

Transportation Safety Board
of Canada



Bureau de la sécurité des transports
du Canada

TSB

T R A N S P O R T A T I O N S A F E T Y B O A R D



Annual Report to Parliament

2004-2005

Canada

Transportation Safety Board of Canada
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ANNUAL REPORT TO PARLIAMENT 2004–2005

Place du Centre
200 Promenade du Portage
4th Floor
Gatineau, Quebec K1A 1K8

17 August 2005

The Honourable Lucienne Robillard, P.C., M.P.
President of the Queen's Privy Council for Canada
House of Commons
Ottawa, Ontario K1A 0A6

Dear Minister:

In accordance with subsection 13(3) of the *Canadian Transportation Accident Investigation and Safety Board Act*, the Board is pleased to submit, through you, its annual report to Parliament for the period 1 April 2004 to 31 March 2005.

Yours sincerely,



Charles H. Simpson
Acting Chairperson

TABLE OF CONTENTS

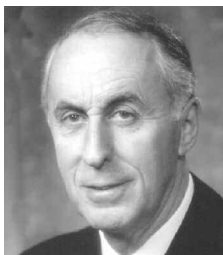
Members of the Board.....	1
Chairperson's Message.....	3
Senior Management.....	4
Mission of the TSB.....	4
Independence.....	4
Occurrences, Investigations and Safety Action.....	5
Liaison with the Canadian Transportation Community.....	8
International Cooperation and Knowledge Transfer.....	10
Marine Occurrence Statistics and Investigations.....	12
Pipeline Occurrence Statistics and Investigations.....	21
Rail Occurrence Statistics and Investigations.....	22
Air Occurrence Statistics and Investigations.....	30
Appendix A—Glossary.....	40

LIST OF FIGURES

1	Occurrences Reported to the TSB.....	5
2	Investigations in Process / Completed.....	6
3	Safety Action by the TSB.....	6
4	Board Assessment of Responses to Recommendations.....	7
5	Marine Occurrences and Fatalities.....	13
6	Pipeline Occurrences.....	21
7	Rail Occurrences and Fatalities.....	23
8	Air Occurrences and Fatalities.....	30



MEMBERS OF THE BOARD



Acting Chairperson Charles H. Simpson

Transportation executive experience includes Executive Vice-President, Operations, for Air Canada; President of the Canadian Air Line Pilots Association; and Vice-President of the International Federation of Air Line Pilots' Associations.



Member Jonathan Seymour

Transportation policy and marine management experience includes Executive Director of International Maritime Centre-Vancouver; chartering, commercial and general manager for several shipping companies; marine policy advisor to the British Columbia government; and policy and economic consultant.



Member Wendy A. Tadros

Transportation and legal experience includes Director of Legal Services for the National Transportation Agency of Canada; Inquiry Coordinator for "The Road to Accessibility: An Inquiry into Canadian Motor Coach Services"; and counsel to the Canadian Transport Commission before the Commission of Inquiry into the Hinton Train Collision.



Member James P. Walsh

Was the Member of the House of Assembly in Newfoundland and Labrador for the district of Conception Bay East-Bell Island from 1989 to 2003. Most recently, served as Minister of Works, Services and Transportation, and also served as Minister of Tourism and Culture, Parliamentary Secretary to the Minister of Finance and Treasury Board, and Parliamentary Secretary responsible for the Newfoundland and Labrador Housing Corporation. Also served as Caucus Chairman and Vice-Chair of the Public Accounts Committee. In 2003, received the distinction of Honorary Life Member of the Transportation Association of Canada.



Member R. Henry Wright

Management and consulting experience includes auditor for the Ontario Ministry of Community and Social Services; senior management administrator of several non-profit organizations; and consultant in government and public relations.

CHAIRPERSON'S MESSAGE

The mandate of the Transportation Safety Board of Canada is clear and very focussed — we investigate accidents in the rail, air, pipeline and marine modes of transportation to determine what happened and why it happened. Our ultimate product is information and knowledge, imparted to individuals, transportation companies, business associations, manufacturers and regulators to assist in ensuring that unsafe actions or conditions are not repeated or allowed to persist.

For the past two years, we have placed a particular management focus on ensuring that key information is available to agents of change and the public at large in a more comprehensive and timely fashion. We reduced the number of in-process investigations by 35%, reduced the average time to complete an investigation by roughly 10%, and greatly increased the availability of information derived from our investigations on our Web site. Public use of our Web site has doubled during this reporting period.

These improvements are very positive indicators that the changes implemented by the management team are having the desired effect and that the organization is better positioned to contribute to the advancement of transportation safety in Canada and around the world.

Canadians expect — even demand — a safe and sound transportation system along our waterways, pipelines, railways and in our skies. The work of the TSB over the past year has contributed to the reinforcement of a strong safety culture, both at home and abroad. We are an integral element of an effective network of people and organizations committed to the safety of Canadians. The results highlighted in this year's annual report clearly reflect the value the TSB brings to the transportation system and to Canadians.



Charles H. Simpson
Acting Chairperson

SENIOR MANAGEMENT

Executive Director	D. Kinsman
General Counsel	A. Harding
Director General, Investigation Operations	T. Burtch
Director, Corporate Services	J. L. Laporte
Director, Marine Investigations	F. Perkins
Director, Rail/Pipeline Investigations	I. Naish
Director, Air Investigations	N. Stoss
Director, Engineering	N. Cerullo

MISSION OF THE TSB

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

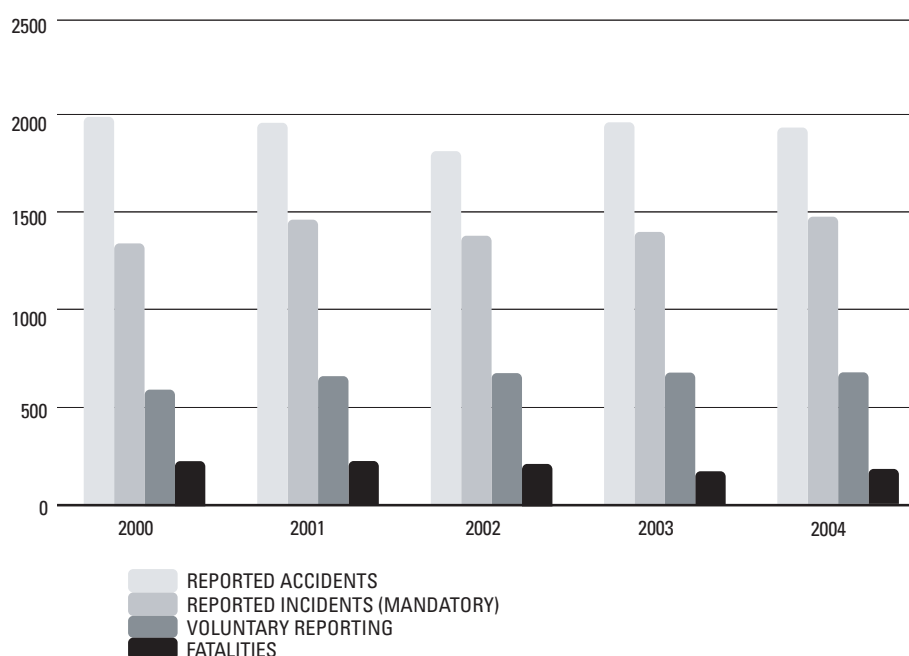
INDEPENDENCE

To encourage public confidence in transportation accident investigation, the investigating agency must be, and be seen to be, objective, independent and free from any conflicts of interest. The key feature of the TSB is its independence. It reports to Parliament through the President of the Queen's Privy Council for Canada and is separate from other government agencies and departments. Its independence enables it to be objective in arriving at its conclusions and recommendations. The TSB's continuing independence and credibility rest on its competence, openness, integrity and the fairness of its processes.

