Annual Report

2007

TRANSPORT ACCIDENT INVESTIGATION COMMISSION
TE KOMIHANA TIROTIRO AITUA WAKA

F.7

Annual Report of the

Transport Accident Investigation Commission

Te Komihana Tirotiro Aitua Waka

for the period 1 July 2006 to 30 June 2007

Presented to the House of Representatives as required by section 150 of the Crown Entities Act 2004.

24 September 2007

Minister of Transport
Parliament Buildings
WELLINGTON

Dear Minister,

In accordance with section 150 of the Crown Entities Act 2004, the Commission is pleased to submit, through you, its 17th Annual Report to Parliament for the period 1 July 2006 to 30 June 2007.

Yours faithfully

Hon W P Jeffries
Chief Commissioner

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About The Transport Accident Investigation Commission

The Nature of the Commission

The Transport Accident Investigation Commission ('the Commission') is a standing Commission of Inquiry established in 1990 under the Transport Accident Investigation Act ('the Act') to inquire into transport accidents and incidents. The Act describes the Commission's main function as being to investigate transport accidents and incidents ('occurrences'). Before 1990, this function was undertaken within the Ministry of Transport. Initially the Commission was limited to investigating civil aviation occurrences, but it was expected that its mandate would be extended progressively. The Commission was given responsibility for investigating rail occurrences in 1992 and marine occurrences in 1995.

The Commission is also an independent crown entity as defined in section 7 of the Crown Entities Act 2004.

Operating Principles

A principal rationale for establishing the Commission separate from the Ministry was to achieve greater compliance with the Convention on International Civil Aviation. This convention is premised on civil aviation occurrences being investigated in accordance with two principles: namely 'independent investigations' and 'no blame investigations'. The Commission applies these principles in all its investigations, not just in its investigations of civil aviation occurrences.

Other fundamental principles the Commission believes important relate to the good conduct of public inquiry. The Commission strives to be:

- Accessible
- Trustworthy
- Fair-minded
- Open-minded
- Reliable
- Credible.

Functions

The Commission's functions are described in the Act. The functions follow from the Commission's statutorily stated principle purpose which is:

> *"… to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future, rather than to ascribe blame to any person."*

The Commission's principle function is to investigate accidents and incidents. Other functions are:

i. to ascertain the cause or causes of accidents and incidents by making such inquiries as it considers appropriate;

ii. to co-ordinate and direct the investigations it does make, including by deciding which other parties to involve;

iii. to prepare and publish the findings and recommendations resulting from each investigation;

iv. (if requested) to deliver a written report on each investigation to the Minister;

v. to co-operate and co-ordinate with overseas counterparts, including taking evidence on their behalf;

vi. when it has not been formally notified by a transport safety regulator of an occurrence that it considers should be investigated under s13, to request such information as it considers appropriate; and

vii. to perform any function or duty conferred on it by its own Act or any other Act.

The Commission

The Commission comprises 3 Commissioners: a Chief Commissioner, Deputy Chief Commissioner, and a Commissioner, each of whom is appointed by the Governor-General on the recommendation of the Minister of Transport for terms of 3 years or more. For the purposes of the Crown Entities Act 2004, the Commissioners are also deemed board members of the Transport Accident Investigation Commission, with the Chief Commissioner as chairperson.

The Commission is supported by an administration comprising the Chief Executive of the crown entity, an investigative team, an administrative team, and assessors appointed to assist the Commission in its determinations.

Members of the Commission are

Hon. Bill Jeffries – Chief Commissioner. Appointed June 1997

Mr Jeffries is a Wellington barrister practising in civil and commercial litigation. He is a former Minister of Transport, Civil Aviation and Meteorological Services, and is also a former Minister of Justice. In 1995 the Swedish government appointed Mr Jeffries as Honorary Consul-General for Sweden. Also most recently he has been the Chairman of the International Transport Safety Association, a grouping of similar bodies to the Commission.

Pauline Winter – Deputy Chief Commissioner. Appointed September 2001

Pauline A Winter has her own consultancy company which she started in 2000 (INTERPACIFIC Ltd). Among her current assignments are providing management services to the Pasifika Education Centre in South Auckland and for the Office of Pasifika Advancement at AUT University.

Pauline chairs the Pacific Business Development Trust and NACEW (National Advisory Council on Employment for Women). She is a member of several boards, including the Prime Minister's Government Innovation and Advisory Board, Legal Services Agency, Auckland Arts Festival Trust and is the current Deputy Chief Commissioner for the Transport Accident and Investigation Commission. She was the first Maori/Pacific Island woman to be elected to chair the Auckland Energy Consumer Trust, the 100% shareholder of New Zealand's largest electricity line company, Vector.

Bryan Wyness – Commissioner. Appointed November 2004

Mr Wyness's industry knowledge is primarily aviation-related, with particular knowledge of Operational Systems Safety, Flight Safety along with his skills as a Flying Instructor, Flight Superintendent, Fleet Captain and Flight Operations Manager (Technical). He also holds a Bachelor of Science degree and an Airline Transport Pilot Licence and Flight Navigator qualification. He is the former Vice President Flight Operations of Air New Zealand. He is currently an independent aviation consultant specialising in Operational Risk Management. He has held appointments with the International Advisory Committee of the Flight Safety Foundation and is a Fellow of the Royal Aeronautical Society.

From left to right: Bryan Wyness, Hon. Bill Jeffries, Pauline Winter

Assessors

The Commission may, from time to time, appoint a suitably qualified person to be an assessor for the purposes of an investigation. The assessors are independent advisers to the Commission who have technical skills relevant to the investigations under consideration. The Transport Accident Investigation Commission Act 1990 allows the Commission to co-opt assessors to be members of the Commission. They are then able to attend and speak at Commission meetings, which is, in practice, what they do.

The Commission has 8 assessors.

The assessors are:

Aviation
Richard Rayward
Pat Scotter
Nick Marwick

Rail
Don Davis
Alan McMaster
William (Bill) Jones

Marine
Keith Ingram
David McPherson

David McPherson

Back row: Nick Marwick, Alan McMaster, Pat Scotter, Don Davis.
Front row: Keith Ingram, Richard Rayward, William (Bill) Jones
Absent: David McPherson

Aligning with government

The government has 3 stated key priority areas. These are:

- Economic transformation
- Families, young and old; and
- National identity.

The Government transport sector, the Commission included, contributes primarily to the Government's priority for Economic Transformation. The activities of the Government transport sector are, more specifically, guided by the New Zealand Transport Strategy (the 'NZTS') which identifies five 'objectives' to support the goal of having an affordable, integrated, safe, responsive, and sustainable transport system. The 5 objectives are:

- Assisting economic development
- Assisting safety and personal security
- Improving access and mobility
- Protecting and promoting public health
- Ensuring environmental sustainability

The Commission contributes to assisting safety by acting on its mandate to inquire into transport accidents and incidents.

Chief Commissioner's Overview

The Transport Accident Investigation Commission serves New Zealand in particular ways. For example, New Zealand needs a strong, successful and safe tourism industry to earn foreign exchange and employ a growingly skilled work-force.

New Zealand needs a flourishing and safe coastal fishing industry, able to earn foreign exchange and employ thousands of men and women who wish to participate in this expanding primary sector of our economy.

New Zealand needs in its single major metropolitan region, Auckland, a rail system capable of moving some fifteen to twenty million people a year on an electrified double track network with twenty-first century rolling stock similar to that operated in Paris, Tokyo or Berlin.

The work of the Transport Accident Investigation Commission contributes to the achievement of the nation's goals in tourism, fisheries and the building of a twenty-first century Auckland, by investigating and making safety recommendations on accidents and incidents which have already occurred in these particular sectors. New Zealand needs safe tourism, safe fisheries and a safe Auckland rail system.

Hon. W P Jeffries
Chief Commissioner

In May, 2006, while travelling from Kaihuka, in the Breaksea Island Group in Foveaux Strait to Bluff, the coastal fishing vessel *Kotuku* capsized causing the death of six of the nine persons on board, two of whom were children.

Despite the difficulties of a winter-time salvage in depths exceeding 30 metres, the vessel was successfully raised to the surface and towed to Port William, a shelving sandy bay on the West Coast of Stewart Island. Later, with the use of a flotation collar the vessel was towed to Riverton, Southland and taken by land to Invercargill.

Since recovery the Commission has obtained an expert technical opinion on stability issues based upon the systematic examination of the wreck itself together with computer-based stability modelling data.

On 11 September 2007 the Commission distributed its preliminary report to interested parties and on 11 October 2007 the Commission held a hearing in Invercargill to receive in person the responses, in particular, of the relatives of the deceased.

The fishing vessel *Kotuku* is representative of an aging coastal fishing fleet industry employing perhaps up to two thousand people. When the Commission has completed its full investigation and publishes its findings and recommendations in 2008, the New Zealand fishing industry will gain some valuable lessons from this Foveaux Strait disaster. This work will contribute to higher standards of safety for the New Zealand maritime sector and in particular, New Zealand coastal fishing.

Some two and a half million foreign tourists visit New Zealand each year. As well, New Zealanders enjoy holidaying in their own country. The inter-island ferry operations across Cook Strait and the burgeoning Fiordland operations involving sea-going over-night vessels carrying hundreds of passengers, are centrally important components in this growing market.

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Following a series of "incidents" (that is, events or conditions which have the potential to result in non-trivial amount of damage or injury) in both Milford Sound and in Cook Strait commercial shipping operations, the Commission opened a set of investigations. To assist the Commissioners' understanding of the environmental conditions under which these services operate the Commission visited Milford Sound in December 2006 and travelled the Cook Strait in March 2007 on the Interislander Ferry *Kaitaki*.

Another series of incidents involving operations of the Auckland rail system, moving some five million passengers each year, prompted the Commissioners to arrange a full day in August 2007 travelling on the trains, inspecting the diesel multiple unit maintenance facility at Westmere and viewing Britomart Transport Centre, and thereby gaining a direct understanding of this network.

> New Zealand needs a flourishing and safe coastal fishing industry, able to earn foreign exchange and employ thousands of men and women who wish to participate in this expanding primary sector of our economy.

While at the Milford Sound the Commissioners met representatives of all the operators, to see "first hand" how the operators work in a spectacular but potentially dangerous environment and to converse with the regulatory authorities. The Commission records its appreciation of the co-operative attitude of all those involved in strengthening safety in this scenic attraction in Milford Sound which now hosts almost half a million visitors a year (470,000 in 2005).

When the Commissioners made a Cook Strait crossing in March 2007 on one of the principal operator's vessels they viewed "firsthand" the bridge, and the engine-room and assessed over-all the completion of a safe journey through the Cook Strait between the Pacific Ocean and the Tasman Sea.

The Commission also records its appreciation of the way in which the operator helped the Commissioners' understanding of its operations.

The particular challenge in transport safety posed by the Auckland traffic congestion problem, is that the vast new capital investment in the rail network up-grade for double-tracking, electrification and new rolling stock, designed to shift a further ten million passenger a year off the road and onto rail in the next eight years, generates unprecedented difficulties.

Until the double tracking and the electrification project is completed within the next five years, the new trains cannot be put in place. Consequently, unwanted rolling stock from Australia and Britain is being deployed on a make-shift basis pending "the laying of the foundation" for the "state of the art" rolling stock yet to be commissioned. The conflict between the old existing rail system with the building of a new twenty-first century urban rail network, must be managed by the participants.

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Commissioners met representatives from the Auckland Regional Transport Authority, Land Transport New Zealand, Ontrack, Veolia Transport and Toll Rail. Ontrack has already commenced a $600 m capital programme to upgrade tracks, platforms and signalling before 2011 in order to plan for ten minute frequencies based upon "state of the art" rolling stock. A further $500 m will be invested before 2013 to electrify this network.

In summary, the Commission's discharge of its statutory obligations of inquiring into and reporting with recommendations for safety improvement, occurs within the context of a changing, growing New Zealand. The mission is to learn from the past because the future is open and can be influenced.

Hon. W P Jeffries
Chief Commissioner

Chief Executive's Report

Commission Activities – Year in Review

The Commission met 14 times in 2006/2007. The Commission meets monthly and will convene special meetings on particular cases as required. Two special meetings were held in respect of marine and rail investigations.

In addition, the Commission ventured out of Wellington, visiting tourist operations in Milford Sounds and operations on the inter-island ferries, and operations on the Auckland rail network. These visits are part of a commitment on the part of the Commission to gain a greater appreciation of modal operations in specific regional environments such as the West Coast or the Cook Strait.

From a service delivery perspective the 2006/2007 year got off to a slow start in terms of notifications received and investigations launched. This was a continuation of last year's slow decrease in notifications in the 4th quarter. The trend continued well into the second quarter of 2006/2007 with notifications down 24 percent (91) on last year at the end of the second quarter.

Lois Hutchinson
Chief Executive

However going into the second half of the financial year notifications surged, increasing 94 percent (144) on the first half year's result and 74 percent (123) on last year's result. At year end the Commission had received 847 notifications – an all time high. The increase in notifications is driven by the aviation and marine modes with the increases peaking in the third quarter, as they did last year. This is suggestive of seasonal impacts from mid to late summer activities. Rail notifications dropped 26 percent from last year.

Investigations launched were 50 percent down on last year in the first quarter but then sustained a higher launch rate over the remaining quarters, settling at a 21 percent (7) increase on investigations launched compared with the figures for last year. The overall launch rate for investigations is 5 percent – the same as last year.

The Commission published fewer reports this year than in the previous 2 years – 15 reports published compared with 53 last year. The slowed notification rate and subsequent lower investigations launched rate between April 2006 and December 2006 reduced the volume of active cases in the inquiry system, particularly in the aviation and marine modes, with fewer final reports published. However, as discussed above, with the surge in notifications and the increase in investigations launched, the Commission's active caseload increased markedly – moving from 26 in June 2006 to 52 in June 2007. Rail cases increased 56 percent.

Rail cases consistently account for 50 percent of the Commission's caseload. While rail notification rates are lower than aviation and marine rates, the investigation launch rate is higher – averaging 17 percent over the last three years compared with aviation and marine with 4 and 5 percent respectively. The higher launch rate for rail does not indicate an overly unsafe system.

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Rather, the rate reflects the characteristics of the type of notifications received, given the operating environment of rail which, of course, involves constant movement of heavy machines. The rate is suggestive of properly exercised discretion in reporting incidents in so far as the Commission is being notified of incidents that might warrant further investigation.

Events of note for the year included the start of the Commission's training partnership with Cranfield University School of Engineering in the United Kingdom, and participation in the International Maritime Organisation's Flag State Implementation at the invitation of the Director of Maritime Safety.

of 2 key senior staff. These events occurred early in the financial year. The Commission quickly recognised it could not make budget and signalled the impending fiscal risk with a forecast of $(87k). The deficit is funded out of the Commission's cash reserves, reflecting the reduction in taxpayers' equity on the balance sheet.

The impact of the cost of the *FV Kotuku* inquiry highlighted the Commission's exposure to high cost inquiries in which baselines are set to manage small to medium level events on average. The *Kotuku* event has been described as a 1 in 23 year event.

The Commission is developing a core competency training programme for its investigation staff.

The Commission is developing a core competency training programme for its investigation staff. Part of that programme is completion of a multi-modal accident investigation course with Cranfield University. Our investigators have the opportunity to work and study alongside their international colleagues. At the completion of the course investigators then spend 1-3 weeks with our United Kingdom peers, gaining further practical experience, and sharing expertise.

By participating in the Flag State Implementation, the Commission had a rare opportunity to lend its investigative knowledge at a State level in the development of *International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident*.

