 Public Interest in Transportation Safety

Transportation safety has always been a matter of public concern in Canada. This is largely due to the essential social and economic role that the transportation system plays in this country. New information demands have evolved in the aftermath of such accidents as the crash of Swissair Flight 111 (SR 111) near Peggy's Cove, Nova Scotia, the April 2001 Via Rail train derailment in Stewiacke, Nova Scotia, the sinking of the "TRUE NORTH II" small passenger vessel near Tobermory, Ontario, and the February 2001 explosion of a gas pipeline compressor station in Quebec's Eastern Townships. News media expect real-time, round-the-clock, on-site coverage. The expectations of the next-of-kin for support from the investigating agencies have also increased. They have an enormous thirst for up-to-date factual information; most wish to follow closely the

progress of the investigation. Given the loss they have suffered, great care must be exercised in communicating with them. The TSB also faces increasing demands for information through the Access to Information program, especially given the increasing trend toward litigation resulting from transportation accidents. Fulfilling these evolving needs is proving to be a major challenge with existing resource levels.

2.3.2 Government Policy and Industry Environment

In recent years, partly as a result of government initiatives and partly in response to commercial imperatives, various changes have occurred that may influence transportation safety. Among the changes are the privatization of Crown corporations, the commercialization of many Transport Canada operations, in all modes, and the increasing consolidation and globalization of companies. The highly competitive environment in all elements of the transportation industry and the demands by the public and shippers for an almost accident-free transportation system are also significant considerations.

2.3.3 Impact of Technology on Transportation

Over the last 10 years, the rate of technological change in the transportation industry has been very rapid. This is largely due to significant advances in computer and electronics technology, the development of new materials, and their application to the transportation industry. These advances affect all modes of transportation, and while many of them enable investigators to perform their work more effectively, they also make the job of investigation and safety analysis increasingly complex and specialized. The increased reliance on automation poses particular problems for analysing failures at the human-machine interface.

2.3.4 Volume of Transportation Activity in Canada

The marine mode involves approximately 7600 Canadian-registered merchant ships and 20 000 foreign-flag vessels which complete some 68 000 movements in Canadian waters and 50 000 pilotage assignments annually. Commercial trade produces over 17 million vessel-kilometres in Canadian waters. Marine traffic in Canada includes the transportation of about 55 million passengers annually and over 350 million tons of cargo for domestic and international markets which represents 38% of all cargo carried in Canada by all modes of transportation. In addition, about 28 000 Canadian fishing vessels were licensed to take part in various commercial fisheries last year involving 52 000 fishermen.

There are some 30 federally regulated railways, operating close to 65 000 kilometres of track. The system generates over 579 billion ton-kilometres of output, produces close to 121 million freight train-kilometres of work and over 1.4 billion passenger-kilometres of

service. The railways operate over 3000 locomotives and approximately 110 000 freight and passenger rail cars, and employ over 45 000 people.

The national pipeline system under federal jurisdiction comprises about 100 oil and gas companies. These companies operate approximately 40 000 kilometres of pipelines. Over 145 million cubic metres of crude oil and 141 billion cubic metres of natural gas are moved by pipeline under federal jurisdiction in Canada annually.

The civil air transportation system processes over 70 million enplaned and deplaned passengers annually through over 600 Canadian airports. About 900 Canadian air carriers and an almost equal number of foreign carriers operate in Canada. There are over 70 000 licensed aviation personnel and nearly 28 000 registered aircraft. The Canadian aerospace industry and the airline industry employ about 88 000 people. The Canadian aerospace industry will export more than \$20 billion of aeronautical products this year. In terms of total sales, Canada occupies the fourth position in the world.

2.3.5 Level of Activity

More than 3000 transportation occurrences are reported each year in accordance with federal reporting requirements. The TSB bases its decision to investigate on its Occurrence Classification Policy (see TSB Internet site at www.tsb.gc.ca for details) using a comprehensive risk management process aimed at evaluating the consequences of operational decisions. However, whether or not the TSB decides to investigate, agency resources are required to make that determination and to maintain a national database of transportation accidents and incidents. The prime criterion for deciding to investigate is whether an investigation is likely to lead to a reduction in risk to persons, property or the environment. Due to limited resources, the TSB does not investigate some accidents less likely to result in safety actions, even when they involve fatalities. This has resulted in some adverse public reaction, and the TSB has come under increased public scrutiny. The TSB is also carrying a backlog of investigations in progress. Approximately 178 investigations are currently in progress, of which close to half are more than one year old. The management of this backlog, combined with the sustained uptake of new cases, presents an on-going challenge due to the limited resources available.

2.3.6 Swissair Flight 111 (SR 111) Accident Investigation

The crash of SR 111 near Peggy's Cove, 2 September 1998, severely tested the resources of the TSB. This is the most complex transportation accident investigation in Canadian history, requiring the mobilization of the majority of the TSB resources thereby creating backlogs in other work. On-going efforts to complete this investigation continue to consume considerable TSB resources, and only limited progress has been achieved in catching up on the backlogs.

Section 3: Departmental Performance

3.1 Strategic Outcomes

In its 2000–2001 Report on Plans and Priorities, the TSB defined the following desired strategic outcomes and related indicators.

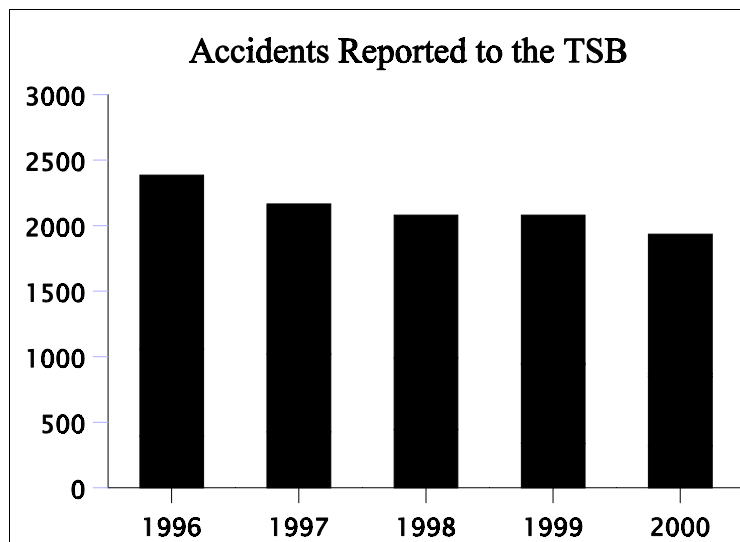
Provide Canadians with:	To be demonstrated by:
<p>Advancements in safety through independent, objective and timely analysis of safety failures in the federally regulated transportation system.</p>	<ul style="list-style-type: none"> • Identification of safety failures in the marine, rail, pipeline and air transportation systems. • Reduction in risks to persons, property and the environment through the use of investigation findings by governments and industry. • Public access to safety information and recommendations. • Satisfaction with quality and timeliness of findings and recommendations. • Awareness by Canadians of the Board’s role in advancing transportation safety. • National and international recognition of the Board as an authoritative and independent resource in the area of transportation safety.