OCCURRENCES, INVESTIGATIONS AND SAFETY ACTION

In 2004, a total of 1935 accidents and 1476 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 1973 accidents reported in 2003 and the 1999–2003 annual average of 1978 accidents. The number of reportable incidents reached 1476 in 2004, up from 1390 in 2003 and the 1999–2003 average of 1361. 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.

FIGURE 1 – OCCURRENCES REPORTED TO THE TSB



All reported occurrences were examined in accordance with the Board's Occurrence Classification Policy to identify those with the greatest potential for advancing transportation safety. Investigations were undertaken for 72 of the approximately 4000 occurrences reported to the TSB in fiscal year 2004–2005. In that same period, 115 investigations were completed, compared to 73 in the previous year.² The number of investigations in process decreased to 99 at the end of the fiscal year from 142 at the start. Average time to complete an investigation decreased to 619 days in fiscal year 2004–2005 from 684 days in the previous year. Information on all reported occurrences was entered into the TSB database for historical record, trend analysis and safety deficiency validation purposes.

1. While the Board'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. For definitions of terms such as *accident*, *incident* and *occurrence*, see Appendix A.

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

FIGURE 2 – INVESTIGATIONS IN PROCESS / COMPLETED

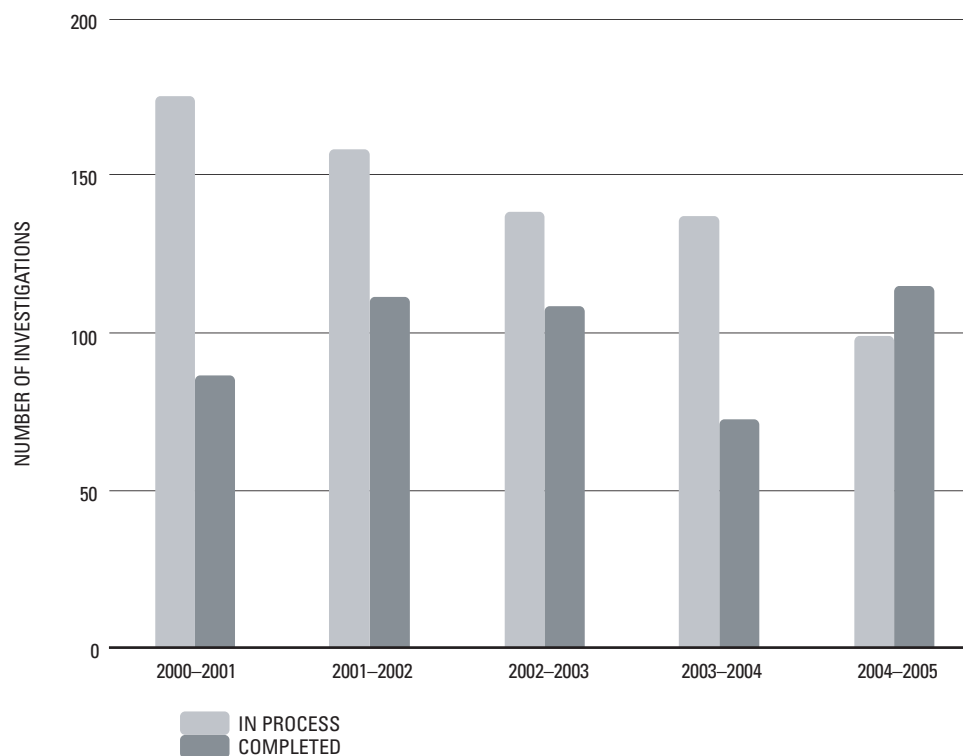


FIGURE 3 – SAFETY ACTION BY THE TSB

2004–2005	RECOMMENDATIONS ³	SAFETY ADVISORIES	SAFETY INFORMATION LETTERS
Marine	4	9	8
Pipeline	0	5	0
Rail	3	6	10
Air	4	9	6
TOTAL	11	29	24

Note: A total of four Safety Concerns were identified for Marine in 2004–2005.

A total of three Safety Concerns were identified for Rail in 2004–2005.

A total of five Safety Concerns were identified for Pipeline in 2004–2005.

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

In accordance with the *Canadian Transportation Accident Investigation and Safety Board Act*, a federal minister who is notified of Board 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.

FIGURE 4 – BOARD ASSESSMENT OF RESPONSES TO RECOMMENDATIONS⁴

2004–2005	FULLY SATISFACTORY ATTENTION TO SAFETY DEFICIENCY	SATISFACTORY INTENT TO ADDRESS SAFETY DEFICIENCY	ATTENTION TO SAFETY DEFICIENCY SATISFACTORY IN PART	UNSATISFACTORY ATTENTION TO SAFETY DEFICIENCY
Marine	0	4	3	4
Pipeline	0	0	0	0
Rail	2	2	1	0
Air	1	1	0	0
TOTAL	3	6	3	4

4. Also includes responses to recommendations issued in the previous fiscal year.

LIAISON WITH THE CANADIAN TRANSPORTATION COMMUNITY

As part of the TSB's effort to keep abreast of technological change and to maintain contact with the transportation industry in Canada, TSB staff and Board members attend and participate in various conferences and technical meetings pertinent to transportation safety.

Members of the Board participated in visits and conferences with the Railway Association of Canada in British Columbia, the British Columbia Towboat Conference in Victoria, the International Pipeline Conference in Calgary and the Air Transport Association of Canada. Members of the Board also made presentations to the Canadian Transportation Lawyers Association in Calgary, the International Pipeline Conference in Calgary and the Pipeline Research Council International, Inc. Conference in Montebello.

In addition, the Executive Director continued to maintain close ties with the community by attending meetings such as the Canadian Business Aircraft Association's Annual General Meeting and Annual Stakeholders' Meeting, the Helicopter Association of Canada Annual Convention, the Canadian Aviation Executives' Safety Network Annual Meeting, the Transport Canada-sponsored Canadian Aviation Safety Seminar, the Canadian Air Traffic Controllers' Annual Convention and the Railway Association of Canada Annual General Meeting.