Financial Performance

The Commission ended the financial year with a deficit of $74k against a planned surplus of $25k. The deficit was driven by on going costs associated with the inquiry into the *FV Kotuku* capsizing in Foveaux Strait, and retirements

Across the modes, the Commission averages one severe event every 3 to 5 years. The cost of these events for the Commission is variable, ranging from $50k to $250k. The Commission does not have recourse to supportive funding outside of the normal appropriation process to support high cost events. However, the Commission is exploring funding arrangements to support future high cost inquiries when warranted.

The on going deficit position the Commission is in is a concern and has been highlighted through the Commission signalling the fiscal risk. Consequently, a capability review of the Commission is planned for early 2007/08. Meanwhile the Commission has an additional $110k increase to its baseline for 2007/08 to cover contractual obligations.

Lois Hutchinson
Chief Executive

Chief Investigator of Accidents' Report

Investigation – Year in Review

Another year for the Commission goes by; another year of working in partnership with the transport industry, sharing in its successes, learning from its failures, and informing the greater public of the lessons learned.

For myself, I returned to the Commission in February 2007, following a five-year break pursuing managerial experience in transport operations. Those five years were not without their challenges and ironically I had the opportunity to work with regulators and the Commission from "the other side of the fence". I bring back to the Commission a fresh perspective of the industry, and great respect for the work the Commission does.

The current team of investigators is a mix of the experienced and the new. One thing that has not changed is their collective enthusiasm and passion for the task; their dedication to making a difference. That enthusiasm is not surprising given the strong leadership provided by my predecessor, John Mockett. John has left the team of investigators in a strong position to carry on their good work. I thank John for that and wish him well for his well-earned retirement.

Tim Burfoot
Chief Investigator of Accidents

There is nothing new in the fact that accidents rarely occur due to a single cause. There are usually a number of factors that contribute to an accident: local factors such as the performance of the human and the machine, and the interface between them; the environment; and the list goes on. It is these factors that are usually examined in the early stage of an investigation. What is often revealed from this stage is what went wrong, but not necessarily why it went wrong.

Every transport vehicle operates within a system. The system encompasses the procedures, standards, rules and regulations set and followed by operating companies, national regulators, government, and international governing bodies.

In examining the system, the inquiry agency will find rich pickings in its quest for the root causes of an accident because often where the true causes lie, and where any recommendations for change are best directed.

People will generally model their behaviour around the environment in which they work. A poor system will generally engender poor behaviour; and unsafe systems will generally engender unsafe behaviour.

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Effective regulation is a useful defence against unsafe behaviour. Rules and regulations and codes are essential mechanisms for providing minimum standards for industry to meet; thus they serve as a useful defence against safety standards falling as a result of the inevitable commercial pressures that exist in any transport industry. The Commission examines the appropriateness of standards and the ways they are applied to industry as part of its inquiries, and through this examination, endeavours to make more meaningful recommendations for improvement.

The principle purpose of the Commission is to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future, rather than to ascribe blame to any person. Following on from that, the Commission's Act says that it will investigate an accident or incident when it believes that the circumstances of the accident or incident have, or are likely to have, significant implications for transport safety, or may allow the Commission to establish findings or make recommendations which may increase safety.

New Zealand benefits from the Commission taking a closer examination of the system during its inquiries because this can be done in response to relatively minor events that the Commission might choose to investigate as a result of monitoring trends or emerging "themes". In this manner, powerful recommendations can be made without having to wait for a major accident with tragic loss of life or serious injury. A consequence of this approach is that strong messages for safety might not be realized because they stem from low profile events. To combat this, the Commission is tending to direct its recommendations to the regulatory authorities, because they are best placed to effect any required change.

During the year the Commission has launched investigations into 13 aviation, 17 rail and 10 marine occurrences. Of the investigations underway, including some from the previous years, only 3 aviation, 5 rail and 7 marine investigations were completed and their reports approved for publication by the Commission. The reasons for the fall-off in reports are discussed elsewhere in this report, but one reason is the substantive enquiries and the resources they take when widening the scope of the investigation to include the system.

> Every transport vehicle operates within a system. The system encompasses the procedures, standards, rules and regulations set and followed by operating companies, national regulators, government, and international governing bodies.

The investigation into the capsize and sinking of the fishing vessel *Kotuku* in Foveaux Strait on 13 May 2006 has progressed throughout this year and is nearing an end. The investigation has been complex and stretched the Commission's resources, both human and financial. With 6 persons losing their lives, the accident is New Zealand's worst maritime disaster since the sinking of the Wahine in Wellington Harbour in 1968. Given the substantive issues and sensitivities raised in the preliminary report, the Commission is holding its first submissions-only public hearing in Invercargill to allow interested parties to make submissions directly to the Commissioners.

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The rail investigation team has had a challenging year also, managing a heavy case load for what is arguably the transport mode undergoing the most rapid change in New Zealand, and dealing with the challenges associated with that change.

The air investigators continue their good work, and while their case load is also high, I am pleased to say it has been a year without significant accident. As with the other modes, long may that continue.

This year has seen the Commission involved in several joint investigations with similar independent investigation agencies in the United Kingdom, Australia, and United States, helping to meet New Zealand's international obligations under aviation and maritime conventions. This co-operation with other countries is crucial to the Commission's work, as it will inevitably be assisted by them should New Zealand suffer a major transport accident.

The team of investigators and I look forward to another year of contributing to a safe and sustainable transport industry, and wish the respective modes a safe and therefore prosperous year.

Tim Burfoot
Chief Investigator of Accidents

Medical Consultant's Report

Alcohol and Drugs in Aviation

The New Zealand Transport Strategy includes key objectives to promote and protect the health and safety of the New Zealand public; the Commission's role in that strategy lies in preventing transport accidents and increasing the likelihood that victims of incidents will survive. As more than half of transport accidents involve operator error as the proximate or contributory cause, any factor that reduces crew performance will significantly jeopardise public health and safety.

The susceptibility of operating crew to error-producing traits can be reduced by ensuring that they are medically well, fit for the role, not unduly fatigued, and not impaired. Medical factors causing crew impairment are rare and the overwhelming majority of these are related to impairment by drugs and/or alcohol. Over the past 20 years, alcohol and recreational drugs together or individually have been involved in 4% of aviation accidents in the US (NTSB SR A-00-4) and in the United Kingdom (Enrstings Aviation Medicine 2007). The Commission has investigated a similar number of accidents where alcohol and drugs has played some role across all modes of transport in New Zealand. The train derailment at Te Wera (2002 Report 02-116) was attributed to excessive speed and post-alcohol impairment. A helicopter accident at Hokitika, (1992 Report 92-002) and fixed wing accidents at Franz Josef Glacier (1993 Report 93-014) and Taupo (2005 Report 05-003) were related to alcohol and marijuana respectively. Six accidents, three incidents and five mishaps have occurred in commercial shipping in the past five years. While there is a dearth of data on precise accident rates, it has been estimated that alcohol was involved in 18-37% of recreational boating facilities (Recreational Boating Association). Performance degradation by recreational drug use or the effects of alcohol or post-alcohol impairment has resulted in the deaths of the general public as well as operating crew. The Commission is seeking to be able to closely investigate the potential for such accidents, and strongly supports initiatives to minimise any threat to safety by substance related impairment. Commission staff are participating in the Ministry's Substance Impairment Group team in

Dr Robin Griffiths
Medical Consultant

The message is simple – alcohol and recreational drugs (marijuana, cocaine, amphetamines and the like) have no place in the air, sea, rail or road.

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working on strategies to reduce the use of drugs and alcohol by safety-sensitive personnel in the transport sector.

Additional threats to public safety arise from the impact of alcohol-related impairment on survival. In a recent maritime accident, alcohol consumption played a role in the ability of survivors to swim to safety in cold rough seas. It has not as yet been possible to quantify the role of alcohol and drugs in reducing the ability of survivors to escape from the cabin of ships, aircraft or trains after an accident. However, there is an established relationship between the blood alcohol and the risk of both accidentally entering the water and subsequently becoming unable to continue swimming, due to factors such as alcohol-related skin flushing and heat loss that play a role by increasing the rate of heat loss and accelerating the onset of hypothermia.

The message is simple – alcohol and recreational drugs (marijuana, cocaine, amphetamines and the like) have no place in the air, sea, rail or road. The Commission considers that strategies to reduce drug and alcohol use among participants in the transport system is a high priority to promote health and safety in New Zealand's wider society as they travel, work and play.

Dr Robin Griffiths
Medical Advisor

Transport Sector Inquiries

About Inquiries

The Commission's inquiries take the form of investigations into the facts of circumstances and causes of accident and incident events. The Commission does not investigate all accidents and incidents in the transport sector. It has the discretion to investigate accidents and incidents under certain conditions for air, rail, and sea.[1]

The Commission has all the powers of a Commission of Inquiry convened under the Commissions of Inquiry Act 1908 except the power to award costs. Mindful of this, the Commission conducts its affairs in accordance with well-established procedures associated with holding public inquiries. The Commission may receive hearsay evidence and inform itself on any matter it believes appropriate in its pursuit of the truth of events. It is free to decide for itself the form of its inquiries, and how best to conduct its inquiries.

The Commission's work involves a number of phases, depending on the form of its inquiry. The Commission's standard approach to inquiry is instigated with notification of an accident or serious incident, and then distinct phases of:

- Investigation and analysis
- report preparation
- consultation with affected and interested parties
- Commissioners' determinations on the investigative reports
- Commissioners' determinations on safety recommendations
- final report release to the public
- the issuance of the safety recommendations to the regulators, and, where appropriate, involved transport operators.

The Commission normally holds its hearings in camera. However, it may hold a public hearing if so doing is likely to provide any significant advantages over the Commission's standard procedure for determining the causes and circumstances of an accident or incident, or if the matters before the Commission are of significant public importance or concern.

Occurrences are notified

Operators must notify the transport regulators when an accident or incident occurs involving aircraft, maritime vessels, or trains. Once an accident is notified, the regulator must notify the Commission of any accident or serious incident. The Commission must then determine whether the occurrence as reported happened in circumstances that have, or are likely to have, significant implications for transport safety, or may allow the Commission to establish findings or make recommendations that may increase transport safety. If, in its determinations, the Commission affirms the above, then it must investigate.

Investigations are launched

Having made the decision to launch an investigation, the Commission assembles an investigative team appropriate to the circumstances of the occurrence. The investigation team is led by an investigator-in-charge, and is made up of experts who have the skills and knowledge to examine relevant aspects of the accident or incident.

1 A full description of the circumstances under which the Commission may investigate is provided on p 75, The Commission's Functions and Role.

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A site investigation is carried out as soon as practical. The length of time this takes to complete varies, depending on the severity and complexity of the accident or incident. Investigators carry a warrant authorising them to control the site, and to seize and detain evidence. Investigators also have certain powers of entry.

Investigators interview or confer with anyone whose information may assist in the determination of the causes and circumstances of an accident or incident. Investigators carry photo-identity cards to identify themselves. Mindful of the stress an accident or incident brings to those involved or affected, investigators strive to arrange and conduct interviews with sensitivity, and allow a support person to be present (as long as that person does not impede the interview). Some people may need to be interviewed several times. A person can be required to attend an interview and to answer questions. The Transport Accident Investigation Commission Act 1990 prevents other people and organisations obtaining investigators' records of interviews and discussions and certain other types of information from the Commission. The Transport Accident Investigation Commission Act 1990 does not prevent people making statements to anyone else, but those statements must not include or speculate on information provided by the Commission.

Information from interviews will be included in the final report only when pertinent to the analysis of the accident or incident.

The Commission engages specialists to provide advice, analysis and opinions on matters not within the Commission's own expertise. Laboratories in New Zealand or overseas analyse components, "read out" voice recorders and decipher data recorders.

Reports are prepared

The Commission's report is a summary of the investigation. It contains the relevant facts, analysis, findings and safety recommendations. Before finalising the report, the Commission circulates a preliminary report to any persons whose conduct is stated or implied to have contributed to the cause of the accident to give them an opportunity to comment on or to refute that statement. The Commission may also seek comment from others who may be able to contribute to the accuracy of the report, or to the effectiveness of safety recommendations.

Because the preliminary report may contain inaccuracies and may be subject to change, its circulation is strictly limited and wider disclosure is prohibited under the Transport Accident Investigation Commission Act 1990. Submissions have the same protection as records of interviews and discussions.

The final report incorporates improvements arising from any further investigation and the submissions on the preliminary report. Recipients of the preliminary report and, if they so request, next of kin and others similarly affected, are forwarded a copy of the final report on a confidential basis a few days before public release.

Most final reports are released within 7 or 8 months of the start of the investigation. When investigations are particularly complex, reports take longer to complete. In addition to providing reports as outlined above, the Commission makes its reports available on inter-loan from public libraries, by individual purchase or by annual subscription from the Commission. The Commission's website carries an index of Commission reports, report abstracts and safety recommendations and status, as well as general information about the Commission.

The Commission encourages operators to take responsibility for taking corrective action as soon as is practicable, after the event. The Commission's preference is for operators to recognise and take the corrective or preventive action before a safety recommendation is needed. When operators do act of their own volition to take a safety action, the Commission will identify and include the action taken in its final report.

Safety recommendations are issued

Safety recommendations are fundamental to the Commission's role of accident prevention. With human lives at stake, timeliness is an essential part of the recommendation process. As a result the Commission may issue a safety recommendation without waiting for an investigation to be completed. The Commission designates the person or party expected to take action and describes the result it recommends. The Commission consults with the recipient of the safety recommendation before making the recommendation publicly. Final safety recommendations are usually incorporated in the accident report together with the relevant parts of any replies (if available).

The Year in Review

Investigations – Gathering the Evidence, Forming a View

The Commission launched 40 investigations in 2006/2007. The Commission's principal function is to investigate accidents and incidents.

In launching investigations into adverse occurrences, it is expected that there are lessons to be learnt that can be shared, and in time what is learnt may be enough to reduce the likelihood of similar events recurring. In each year the Commission does have cause to pause and reflect on particular occurrences because of the issues raised in the course of investigation, or because the occurrence echoes previous occurrences, suggesting that lessons have not been learnt, or because there is an emerging theme or pattern within a sector that may be a signal for wider concern.

Below are some examples of the kinds of investigation that prompted the Commission to take a reflective stance.

From the Aviation Sector

The importance of clear communication, following correct procedure and proper maintenance

One emerging theme from the aviation sector in the past year has been runway-related issues involving incursions, potential collisions and overruns. The investigations on these matters are still open but they still involve examination of the ways aerodrome information is presented to pilots, air traffic control procedures, and aerodrome layout and runway maintenance.

Although the above investigations are still open, the concerned parties have taken various safety actions to correct the runway-related concerns and the Commission will issue safety recommendations to the Director of Civil Aviation to further address these issues.

Another theme was electrical malfunctions causing smoke or fumes in the cockpit and cabin, which led to diversions and precautionary landings. One investigation, 06-003, involved a Boeing 737 and the evacuation of 96 passengers and 5 crew members because of cabin smoke.

Landing gear collapse after landing in an older aeroplane

Issues that have emerged from these investigations include the ways emergencies and evacuations are handled and crew training.

Safety recommendation 007/07 was issued to the Director of Civil Aviation asking that he ensure the Chief Executive of Air New Zealand and other New Zealand operators of Boeing 737 aircraft review and enhance emergency training procedures. The review should include the positioning of all crew members on board for abnormal landings and possible evacuations, and the associated use of all appropriate emergency exits, the use of hand signals in emergencies and the management of the ground evacuation checklist to ensure that flap has been fully deployed if time permits.