3.2 Performance Accomplishments

Canada’s transportation system is considered one of the safest in the world. Again this year, progress has been achieved in our on-going quest to advance transportation safety even further. In 2000, a total of 1992 accidents and 1347 incidents were reported in accordance with the TSB’s regulations for mandatory reporting. There were also 571 voluntary incident reports. The number of accidents in 2000 decreased by 7% from 1999 and by 17% since 1996. This year was marked with declines in the number of accidents reported in the aviation, marine and rail sectors (see Appendix C for details). In fact, the 321 reported accidents involving Canadian-registered aircraft and the 449 reported

shipping accidents represent the lowest numbers of accidents reported in these modes in the last 25 years. This reduction 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.

Figure 1 (numbers are by calendar year)



It is virtually impossible to measure accurately the impact of the TSB on transportation safety. No two investigations are identical. Some lead to significant safety improvements, and others do not. There is also no good way to link costs incurred by the TSB directly to specific improvements in transportation safety. However, the TSB has certainly been successful in achieving its strategic outcomes over the past year as evidenced by the numerous safety actions taken by its co-delivery partners using the TSB's findings and outputs. The Minister of Transport has also noted on a number of occasions during the year the valuable contribution of the TSB in the advancement of transportation safety.

“The TSB plays an important role in identifying areas where possible improvements can be made in the transportation system.”

(David Collenette, Minister of Transport, February 2001)

and others do not. There is also no good way to link costs incurred by the TSB directly to specific improvements in transportation safety. However, the TSB has certainly been successful in achieving its strategic outcomes over the past year as evidenced by the numerous safety actions taken by its co-delivery partners using the TSB's findings and outputs. The Minister of Transport has also noted on a number of occasions during the year the valuable contribution of the TSB in the advancement of transportation safety.

The next few pages of this report summarize the results and outcomes of the TSB's work over the past year as measured against the stated performance indicators. Given the magnitude of the SR 111 accident investigation, a separate section is dedicated to reporting the results achieved to date on that particular undertaking.

3.2.1 Summary Financial Information

Figure 2 below summarizes the financial performance of the TSB and allocates resources utilized between the SR 111 investigation and other departmental activities. Detailed information about the TSB’s financial performance is included in Appendix D.

Figure 2

Summary Financial Information ¹			
	SR 111 Investigation	Other Activities	Total
Planned Spending	\$0	\$24,086,000	\$24,086,000
Total Authorities	\$4,308,000	\$26,590,000	\$30,898,000
Actual Expenditures	\$3,556,000	\$26,589,000	\$30,145,000
Full-Time Equivalent Personnel Utilized	15	201	216

3.2.2 Results Achieved Against Performance Indicators

The following symbols are used to indicate the results achieved against each performance indicator:

- : work is underway
- ✓: objectives achieved.

1: The summary financial information presented includes three figures. These are intended to show the following:

- what the plan was at the beginning of the year (**Planned Spending**);
- original spending plans plus additional spending Parliament has seen fit to approve in Supplementary Estimates in relation to new collective bargaining obligations and the SR 111 accident investigation (**Total Authorities**);
- total expenditures incurred (**Actual Expenditures**).

Performance Indicators		Results
1	Identification of safety failures in the marine, rail, pipeline and air transportation systems.	✓
2	Reduction in risks to persons, property and the environment through the use of investigation findings by governments and industry.	✓

Our Accomplishments:

Overall, the TSB has been successful in identifying safety failures and in reducing risks in the transportation systems. TSB investigations result in widely distributed 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. This year there was also a significant increase in the number of safety recommendations issued by the TSB. These results reflect a careful application of the TSB's occurrence classification policy in deciding whether to investigate or not, and on 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 2000–2001, the TSB issued a total of 74 safety outputs (29 recommendations, 21 safety advisories and 24 information letters). 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 alert 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 operational practices and procedures, preventive modifications to equipment, replacement of parts, and the modification of training programs. Figure 3 provides a few specific examples of such safety actions that were taken during 2000–2001.

Figure 3

Occurrences Investigated	Safety Actions
<p>Sinking of M.V. "BRIER MIST"</p> <p><i>(The investigation identified, inter alia, safety deficiencies associated with the installation, maintenance, inspection and securement of hatch covers.)</i></p>	<p>Transport Canada implemented an improved targeted inspection program to increase awareness about watertight hatch covers and to verify compliance of small fishing vessels with existing regulations.</p>
<p>Train derailment at Thamesville, Ontario</p> <p><i>(The investigation identified safety deficiencies related to the operation of main track switches and to an over-reliance on procedural compliance in the operation of rail traffic control.)</i></p>	<p>Transport Canada issued an emergency directive regarding the use of main track switches in non-signalled territory. The directive included restrictions on train speeds, stricter procedures for rail employees using main track switches, and a requirement for industry to submit detailed plans to further mitigate risks.</p>
<p>Train derailment at Mont-Joli, Quebec</p> <p><i>(The investigation identified safety deficiencies related to the communication of operating policies and practices and to the safety infrastructure for new railway companies.)</i></p>	<p>Transport Canada has amended the <i>Railway Safety Management System Regulations</i> and is working in collaboration with the Railway Association of Canada on a number of initiatives to improve communication with new railway companies commencing operations.</p>
<p>Cessna model 150/152 crash near Les Cèdres, Quebec</p> <p><i>(The investigation identified that during an attempted spin and recovery procedure the vertical stabilizer became stuck and could not be moved.)</i></p>	<p>Cessna issued a service bulletin instructing all owners to modify a component of the aircraft's vertical stabilizer to prevent the stabilizer from becoming stuck.</p>
<p>Loss of an engine cowling on take-off by an Airbus 320 at Pearson International Airport</p> <p><i>(The investigation focussed on human factors associated with servicing tasks, operations procedures and cowling position indication.)</i></p>	<p>The aircraft operator undertook many operational procedures including making modifications to the aircraft. Transport Canada issued an alert report to industry. The French aviation agency (Direction Générale de l'Aviation Civile) is in the process of issuing two service bulletins requiring modifications to the latch mechanism and cowling holding device of all aircraft of this model.</p>
<p>Bell 206 helicopter crash near Resolute Bay</p> <p><i>(The investigation revealed that the injured pilot had difficulty accessing the aircraft's survival kit, whose packaging required considerable strength and dexterity to open.)</i></p>	<p>The manufacturer of the survival kit has modified the kit designs to make it easier for accident survivors to access the contents.</p>