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

Marine staff gave presentations to the Comité régional sur les communications d'urgence in Quebec, and a multimodal presentation was given to senior Sûreté du Québec personnel in Montréal. In the Central region, presentations were made to police, harbour masters, fire departments, emergency medical services units, the U.S. Coast Guard and U.S. border police, two International Shipmasters lodges and the Canadian Power and Sail Squadron. In the Western region, presentations were made to the Canadian Coast Guard Auxiliary, Washington Marine Group, Orient Steamships Canada Ltd., Fairmont Shipping Canada Ltd. and Valles Steamship Canada Ltd., the Chamber of Shipping and the Institute of Chartered Shipbrokers. The Vancouver office staff are directly involved in the proceedings of the Marine Action Group (MAG) and have made a dozen presentations to fishing and other marine interests. Other activities included participation in meetings with the Canadian Maritime Law Association, the Canadian Marine Advisory Council (both national and regional) and the Society of Naval Architects and Marine Engineers.



Pipeline staff made presentations about the TSB's mandate, investigative process and reporting requirements to a wide range of pipeline companies in both eastern and western Canada. Companies included El Paso Canada Pipeline, EnCana Corporation, Marathon Canada Ltd.–Corridor Resources, Canada–Nova Scotia Offshore Petroleum Board, Shell Canada, Heritage Gas, Petro-Canada, Imperial Oil, Exxon Mobil, Sable Pipeline, Exxon's fractionation plants in Point Tupper and Goldsboro, Global Santa Fe, TransCanada PipeLines, Enbridge, Terasen Pipelines, Maritimes & Northeast Pipeline, Alliance Pipeline, and Edmonton and Regina Emergency Measures District.

Rail staff made presentations at the Atlantic Regional Railway Conference in Moncton and to Canadian Pacific Railway in Calgary. Both formal and informal meetings were held with Canadian industry and regulatory bodies.

TSB Air staff participated in annual meetings with departments and associations within the aviation community and provided formal briefings to the Air Transportation Association of Canada, the Northern Air Transport Association, the Canadian Space Agency meeting on the Human Spaceflight Emergency Disaster Contingency Plan, the National Police Convention, the Recreational Aircraft Association, and the Northwest Territories Government Forestry Services. Staff also participated and provided briefings during disaster response planning exercises with the Montréal Airport and the Edmonton International Airport Aircraft Rescue and Fire Fighting service.

The TSB's Engineering facilities continued to provide briefings and visits of particular interest to industry groups. This year, the Engineering Branch examined the fuel cell explosion on Bell 206 helicopters with Transport Canada (TC) and a fractured main rotor Starflex on a Eurocopter AS 350 helicopter for TC. It also tested marine lights for TC and participated as an observer for a rail site survey. It examined a failed rail line heater for OC Transpo and participated in a shared evaluation of CVR and FDR (cockpit voice recorder and flight data recorder) and track-train dynamics for the National Research Council.

Macro-analysis staff met with B.C. Ferries, the B.C. Chamber of Shipping, the B.C. Pilotage Authority, the B.C. Safety Authority and researchers from the University of British Columbia to explore ways to improve the TSB's occurrence data products and services. Further, the Macro-analysis Division provided active support to Transport Canada's multidisciplinary research project on grade-crossing accidents.

INTERNATIONAL COOPERATION AND KNOWLEDGE TRANSFER

The TSB's mission is to advance transportation safety, not only in Canada but worldwide. This cooperation comes in many forms, through participation in safety symposiums, international safety organizations and international investigations.

Over the past year, Board members attended the 49th Aviation Safety Seminar in Tucson, Arizona, and the Air Line Pilots Association Annual General Meeting, the official opening of the U.S. National Transportation Safety Board Academy and a meeting of the International Transportation Safety Association, all in Washington, D.C. The Executive Director also attended and made two formal presentations at the International Transportation Safety Association meeting.

Marine staff continued to participate on various International Maritime Organization (IMO) committees and sub-committees, 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 investigating marine casualties and incidents. The TSB is a founding member of the Marine Accident Investigators' International Forum and this year made presentations at the annual 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 at Trieste, Italy. A monthly column about noteworthy Canadian marine investigations is prepared for the *Marine Engineers Review*, a noted U.K. 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 investigation of marine accidents.

Air staff completed its support to the Gabinete de Prevenção e Investigação de Acidentes, 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 on international investigations and inter-agency procedures. The TSB 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 (AIR) Working Group held in Washington in June 2004, the RAPS Users Conference in Ottawa in June 2004, and the FDR Parameter Working Group. A TSB staff member has been designated the Canadian representative for the ICAO Flight Recorder (FLIREC) Panel. Engineering staff examined aircraft instruments for investigations carried out by Zimbabwe and Japan. Staff also attended engine teardown at Pratt & Whitney as an accredited representative for Italy and helped the U.S. National Transportation Safety Board in failure analysis due to facility problems.

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, conference 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 International Maritime Organization meetings in London and ICAO meetings in Montréal. They also attended the ICAO Threat and Error Management Symposium in Seattle and the Association of 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 B.C.), 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 International Civil Aviation Organization's Safety Indicators Study Group. The Macro-analysis Division also provided several statistical reports to international agencies and industries.

ANNUAL STATISTICS

Four-hundred and ninety-one marine accidents were reported to the TSB in 2004, a 10% decrease from the 2003 total of 547 and an 8% decrease 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.

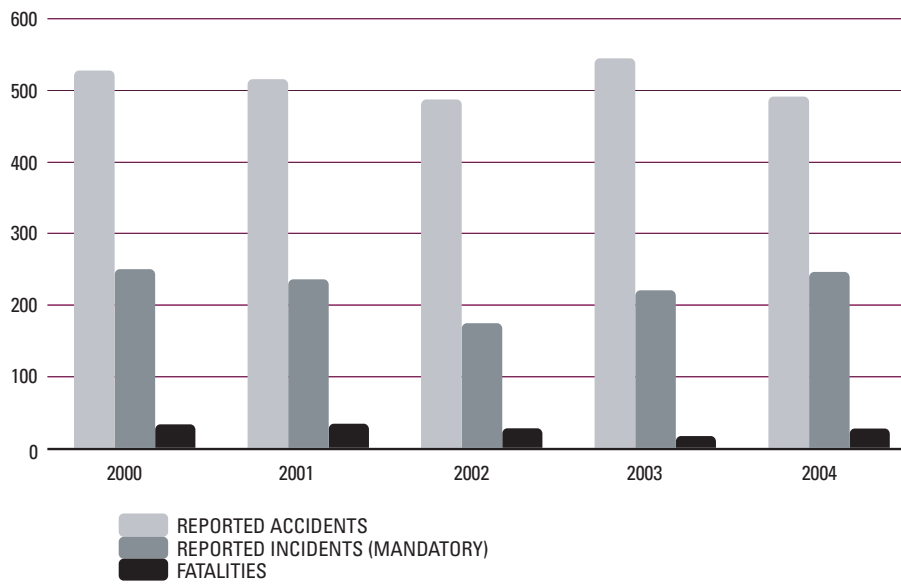
Marine activity for Canadian commercial non-fishing vessels increased by 8% from the 1999–2003 average, resulting in a 3% decrease in the accident rate from 3.1 to 3.0 accidents per 1000 movements. Although marine activity for foreign commercial non-fishing vessels remained relatively unchanged compared to the 1999–2003 average, accidents decreased, yielding a 26% reduction in the accident rate from 1.9 to 1.4 accidents per 1000 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 5 – MARINE OCCURRENCES AND FATALITIES



MARINE INVESTIGATIONS STARTED IN 2004–2005

The following information is preliminary. Final determination of events is subject to the TSB's full investigation.