The Director accepted recommendation 007/07 and said this would be carried out as part of the Civil Aviation Authority's regular meetings with operators and would be completed within six months of the final report date.

Another theme was mechanical malfunctions. As a result of an increasing number of investigations over the years involving landing gear malfunctions with older aircraft, the Commission is examining through an open investigation the issue of maintenance practices for aging aircraft.

The Commission also investigated several operational occurrences that involved incorrect pilot situational awareness, which led to loss of control and collision with obstacles.

Investigation 06-008 is examining the issue of the frequency of landing gear malfunctions in aging aircrafts and their maintenance programmes.

Investigation 06-007 is examining the pilot's situational awareness prior to this collision with terrain.

Recovery of a helicopter from Crater Lake Mount Ruapehu

continued on the next page ...

From the Rail Sector – Fires on Rail Passenger Vehicles

The importance of on board fire detection and suppression systems

Investigations:

04-112 involving an auxiliary engine fire on diesel multiple unit passenger Train 2146 at Boston Road[2]
04-116 involving an auxiliary generator fire on Train 1605 at Carterton[3]
05-108 involving a driving engine fire on diesel multiple unit Train 3334 at Auckland[4]
06-101 involving an auxiliary engine fire on diesel multiple unit Train 3163 at Manurewa

In the two years following the auxiliary engine fire in diesel multiple unit Train 2146 at Boston Road on 16 April 2004, there were three more fires on passenger trains, culminating with a fire on diesel multiple unit passenger Train 3163 at Manurewa on 15 March 2006. Each of these occurrences highlighted either defective (1) or non-existent on board fire detection and suppression systems (3).

A common finding from each of these investigations was the presence of accumulated debris and oil residue as a source of combustible material for a fire. As a result, inadequate engine cleaning schedules and lack of standards for the supply and fitting of engine components were identified as a cause in three of the fires. Investigation into the two auxiliary engine fire occurrences also identified difficulty accessing the fire because of noise suppressing shrouds enclosing the auxiliary engines.

Safety recommendations were made to Auckland Regional Transport Authority regarding modification to the shroud panels to improve access to the auxiliary engines; to Toll NZ Consolidated Limited to ensure engine cleanliness standards were maintained; and to the Director of Land Transport New Zealand regarding the installation of on-board fire detection and suppression systems on rail vehicles with enclosed internal combustion engines. These safety recommendations were accepted by the relevant parties.

Fire on Board Train 3163 at Manurewa

2 Investigation 04-112 occurred in the 2003/2004 year with the investigation largely undertaken and completed in 2004/2005.
3 Investigation 04-116 occurred in the 2003/2004 year with the investigation largely undertaken and completed in 2005/2006.
4 Investigation 05-108 occurred in the 2004/2005 year with the investigation largely undertaken and completed in 2005/2006.

Derailments Attributed to Wagon/Track Dynamic Interaction

The need for a review of the track and rolling stock maintenance standards/ tolerances

Investigations 03-114[5], 05-103[6], 07-101, 07-102 and 07-110 involved derailments caused by wagon/track dynamic interaction at Shannon, Hunterville, Vernon, Glenavy and Hihitahi.

Dynamic interaction describes derailment when the track geometry, wagon condition, wagon loading, and train speed are individually within tolerance limits, or only marginally in excess, but to the extent that each variation in itself is not sufficient to be a prime cause of derailment. However, when in combination these conditions can result in a derailment.

Investigation 03-114 led the Commission to recommend to the Chief Executives of ONTRACK and Toll NZ Consolidated Limited that together they critically review current track and mechanical code standards and maintenance tolerances to ensure they were compatible and to minimise the potential for derailments caused by dynamic interaction. Both parties advised that they accepted the respective recommendations.

Given the similarities to Investigation 03-114, reference to the safety recommendations was also made in Investigation 05-103.

Following the latest series of derailments, the Commission has been advised that both parties are now jointly developing guidelines for gathering track and wagon data for computer analysis.

From the Maritime Sector

The importance of safety management systems

A common theme to come out of recent marine investigations is the functionality of the safety management system and the legislation surrounding it.

A number of incidents have revealed that the safety management system ought to have identified and corrected deficiencies that were subsequently proved to be factors in occurrences. The problem appears to be systematic, with incidents involving restricted limit passenger vessels, fishing vessels and barges, all affected by Maritime Rule part 21, Safe Ship Management Systems.

The investigation into the loss of control of a restricted limit passenger vessel in Milford Sound, found that design approval and the fit-for-purpose survey had not identified the manoeuvring limitations of the vessel in strong winds. As a result, the Commission made safety recommendation 009/07 to the Director of Maritime New Zealand, which called upon her to review and make changes to the safe ship management system.

The Director of Maritime New Zealand responded that the Authority constantly monitors the safe ship management system and that it was in the process of

continued on the next page ...

5 Investigation 03-114 occurred in the 2003/2004 year with the investigation largely undertaken and completed in 2004/2005.
6 Investigation 05-103 occurred in the 2004/2005 year with the investigation largely undertaken and completed in 2005/2006.

reviewing the maritime rule that relates to the system. A review into the current capacity and the quality of the system has been commissioned with a view to comparing it with requirements in order to identify areas in need of improvement. Additional resources were also being allocated to the safety management team of Maritime New Zealand.

A secondary but associated issue that features in many investigations is inconsistencies within the Maritime Rules that make compliance and monitoring difficult. Such inconsistencies often occur in relation to the manning and qualification requirements for differing areas of operations; such as inshore, coastal, offshore and unlimited, and the type of activity; fishing, passenger and non-passenger.

Investigation 07-206 into the capsize of a laden dumb barge *Kimihia* as it was being towed into Wellington Harbour by the tug *Nautilus III* is ongoing, but early indications are that seawater had entered the vessel due to corrosion in ventilators on the deck. The corrosion would normally have been discovered during a survey that took place a little over a month before the accident.

Recovery of a barge that capsized

Summary of Occurrences Investigated

Within the period 1 July 2006 to 30 June 2007

Aviation Investigations

Table 1:

INV NO:	VEHICLE DESCRIPTION	REPORTED EVENT	LOCATION	OCCURRED	LAUNCHED
06-003	Boeing 737-319, ZK-NGC	electrical malfunction and subsequent ground evacuation	Auckland	12-Sep-06	12-Sep-06
06-004	Robinson R44, ZK-HUC	wire strike during low level search	near Punakaiki	9-Nov-06	9-Nov-06
06-005	Gippsland GA8 Airvan, ZK-KLC	impending engine problem	Cook Strait	27-Nov-06	28-Nov-06
06-006	Partenavia P68B, ZK-MYF	loss of engine power	Takapau	2-Dec-06	2-Dec-06
06-009	Boeing 767-300, ZK-NCK	engine fire after landing	Auckland Int'l Airport	30-Dec-06	30-Dec-06
06-008	Piper Aztec PA23, ZK-PIW	landing gear collapse	Ardmore	21-Dec-06	21-Dec-06
06-007	Kawasaki Hughes 369HS, ZK-HDJ	collision with terrain	Mt Ruapehu	11-Dec-06	11-Dec-06
07-002	Dornier 228-202 ZK-VIR	partial incapacitation of crew during positioning flight	over the Southern Alps en route from Westport to Christchurch	30-Mar-07	2-Apr-07
07-001	Boeing 777 A6-EBC	reduced length departure incident	Auckland Int'l Airport	22-Mar-07	23-Mar-07
07-003	Piper PA 32 ZK-DOJ	"ground looped" on landing	Elfin Bay airstrip near Glenorchy	5-Apr-07	11-Apr-07
07-004	Boeing 737-300	aircraft filled with smoke fumes	north of Ohakea, en route Wlg-Akl	3-May-07	3-May-07
07-005	Raytheon 1900D ZK-EAN and Air Nelson SAAB SF340A	near runway collision	Auckland Aerodome	29-May-07	30-May-07
07-006	Eagle 300	intentional wheels up landing	Woodbourne/ Blenheim	18-Jun-07	18-Jun-07

Rail Investigations

Table 2:

INV NO:	VEHICLE DESCRIPTION	REPORTED EVENT	LOCATION	OCCURRED	LAUNCHED
06-106	Express freight Train 826	wrongside signal failure	Cora Lynn	31-Jul-06	3-Aug-06
06-107	Train 3169	overran platform	Ellerslie	11-Aug-06	18-Aug-06
06-108	EMU Passenger Train 9268	struck slip and derailed	between Wellington and Wadestown	26-Aug-06	26-Aug-06
06-109	Freight Train MP33	loose material	Papakura	2-Oct-06	3-Oct-06
06-110	DMU passenger Train 4045	uncontrolled mainline movement	Britomart	9-Oct-06	9-Oct-06
06-111	Express freight Train 23720	derailment	Utiki	20-Oct-06	20-Oct-06
06-112	Tram 244	collision	Christchurch	21-Nov-06	22-Nov-06
07-101	Express Freight Train 73605	derailment	Main North Line near Vernon	6-Jan-07	8-Jan-07
07-102	Express Freight Train Service 934D	derailment, 4 km track and one bridge damaged	Main South Line between Glenavy and Studholme	6-Mar-07	6-Mar-07
07-105	SA/SD passenger Train 2216	overran platforms by 60 m	Te Mahia and Meadowbank	10-Apr-07	12-Apr-07
07-106	DMU passenger Train 3211	TB handle jammed	Papkura	11-Apr-07	12-Apr-07
07-104	Passenger excursion Train B08	smoke in driver cab	Tunnel 17, Raurimu Spiral	1-Apr-07	5-Apr-07
07-107	Heritage passenger Train	derailment	McKirdy	15-Apr-07	16-Apr-07
07-103	Express Passenger Trains 200 and 201	train 200 collided with stationary Train 201 while placing service at National Park Platform	National Park	21-Mar-07	21-Mar-07
07-109	Mainline Shunt Y42	overran track warrant	Oreti, Ohai Industrial Line	15-May-07	15-May-07
07-108	Freight Train 720	overran track warrant	Seddon - Vernon	12-May-07	17-May-07
07-110	Express Freight Train MP30	ONTRACK worker fatally injured when hit by passing train	NIMT line north of Huntly	19-Jun-07	19-Jun-07

Marine Investigations

Table 3:

INV NO:	VEHICLE DESCRIPTION	REPORTED EVENT	LOCATION	OCCURRED	LAUNCHED
06-206	Passenger restricted limit vessel *Fiordland Navigator*	loss of directional control	Milford Sound	8-Jul-06	14-Aug-06
06-207	Passenger vessel *Milford Sovereign*	stalled engines and collision with rock wall	Milford Sound	31-Oct-06	1-Nov-06
06-208	Fishing vessel *Santa Maria II*	engine room fire	105 nm W9W L'Esperance Rock, Kermadec Islands	10-Dec-06	11-Dec-06
07-201	Passenger catamaran, *Cruise Cat*	collision with navigational mark	Waikato River entrance, Lake Taupo	22-Feb-07	26-Feb-07
07-202	Fishing vessel *Walara-K*	sank	200 miles off Cape Egmont	7-Mar-07	7-Mar-07
07-204	Passenger vessel, *Aratere*	machinery failure	Cook Strait	21-Mar-07	26-Mar-07
07-203	Barge *Seatow 61*	collision with private boat	Carnarvon, W Australia	18-Mar-07	20-Mar-07
07-205	Vehicle barge *Spirit of Waiheke*	grounding	Kennedy Point, Waiheke, Half Moon Bay, Auckland	21-Mar-07	26-Mar-07
07-206	Barge *Kimihia*	capsize	Wellington Harbour entrance	14-Apr-07	14-Apr-07
07-207	Bulk carrier *Taharoa Express*	cargo shift whilst seeking safe haven	southwest of Cape Egmont	22-Jun-07	23-Jun-07

Reports and Recommendations – making an impact

Reports

The Commission released 15 reports in 2006/2007:

- 5 reports related to investigations launched in 2005
- 8 reports related to investigations launched in 2006
- 2 reports related to investigations launched in 2007.

The Commission is required under the Transport Accident Investigation Commission Act 1990 *"... to prepare and publish findings and recommendations (if any)"*[7] in respect of the investigations undertaken. The findings and recommendations are published in the form of reports made available in hard copy or on-line from the Commission's website.

The format of the report is modelled from that which New Zealand is obliged to use when reporting to the International Civil Aviation Organisation (ICAO). ICAO administers the Convention on International Civil Aviation. This form of reporting establishes a methodical, consistent approach to critically examining evidence, and on analysis, deriving the cause or causes of the accident or incident. The format is used by accident investigation agencies the world over, forming the basis of a standard approach to transport accident investigations.

Some notable reports this year were these:

From the Aviation Sector

The importance of proper maintenance for older aircrafts

Report 06-002, involving ZK-FMU, a Piper PA 23-250 Aztec, which landed intentionally at Napier Aerodrome with its landing gear retracted, identified the need for replacement of some components on older aircraft.

During a normal circuit, the landing gear selector lever broke when the student pilot tried to select the landing gear to go down. The instructor could not reach the

ZK-FMU with failed landing gear

7 Section 8, The Transport Accident Investigation Commission Act, 1990.

remaining segment of the lever to select the landing gear down, and neither of the 2 emergency gear lowering systems would work without the gear being selected to go down.

A safety issue identified was the unreliability of visual inspections to detect landing gear selector lever cracking. A safety recommendation addressing this issue was made to the Director of Civil Aviation.

The Director accepted this recommendation and issued an amended airworthiness directive to address the issue.

From the Rail Sector

The Importance of regular brake system maintenance

Report 06-102 on SA/SD push/pull passenger Train 4306, in which the brakes worked irregularly between Westfield and Otahuhu highlighted the ineffective braking when the emulsion of water, oil or other contaminants associated with compressed air systems was not manually drained on a regular basis.

Although the brake valve was serviceable and within wear limits, its performance had been affected by the ingress of the emulsion.

In 2003, Toll Consolidated NZ Limited implemented a 4-year cycle for the change-out of brake control valves on all their locomotives.

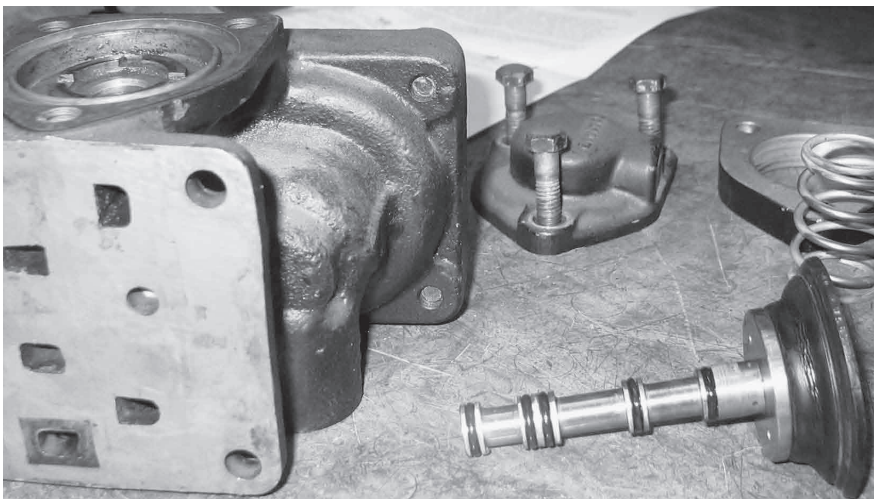
However, a manufacturer of air brake components recommended that brake control valves on locomotives used exclusively in suburban passenger operations should be changed every 2 years instead of the usual 4 years for locomotives used on long haul freight operations.