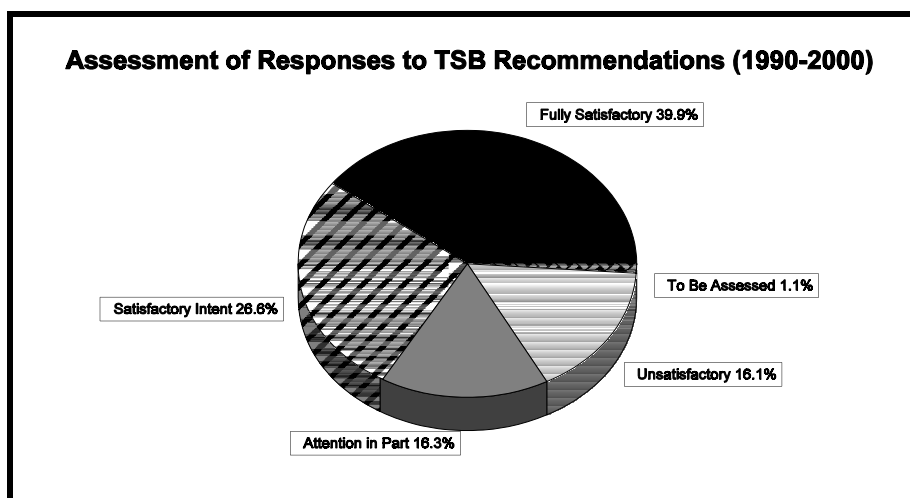
In order to help assess its contribution to the advancement of safety the TSB assesses the responses to its recommendations. In 2000–2001, the TSB received responses to 32 recommendations, some relating to recommendations issued in the previous year. The results of this assessment are shown in figure 4. In all cases the TSB was successful in getting the attention of change agents, and in 24 of 28 assessed cases, action has either been completed or is underway to fully resolve the safety deficiencies identified.

Figure 4

Assessment of Responses to TSB Recommendations - Current Year						
2000-2001 (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	3	2	0	0	0	5
Pipeline	0	0	0	0	0	0
Rail	2	3	0	0	2	7
Air	3	11	4	0	2	20
Total	8	16	4	0	4	32

Over a longer time frame, the response to TSB recommendations is also very positive. Figure 5 illustrates the assessment of responses to TSB recommendations issued since 1990. Over the past year, the TSB has noted an improvement in the attention given to reducing or eliminating the safety deficiencies identified, especially by Transport Canada.

Figure 5



Safety information is also provided to key stakeholders throughout the investigation process permitting them to take immediate safety actions where appropriate. It is now frequent practice to observe safety action being taken by industry and government during the course of TSB investigations. In such situations, rather than issuing recommendations, the TSB can then report on the corrective actions already taken by industry and government agencies. Such safety action can range widely in scope and importance. Operators will often take immediate remedial action after discussion with TSB investigators (for example, 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. Figure 6 provides a few specific examples of such safety actions that were taken during 2000–2001.

Figure 6

Occurrences Investigated	Safety Actions
<p>Sinking of the M.V. “FLARE”</p> <p><i>(The investigation revealed that other vessels of similar age and design could be susceptible to the same fissure damage that contributed to the sinking.)</i></p>	<p>Transport Canada inspectors used TSB information to conduct structural inspections on vessels of similar age and design when they called at Canadian ports, to ensure compliance with international conventions.</p>
<p>DHC-2 Beaver aircraft crash on Lake Asonis</p> <p><i>(The investigation determined that some of the passengers were not dressed suitably to protect themselves from exposure to climatic conditions and one passenger suffered frostbite to the fingers, requiring amputation.)</i></p>	<p>Transport Canada produced a video informing passengers of small aircraft of the need to wear appropriate clothing and footwear for the weather conditions in the area being overflown.</p>
<p>“PAC MONARCH” lifeboat incident</p> <p><i>(The investigation identified safety deficiencies pertaining to the design and operation of lifeboats.)</i></p>	<p>The manufacturer of lifeboat release mechanisms was convinced of the need for system design changes to its equipment through discussion with investigators during testing of the mechanism in TSB laboratories.</p> <p>Information was also exchanged with investigators of the Australian Transport Safety Bureau who were investigating a similar accident. Investigators were able to compare findings and provide safety information to vessel operators and regulators in other countries.</p>

Performance Indicators		Results
3.	Public access to safety information and recommendations.	✓
4.	Satisfaction with quality and timeliness of findings and recommendations.	□
5.	Awareness by Canadians of the TSB's role in advancing transportation safety.	□

Our Accomplishments:

The TSB has been successful in providing access to safety information and recommendations. However, some work is required to improve the satisfaction of clients and to increase the awareness of Canadians about the TSB's role. Clients are generally very satisfied with the quality of the TSB's work but have expressed concerns about the lack of timeliness of the Board's investigation reports. Canadians also recognize the work done by TSB investigators but cannot always distinguish between the TSB and other federal departments and agencies involved in transportation safety.

“The report reads like any other thorough technical review - except, perhaps, for one notable difference: A millimetre below the surface, the TSB's dry, technical language sparkles with a matter-of-fact intelligence that commands notice and respect.”

W.M. Glenn and D. Dehaas, OSH Canada, July 2001

In 2000–2001, the TSB published 90 investigation reports, as well as monthly and annual statistical reports. The TSB continues to publish the *Reflexions* safety digest for each transportation mode. These digests contribute to the advancement of transportation safety by reflecting on the safety lessons learned from accident and incident investigations. Extremely positive feedback has been received from Canada and around the world on these publications.

The TSB has taken a pro-active approach to 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 dialogue with key stakeholders, including the early communication of safety issues that arise during the investigation. In 2000–2001 the TSB responded to a large number of informal requests for information, thereby providing Canadians with information without the need to use the formal Access to Information process. The TSB processed ten times more informal requests than formal requests. The TSB is making greater use of its Internet site to make its reports and other transportation safety information available to Canadians. This year the content of the departmental Internet site was expanded with the posting of 243

previously released reports as well as speeches on a variety of safety-related issues by the Chairperson and senior staff. This initiative has proven to be a cost-effective way of disseminating information. The site is averaging 238 000 visits per month, an increase of 16% over last year. Visitors to the site are Canadians and people from all around the world.

The TSB Internet site is averaging 238 000 hits per month.

The TSB has placed emphasis on communications with next-of-kin of accident victims. In response to their request for information, the families are kept informed on the progress of the investigation and special briefings are held when required to help them understand the accident. In its efforts to improve these communications with next-of-kin, the TSB invited a next-of-kin representative to address a national meeting of TSB investigators. The TSB has also been actively involved in an inter-departmental work group looking at the need for a compassionate assistance program to assist survivors and next-of-kin of victims.

Every year the TSB publishes a leaflet entitled *Key Safety Issues*. The current version (contained in the TSB's annual report for 2000–2001) outlines those issues which, in the Board's opinion, pose enough risk to transportation safety to justify extra efforts by the transportation industry and government agencies to prevent further accidental losses. The TSB believes that by highlighting such safety issues it can increase the awareness of industry and government, with a view to the implementation of safety actions which will reduce or eliminate the attendant safety risks.