DATE	LOCATION	VESSEL(S)	TYPE	EVENT	OCCURRENCE NO.
2004.04.27	Sorel, Que.	<i>Catherine-Legardeur</i>	Ferry	Grounding	M04L0050
2004.06.17	10 nm off Natashquan, Que.	<i>Persistence I</i>	Fishing	Taking water	M04L0065
2004.06.21	Magog River, Sherbrooke, Que.	(no name)	Raft	Capsizing	M04L0066
2004.07.10	St. Clair River, Michigan, USA	<i>Evans McKeil</i>	Tug	Striking	M04F0016
2004.07.24	Off Île de Grâce, Que.	<i>Horizon</i>	Container	Grounding	M04L0092
2004.07.27	Alexandria Bay, New York, USA	<i>Salvor KTC 115</i>	Tug Barge	Grounding	M04F0017
2004.08.11	Saint-Nicolas, Que.	<i>Canada Senator Mondisy</i>	Container Pleasure craft	Collision	M04L0099
2004.08.14	Bay of Quinte, St. Lawrence River, Ont.	<i>Elmer H</i> (no name) (no name)	Tug Barge Pleasure craft	Collision	M04C0043
2004.08.15	Iroquois Lock, St. Lawrence Seaway, Ont.	<i>Federal Maas</i>	Bulk carrier	Striking	M04C0037
2004.08.24	Île-aux-Coudres, Que.	<i>Famille Dufour II</i>	Passenger catamaran	Striking	M04L0105
2004.09.11	Off Amherstburg, Ont.	<i>Karen Andrie A397</i>	Tug Barge	Striking	M04C0044
2004.09.19	Off Cape Bonavista, N.L.	<i>Ryan's Commander</i>	Fishing	Foundering and grounding	M04N0086
2004.10.29	Kyuquot Sound, B.C.	<i>Prospect Point</i>	Fishing	Capsizing	M04W0225
2004.11.06	Georgia Strait, B.C.	<i>Manson M.B.D. No. 32 McKenzie</i>	Tug Barge Barge	Sinking	M04W0235
2004.12.10	Off Payette Island, Georgian Bay, Ont.	(no name)	Workboat	Capsizing	M04C0090
2005.03.29	Off Îles-de-la-Madeleine, Que.	<i>Justin M</i>	Fishing	Sinking	M05L0036

MARINE REPORTS RELEASED IN 2004–2005

DATE	LOCATION	VESSEL(S)	TYPE	EVENT	REPORT NO.
2000.05.18	Lac Saint-François, St. Lawrence Seaway, Que.	<i>Sunny Blossom</i>	Chemical tanker	Grounding	M00C0019
2000.10.03	Liverpool, N.S.	<i>Keta V</i>	Tug	Grounding	M00M0106
2001.05.14	Goderich, Ont.	<i>Canadian Transfer</i>	Self-unloading bulk carrier	Bottom contact	M01C0019
2001.06.15	Lake Winnipeg, Man.	<i>Shannon Dawn</i> <i>Rachel M</i>	Fishing Fishing	Swamping and capsizing	M01C0029
2001.08.22	Sault Ste. Marie, Ont.	<i>PML 2501</i> <i>Coral Trader</i>	Barge Chemical tanker	Striking	M01C0059
2001.09.02	Niagara River Gorge, Ont.	<i>Saute Moutons 14</i>	Water jet boat	Persons overboard	M01C0063
2001.10.26	Queen Charlotte Sound, B.C.	<i>Kella-Lee</i>	Fishing	Foundering	M01W0253
2002.03.17	Belle Isle, N.L., 76 nm ENE	<i>Katsheshuk</i>	Fishing	Fire and sinking	M02N0007
2002.04.01	Sechelt Rapids near Egmont, B.C.	<i>Deep Water</i>	Small open boat	Capsizing	M02W0049
2002.04.21	Off Broder Island, St. Lawrence Seaway, Ont.	<i>Progress Pitts</i> <i>Carillon</i>	Tug Barge	Striking	M02C0011
2002.05.15	Anstruther Lake, Ont.	(no name)	Workboat	Foundering	M02C0018
2002.05.22	Off Île de Grâce, Que.	<i>Vaasaborg</i>	General cargo	Grounding	M02L0039
2002.06.11	Atrevida Reef, Malaspina Strait, B.C.	<i>Bruce Brown</i>	Log salvage	Capsizing	M02W0089
2002.06.23	Ottawa River, Gatineau, Que.	<i>Lady Duck</i>	Amphibious passenger vehicle	Sinking	M02C0030
2002.07.08	Near Kelsey Bay, B.C.	<i>Fritzi-Ann</i>	Fishing	Capsizing	M02W0102
2002.07.16	Near Verchères, St. Lawrence River, Que.	<i>Kent</i>	Bulk carrier	Crew member lost overboard	M02L0061
2003.02.26	Off Batiscan, St. Lawrence River, Que.	<i>Great Century</i>	Bulk carrier	Grounding	M03L0026
2003.04.15	Sault Ste. Marie, Ont.	<i>Emerald Star</i>	Tanker	Grounding	M03C0016
2003.05.03	Approaches to Halifax Harbour, N.S.	<i>Shinei Maru No. 85</i>	Fishing	Grounding	M03M0040
2003.09.29	Off Anticosti Island, Que.	<i>Evan Richard</i>	Fishing	Downflooding and grounding	M03L0124
2003.11.08	Fraser River, B.C.	<i>Cielo Del Canada</i>	Container	Grounding	M03W0237

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.	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 <i>Canada Shipping Act 2001</i> 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.



ASSESSMENT OF RESPONSES TO MARINE RECOMMENDATIONS ISSUED IN 2003–2004

Allanburg, Ontario – 11 August 2001 Fire on Board at Bridge 11 – Bulk Carrier <i>Windoc</i>			Report No. M01C0054
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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 TC concerning the response.	Pending	To be reported next fiscal year

Bruce Mines Wharf, Georgian Bay, Ontario – 1 June 2000 Structural Failure – Bulk Carrier <i>Algowood</i>			Report No. M00C0026
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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 Major Water Ingress – Scallop Dragger <i>Alex B.1</i>			Report No. M01L0112
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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, Canadian Coast Guard, the Canadian Council of Professional Fish Harvesters 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.

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.

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 sub-committee’s consideration.

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 in the new <i>Fishing Vessel Safety Regulations</i>, 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.
M03-06 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 <i>Fishing Vessel Safety Regulations</i>, 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.

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 be 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 can 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 fits securely to prevent entry of water.

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

TC 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.

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

TC will review with the owner of a passenger vessel the organization of the stowage area for adult and child lifejackets to facilitate their distribution.

The owner of a small ro-ro ferry is looking at ways to better secure its ferries to the dock when embarking and disembarking vehicles.

TC 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.