After the incident Toll Consolidated NZ Limited adopted the two-yearly brake control valve change-out cycle on locomotives used exclusively in suburban passenger operations in line with the manufacturer's recommendation.

Additionally Toll NZ Consolidated Limited implemented an annual change-out cycle for one of the brake control valves in recognition of its vulnerability to high levels of contamination and also promulgated a requirement for locomotive servicing staff to manually purge the air brake system every 24 hours.

In view of these safety actions arising from the investigation the Commission did not need to make any safety recommendations covering these issues.

Contaminated brake control valve component, with clean component for comparison below



From the Maritime Sector

The importance of not relying on one method of position fixing

Report 06-205 on the incident involving fishing vessel *Lady Luck* which collided and subsequently foundered on a rock off of Motiti Island in the Bay of Plenty identified the need for masters and crews of vessels to utilise all available means of position fixing to ensure safe navigation.

The *Lady Luck* was returning from a fishing trip in bad weather when it collided with Black (Matatapu) Rock near the southern extremity of Motiti Island. The skipper of the boat was able to transmit a distress message on very high frequency (VHF) channel 16 before he and the other 3 persons on board boarded the liferaft and the vessel sank.

The *Lady Luck* after the collision

A safety issue identified was the over-reliance on one method of position fixing and plotting especially when the chosen, electronic method was susceptible to malfunction due to the ingress of small amounts of water.

The importance of having a watchkeeping alarm in single-handed wheelhouse operations

Report 06-203 was on fishing vessel *Venture* while on passage from Picton to Oamaru grounded on the shore of Tory Channel after the skipper fell asleep at the helm.

After checking the watertight integrity of the boat, the skipper attempted to re-float the boat but was unsuccessful. As the boat was in no immediate danger and the crew had suffered no injuries, the skipper decided to wait until daylight before summoning assistance. The crew of a passing ferry noticed the boat aground and reported the incident to Picton harbour radio.

The safety issues identified were the undertaking of navigational watchkeeping and helmsman tasks while impaired by the effects of fatigue and the lack of a watchkeeping monitor alarm for a single-handed wheel-house operation.

A safety recommendation was made that the skipper implement the *Safety Guidelines for Small Commercial Fishing Vessel* as issued by FishSAFE organisation, with particular reference to the more pertinent sections on fatigue management and the fitting of a watchkeeping alarm.


The *Venture* aground in Tory channel

Summary of Reports Finalised

Aviation Investigations

Table 4:

INV NO:	VEHICLE DESCRIPTION	REPORTED EVENT	LOCATION	OCCURRED	APPROVED FOR PUBLICATION
05-006	Metroliner SA227-AC, ZK-POA	in-flight break-up	Stratford	3-May-05	20-Jul-06
06-002	Piper Aztec PA23-250, ZK-FMU	gear-up landing	Napier	13-Apr-06	17-Aug-06
06-004	Robinson R44, ZK-HUC	wire strike during low level search	near Punakaiki	9-Nov-06	21-Jun-07

Rail Investigations

Table 5:

INV NO:	VEHICLE DESCRIPTION	REPORTED EVENT	LOCATION	OCCURRED	APPROVED FOR PUBLICATION
05-120	Express freight Train 142	runaway wagons	Mercer	1-Sep-05	5-Mar-07
05-125	Train 1910	train parting	Dunedin	28-Oct-05	17-Aug-06
05-127	Shunt H52	track occupation irregularity	Te Rapa	27-Oct-05	15-Feb-07
05-128	Train service 3056	improper door operation	Papatoetoe	31-Oct-05	21-Sep-06
06-101	DMU Train 3163	fire	Manurewa in Auckland	15-Mar-06	21-Jun-07
06-102	SA/SD passenger Train 4306	braking irregularity	between Westfield and Otahuhu	31-Mar-06	21-Jun-07
06-112	Tram 244	collision	Christchurch	21-Nov-06	21-Jun-07

Marine Investigations

Table 6:

INV NO:	VEHICLE DESCRIPTION	REPORTED EVENT	LOCATION	OCCURRED	APPROVED FOR PUBLICATION
06-202	Passenger ferry *Kea*	loss of control leading to a collision with a berthed vessel	Devonport	10-Mar-06	9-Aug-06
06-203	Fishing vessel *Venture*	grounded	Tipi Bay, Tory Channel	19-Apr-06	14-Dec-06
06-205	Fishing vessel *Lady Luck*	collision with rock and subsequent foundering	Motiti Island	23-Jun-06	21-Jun-07
07-204	Passenger vessel *Aratere*	machinery failure	Cook Strait	21-Mar-07	8-May-07
07-205	Vehicle barge *Spirit of Waiheke*	grounding	Kennedy Point, Waiheke, Half Moon Bay, Auckland	21-Mar-07	19-Apr-07

Safety Recommendations

The Commission issued 26 safety recommendations in 2006/2007.

It is the Commission's function to draw attention to transport safety concerns. Safety recommendations are intended to guide remedial action so that transport safety concerns may be addressed. The safety recommendations are generally directed at improving overall transport systems safety, and reducing the operating risk of inherently unsafe systems.

The Transport Accident Investigation Commission Act 1990 allows the Commission to make preliminary recommendations to the Regulators *"... as may be necessary in the interests of transport safety"*[8]. The Commission may also give notice of proposed recommendations *"... to such persons as may be appropriate in the interests of transport safety"*[9].

Historically the Commission has made its preliminary safety recommendations to transport sector regulators and operators, depending on the circumstances. However this year the Commission has questioned the appropriateness of continuing to issue preliminary safety recommendations directly to transport sector operators rather than expressly to the regulators, as its Act requires. The Commission has come to the view that system-wide learning is more likely to be achieved through the regulators, acting on their mandates rather than through discrete engagement with affected operators.

It is important to note that safety recommendations are advisory, not mandatory. The final safety recommendations published by the Commission emerge out of a deductive process involving investigation, examination, analysis, diagnostics, consultation, and discussion. The safety recommendations are tangible strategies from the Commission's perspective towards safe action, safe behaviour and safe systems. However, from time to time the operators and Regulators do not agree with the Commission's findings or safety recommendations. When this occurs the difference becomes a matter of public record with the Commission publishing the difference in its final report into the event.

Some notable safety recommendations are:

From the Aviation Sector

Preserving accident site evidence, and the proper assessment of aircraft and personnel following an accident

Following a helicopter wire strike accident in November 2006 (report 06-004) the injured pilot twice moved the helicopter to more secure and accessible locations. Consequently, on 12 June 2007, the Commission recommended to the Director of Civil Aviation that he:

> Remind pilots of their responsibility after an aircraft accident to preserve the accident scene, to have the continued airworthiness of the aircraft assessed, and to notify the Director of any change in their medical condition. [013/07]

The text of the above safety recommendation was unchanged from that discussed earlier with the Civil Aviation Authority on 22 May 2007. The Director of Civil Aviation replied that he would:

- Accept this recommendation [013/07] and will publish an article in the CAA *Vector* safety magazine to remind pilots of their responsibility after an aircraft accident to preserve the accident scene, to have the continued airworthiness of the aircraft assessed, and to notify the Director of any change in their medical condition.

8 Section 9, The Transport Accident Investigation Commission Act 1990.

9 Ibid.

From the Rail Sector

Managing the maintenance of diesel powered rail passenger vehicles – a case of differing opinions

Safety recommendation 015/07 issued to the Director of Land Transport New Zealand on 19 June 2007 suggested that require rail participants to operate a maintenance system in which, among other things:

- manufacturers' inspection, repair and maintenance instructions are documented and followed
- safety critical components are identified and documented
- work instructions are issued for maintaining safety-critical equipment
- all maintenance is recorded.

The Director advised on 26 September 2007 that Land Transport New Zealand has recently reviewed its regulatory activities within the co-regulatory New Zealand rail system and plans to take a more strategic, proactive and risk based approach in its monitoring of, and involvement with, the rail industry. Land Transport New Zealand notes the failure of the maintenance system that led to the collapse of the Nuhaka Bridge and in the commissioning and construction process associated with the construction of SD passenger cars, as outlined in the Commission's reports.

From the Maritime Sector

The Importance of Circular Distribution

Following an investigation into a heavy weather incident involving an interisland ferry, the Commission found that an International Maritime Organisation circular giving important new information about the effect on ship stability and handling in following and quartering seas had not been properly circulated by Maritime New Zealand some 11 years prior to the accident. Consequently, the New Zealand Maritime industry had scant appreciation for some phenomena explained in the circular and therefore recommended to the Director of Maritime New Zealand that she:

> 017/07 advise all affected shipping companies in New Zealand of all current IMO circulars and documents, and how each may acquire them.

In reply the Director of Maritime New Zealand stated that:

> Maritime New Zealand accepts the intent of this recommendation, however, would note that it has procedures in place to ensure operators do receive circulars when they are issued by the IMO.
>
> Maritime New Zealand will investigate the supply of an electronic listing of historic circulars which will be provided to SOLAS shipping operators in New Zealand.

The Commission's *Annual Report* for 2006 mentioned a safety recommendation that had been made to the Director of Maritime New Zealand in 2005, that called for a review of the distribution of IMO circulars and the associated documentation. However, in the implementation of this recommendation, it appears that some IMO circulars previously issued had not been distributed to relevant shipping companies. Maritime New Zealand should have instigated a system which ensured that all parties received all relevant current IMO circulars. To address this anomaly, recommendation 017/07 was issued.

International Activities – Being Prepared

Participation in international events and training programmes is an important part of the Commission's work programme. The Commission is obliged to be in a state of preparedness for occurrences, large and small, wherever they occur. The Commission's obligations arise in part from New Zealand's international treaty agreements such as the Convention on International Civil Aviation which states that it is incumbent on signatory states to provide for a common standard of independent aviation accident investigation. Also it is important that the Commission's investigative staff are current in their investigative practice so that consistent, reliable, scientifically based investigations are undertaken, guided by best practice and supported by appropriate technologies and diagnostics.

New Zealand, as an island state with a small population, positioned as it is at 41° 00S, 174° 00E with few near neighbours, is reliant upon access to other accident management systems to ensure sufficient practice and capability to handle the next significant event. Also, as with other jurisdictions, it is recognised that for bigger accident events no one state necessarily has the investigative resources to manage its own response efficiently. Our investigators may be called upon to assist in other countries, and we in turn may call for help when required. So, to be ready, Commission members and staff attend training workshops, seminars, strategic meetings and conferences annually to learn, and to cement relationships.

International events attended include the:

- International Transport Safety Association Chairpersons' Meeting, Ottawa, Canada
- International Maritime Organisation Flag State Implementation Session, London
- International Society of Air Safety Investigators' Annual Conference, Mexico
- Australian Transport Safety Bureau's Human Factors Course, Canberra
- Australian Transport Safety Bureau's Investigation Analysis Course, Canberra
- International Rail Safety Conference, Dublin
- Jet Engine Mishap Investigation Course, Texas
- Fundamentals of Accident Investigation, Cranfield University, United Kingdom
- International Rail Accident Investigation Conference, London
- Marine Accident Investigation Forum, Panama
- Bridge Resource Management Training, Sydney
- Australia and New Zealand Society of Air Safety Investigators Conference, Wellington

Capability

Being A Good Employer

Our People

The Commission employs 15 staff.

Over the last year the Commission has been reviewing and updating its Good Employer policies. A greater emphasis is being placed on being a good employer by developing a Good Employer and EEO policy covering recruitment strategies to support succession planning for a specialist workforce, remuneration, career development, work/life balance, health and wellbeing, study assistance, and preparation for retirement. The revised policies are currently in draft form for Board sign off. Currently staff are supported in tertiary training opportunities, medical care, eye testing, vaccinations, and fitness programmes.

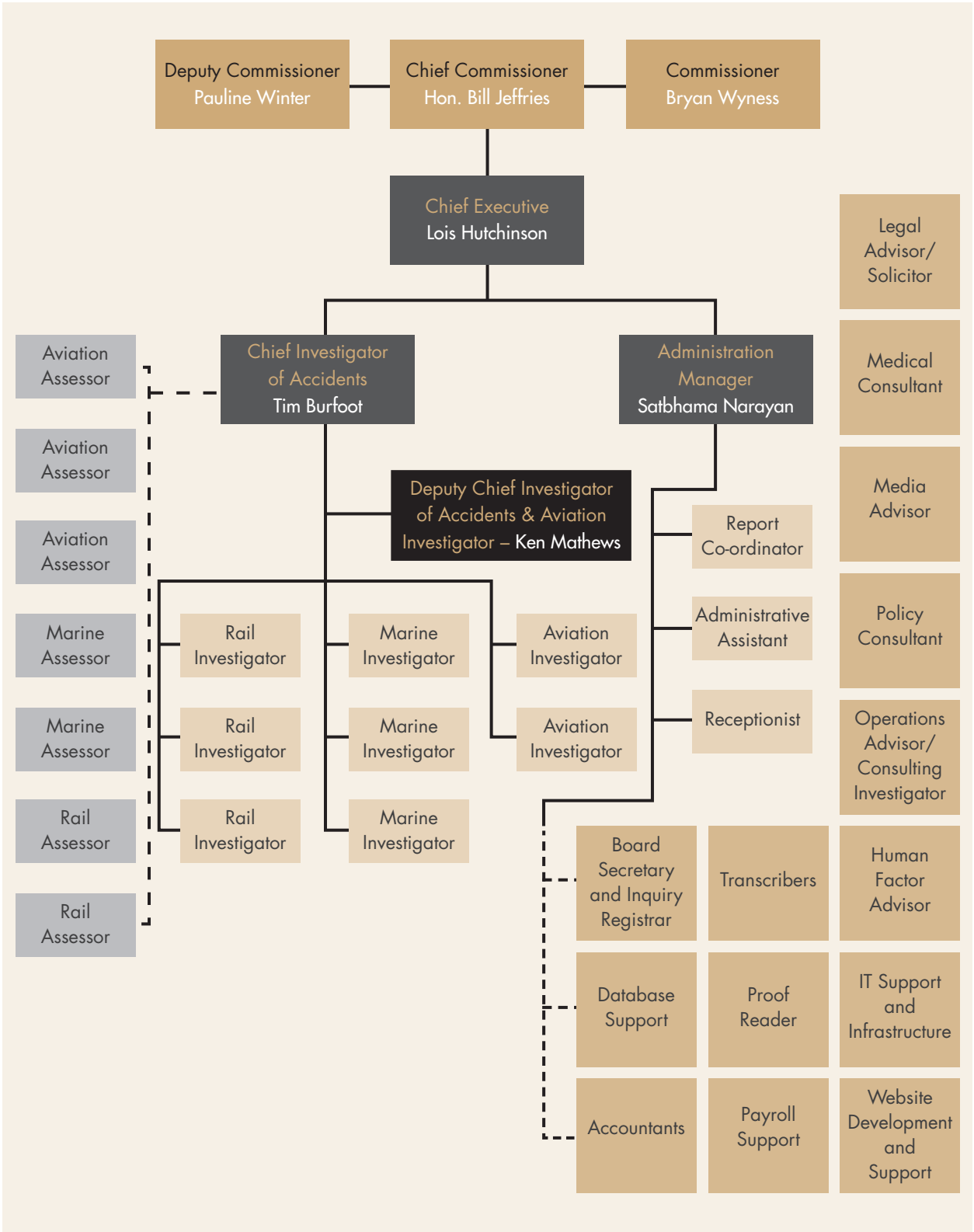
The Commission employees meet once a month to discuss issues and matters affecting them. Policies for development or updating are discussed and shared in this forum. Once policies are approved by the Board they are promulgated to staff through updating policy manuals.