The TSB has previously stated its goal of producing a final report within one year of the occurrence. As of 31 March 2001, of the 178 investigations in progress there were 102 investigations that had been in progress for more than a year. Notwithstanding the emphasis placed on report timeliness by the Board, adherence to the one-year standard has yet to be achieved. For the 90 reports completed in this period, the average time in progress was about 20 months, down from 21 months in 1999–2000, as shown in figure 7. There are a number of factors contributing to the lack of timeliness of reports. The ongoing SR 111 investigation continues to consume considerable resources that cannot be made available for other investigations. Staff turnover, difficult recruitment (for a variety of reasons) and a long training process also impede the timely completion of reports. The 115 investigations started this year constitute a 25% increase over 1999–2000. This resulted in a significant increase in the number of investigations in progress at year-end (178 ongoing investigations vs. 144 last year). The increased uptake of cases and the reduction in average time in process demonstrate a small progress in improving our performance on report timeliness.

The TSB did not meet its one-year standard for the completion of investigations.

Figure 7

TSB Productivity								
	Marine		Rail / Pipeline		Air		Total	
	1999-2000	2000-2001	1999-2000	2000-2001	1999-2000	2000-2001	1999-2000	2000-2001
Investigations started	26	23	13	23	43	69	82	115
Investigations completed	27	31	14	10	40	49	81	90
Average duration of completed investigations (number of days)	685	639	842	847	527	522	636	599

This year special efforts were made to expedite the processing of investigations into the sinking of the “TRUE NORTH II” and the Thamesville train derailment to ensure timely results in advancing transportation safety and to respond to specific public interest associated with these accidents. The TSB also issued interim safety information during the course of a number of investigations. Positive response was received to this interim information. The TSB will therefore continue with these measures to ensure the timely availability of safety information. The TSB has also established that much emphasis is placed on its final reports, whereas advancements in transportation safety can often take place while an investigation is in progress. Over the coming year, the TSB communication strategy will therefore try to focus on all forms of TSB safety communications rather than on its final reports alone.

Last year the TSB commissioned an independent survey of persons with a direct interest in the findings of the Board. This survey provided valuable insight on the views of Canadians vis-à-vis the TSB and its work. Building upon the results of this survey, this year the TSB contracted with a communications firm to conduct a media analysis of the news coverage. The bulk of news coverage featuring the TSB during 2000–2001 was neutral and balanced in tone. The majority of print and broadcast items provided factual and credible treatment of the TSB’s activities across Canada. A number of investigations, such as the SR 111 and the “TRUE NORTH II” accidents, resulted in positive news coverage. This positive coverage lent considerable weight and authority to the TSB’s findings and investigative work, and often included supportive commentary from stakeholders and praise from the victims’ families for the TSB’s diligence and efforts to improve transportation safety. Overall, the media regarded the TSB as credible and expert. Negative coverage of the TSB was rare and related to specific issues.

Overall, recognition of the TSB’s name by the media and the public continues to increase. More and more Canadians now recognize the TSB name and can make a distinction between the TSB and Transport Canada. The TSB is now very well recognized within the transportation industry and the specialized media. This recognition was developed in the context of high profile accident investigations such as the sinking of the “TRUE NORTH II”, the Thamesville derailment, and the crash of SR 111. However, there remains a certain confusion within the mainstream media and the general public. TSB investigators are often mistaken as Transport Canada employees. A recent poll conducted for the Air Travel Complaints Commissioner suggests that a high degree of public confusion exists about the role of each agency operating within the transportation portfolio. Therefore, to improve Canadians’ recognition of the TSB, there will be a continuing effort to fine tune its communication efforts towards the mainstream media and the general public.

With its limited resources, the TSB is unable to do all the work that it believes should be done. Some accidents are not investigated. Some failures that could lead to safety improvements may not be identified. The timeliness of the TSB’s reports is very difficult to improve.

However, in the past few months the TSB has undertaken a change process. Work is currently underway to conduct a self-assessment which will then lead to a strategic planning exercise. All TSB outputs will be reviewed to determine whether they effectively contribute to the desired strategic outcomes. This exercise will help the organization establish a solid framework for resource planning and allocation, and facilitate operational decision making to ensure that the best possible results are achieved with the resources available.

Performance Indicator		Results
6	National and international recognition of the Board as an authoritative and independent resource in the area of transportation safety.	✓

Our Accomplishments:

The TSB is very well recognized at both the national and international levels. A number of memoranda of understanding have been negotiated to facilitate cooperation with other Canadian organizations. These organizations recognize the professionalism and expertise of the TSB in its field of competence and have come to

The TSB provides accident investigation services relating to short-line railways to the provinces of Alberta and Ontario.

rely on the TSB's findings. This recognition transcends the federal and provincial jurisdictions. For example, at the request of the provincial government the TSB has successfully conducted an investigation into a short-line railway accident in Alberta. The TSB also provided specialized assistance in human factors to assist in the investigation of a mining incident in northern Ontario.

The Canadian transportation industry has also developed a high level of confidence in the work of the TSB. This is demonstrated by numerous invitations to present papers and to participate in various conferences and technical meetings related to transportation safety. Examples include the Canadian Safe Boating Council Symposium, the Canadian Aviation Safety Seminar, Aerospace 2000, the Millennium Transportation Conference, the National Association of Chief Coroners and Chief Medical Examiners conference, and meetings of the Railway Association of Canada, the Canadian Energy Pipeline Association, the Canadian Emergency Preparedness Association, the Canadian Marine Advisory Council, the Northern Air Transport Association, the Air Transport Association of Canada and many others.

“It will be investigated by what is widely considered to be one of the world’s half-dozen best and most sophisticated accident investigation bodies: the TSB.”

Quote from OHS Canada magazine, July 2001

The TSB is also recognized for its contribution to safety by people and organizations outside the transportation industry. *OHS Canada*, a reputable magazine devoted to occupational health and safety issues, recently published a feature article on the TSB outlining the TSB's expertise, timely release of findings, investigative techniques and independence.

The TSB's engineering facilities continue to be of particular interest to officials from government, industry and academia. A number of visits and briefings were provided to enhance awareness and understanding of how scientific methods and technology are used during TSB investigations. In particular, the TSB's flight recorder playback capabilities attract worldwide attention. The Recorder Analysis and Presentation System (RAPS) developed by the TSB is currently in use under licensing agreement by thirteen government safety agencies in eight countries. This software has gained international recognition as a world standard for the decoding, analysis, and presentation of flight recorder information and is used at the world's leading flight recorder laboratories. Aircraft manufacturers and others in the aviation safety industry have shown increasing interest in RAPS. The TSB has therefore recently agreed to licence this software to a private enterprise, thereby permitting commercial exploitation of the product and ensuring its long-term viability.