PIPELINE

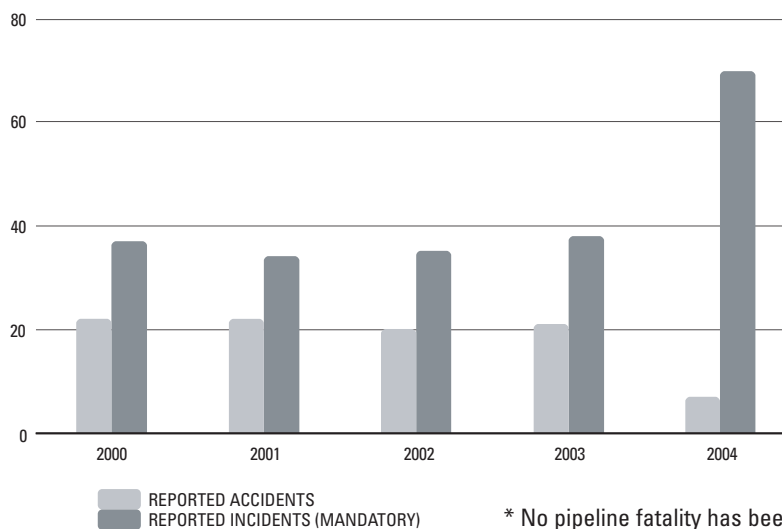
Occurrence Statistics and Investigations

ANNUAL STATISTICS

Seven pipeline accidents were reported to the TSB in 2004, down from both the 2003 total of 20 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 last year. The accident rate decreased to 0.5 pipeline accidents per exajoule in 2004, down from 1.64 in 2003 and the 1999–2003 average rate of 1.72. 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 6 – PIPELINE OCCURRENCES



PIPELINE REPORTS RELEASED IN 2004–2005

DATE	LOCATION	COMPANY	EVENT	REPORT NO.
2000.12.28	East Hereford, Que.	Gazoduc TQM Inc.	Compressor station occurrence	P00H0061
2002.04.14	Brookdale, Man.	TransCanada PipeLines	Natural gas pipeline rupture	P02H0017

ANNUAL STATISTICS

A total of 1129 rail accidents were reported to the TSB in 2004, a 9% increase from last year's total of 1032 and a 7% increase from the 1999–2003 average of 1054. 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.

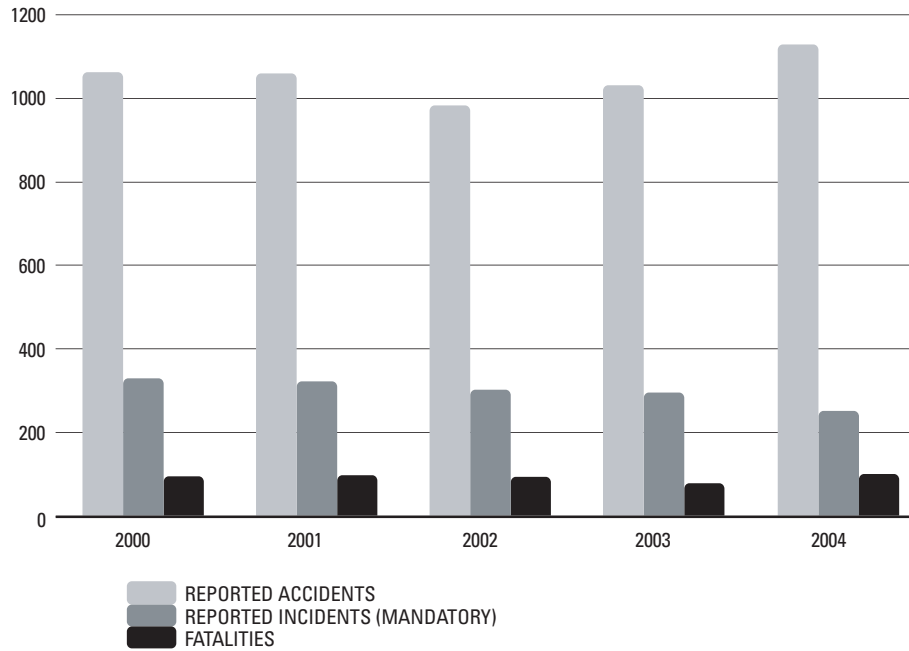
Five main-track collisions occurred in 2004, compared to six in 2003 and the five-year average of eight. In 2004, there were 152 main-track derailments, comparable to the 149 in 2003, but a 21% increase from the five-year average of 126. Non-main-track collisions numbered 114 in 2004, up from 104 in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



RAIL INVESTIGATIONS STARTED IN 2004–2005

The following information is preliminary. Final determination of events is subject to the TSB's full investigation.

DATE	LOCATION	COMPANY	EVENT	OCCURRENCE NO.
2004.04.18	Linacy, N.S.	Cape Breton and Central Nova Scotia Railway	Main-track train derailment	R04M0032
2004.06.28	Richmond, Ont.	VIA Rail Canada Inc.	Crossing accident	R04H0009
2004.07.08	Bend, B.C.	Canadian National	Movement exceeds limits of authority	R04V0100
2004.07.25	Burton, Ont.	Canadian National	Main-track train derailment	R04T0161
2004.08.08	Estevan, Sask.	Canadian Pacific Railway	Non-main-track train derailment	R04W0148
2004.08.17	Lévis, Que.	Canadian National	Main-track train derailment	R04Q0040
2004.10.06	Renfrew, Ont.	Ottawa Valley Railway	Crossing accident	R04H0014
2004.10.24	Eltham, Alta.	Canadian Pacific Railway	Crossing accident	R04C0110
2004.10.24	Floods, B.C.	Canadian Pacific Railway	Main-track train derailment	R04V0173
2004.11.12	Lévis, Que.	Canadian National	Main-track train derailment	R04Q0047
2005.01.31	Mackay, Alta.	VIA Rail Canada Inc.	Crossing accident	R05E0008
2005.02.09	Calgary, Alta.	Canadian Pacific Railway	Rolling stock damage	R05C0049
2005.02.17	Brockville, Ont.	Canadian National	Crossing accident	R05T0030
2005.02.23	Saint-Cyrille, Que.	Canadian National	Derailment	R05Q0010