The Commission's workforce is predominantly 50+ years. Investigative staff are recruited from the transport modes the Commission investigates. They are expected to be seasoned professionals with longevity in their mode of expertise. The Commission's staff composition is shown in table 7 below.

Table 7: TAIC Workplace Composition

TAIC WORKPLACE COMPOSITION BY GENDER	NUMBER
Male	11
Female	4
TAIC WORKPLACE COMPOSITION BY ETHNICITY	**NUMBER**
European	12
Pacific	2
Asian	1

TAIC Organisational Chart – as at 21 August 2007



Summary of Activities

Services provided

The Minister of Transport purchases independent investigation and reporting on aviation, rail and marine accidents and incidents, and the promulgation of safety recommendations that are derived from the investigations, when appropriate. The investigations are to determine the circumstances and causes of accidents and incidents having significant implications for transport safety, with a view to avoiding similar occurrences in the future, rather than to ascribe blame to any person.

International cooperation and the exchange of accident information with similar accident investigation agencies overseas are also supported.

Summary of Occurrences Notified

The Directors of Civil Aviation, Land Transport and Maritime New Zealand are each required to notify the Commission of accidents and serious incidents reported to them.

The Commission received 847 notifications in 2006/2007.

Notifications of occurrences to the Commission averaged 675 per annum over the years 2004/2005 through to 2006/2007. Notifications increased 70% over the 3 years with aviation sector notifications dominating, increasing 109% from 2004/2005, followed by marine notifications increasing 86%. Rail notifications have declined 9% over the three-year period.

Table 8: Occurrences 2004/2005 – 2006/2007

OCCURRENCES NOTIFIED BY MODE 2004-2007								
MODE	2004/05	% OF TOTAL	2005/06	% OF TOTAL	2006/07	% OF TOTAL	GRAND TOTAL	% OF TOTAL
Air	185	37%	213	31%	386	31%	784	39%
Rail	129	26%	159	24%	118	24%	406	20%
Marine	184	37%	307	45%	343	45%	834	41%
Total	498		679		847		2,024	

Summary of Investigations

The Commission does not investigate every occurrence notified to it. Criteria are applied to ensure those occurrences to be investigated will add value to the lessons already learnt, and not waste scarce resources through duplication of effort when there is nothing more to be gained. Sometimes the Commission may decide to investigate when there is a clear pattern or trend emerging from a series of similar occurrences. Having decided to investigate, the Commission prioritises investigations according to severity of event and numbers of people harmed, or likely to be harmed. Prioritisations used are:

PRIORITY 1:	Widespread or major threat to public safety.
PRIORITY 2:	Significant concern for public safety.
PRIORITY 3:	Likely to have significant implications for transport safety.
PRIORITY 4:	Initial enquiries are to be made to determine whether the occurrence is likely to have significant implications for transport safety. If it does, the occurrence is re-prioritised as priority 3. If it doesn't, it is re-allocated a priority 5, and discontinued.
PRIORITY 5:	Not for investigation.

The Commission launched 40 investigations from 847 notifications. This represents a 5% launch rate. This launch rate is the same as last year's. The average launch rate over the years 2004/2005 through to 2006/2007 is 7%.

Rail investigations continue to dominate the Commission's caseload, averaging 49% of the investigations launched over the three-year period. The predominance of rail cases is lessening as the Commission reappraises the priority allocation to notifications as more incident data are made available to the Commission. Incident data supply important information for determining significance to transport safety. Incident rates, particularly standardised rates, provides context. However such basic data are not always available to the Commission. Nevertheless by monitoring trends and patterns of accident and incident event types over the whole of the transport systems of interest the Commission expects to establish a sound baseline for assisting in determining whether investigations are warranted, and what scale of inquiry should be undertaken.

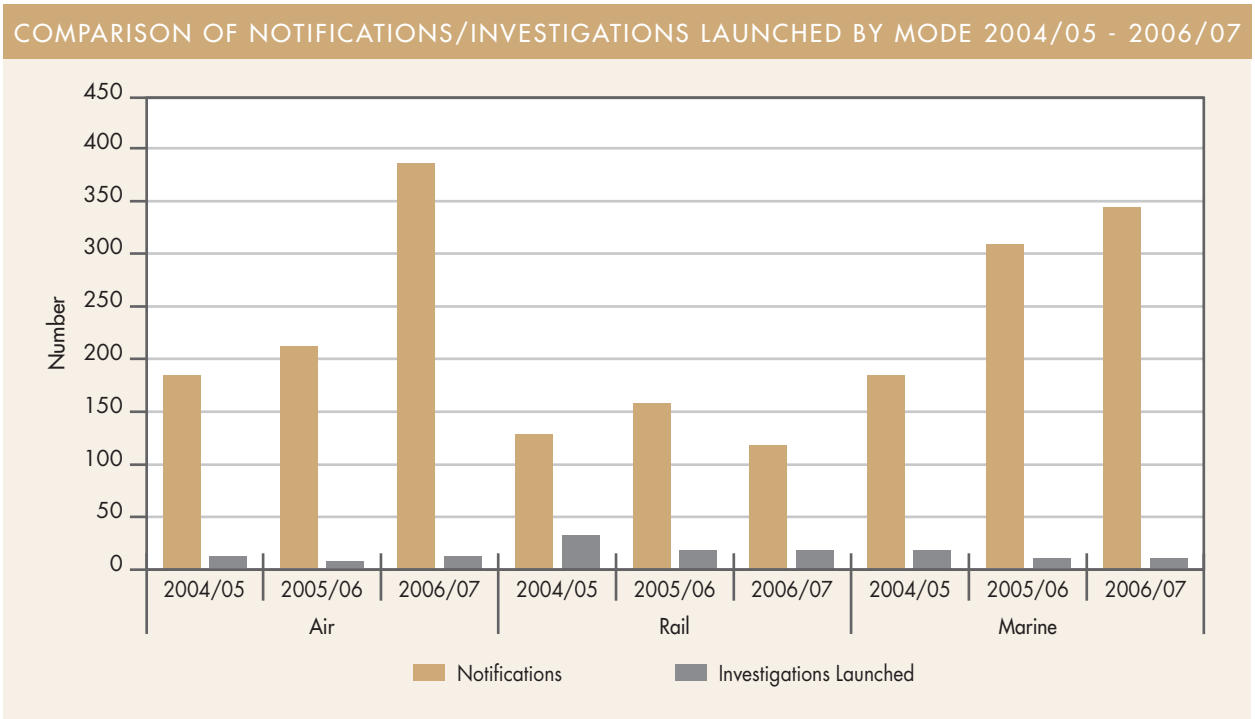
Table 9: Investigations Launched 2004/2005-2006/2007

INVESTIGATIONS LAUNCHED BY MODE 2004-2007								
MODE	2004/05	% OF TOTAL	2005/06	% OF TOTAL	2006/07	% OF TOTAL	GRAND TOTAL	% OF TOTAL
Air	11	18%	7	21%	13	33%	31	23%
Rail	33	53%	17	52%	17	43%	68	50%
Marine	18	29%	9	27%	10	25%	38	27%
Total	62		33		40		137	

Table 10: Investigations – Launch Rates

	2004/05	2005/06	2006/07
Notifications	498	679	847
Investigations Launched	62	33	40
Rate	12%	5%	5%
Ratio	1:09	1:20	1:26

Figure 1: Comparison of Notifications/Investigations Launched by Mode



Investigations launched increased 21% on last year's result. The increase was driven by aviation investigation which increased by 6 (85%), whereas the level of rail and marine investigations launched remained the same.

The Commission is endeavouring to improve knowledge of the circumstances and causes of transport accidents and incidents bearing in mind that reporting of accidents and some incidents to the Commission is mandatory under the Regulators' legislation. To help ascertain whether lessons are being learnt the Commission has begun to monitor trends and patterns in event types across the modes of interest. We are just beginning to lay the foundation for inquiring into event types so that in the coming years we can test for changes in levels and incident rates of events as they are reported to us. The charts below compare investigations launched sorted by events by the Commission over the years 2005/06-2006/07. In the near future we would like to be able to 'read' over event types from notifications received through to safety recommendations issued so that a picture is formed of the types of occurrences present, and perhaps prevailing in the inquiry system.

Figure 2: Aviation Investigations Launched by Event Type

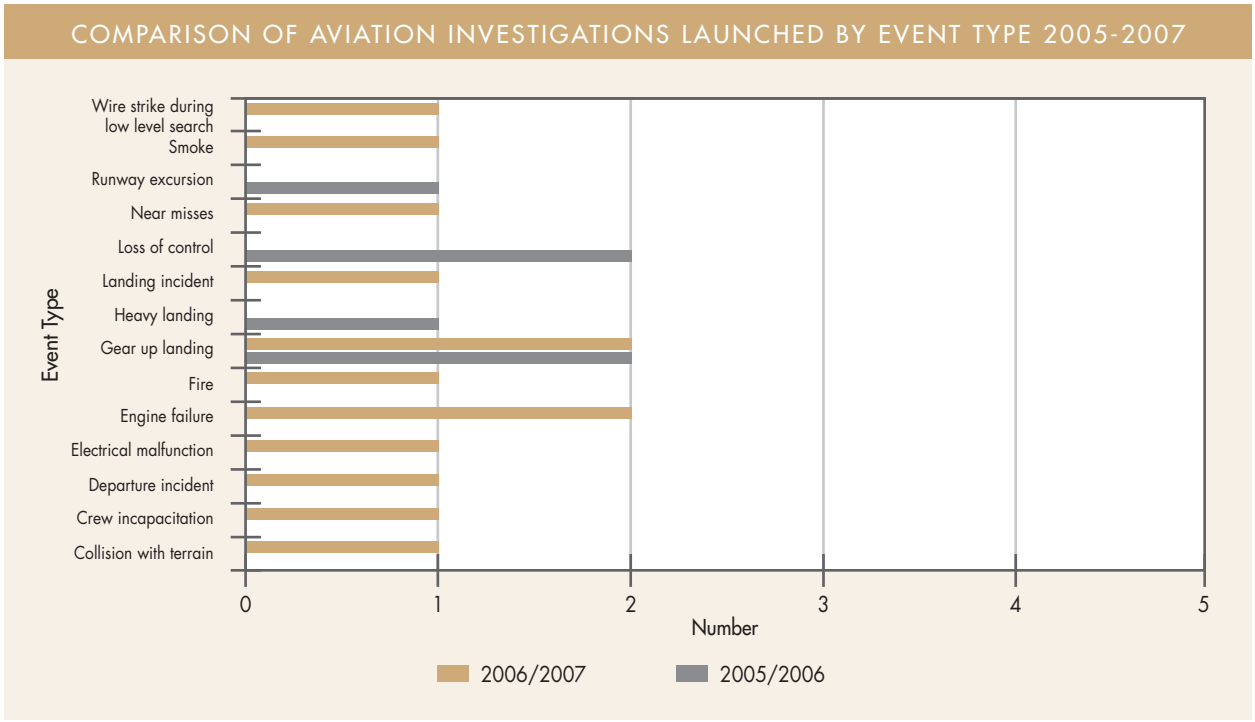


Figure 3: Rail Investigations Launched by Event Type

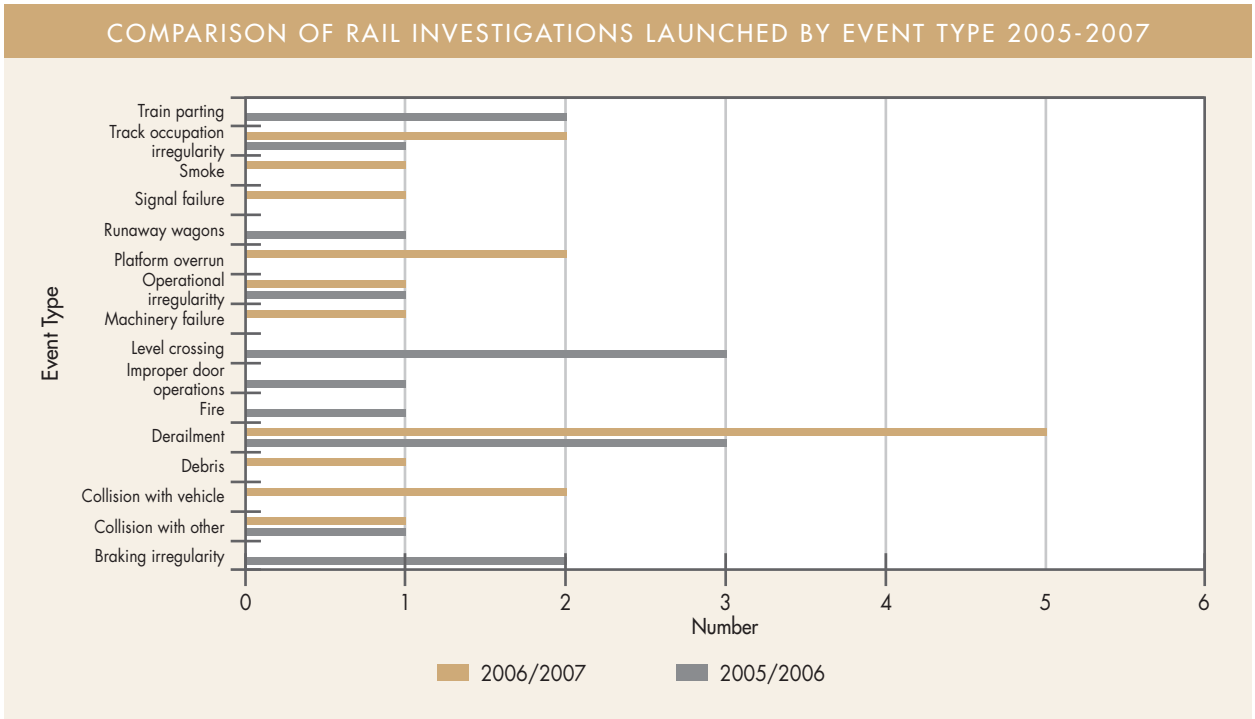
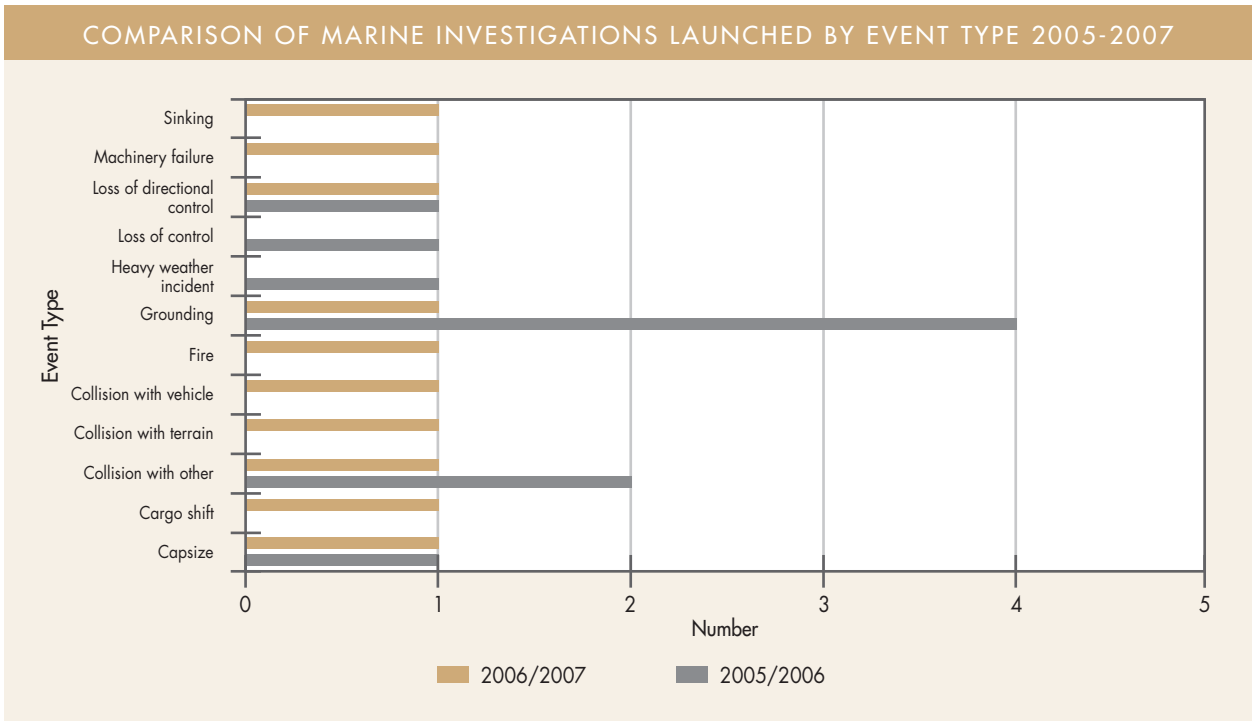