The Integrated Safety Investigation Methodology training program developed by the TSB has drawn considerable interest amongst other safety organizations within and outside of Canada. Numerous requests have been received for participation in these training sessions. Although the TSB is not in the business of providing training to others, vacant seats in the investigator training sessions have been offered to representatives of other transportation safety agencies. To date, participants from Transport Canada, the United States, New Zealand and the Netherlands have benefited from this training program. The academic world has also expressed interest in the TSB methodology.

The TSB's integrated process for investigating human factors has influenced or been directly applied by other organizations in the development of their own internal models of investigation. The International Maritime Organization (IMO) used the process as a basis for their model of investigating for the human elements in marine casualties. The model provided a construct for Nav Canada in their development of an internal investigation methodology. Laurentian University has also used the TSB methodology in its research and development work—to apply it in the understanding of human factors in industrial occurrences other than transportation.

The TSB has also received numerous requests for information and assistance from foreign countries. New Zealand and Australia have consulted with the TSB in their work to ensure their readiness for a major aircraft accident. Taiwan, Italy and the Netherlands have consulted with the TSB on the establishment of an independent transportation safety organization for their countries.

The TSB actively supports the work of two organizations of the United Nations: the IMO and the International Civil Aviation Organization (ICAO). The TSB has participated in the delivery of marine accident investigation courses sponsored by the IMO, given annually to developing country and industry representatives at the International Maritime Academy at Trieste, Italy. TSB staff have regularly supported the Canadian delegation to the IMO Maritime Safety Committee, Flag State Implementation Sub-Committee, and Navigation Safety Sub-Committee meetings. The TSB also participated actively in the IMO-sponsored Voyage Data Recorder Working Group and the international Future Flight Data Collection Committee.

The TSB also participates in such international associations as the International Transportation Safety Association, the Marine Accident Investigators International Forum, the International Society of Air Safety Investigators, the International Ergonomics Association, and the Flight Safety Foundation.

3.2.3 Swissair Flight 111 (SR 111) Investigation

The crash of SR 111 has resulted in the most complex transportation accident investigation ever undertaken in Canada. Since the accident, TSB staff have worked tirelessly on this investigation.

	Performance Indicators	Results
1	Identification of safety failures in the air transportation system.	✓
2	Reduction in risks to persons, property and the environment through the use of investigation findings by governments and industry.	✓
3	Public access to safety information and recommendations	✓
4	Satisfaction with quality and timeliness of findings and recommendations.	✓
5	Awareness by Canadians of the Board's role in advancing transportation safety.	□
6	National and international recognition of the Board as an authoritative and independent resource in the area of transportation safety.	✓

Our Accomplishments:

This single investigation has already led to significant advancements in transportation safety worldwide. Numerous safety deficiencies have been identified by the TSB and communicated publicly. Although the investigation is still ongoing, and safety deficiencies that may lead to safety action have yet to be fully analyzed, the TSB has, in the interim, communicated a number of findings and released recommendations. Twelve recommendations and three safety advisories have been issued to Canadian, United States, and European authorities, resulting in a number of safety actions to reduce risks. Safety actions initiated to date have an estimated cost of well over one billion dollars for the worldwide transportation industry. They include:

- the removal of metalized Mylar thermal acoustical insulation blankets in some 1500 aircraft and its replacement with other materials,
- the review of flammability test criteria and methods used by regulatory authorities,
- the preventive inspection and repair of wiring, particularly in MD-11 and similar aircraft,

- the preventive inspection and modification of pilots' map reading lights in thousands of aircraft,
- the removal of similar in-flight entertainment systems in Swissair aircraft,
- the review by regulatory authorities of specifications for flight recorder recording capacity and power supply,
- the modification of standard operating procedures for aircraft crews—to prepare to land immediately upon detection of smoke in the cabin, and
- international research and development initiatives on in-flight firefighting issues.

Clients are generally very satisfied with the work of the TSB on this investigation. Many TSB recommendations were quickly accepted by the regulatory agencies in Canada, the United States and Europe, due to the compelling case submitted to them. Specialists in the industry have also commended the TSB on its thorough work in analysing the safety deficiencies. News coverage of this investigation has been very positive towards the TSB and its work. Feedback from next-of-kin of the victims has also been very positive.

“It’s amazing that they could do that (reconstruct the wreckage). If that costs millions of dollars, it’s worth it, every million to avoid anything like this. There shouldn’t be any doubt about that.”

(Comments from V. Arnmark, widow of a crash victim, in The Herald, Halifax, December 2000)

“The TSB has taken aviation safety to heights that I had never thought possible considering the complexity and controversy surrounding the crash of Swissair 111.”

(Comments from Lyn S. Romano, Chairman of International Aviation Safety Association, August 2001)

However, considerable work remains before the TSB can consider this investigation completed. A number of safety issues have yet to be fully analysed and a final investigation report must be issued. Costs of \$50.9 million have been incurred to date by the Canadian government. Many Canadians do not fully understand why the TSB was tasked with the conduct of this investigation and why work continues so long after the accident occurred. On many occasions the TSB has explained its role and responsibilities under international agreements signed by Canada. However, more work is required in this area before Canadians can fully understand Canada’s obligations and the reciprocal arrangements where other countries would investigate Canadian aircraft accidents taking place within their territory.

3.3 Other Performance Issues to Note

The TSB has made significant progress on the implementation of government-wide initiatives. This year the TSB successfully implemented the Financial Information Strategy. New staffing delegation instruments were negotiated with the Public Service Commission. Work continued to progress in preparation for the implementation of the Universal Classification System. Work was also undertaken on the modernization of the departmental Materiel Management function.

The TSB also played an active role within the federal government small agencies community. TSB officials participated in a number of work groups in order to share best practices and to collaborate on certain projects in order to minimize costs and efforts. The TSB was recognized by the Treasury Board Secretariat for its leadership in this regard.

Section 4: Other Information

The TSB reports publicly on all its investigations. Most TSB investigation reports published since 1995 are available on the TSB Internet site. The TSB also publishes periodic statistical reports for each one of the four transportation modes. These reports are also available on the TSB Internet site. Finally, the TSB publishes an annual report to Parliament (including detailed audited financial statements) and a periodic safety magazine titled *Reflexions*, both available in printed form upon request.

Miscellaneous additional information is also available on the TSB departmental Internet site at: <http://www.tsb.gc.ca>

For further information you may also contact us at:

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Appendices

A - Description of TSB Investigation Process

B - TSB Cooperation / Interaction

C - Transportation Safety Statistics

D - Financial Performance

E - Internet Addresses for Other Organizations Involved in Transportation Safety

Appendix A

Description of TSB Investigation Process

The TSB has the discretion to choose which occurrences to investigate. In essence, the TSB's policy is to investigate the occurrences which have a reasonable potential to result in safety action or which generate a high degree of public concern for transportation safety.