RAIL REPORTS RELEASED IN 2004–2005

DATE	LOCATION	COMPANY	EVENT	REPORT NO.
2001.10.06	Drummond, N.B.	Canadian National	Crossing accident and derailment	R01M0061
2002.03.18	Éric, Que.	Quebec North Shore and Labrador Railway	Main-track train derailment	R02Q0021
2002.05.02	Firdale, Man.	Canadian National	Crossing accident and derailment	R02W0063
2002.07.03	L'Assomption, Que.	Canadian National	Main-track train derailment	R02D0069
2002.07.08	Camrose, Alta.	Canadian National	Main-track train derailment	R02C0050
2002.07.22	Lévis, Que.	Canadian National	Non-main-track train derailment	R02Q0041
2002.08.13	Milford, N.S.	Canadian National	Main-track train derailment	R02M0050
2002.10.24	Hibbard, Que.	Canadian National	Main-track train derailment	R02D0113
2002.12.04	Medicine Hat, Alta.	Canadian Pacific Railway	Main-track train derailment	R02E0114
2003.01.20	Saint-Charles, Que.	Canadian National	Collision involving a track unit	R03Q0003
2003.01.21	Agincourt, Ont.	Canadian Pacific Railway	Non-main-track train derailment	R03T0026
2003.01.22	Toronto, Ont.	Canadian National	Dangerous goods leaker	R03T0047
2003.02.05	Port Moody, B.C.	Canadian Pacific Railway	Non-main-track train derailment	R03V0019
2003.02.13	Nobel, Ont.	Canadian Pacific Railway	Main-track train derailment	R03T0064
2003.02.21	Melrose, Ont.	Canadian Pacific Railway	Main-track train derailment	R03T0080
2003.03.27	Sherbrooke, Que.	St. Lawrence & Atlantic Railroad	Main-track train derailment	R03D0042
2003.05.12	Manseau, Que.	Canadian National	Main-track train derailment	R03Q0022
2003.05.14	McBride, B.C.	Canadian National	Bridge collapse and train derailment	R03V0083
2003.05.21	Gamebridge, Ont.	Canadian National	Main-track train derailment	R03T0157
2003.05.21	Green Valley, Ont.	Canadian Pacific Railway	Main-track train derailment	R03T0158
2003.07.30	Villeroy, Que.	Canadian National	Main-track train derailment	R03Q0036
2003.10.19	Carlstadt, Ont.	Canadian Pacific Railway	Main-track train derailment	R03W0169
2004.01.08	New Hamburg, Ont.	VIA Rail Canada Inc.	Main-track train derailment	R04S0001
2004.02.17	Winnipeg, Man.	Canadian Pacific Railway	Non-main-track train derailment	R04W0035
2004.03.17	Linton, Que.	Canadian National	Main-track train derailment	R04Q0016

RAIL RECOMMENDATIONS ISSUED IN 2004–2005

Napadogan 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.	TC 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.

Rivers Subdivision, Firdale, Manitoba – 2 May 2002
Crossing Accident and Derailment – Canadian National

Report No. R02W0063

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.	TC 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	TC, 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.	TC shares the TSB's concern for the safety of emergency responders. TC sent a letter attaching the TSB report to provincial and territorial representatives requesting review and consideration.	Fully satisfactory	TC has made progress on the issue with the responsible change agents. TC has already started receiving positive feedback on that letter.



ASSESSMENT OF RESPONSES TO RAIL RECOMMENDATIONS ISSUED IN 2003–2004

Fraser Subdivision, near McBride, British Columbia – 14 May 2003 Timber Bridge Collapsed under a Train – Canadian National		Occurrence 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.	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 Canada Transport 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.

OTHER RAIL SAFETY ACTIONS TAKEN

On 1 March 2004, 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. On 24 August 2004, the Goderich-Exeter Railway Company (GEXR) advised TC that it had removed all open hearth rail from the jointed rail portion of the Guelph Subdivision.

In May 2004, 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 locomotive engineer to set the locomotive distance measuring device as soon as the train reaches the HBD location, and for the crew to verbally confirm any HBD announcements received with each other.

CPR, jointly with Canadian National (CN), has installed a trackside acoustic detector system on CN's Yale Subdivision (directional running zone). This device, the only one of 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, TC 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 action:

- 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 weld was missing and 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 TC. 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. TC conducted an audit of methods and evaluated the track condition in the Sherbrooke Subdivision. TC also conducted train speed checks using radar in areas in which 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 HBDs have been revised.

CPR completed a tie replacement program on the Belleville Subdivision.

ANNUAL STATISTICS

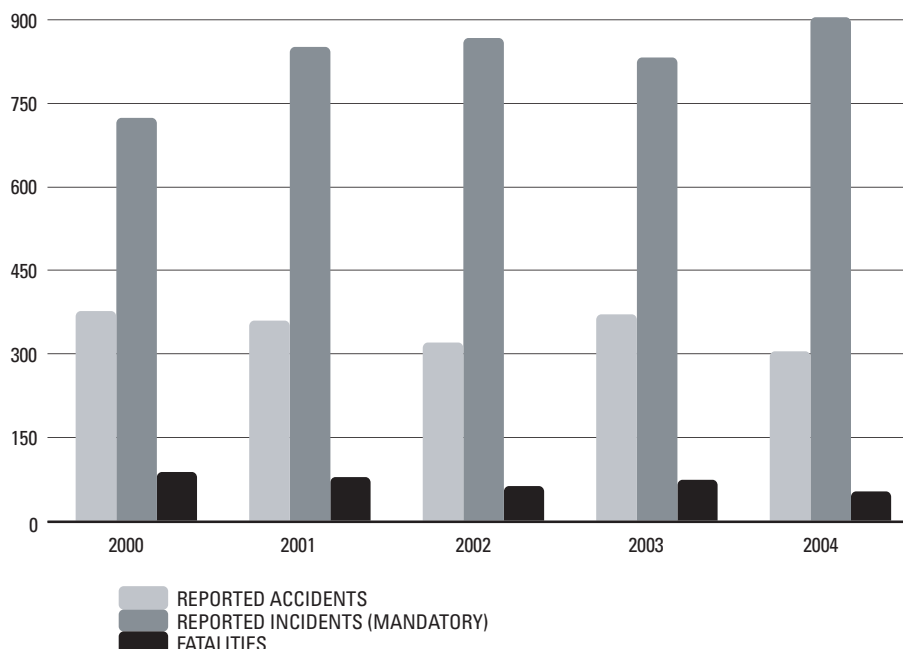
Canadian-registered aircraft, other than ultralights, were involved in 252 reported accidents in 2004, a 15% decrease from the 2003 figure of 295 and a 17% decrease from the 1999–2003 average of 305. The estimate of 2004 flying activity is 3,809,000 hours, yielding an accident rate of 6.6 accidents per 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 four of the remaining nine 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 six in 2004 from seven 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 three with 10 fatalities in 2004 from six with eight 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 8 – AIR OCCURRENCES AND FATALITIES



AIR INVESTIGATIONS STARTED IN 2004–2005

The following information is preliminary. Final determination of events is subject to the TSB's full investigation.