Figure 4: Marine Investigations Launched by Event Type



Prioritisation of Notifications

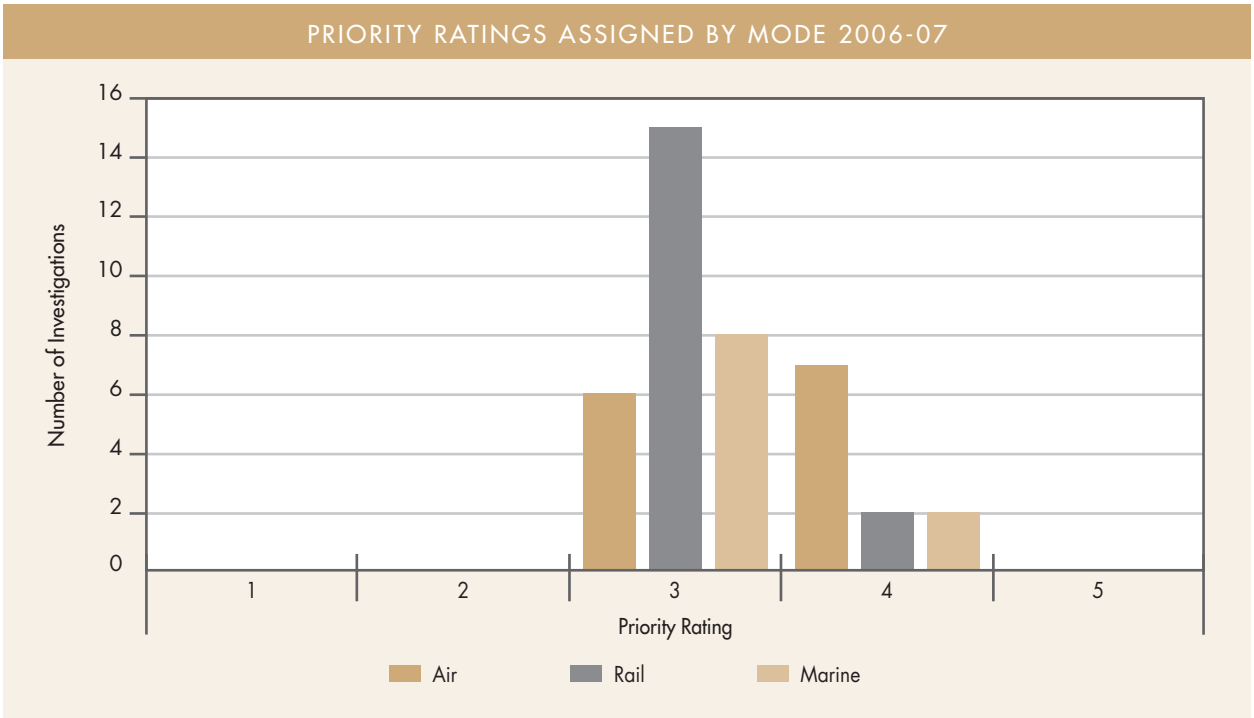
All notifications received are prioritised. Four percent of prioritisations are priority 3, 1 percent are priority 4, and 95 percent are priority 5. This is a similar distribution to last year.

The prioritisations reveal the structure of the accident/incident pattern which is overwhelmingly, but not exclusively, low order accidents and incidents. Repetitive occurrences of these low order events may be signals of deeper systemic failures. Priority 3 inquiries do test whether there are deeper issues on seemingly irrelevant events, remembering that priority 3 relates to the likelihood of significant implications for transport safety.

Table 11: Prioritisations Initially Assigned

PRIORITISATIONS	1	2	3	4	5
Air	0	0	6	7	373
Rail	0	0	15	2	101
Marine	0	0	8	2	333
Total	0	0	29	11	807

Figure 5: Priority Ratings Assigned by Mode



Seventy three percent of investigations launched are priority 3, and of that priority 3, 52% are Rail investigations.

Rail notifications are low volume compared with Air or Marine but the launch rate for Rail is 10% higher than either Air or Marine modes. The lower level of occurrence notifications in Rail reflects the Director of Land Transport's discretion to report incidents. Under the Railways Act 2005 the Director must report all accidents, and incidents at their discretion. This is in contrast with the Directors of Civil Aviation and Maritime New Zealand who must report all accidents and serious incidents. The level of rail notifications supports active use of the Director's discretion subject to internal relativities so that, in effect, the Commission is receiving notice of serious rail occurrences, which in turn drives the higher launch rate for rail.

Summary of reports

The Commission makes determinations as to circumstances and causes of accidents and incidents after inquiring into the accident or incident.

The Commission compiles reports on the occurrences it inquires into, providing an account of the occurrence, the form of the investigation undertaken, the people spoken to, the tests and analyses conducted, the feedback provided by interested parties, the findings obtained, and the safety recommendations, if any, made to rectify or counter the contributing factors to the accident or incident event. When the Commission approves a final draft report, the report is prepared for publication, and the investigation is deemed closed.

Table 12: Reports Produced by Mode 2004-2007

REPORTS PRODUCED BY MODE 2004-2007								
MODE	2004/05	% OF TOTAL	2005/06	% OF TOTAL	2006/07	% OF TOTAL	GRAND TOTAL	% OF TOTAL
Air	9	21%	11	21%	3	20%	23	21%
Rail	20	47%	29	55%	5	33%	54	49%
Marine	14	33%	13	24%	7	47%	34	30%
Total	43		53		15		111	

Report production slowed markedly in 2006/07 compared with the previous 2 years. Notifications to the Commission dropped at the end of 2005/06 and slowed into 2006/07 before surging again in the latter half of 2006/07. This meant cases in the system tailed off but then increased markedly towards the end of 2006/07. This effect can be seen in Table 12.

There are three main stages to an investigation. They are:

STAGE 1:	Under investigation, including preparation of the draft preliminary report.
STAGE 2:	The draft preliminary report is approved for release by the Commission for consultation with Interested Parties.
STAGE 3:	The Commission has approved the final report, with the report to be prepared for publication.

Table 13 below shows the status of open investigations as on 30 June 2007. There were 52 open investigations compared with last years 26 – a 100% increase in caseload.

Table 13: Current Investigations in Progress

INVESTIGATIONS IN PROGRESS										
Mode	Stage 1 2006/07	2005/06	Stage 2 2006/07	2005/06	Stage 3 2006/07	2005/06	Total 2006/07	2005/06	% of Total 2006/07	2005/06
Air	11	1	2	2	2	2	15	5	29%	19%
Rail	21	11	2	5	2	2	25	16	48%	62%
Marine	8	5	3	0	1	1	12	5	23%	19%
Total	40	17	7	7	5	5	52	26	100%	100%
% of Total	77%	65%	13%	15%	10%	20%	100%	100%		

Each year some of the investigations undertaken do not proceed to completion with a final report. These are generally priority 4 investigations launched and discontinued because the implications for transport safety are not significant.

The number of investigations ceased without publishing a report are detailed in Table 14 below.

Table 14: Investigations Ceased 2004-2007

INVESTIGATIONS CEASED WITHOUT PUBLISHING A REPORT				
MODE	2004/05	2005/06	2006/07	TOTAL
Air	4	2	0	6
Rail	8	3	0	11
Marine	2	1	2	5
Total	14	6	2	22
% of Investigations Launched	38%	18%	5%	

Summary of Safety recommendations issued

If the Commission is making an impact at all on preventing similar accidents or incidents recurring it is through the promulgation of its reports and uptake of its safety recommendations. It is difficult to assess what direct impact the Commission has on improving the safety of transport in New Zealand but certainly some correlation may be drawn between the level of uptake of the safety recommendations issued in respect of specific events and the frequency of similar events over time. Currently the Commission is unable to test for correlations; however, at a rudimentary level it does monitor the uptake of its safety recommendations.

The Commission issued 26 safety recommendations.

Table 15: Safety Recommendations Issued 2004/2005-2006/2007

MODE	2004/05	2005/06	2006/07
Air	16	22	6
Rail	36	30	15
Marine	67	25	5
Total	119	77	26

Figure 6: Aviation Safety Recommendations Issued by Event Type

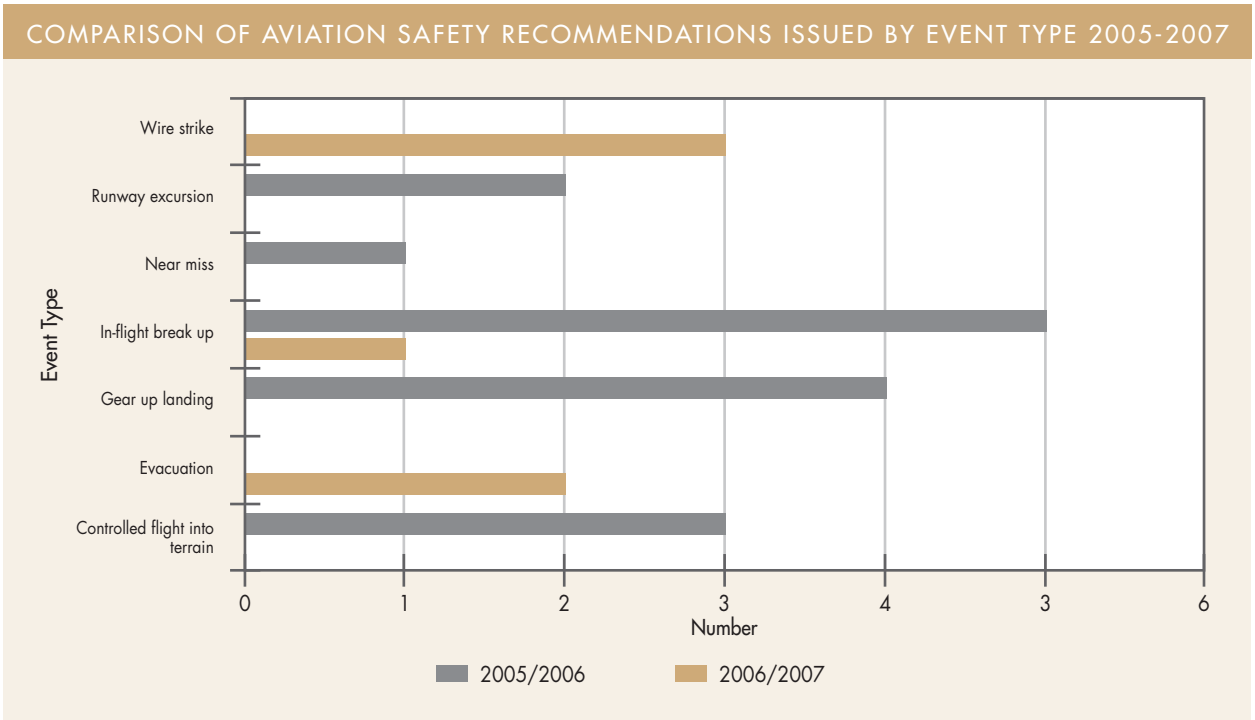


Figure 7: Rail Safety Recommendations Issued by Event Type

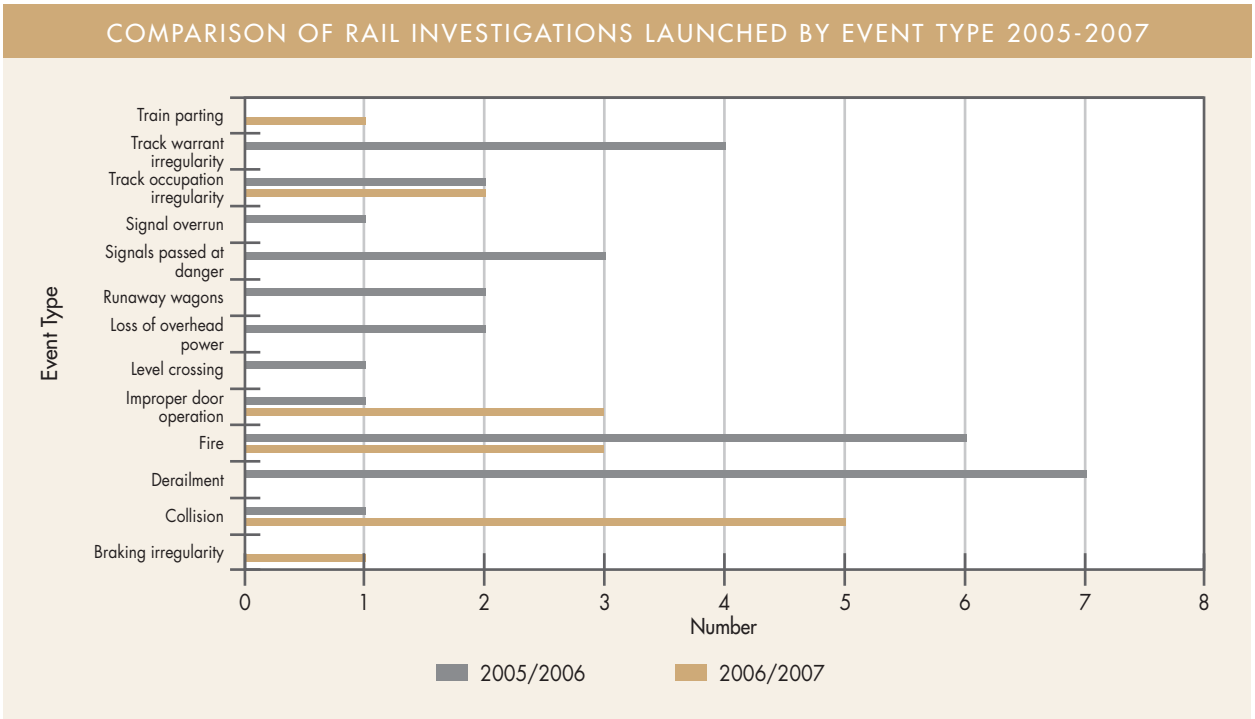
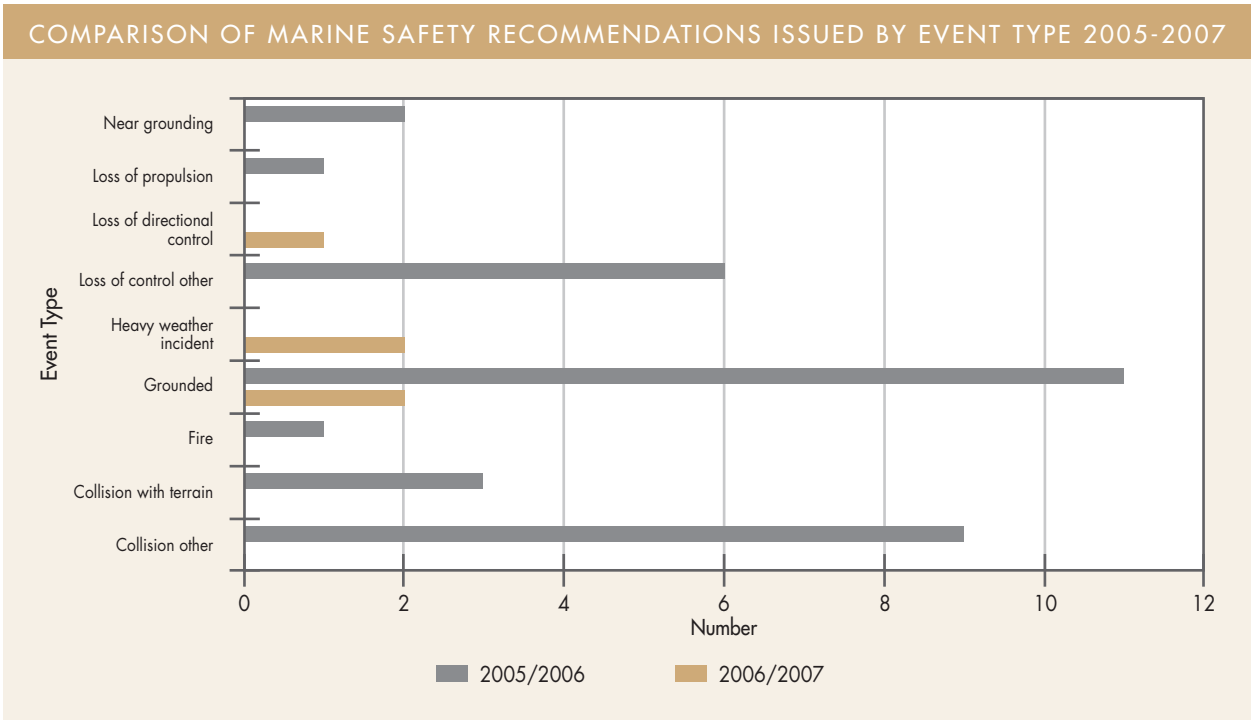