The TSB's operating philosophy is one of openness, fairness, competence and integrity. Thus, investigations and public reports are designed to maximize information to advance safety while respecting the rights of those involved.

Occurrence Classification Policy

Over 3000 transportation occurrences are reported to the TSB each year in accordance with its reporting requirements. Practical considerations dictate that only a small proportion of these be investigated. While many occurrences warrant a TSB investigation (in that they offer potential for acquiring new knowledge of the underlying safety deficiencies compromising safe transportation operations), most reported occurrences by themselves offer little scope for adding to the TSB's knowledge of underlying safety deficiencies. However, a broad examination of sets of such occurrences—involving similar phenomena or contributory factors—is at times warranted.

Effective resource management and the advancement of transportation safety will depend upon the TSB's timely identification of individual occurrences, as well as unsafe situations or conditions, with potential for significant safety payoff. To this end, the TSB has developed a five-level classification system. Each occurrence is classified based on a risk assessment process, and a decision is made whether to investigate. This risk assessment process continues to be applied throughout the course of the investigation, so that a decision may be made to stop an investigation when it becomes clear that the outcome would not contribute to the advancement of transportation safety.

The primary criterion for determining if an occurrence in any mode will be investigated is whether such analysis is likely to lead to a reduction of risk to persons, property, or the environment. Other criteria include:

- consideration of any TSB obligations or commitments under international agreements, assistance to the provinces or other nations, etc.,
- consideration of the degree of public expectation of a TSB investigation.

The complete occurrence classification policy and the detailed considerations for the assessment of risk are described on the TSB Internet site.

Investigation Process

Field Phase

The number of investigators deployed to an occurrence site to conduct an investigation varies from one investigator for a relatively straightforward investigation to upwards of 20 to 30 for a major investigation.² The field phase can last from one day to several weeks or more. In all cases, an investigator-in-charge is appointed to lead the investigation. Generally, the field phase includes examination of the occurrence site, field examination of the equipment, vehicle or wreckage, witness interviews, the collection of pertinent documents and the selection and removal of specific wreckage items for further examination.

Post-Field Phase

A large number of activities take place from the time that the investigation team returns from the occurrence site until the investigator-in-charge produces the initial draft report. This phase can take up to six months depending on the size and complexity of the investigation. The following are activities that may be conducted during this phase:

- collection and examination of all pertinent Transport Canada / National Energy Board, company, vehicle and other local, national and international records;
- interviews with company and Transport Canada / National Energy Board personnel;
- laboratory examination of selected wreckage;
- readout and analysis of recorders;
- statistical analysis;
- human performance information;
- simulation work; and
- review of autopsy and toxicology reports.

The investigator-in-charge, with the support of other investigators on the team, is responsible for collating and analysing all the information collected and for producing a draft report.

2

Note: The investigation of SR 111 is outside the scope of the normal process, and at the height of the activity, the TSB investigator-in-charge was directing or coordinating the efforts of approximately 4000 government employees, contractors and volunteers. The field phase for this investigation extended well beyond the one-year mark.

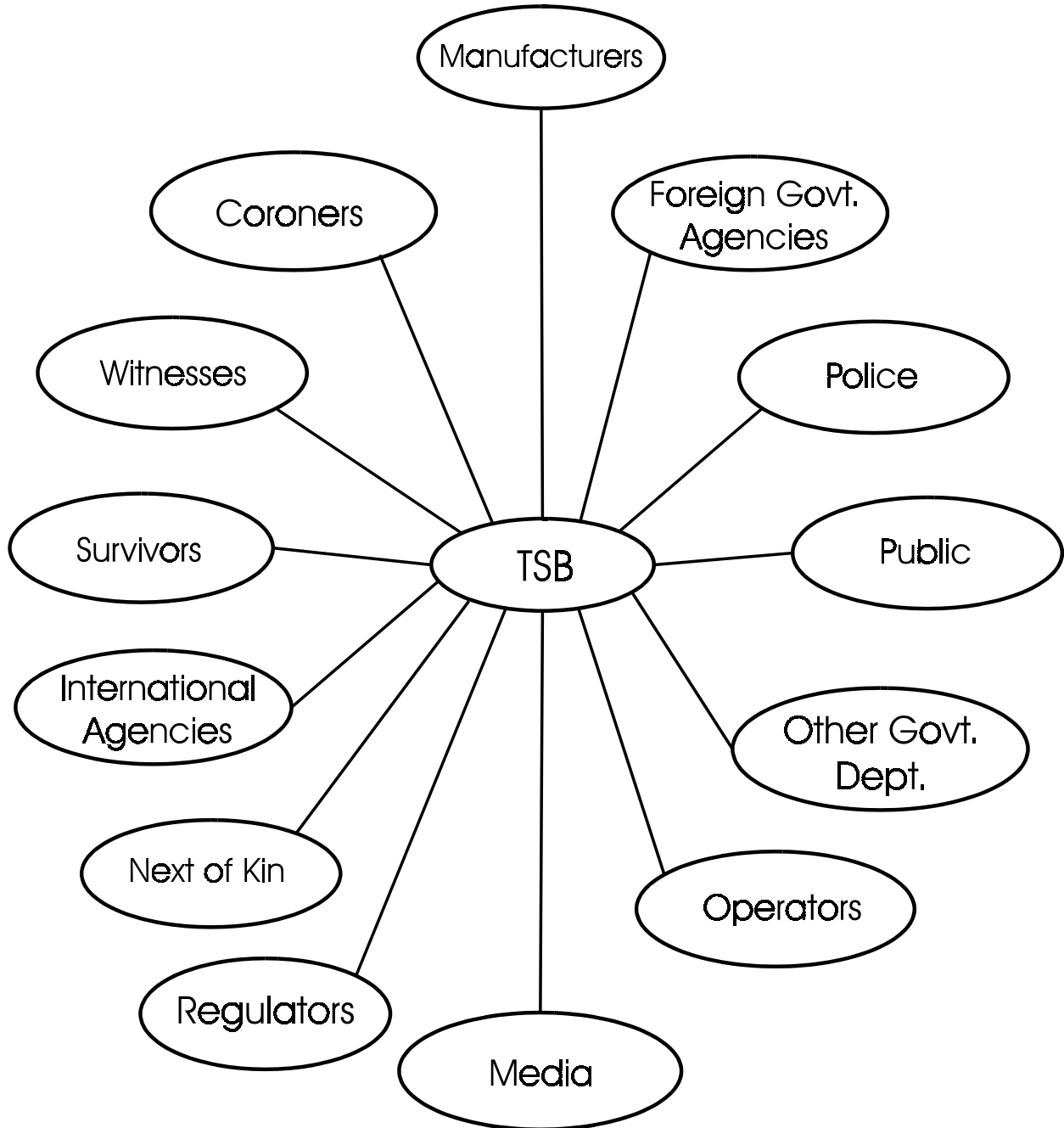
Report Production

The draft investigation report is reviewed by the Board and may be accepted as the Board's draft report, amended or returned for further staff work. Once approved, the Board's draft report is sent on a confidential basis to designated persons for review and comment. Comments received from reviewers are considered by the Board and may result in changes to the report. This process ensures both the fairness and the accuracy of the report. The investigation report is then finalized, printed and released to the public. The TSB performance standard is to release reports within one year of the date of the occurrence. However, investigation reports for major, very complex or unusual investigations may take longer.