DATE	LOCATION	AIRCRAFT TYPE	OCCURRENCE NO.
2004.04.07	CYXU London, Ont.	Cessna 172M Boeing 737-200	A0400092
2004.04.08	Mount O'Leary, B.C.	Cirrus Design SR20	A04P0110
2004.04.19	CYMT Chibougamau/Chapais, Que.	Beechcraft A100	A04Q0049
2004.04.22	CYTS Timmins, Ont.	Raytheon B300	A0400103
2004.04.28	Tasu Creek (Queen Charlotte Islands), B.C.	Bell 206L	A04P0142
2004.05.05	CYVR Vancouver Intl, B.C.	de Havilland DHC-8-100 de Havilland DHC-2	A04P0153
2004.05.08	Thetis Island, B.C.	Cessna 305A	A04P0158
2004.05.15	Tabusintac, N.B., 2 nm E	Eurocopter AS350-B3	A04A0050
2004.05.18	Fawcett Lake, Ont.	de Havilland DHC-2 Mark I Beaver	A04C0098
2004.05.28	CYMQ Moncton/Greater Moncton Intl, N.B.	Boeing 727-225	A04A0057
2004.06.07	Taltson River (Ferguson's Cabin), N.W.T.	Cessna A185F	A04W0114
2004.06.11	Bob Quinn Airstrip, B.C.	MD Helicopter 369D	A04P0206
2004.06.13	CYQB Québec/Jean Lesage Intl, Que.	Airbus A320 Cessna 172S	A04Q0089
2004.06.14	Gatineau, Que., 2 nm SE	de Havilland DHC-2 Mark 1	A04H0002
2004.06.25	Flourmill Volcano, B.C., 5 nm W	Eurocopter AS350 B2	A04P0240
2004.07.14	CYOW Ottawa/Macdonald-Cartier Intl, Ont.	Embraer EMB-145	A0400188
2004.07.18	Stanley, N.S.	Schreder HP 18 (amateur-built glider)	A04A0079
2004.08.05	Québec (YQB VOR), Que.	Cessna 208B Cessna 172R	A04Q0124
2004.08.13	McIvor Lake, B.C.	Robinson R22 Beta	A04P0314
2004.08.19	CYSJ Saint John, N.B.	Piper PA-31-350	A04A0099

DATE	LOCATION	AIRCRAFT TYPE	OCCURRENCE NO.
2004.08.26	CJE7 Ashern, Man., 15 nm SW	Piper PA-28-235	A04C0162
2004.08.31	CYQM Moncton/Greater Moncton Intl, N.B.	Boeing 727-200	A04A0110
2004.08.31	Nain, N.L., 45 nm NW	Eurocopter AS 350 D	A04A0111
2004.09.02	Kingston, Ont.	de Havilland DHC8-102	A0400237
2004.09.10	CYXD Edmonton City Centre (Blatchford), Alta.	Beech C90A	A04W0200
2004.09.21	CYVC La Ronge Airport, Sask.	Fairchild SA-227-AC Metro III	A04C0174
2004.10.14	CYHZ Halifax Intl, N.S.	Boeing 747-200	A04H0004
2004.10.30	Shepherd Bay, Nun.	Bell 212	A04C0190
2004.12.01	CYGS St-Georges, Que.	Beech B300	A04Q0188
2004.12.05	CYYT St. John's Intl, N.L., 10 nm SW	Piper PA-28	A04A0148
2004.12.16	CYOO Oshawa, Ont.	Shorts SD3-60	A0400336
2004.12.19	CYPG Gaspé, Que.	Piper PA-31-350	A04Q0196
2004.12.24	CYVP Kuujuaq, Que.	Beech A100	A04Q0199
2004.12.28	Invermere, B.C., 16 nm S	Robinson R44	A04P0422
2005.01.01	SCEM, Santiago, Chile	Boeing 767-300	A05F0001
2005.01.19	Kelowna, B.C., 80 nm NE	Beechcraft King Air 200	A05P0018
2005.01.20	CYYC Calgary Intl, Alta.	McDonnell Douglas DC-9-83	A05W0010
2005.01.24	La Grande-4, Que., 60 nm SE	Eurocopter AS-350 B	A05Q0008
2005.02.11	Spearhead Glacier, B.C.	Bell 212	A05P0032
2005.02.21	CZBM Bromont, Que.	Hawker Siddeley HS 125	A05Q0024
2005.02.24	Blue River, B.C.	Bell 212	A05P0038
2005.03.06	Varadero, Cuba	Airbus A310-300	A05F0047



AIR REPORTS RELEASED IN 2004–2005

DATE	LOCATION	AIRCRAFT TYPE	EVENT	REPORT NO.
2001.10.08	Mollet Lake, Que.	de Havilland DHC-2 MK I	Collision with water	A01Q0166
2002.01.20	Patapédia River Valley, N.B.	Piper PA28-161	Collision with terrain	A02Q0005
2002.02.22	Val d'Or Airport, Que.	Eurocopter AS 350 BA	In-flight engagement of collective lever lock	A02Q0021
2002.05.09	Des Passes Lake, Que.	Cessna 180F	Nose down and over on take-off	A02Q0054
2002.05.13	Toronto/Lester B. Pearson Intl Airport, Ont.	Boeing 767-300	Cargo bay fire	A0200123
2002.05.18	North Bay Airport, Ont.	Beechcraft King Air A100	Nose landing gear actuation failure	A0200131
2002.05.20	Three Valley Gap, B.C.	Bell 206L-4	Loss of control and collision with terrain	A02P0096
2002.07.11	Chitek Lake, Sask.	Bell 205	Drive shaft failure and collision with terrain	A02C0161
2002.07.14	Saint-Stanislas de Kostka, Que.	Gilles Léger Super Chipmunk	In-flight separation of right wing	A02Q0098
2002.08.07	Smithers, B.C., 10 nm S	Bell 214B-1	Engine power loss	A02P0168
2002.08.15	McBride, B.C., 20 nm S	Eurocopter SA315B Lama Helicopter	Engine power loss – component failure	A02P0179
2002.08.25	Toronto Airport Control Tower, Toronto/Lester B. Pearson Intl Airport, Ont.	Cessna 206 McDonnell Douglas DC-9-51	Risk of collision	A0200272
2002.09.02	Québec/ Jean Lesage Intl Airport, Que.	Mooney M20E	Engine failure and loss of control	A02Q0119
2002.09.07	Lake St. John, Orillia, Ont.	Cessna 172P	Loss of control and collision with terrain	A0200287
2002.09.10	Gander Intl Airport, N.L.	DC-8-63F	Runway overrun	A02A0107
2002.09.11	Halifax Intl Airport, N.S.	Navajo Chieftain PA-31-350	Wheels-up landing	A02A0108
2002.09.11	Pink Mountain, B.C. 20 nm W	Bell 212	Tail rotor drill shaft coupling failure	A02W0178
2002.09.17	London, Ont.	Sikorsky S-76A	Hard landing	A0200301
2002.10.17	Churchill, Man., 290 nm NE	Boeing 777-228ER	Cockpit fire – precautionary landing	A02C0227
2002.10.20	Timmins, Ont., 40 nm W	Airbus A340-300	Engine power loss in flight	A02P0261
2002.10.24	Toronto/Lester B. Pearson Intl Airport, Ont.	de Havilland DHC8-311	Aircraft difficult to control	A0200349
2002.12.16	Lake Errock, B.C.	Sikorsky S-61N	Loss of engine power	A02P0320
2003.01.21	Mekatina, Ont.	Eurocopter AS 350 B2	Loss of control – collision with terrain	A0300012