Figure 8: Marine Safety Recommendations Issued by Event Type



Safety Recommendations Accepted

Safety recommendations accepted show the total number closed off as accepted in the year. Of the safety recommendations issued in the year, 19 out of 20 were accepted (95%) with 194 open, and 1 declined.

Table 16: Number of Safety Recommendations Accepted

MODE OF TRANSPORT	2004/05	2005/06	2006/07	TOTAL
Air	5	9	3	17
Rail	39	28	12	79
Marine	55	35	5	95
Total Safety Recommendations	99	72	20	191

Table 17: Number of Safety Recommendations Declined

MODE OF TRANSPORT	2004/05	2005/06	2006/07	TOTAL
Air	2	0	0	2
Rail	0	4	0	4
Marine	9	6	1	16
Total Safety Recommendations	11	10	1	22

Safety recommendations, while accepted, are not always implemented on acceptance. The Commission designates accepted but unactioned safety recommendations as 'open', and monitors the time lapsed for open safety recommendations. The Commission recognises that some safety recommendations issued will require a number of years for full implementation because of the nature of change required, or the scale of the task required. Table 18 shows the number of safety recommendations open. There is a net reduction of 9 open safety recommendations from last year's ending balance.

Table 18: Number of Safety Recommendations Open at Year's End 2007

MODE OF TRANSPORT	OPENING BALANCE	ISSUED OVER THE YEAR	CLOSED OVER THE YEAR	ENDING BALANCE
Air	47	6	12	41
Rail	73	15	16	72
Marine	90	5	7	88
Total Safety Recommendations	210	26	35	201

Table 19: Safety Recommendations Open Longer Than 12 Months

MODE OF TRANSPORT	SRS OPEN > 12 MONTHS	SRS OPEN > 24 MONTHS
Air	6	22
Rail	25	34
Marine	23	65
Total Safety Recommendations	54	121

Statement of Responsibility

For the Year Ended 30 June 2007

In the financial year ended 30 June 2007, the Commissioners and management of the Transport Accident Investigation Commission were responsible for:

(a) The preparation of financial statements and the judgements they contained;

(b) Establishing and maintaining a system of internal control designed to provide reasonable assurance as to the integrity and reliability of financial reporting.

In the opinion of the Commissioners and management of the Transport Accident Investigation Commission, the financial statements for the financial year reflect fairly the financial position and operations of the Transport Accident Investigation Commission.

Hon. W P Jeffries
Chief Commissioner

Pauline Winter
Deputy Chief Commissioner

Financials – Statement of Accounting Policies

For the Year Ended 30 June 2007

1. Reporting entity

The Transport Accident Investigation Commission is an independent Crown entity established under the Transport Accident Investigation Commission Act 1990.

The Commission investigates aviation, marine and rail accidents and incidents, the circumstances of which have, or are likely to have, significant implications for transport safety. The Commission publishes safety recommendations and reports on accidents and incidents to avoid similar occurrences in the future.

The Commission also represents New Zealand at accident investigations in which New Zealand has a specific interest, conducted by overseas authorities, and exchanges accident and incident information with overseas government accident investigation authorities.

The Commission's air accident investigation capability is occasionally extended, on a cost recovery basis, to Pacific Island states with no similar agency.

2. Measurement system

The financial statements have been prepared on a historical cost basis.

3. Particular accounting policies

The following particular accounting policies that materially affect the measurement of financial performance and financial position have been applied:

(a) Budget figures
The budget figures are those approved by the Commission at the beginning of the financial year. The budget figures have been prepared in accordance with generally accepted accounting practice and are consistent with the accounting policies adopted by the Commission for the preparation of the financial statements.

(b) Revenue
The Commission derives revenue through the provision of outputs to the Crown, for services to third parties and income from its investments. Such revenue is recognised when earned and is reported in the financial period to which it relates.

(c) Fixed assets are shown at cost less accumulated depreciation and have been depreciated on a straight line basis that is anticipated to write them off over their estimated useful lives.

FIXED ASSET TYPE	USEFUL LIFE (YEARS)
Buildings (store)	33
Furniture and fittings	8 - 18
Office equipment	2.5 - 20
EDP equipment	3.3 - 10

(d) Receivables
Receivables have been valued at expected net realisable value.

(e) GST
These financial statements have been prepared exclusive of GST except for those payables with suppliers and receivables from customers.

(f) Statement of Cash Flows
Cash comprises monies held in the Commission's bank accounts and short term deposits. Financing activities comprise the change in equity and debt capital structure of the Commission. Investing activities relate to the sale and purchase of fixed assets. Operating activities include all transactions and other events that are not investing or financing activities. Interest received is included in operating activities.

(g) Provision for employee leave entitlements
Provision of employee leave entitlements is recognised when employees become eligible to receive the benefits.

(h) Taxation
The Commission is a public authority in terms of the Income Tax Act 2004 and consequently is exempt from income tax.

(i) Operating leases
Operating lease payments, where the lessor effectively retains substantially all the risks and benefits of ownership of the leased items, are charged as expenses in the periods in which they are incurred.

(j) Financial instruments
The Commission is party to financial instruments as part of its normal operations. These financial instruments include bank accounts, short-term deposits, debtors and creditors. All financial instruments are recognised in the statement of financial position and all revenues and expenses in relation to financial instruments are recognised in the statement of financial performance.

4. Changes in accounting policies

There have been no changes in accounting policies during the year under review.

All policies have been applied on the basis consistent with the previous year.

Statement of Financial Position

As at 30 June 2007

	Note	Actuals 30/06/07 $	Budget 30/06/07 $	Actuals 30/06/06 $
ASSETS				
Fixed assets	1	86,517	75,000	85,269
Current assets				
Cash at bank		66,258	264,000	119,491
Short-term deposits		304,313	400,000	404,313
Receivables	2	49	-	55,966
Accrued interest		3,898	6,000	7,168
Prepayments and advances		8,026	50,000	23,843
Total current assets		382,544	720,000	610,781
Total assets		469,061	795,000	696,050
Represented by: LIABILITIES AND TAXPAYERS' FUNDS				
Current liabilities				
Payables and accruals	3	112,299	260,000	239,211
Provision for employee leave entitlements	4	94,874	100,000	120,733
Total current liabilities		207,173	360,000	359,944
Taxpayers' Equity		261,888	435,000	336,106
Total liabilities and taxpayers' funds		469,061	795,000	696,050

The accompanying notes and statement of accounting policies should be read in conjunction with these financial statements.

Hon. W P Jeffries
Chief Commissioner

Pauline Winter
Deputy Chief Commissioner

Statement of Financial Performance

For the year ended 30 June 2007

	Note	Actuals 30/06/07 $	Budget 30/06/07 $	Actuals 30/06/06 $
REVENUE				
Crown revenue		2,616,000	2,617,000	2,616,000
Rental income		86,183	-	-
Other income		10,780	6,000	4,991
Interest earned		27,112	23,000	36,630
Total Revenue		2,740,075	2,646,000	2,657,621
EXPENDITURE				
Audit fees		11,350	10,400	10,927
Commissioners' fees		93,697	73,000	75,897
Depreciation				
Buildings		918	1,000	894
EDP equipment		11,932	23,000	15,084
Office furniture, fittings and equipment		11,700	21,000	10,347
Lease, rentals and outgoings		310,107	230,000	175,361
Capital charge	5	27,103	31,000	30,928
Personnel costs		1,596,118	1,554,000	1,586,720
Loss on sale		-	-	150
Other operating costs		751,368	677,600	801,810
Total Expenditure		2,814,293	2,621,000	2,708,118
Net Surplus/(Deficit)		(74,218)	25,000	(50,497)

The accompanying notes and statement of accounting policies should be read in conjunction with these financial statements.

Statement of Movements in Equity

For the year ended 30 June 2007

	Note	Actuals 30/06/07 $	Budget 30/06/07 $	Actuals 30/06/06 $
Opening Taxpayers' equity at 1 July		336,106	410,000	386,603
PLUS:				
Net Surplus/(Deficit)		(74,218)	25,000	(50,497)
Closing Taxpayers' equity at 30 June		261,888	435,000	336,106

The accompanying notes and statement of accounting policies should be read in conjunction with these financial statements.

Statement of Cash Flows

For the year ended 30 June 2007

	Note	Actuals 30/06/07 $	Budget 30/06/07 $	Actuals 30/06/06 $
CASH FLOWS FROM OPERATING ACTIVITIES				
Cash was received from:				
Crown revenue		2,616,000	2,617,000	2,616,000
Rental income		86,183	-	-
Other income		66,697	6,000	8,973
Interest received		30,382	36,000	34,209
		2,799,262	2,659,000	2,659,182
Cash was disbursed to:				
Payments to suppliers		1,277,617	1,054,000	1,035,176
Payments to employees		1,621,977	1,554,000	1,577,807
Capital charge		27,103	31,000	30,928
Net cash flows from operating activities		(127,435)	20,000	15,271
CASH FLOWS FROM INVESTING ACTIVITIES				
Cash was received from:				
Sale of fixed assets		-	-	1,081
Cash was applied to:				
Purchase of fixed assets		25,799	45,000	30,456
Net cash flows from investing activities		(25,799)	(45,000)	(29,375)
CASH FLOWS FROM FINANCING ACTIVITIES				
Cash provided from:				
Capital Contribution from the Crown		-	-	-
Cash disbursed to:				
Payment of Surplus to the Crown		-	-	-
Net Cash Flows from Financing Activities		-	-	-
Net movement in cash for the period		(153,234)	(25,000)	(14,104)
Opening bank balance		523,805	690,000	537,909
Closing bank balance		370,571	665,000	523,805

The accompanying notes and statement of accounting policies should be read in conjunction with these financial statements.

Reconciliation of Cash Flow with Statement of Financial Performance

For the year ended 30 June 2007

	30/06/07 $	30/06/06 $
(Deficit)/Surplus from Statement of Financial Performance	(74,218)	(50,497)
ADD NON-CASH ITEMS		
Depreciation	24,550	26,325
(Profit)/loss on sale of fixed assets	-	150
	(49,668)	(24,022)
ADD/(LESS) MOVEMENTS IN WORKING CAPITAL ITEMS		
Decrease (increase) in Receivables	55,917	(52,268)
Decrease (increase) in Accrued interest	3,270	(2,421)
Decrease (increase) in Advances and Prepayments	15,817	12,737
Increase (decrease) in Creditors and Accruals	(126,912)	72,332
Increase (decrease) in Provisions	(25,859)	8,913
Total working capital items	(77,767)	39,293
Net cash flows from operating activities	(127,435)	15,271

The accompanying notes and statement of accounting policies should be read in conjunction with these financial statements.

Notes to the Financial Statements

For the year ended 30 June 2007

1: Fixed assets

	Cost $	Depreciation $	Accumulated Depreciation $	Book Value $
2007				
Buildings	43,936	918	15,983	27,953
EDP equipment	124,210	11,932	117,197	7,013
Office furniture, fittings and equipment	251,441	11,700	199,890	51,551
	419,587	24,550	333,070	86,517
2006				
Buildings	29,798	894	15,065	14,733
EDP equipment	124,210	15,084	105,265	18,945
Office furniture, fittings and equipment	239,737	10,347	188,146	51,591
	393,745	26,325	308,476	85,269

2: Receivables

	30/06/07 $	30/06/06 $
Gross Receivables	49	55,966
Less: Provision for doubtful debts	-	-
Net Receivables	49	55,966

3: Payables and Accruals

	30/06/07 $	30/06/06 $
Trade creditors	57,272	140,793
Accrued expenses	55,027	98,418
Total Payables and Accruals	112,299	239,211

4: Provision for employee leave entitlements

	30/06/07 $	30/06/06 $
Annual leave	94,874	91,458
Retirement leave	-	29,275
	94,874	120,733

5: Capital charge

Levied at 7.5% on the taxpayers' funds for 2007. For the 2006 year the rate was 7.5%.

6. Financial instruments

The Commission has various financial instruments comprising both financial assets and liabilities that are stated at their estimated fair value in the Statement of Financial Position.

Financial instruments that potentially subject the Commission to credit risk consisting of cash at bank and accounts receivable. All financial instruments are unsecured and do not require collateral or other security. There are no significant concentrations of credit risk.

A Term deposit is currently placed with BNZ, the term is due to mature on 2/10/07, the rate is 7.70%.
The Term Deposit held with the National Bank is due to mature on 13/8/07, the rate for this was 7.35%.
The term deposit held with Kiwi Bank on is due to mature on 5/09/07 at the rate of 8.18%. Investments and funds are invested pursuant to powers granted under Section 25 of the Public Finance Act 1989.
The Commission incurs minimal foreign currency risk through payables and accruals in the normal course of its business.

7. Employee remuneration

Total remuneration and benefits $000	Number of Employees 2007	2006
$100-$110	2	2
$110-$120	2	3
$120-$130	2	2
$130-$140	0	0
$140-$150	0	0
$150-$160	0	2
$160-$170	0	0
$170-$180	0	0
$180-$190	0	0
$190-$200	1	0

The Chief Executive's total remuneration and benefits received in 2006/2007 is in the $190,000-$200,000 band.