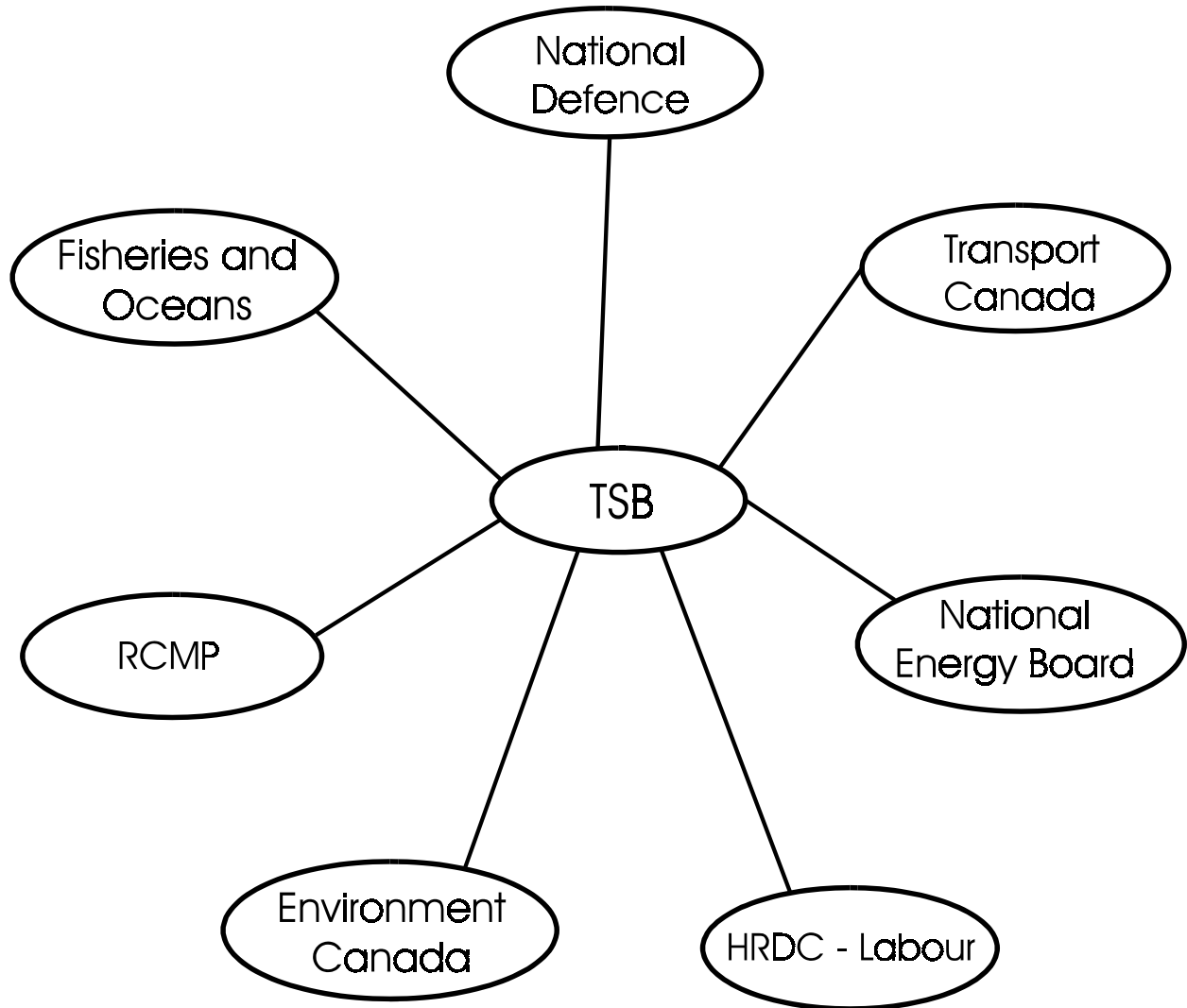
Key Safety Issues List

The TSB investigates and analyses specific accidents and incidents. It also monitors general trends and emerging safety issues, and maintains lists of significant safety concerns. There are a number of areas where the risk to safety is sufficient to warrant extra efforts by the transportation industry and government, to address these risks and reduce further accidental losses. The TSB believes that by working together, participants in the Canadian transportation community can reduce or eliminate the safety deficiencies associated with these key safety issues. Each year, in conjunction with its Annual Report, the TSB reports this list of significant safety issues to Parliament. The most recent list of key safety issues is accessible on the TSB Internet site.

Appendix B
TSB Cooperation / Interaction



Appendix B
TSB Cooperation / Interaction (Federal Government)



Appendix C

Transportation Safety Statistics

The statistics provided in this appendix are extracted from Chapter 4 of the Transportation in Canada 2000 Annual Report published by Transport Canada. More comprehensive information is available in that publication.

The following table presents the statistics on transportation occurrences by mode, including comparisons with the five-year averages. Taking into account the level of activity in each mode, the accident rates for 2000 continue to exhibit a general downward trend.

Transportation Occurrences by Mode - 2000 Versus Previous Five-Year Average (1995-1999)			
	Air	Marine	Rail
Accidents			
2000	321	449	1062
Five-Year Average	363	571	1180
Fatalities			
2000	63	31	87
Five-Year Average	81	33	111
Incidents			
2000	726	243	330
Five-Year Average	703	166	436

The following table 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.