DATE	LOCATION	AIRCRAFT TYPE	EVENT	REPORT NO.
2003.02.14	Goose Bay, N.L., 5 nm E	Cessna 210 N	Loss of control – collision with terrain	A03A0022
2003.03.05	Gander, N.L.	McDonnell Douglas MD-11 Boeing 757-224	Communications failure – loss of separation	A03H0001
2003.03.13	Dauphin, Man., 25 nm SW	Beechcraft King Air C90A	Flight control malfunction	A03C0068
2003.03.25	Langley Airport, B.C., 6 nm NE	Piper PA-28-140	Spiral dive – collision with terrain	A03P0068
2003.04.09	Peace River, Alta., 10 nm SE	Robinson R44	Loss of control – inadequate rotor RPM	A03W0074
2003.04.23	Prince Albert, Sask., 6 nm SW	Beech 99A	Loss of pitch control – collision with object	A03C0094
2003.05.31	Chilliwack Airport, B.C., 7.5 nm E	Cessna 182	Controlled flight into terrain	A03P0133
2003.06.05	Lake Wicksteed, Ont.	de Havilland DHC-6-300	Loss of control on water	A03O0135
2003.06.06	Ward Creek, B.C.	Bell 206B	Engine power loss – hard landing and rollover	A03P0136
2003.06.18	Gisborne, New Zealand, 300 nm ESE	Convair 580	Navigational and rollover error – fuel shortage	A03F0114
2003.06.24	Wasaga Beach, Ont., 5 nm WSW	Mooney M20 E	Engine failure and forced landing on water	A03O0156
2003.06.26	Buchans, N.L., 25 nm SE	Dromader PZL-M-18	Loss of control – collision with terrain	A03A0076
2003.07.04	Boucher Lake, Que.	Bell 206B Jet Ranger	Collision with water	A03Q0092
2003.07.13	Manning, Alta., 75 nm NE	Bell 204B	Loss of power – mechanical malfunction	A03W0148
2003.07.16	Cranbrook, B.C., 2.5 nm S	Lockheed L-188 Electra	Collision with terrain	A03P0194
2003.07.18	Harrison Hot Springs, B.C., 24 nm NNW	Cessna 172M	Collision with terrain	A03P0199
2003.08.05	Toronto, Ont.	Boeing 767 Fokker 100	Loss of separation	A03O0213
2003.08.10	Princeton, B.C.	Cessna 210A	Collision with terrain	A03P0239
2003.08.11	Port Hardy, B.C., 26 nm W	Boeing 747-400 Boeing 757-200	Risk of collision	A03P0244
2003.08.23	Vernon, B.C.	Airbus A319-114	Navigational error–premature descent	A03P0259
2003.08.29	Penticton, B.C., 11 nm NE	de Havilland DHC-2 Mark I	Collision with terrain	A03P0265
2003.09.03	Vancouver Harbour, B.C.	de Havilland DHC-6-100 (Twin Otter)	Collision with dock	A03P0268



DATE	LOCATION	AIRCRAFT TYPE	EVENT	REPORT NO.
2003.09.11	Summer Beaver, Ont.	Cessna 208B Caravan	Collision with terrain	A03H0002
2003.09.16	Mayo, Y.T., 80 nm N	Bell 206B	Power loss and dynamic rollover	A03W0194
2003.09.23	Calgary, Alta., 49 nm SW	Cessna 414A	Controlled flight into terrain	A03W0202
2003.09.26	Toronto/Lester B. Pearson Intl Airport, Ont.	Gulfstream Aerospace LP Astra SPX	Runway excursion	A0300273
2003.09.27	Gaspé, Que.	PA-31-310	Controlled flight into terrain	A03Q0151
2003.10.04	Linda Lake, B.C.	Piper PA-18-150	Loss of control/stall	A03W0210
2003.10.09	Toronto/Buttonville Municipal Airport, Ont. 2 nm SSE	Cessna 172N	Engine power loss and forced landing	A0300285
2003.11.06	Vancouver Intl Airport, B.C.	Airbus A330-300	Maintenance error – in-flight fuel leak	A03P0332
2003.12.16	Jellicoe, Ont.	de Havilland DHC-3 (Otter)	Loss of control after take-off	A0300341
2004.01.13	La Grande, Que., 160 nm SSW	Boeing 767 Boeing 777	Loss of separation	A04Q0003
2004.01.15	Dryden Regional Airport, Ont.	Fairchild SA-277-AC	Loss of directional control and runway excursion	A04C0016
2004.01.19	Toronto/Lester B. Pearson Intl Airport, Ont.	Airbus A321-211	Nosewheel axle failure	A0400016
2004.02.20	Kumealon Inlet, B.C.	Robinson R22	In-flight breakup	A04P0033
2004.02.29	Fraser River near Ruskin, B.C.	Lake LA-4-200 Buccaneer	Collision with water	A04P0041
2004.03.04	Swift Current, Sask., 4 nm SW	Bell 206B Jet Ranger	Loss of visual reference – collision with terrain	A04C0051
2004.03.08	Saint-Hubert, Que.	Schweizer 269C-1	Separation of main rotor on runup	A04Q0026
2004.03.12	Nanaimo, B.C., 20 nm N	Cessna 185 Cessna 185	In-flight collision	A04P0057
2004.03.20	Ralph, Sask.	Baby Belle amateur-built helicopter	In-flight breakup – collision with terrain	A04C0064
2004.04.08	Mount O’Leary, B.C.	Cirrus Design SR20	Loss of control – parachute system descent	A04P0110
2004.05.08	Thetis Island, B.C.	Cessna 305A	Loss of control	A04P0158
2004.05.15	Tabusintac, N.B., 2 nm E	Eurocopter AS350-B3	Main rotor overspeed – difficult to control	A04A0050
2004.07.18	Stanley Airport, N.S.	Schreder HP18 (amateur-built glider)	Aerodynamic stall – loss of control	A04A0079

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.	TC'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. 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 <i>Canadian Air Regulations</i>. Once our 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 (AIP) published weights will be amended on 20 January 2005. Operators whose approved weight and balance control program is based on the AIP 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 AIP Canada published weights were amended on 20 January 2005.



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 FAA acknowledged receipt of the recommendation and advised that it had been forwarded to the appropriate office for staffing. The letter advised that the TSB would be informed of the resolution of the TSB recommendation. DGAC has not yet responded.	Pending	
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.	TC's response stated that it confirmed, through communication with the Canadian aviation industry, that all Canadian aircraft presently affected by CFM SB 73-0126 will have their ECU software upgraded to version C.3.J by March 2005. Therefore, TC is not planning on taking any further action.	Pending	

OTHER AIR SAFETY ACTIONS TAKEN

- Calgary Airport Authority has responded to Safety Information Letter A040061-1 by requesting that NAV CANADA file a NOTAM (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.
- TC 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.
- TC 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.
- TC 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.
- TC 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 the accidents with known or suspected cardiac incapacitation during the past 10 years. Following this review, more frequent or extensive testing may be proposed.
- On 27 May 2004, 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 (ACC) shift managers and the Edmonton air traffic operations specialist, located in the Edmonton ACC, 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 ACC and Cleveland ARTCC (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, TC produced a Service Difficulty Alert (AL-2003-07, dated 2003-07-17) indicating that the installation procedures of 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 airplanes or as spares, will have the new terminals installed. The intent is to eliminate concerns with arcing at the window power terminals.

APPENDIX A — GLOSSARY

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