Accident Rates in Transportation - 2000 versus Previous Five-Year Average (1995-1999)			
	Air ¹	Marine ²	Rail ³
Accidents			
2000	7.5	3.1	13.3
Five-Year Average	9.2	3.6	15.1
¹ : Per 100 000 hours flown (Canadian-registered aircraft only) ² : Per 1000 commercial vessel trips ³ : Per million train-miles			

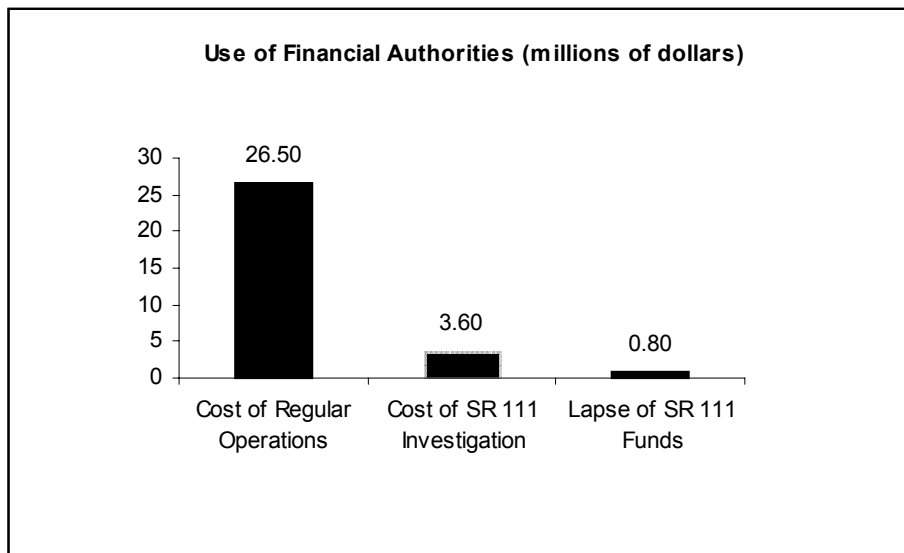
Appendix D Financial Performance

Financial Performance Overview

The TSB started the year with authorities of \$24.1 million. Supplementary Estimates and Governor General Warrants in the amount of \$6.3 million were then approved for the carry-forward of the previous year's lapse, collective bargaining adjustments and for the extraordinary costs of the SR 111 investigation. Transfers in the amount of \$0.5 million were also made from Treasury Board votes, thereby increasing total authorities to \$30.9 million. In 2000–2001 the TSB spent \$30.1 million of its \$30.9 million total authorities. The lapse of \$0.8 million is primarily due to lower spending than anticipated on the SR 111 investigation.

The total expenditures of the TSB, minus SR 111, represent an approximative cost of \$0.86 per Canadian citizen. With SR 111 investigation costs included, the number rises to \$0.98 per Canadian citizen. For this amount, Canada maintains the capability to investigate major failures in four different modes of the national transportation system.

Figure 8



Financial Table 1: Summary of Voted Appropriations

This table explains the way Parliament voted resources to the TSB.

Financial Requirements by Authority (\$ millions)				
Vote		Planned Spending	2000–2001 Total Authorities	Actual Spending
	Canadian Transportation Accident Investigation and Safety Board			
15	Operating expenditures	21.0	27.5	26.7
(S)	Contributions to Employee Benefit Plans	3.1	3.4	3.4
	Total Department	24.1	30.9	30.1
Total Authorities are Main Estimates plus Supplementary Estimates plus other authorities.				
Note: Total Authorities and Actual expenditures are significantly higher than Planned Spending due to the SR 111 accident investigation and new collective bargaining obligations.				

Financial Table 2 : Comparison of Total Planned Spending to Actual Spending

This table explains, in a government-wide standardized fashion, the way resources are used by the TSB.

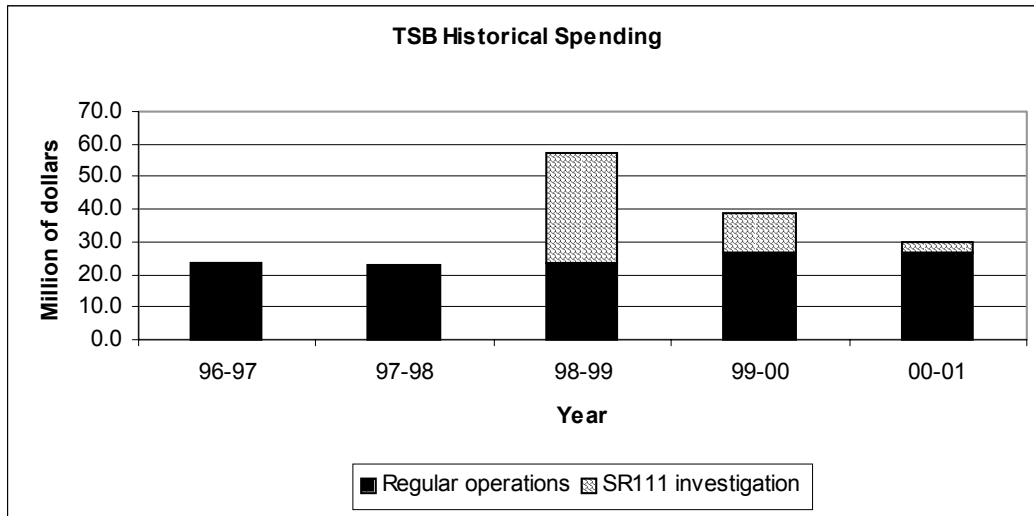
Departmental Planned versus Actual Spending (\$ millions)			
Business Line	2000–2001		
	Planned Spending	Total Authorities	Actual Spending
Staff in Full-Time Equivalents	230	230	216
Operating	23.6	30.4	29.6
Capital	0.5	0.5	0.5
Total Gross Expenditures	24.1	30.9	30.1
Less:			
Respendable Revenues	-	-	-
Total Net Expenditures	24.1	30.9	30.1
Other Revenues and Expenditures			
Non-respendable Revenues	-	-	-0.1
Cost of Services Provided by Other Departments	2.4	2.5	2.4
Net Cost of the Program	26.5	33.4	32.4
Note: Total Authorities and Actual expenditures are significantly higher than Planned Spending due to the SR 111 accident investigation and new collective bargaining obligations.			

Financial Table 3: Historical Comparison of Total Planned Spending to Actual Spending

This table provides an historical perspective on how resources are used by the TSB.

Historical Comparison of Departmental Planned versus Actual Spending (\$ millions)					
	Actual 1998- 1999	Actual 1999- 2000	2000–2001		
			Planned Spending	Total Authorities	Actual
Canadian Transportation Accident Investigation and Safety Board	57.3	39.1	24.1	30.9	30.1
Total	57.3	39.1	24.1	30.9	30.1
Total Authorities are Main Estimates plus Supplementary Estimates plus other authorities.					
Note: Total Authorities and Actual expenditures are significantly higher than Planned Spending due to the SR 111 accident investigation and new collective bargaining obligations.					

Figure 9



In 1998-1999, 1999-2000 and 2000–2001 spending is much higher due to SR 111 investigation costs of \$34.0 million, \$13.4 million and \$3.6 million, respectively.

Appendix E

Internet Addresses of Other Organizations Involved in Transportation Safety

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

Transport Canada	http://www.tc.gc.ca
National Energy Board	www.neb.gc.ca
Fisheries and Oceans - 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 Development Canada	www.hrdc-drhc.gc.ca
National Defence	www.dnd.ca

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

United States

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

Australia

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

Bureau enquêtes accidents	www.bea-fr.org
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United Kingdom

Air Accidents Investigation Branch	www.aaib.dtlr.gov.uk
Marine Accidents Investigation Branch	www.maib.dtlr.gov.uk

International

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