8. Commission members

Commission members earned the following fees during the year:

Member	Fees 2007	2006
Hon. WP Jeffries (Chief Commissioner)	$43,200	$41,400
Ms PA Winter	$21,182	$20,350
Mr B Wyness	$29,315	$21,122

9. Statement of commitments

The Transport Accident Investigation Commission has ongoing leases of the following amounts:

	30/06/07 $	30/06/06 $
Less than 1 year	233,019	239,580
1 – 2 years	191,334	373,726
2 – 5 years	502,982	455,747
5+ years	443,087	443,087
	1,370,422	1,512,140

Note: The lease for Level 9, 114 The Terrace, Wellington was terminated on the 30/7/06 and a new lease was taken for Level 11, Cigna House.

St John house Level 14 has been sub-leased for 2 years until the lease expires in 2008.

10. Statement of contingent liabilities

There were no contingent liabilities existing at balance date. (2006: Nil.)

11. International Financial Reporting Standards

In December 2002 the Accounting Standards Review Board ("ASRB") announced that New Zealand reporting entities would be required to apply New Zealand equivalents to International Financial Reporting Standards ("NZ IFRS") for reporting periods commencing on or after 1 January 2007. The ASRB also allowed the option of adopting NZ IFRS earlier to the mandatory adoption date, allowing adoption from 1 January 2005. The Commission will not adopt NZ IFRS early, the first report in compliance with NZ IFRS will be for the year ended 31 July 2008.

The Commission is liaising with other Crown Entities to identify specific issues arising from the transition to NZ IFRS that could impact the financial statements. The Commission's staff are working with their accountants to identify any issues and are reporting back regularly to the CEO.

No key differences between current accounting policies and NZ IFRS have been identified. The impact on the financial report is expected to be minimal but the full impact is yet to be reliably estimated.

The actual impact of adopting NZ IFRS may vary from the information presented and this variation may be material.

Statement of Objectives and Service Performance

For Outputs in the year ended 30 June 2007

Non-Departmental Output Expenses – Reporting on Accident or Incident Investigations

The Commission delivers to a single output under Vote Transport. The Minister of Transport purchases independent investigation and reporting on aviation, rail and marine accidents and incidents in New Zealand. The Commission investigates to determine the circumstances and causes of accidents and incidents having significant implications for transport safety, with a view to avoiding similar occurrences in the future, rather than to ascribe blame to any person. The Commission has 3 distinct phases in reporting on accidents and incidents which form sub-outputs to the primary reporting output. The phases are:

- Investigations
- Reports produced
- Safety recommendations issued

Promulgation of safety recommendations and reporting on the implementation status of the Commission's safety recommendations are both included in the purchased output.

Funding for international co-operation and for exchange of accident information with similar investigation organisations overseas is also included in the output.

Cost of Services

The Transport Accident Investigation Commission has one output class, therefore all revenue and expenses occurred are the totals as disclosed in the financial statements on pages 52 to 62.

The Commission's Impact on Outcomes

The Commission's work contributes to increasing transport safety. The expected impact of the output class on the sector outcomes is public confidence in a reliable, safe, and secure transport system. This can be achieved from learning the lessons derived from the inquiries made. The Commission's reports into accidents and incidents tell a story of particular events and circumstances warning of likely adverse outcomes unless operating systems are modified in someway to reduce the risk of the events happening again, under similar conditions. The safety recommendations the Commission issues are directed at improving the overall safety of the transport system active in each adverse event, and reducing the operating risk of inherently unsafe systems. The lessons are beneficial when transport sector participants are actively engaged in applying what has been learnt, incorporating the lessons in safety systems and adopting behaviour supportive of safe practice.

Measuring the success of the Commission's outputs is awkward. This is because there are many active drivers of change influencing the safe management systems in the transport modes. The Commission is endeavouring to settle on meaningful measures that would reflect the level of influence the Commission's work has on increasing the safety of transport systems.

The Commission has two measures of impact on improving transport safety. These are:

Impact Measures

Percentage of category occurrences per mode.	This is the ratio of investigations launched by category (e.g air collisions)/occurrences by category.	The percentage of "occurrences by category" is derived from the total accident and incident population for that type of event. The Commission is reliant upon external reporting to provide the total accident/incident data for the type of event. The Commission has not been able to gather information relating to the type of notifications received because parameter limits on the Commission's database have excluded some of the notification detail. This problem has been remedied for 2007/08 monitoring, but not in time for this year's reporting.
Ratio of safety recommendations accepted by mode and the category/occurrence rate by mode and category.	This measures the uptake of safety recommendations and the rate of the type of occurrence the safety recommendations are attempting to address.	There is a time lag between safety recommendations being implemented and discerning any appreciable effect. Also the numbers involved are small which means the dataset needs to populate over a number of reporting cycles. The Commission has just established its baseline for monitoring so there have been no measures taken for 2006/07.

Service Performance

The Commission's inquiry process has three distinct phases or milestones with clear deliverables. The Commission measures its service performance against these deliverables.

The deliverables are:

- Investigations
- Report production
- Safety recommendations issued

Investigations are a chain of activities undertaken by the Commission to determine the cause and circumstances of accidents and incidents. Key elements in the investigation process are site examination, interviews with persons whose information may assist in the determination of cause and circumstance, testing and research, analysis, reporting on findings, and the issuing of safety recommendations where appropriate.

Report production is a prescribed function of the Commission. The Commission is required to prepare and publish findings and recommendations arising out of the investigations it undertakes. Report production involves the compilation of investigation activities, findings and recommendations for Commission approval and publication.

Safety recommendations issued go to improving the safe operation of transport modes so that the transport system is made safer and more secure. The safety recommendations issued are based upon findings arising from the investigations undertaken. Not every investigation results in safety recommendations being issued. Sometimes operators make corrective action negating the need for safety recommendations.

There is no direct measure for determining the Commission's effectiveness in "avoiding similar occurrences in the future". This is because other transport sector participants' actions are contributing to sector safety. The Commission is endeavouring to develop a core set of performance measures that would signal the level of influence the Commission has on the safety systems and behaviours in the affected transport modes by monitoring the uptake and implementation of safety recommendations for prevailing occurrences against the number of occurrences notified and reported on. The expectation is that over time there may be a reduction in types of occurrences with incremental improvements in safety management systems and behaviours.

Each deliverable is measured for quantity, as a proxy for the level of occurrences, quality for assurance of reputable investigative standards and public inquiry reporting, and timeliness for our own system responsiveness and meeting the public need to know the outcome of our inquiries, and overseeing the sector responsiveness to the safety recommendations issued.

The results of the Commission's service performance are listed and discussed below.

Table 20: Investigations Launched Compared to Targets

Mode	Actual 2006/07	Target 2006/07	% to Target	Actual 2005/06
Air	13	11	118%	7
Rail	17	28	61%	17
Marine	10	13	77%	9
Total	40	52	77%	33

Accident inquiries targets are derived from frequency analysis of the previous year's events. The decision to launch investigations comes out of consideration of circumstances through the Commission's filter criteria. The Commission launched 62 rail investigations in 2004/05. This number is unusually high and distorted the subsequent anticipated investigation levels. In terms of raw numbers air and marine investigations launched are close to target, with rail 39% off target, driving the overall lower level of investigations launched against target. Estimates for future levels of rail investigations launched have been adjusted for 2007/08 to 15 compared with the 2006/07 level of 28.

Table 21: Reports Produced Compared to Targets

Mode	Actual 2006/07	Target 2006/07	% to Target	Actual 2005/06•
Air	3	8	38%	11
Rail	5	18	28%	29
Marine	7	12	58%	13
Total	15	38	39%	53

Report production slowed significantly compared with that in 2005/06. There are 3 main reasons for the decrease in reports produced. These are:

1. Fewer notifications in aviation for the first six months with fewer investigations launched resulting in a lower caseload. Notifications surged after December loading the system with new cases. The aviation caseload increased from 5 at June 2006 to 15 at June 2007.
2. A persisting backlog of rail cases competed for attention with the new cases coming in. There are 25 rail investigations in progress at June 2007 compared with 16 at June 2006.
3. The caseload of marine occurrences has been growing, with 12 cases in progress at June 2007 compared with 5 at June 2006. The marine case progression has slowed because of 2 substantive inquiries that have taken considerable resources.

Table 22: Safety Recommendations Issued Compared to Targets

Mode	Actual 2006/07	Target 2006/07	% to Target••	Actual 2005/06•
Air	6	10-16	60%	22
Rail	15	18-33	83%	30
Marine	5	27-51	18%	25
Total	26	55-100	47%	77

• stated % is the minimum of the given range
•• Unaudited

The lower level of safety recommendations issued correlates with the lower level of reports produced.

Timeliness

The Commission's performance against agreed timeline measures is shown below.

Table 23: Performance Against Timeline

MEASURE	AIR	RAIL	MARINE	COMMENT
Statutory timeframes are met *[This measure reflects compliance with timeframes for consulting and fair hearing requirements]*	Met	Met	Met	
Average elapsed time for closing investigations is < 9 months.	8.67 months	8.27 months	12.53 months	Total average: 10.5 Months **Air:** An aviation investigation into an in-flight loss of control and break-up of a night freight aircraft took longer than 9 months to complete because of its complexity. The case required consultation with overseas agencies. **Rail:** The one rail investigation that was completed within 9 months reflected the investigators' case load back log, and some complex issues that arose during several of those investigations. The back log situation continues to improve. **Marine:** One marine investigation took longer than 9 months to complete because an investigation into a passenger ferry heavy weather incident had higher priority. This affected the timeliness of the other cases.
Average elapsed time for implementation of safety recommendations <12 months.	25.5 months	26 months	20.5 months	Total average elapsed time to implement: 24.8 months The longer than targeted average elapsed time for implementation of safety recommendations is driven by 2 main factors – legacy recommendations of 5 years or more, and time dependent safety recommendations.

continued on the next page ...

MEASURE	AIR	RAIL	MARINE	COMMENT
				There are a small number of legacy safety recommendations still open because the affected organisations no longer exist. These safety recommendations are being worked through to determine appropriate action as part of the Commission's ongoing work programme for safety recommendation management. There are similarly a small group of safety recommendations whose implementation can only be achieved over a number of years because of the scale of operations involved. These safety recommendations are mainly in the rail made and are linked to rail maintenance programmes for train sets and tracks.
Reports are published within 4 weeks of Commission adoption.	67%	75%	80%	5 out of 15 reports were delayed 1 week and published in one batch.

Quality

Table 24: Performance Against Quality Standards

MEASURE	AIR	RAIL	MARINE	COMMENT
No challenges to the Commission's investigation process.	Met	Met	Met	
Compliance with international convention standards for accident investigation reporting – based on the International Civil Aviation Organisation's reporting standards.	Met	Met	Met	Tested by international audits of safety investigation processes by the International Civil Aviation (ICAO) Organisation and the International Maritime Organisation (IMO) and feedback from administrators to the convention: • ICAO tested March 2006 • IMO tested July 2007
Rate of uptake of safety recommendations: >80%	100%	100%	80%	Total Rate 95% Measurement is based on responses received in 2006/07 to the safety recommendations issued by the Commission.
Monitor safety recommendations issued – assessing variance from the range.	Not measured	Not measured	Not measured	The baseline for monitoring has just been established. Monitoring begins 2007/08.

Meeting Objectives

The Commission's objectives for 2006/07 are these:

1. Improve knowledge of the causes and circumstances of transport accidents and incidents.
2. Positively influence the response of regulators and transport operators to the safety recommendations made by the Commission by the quality and reasoning of those safety recommendations.
3. Secure the Commission's role in the administration of Annex 13 to the International Convention on Civil Aviation.
4. Clarify the Commission's role in establishing the cause and circumstances of transport accidents and incidents.
5. Maintain succession planning and management.
6. Update and implement equal employment opportunity and good employer programmes.

Table 25: Performance Against Objectives

OBJECTIVES 2006/2007		
OBJECTIVE	MILESTONES	ACHIEVEMENT
1: Improve knowledge of the circumstances and causes of • Budget bid made to support transport accidents and incidents.	Upgrading IT Systems [requires business case to the Treasury]	**Business case completed** • Budget bid made to support cost of upgrade. The decision was taken to undertake a financial review of the Commission in readiness for the 2008/09 budget round. Further work is on hold pending the review.
2: Positively influence the response of the regulators and transport operators to the safety recommendations made by the Commission by the quality and reasoning of those safety recommendations.	Safety recommendation performance targets are monitored.	**Achieved and On-going:** • Quarterly meetings with regulators established. • Aged open safety recommendations are being identified for follow up – There are no concerns presented to date. Many of the safety recommendations have been superceded by subsequent operator actions and safety recommendations implemented. • The Commission website is being updated so that safety recommendation status can be published. The new website is expected to be operational by November 2007.
3: Secure the Commission's role in the administration of Annex 13 to the International Convention on Civil Commission Aviation.	Negotiate an agreement with the Ministry of Transport and Civil Aviation Authority for the to take a direct role in the administration of Annex 13.	**Partially Achieved and On-going:** • The Commission is involved with preparations for ICAO's Accident Investigation Group meeting in September 2008. Other details as to the extent and form of the Commission's increased role in the administration of Annex 13 are being worked through with Ministry of Transport officials.

OBJECTIVES 2006/2007		
OBJECTIVE	MILESTONES	ACHIEVEMENT
4: Clarify the Commission's role in establishing circumstances and causes of transport accidents and incidents.	Procedures with regulators are being agreed upon through Memoranda of Understandings.	**On-going:** • Draft CAA /TAIC Memorandum of Understanding is with the Civil Aviation Authority for sign off – delayed by senior vacancy. • Negotiations with Maritime New Zealand have begun. • Negotiations with New Zealand Police have begun. • Negotiations with NZ Defence Force have begun. • Negotiations with the Coronal Service are beginning.
5: Succession planning and management.	The Australian Transport Safety Bureau (ATSB) and Dutch Safety Investigation Board (DSIB) trainee investigator pilot programmes are observed and evaluated.	**Completed** – not viable for New Zealand because of the long lead in times for training recruits based on taking in new graduates on an internships. Interns are not completing because of the length of time (5years) required for training. • Commission is reviewing recruitment standards and developing a core competency programme for mature staff.
6: EEO and Good Employer programmes	Update and implement programmes, as advised.	Programmes are updated and are being implemented as resources allow.

Audit Report

AUDIT NEW ZEALAND

AUDIT REPORT

TO THE READERS OF THE TRANSPORT ACCIDENT INVESTIGATION COMMISSION'S FINANCIAL STATEMENTS AND PERFORMANCE INFORMATION FOR THE YEAR ENDED 30 JUNE 2007

The Auditor-General is the auditor of the Transport Accident Investigation Commission (the Commission). The Auditor-General has appointed me, Stephen Lucy, using the staff and resources of Audit New Zealand, to carry out the audit on his behalf. The audit covers the financial statements and statement of service performance included in the annual report of the Commission for the year ended 30 June 2007.

Unqualified Opinion

In our opinion:

- The financial statements of the Commission on pages 52 to 62:
  - comply with generally accepted accounting practice in New Zealand; and
  - fairly reflect:
    - the Commission's financial position as at 30 June 2007; and
    - the results of its operations and cash flows for the year ended on that date.
- The statement of service performance of the Commission on pages 63 to 71:
  - complies with generally accepted accounting practice in New Zealand; and
  - fairly reflects for each class of outputs:
    - its standards of delivery performance achieved, as compared with the forecast standards outlined in the statement of forecast service performance adopted at the start of the financial year; and
    - its actual revenue earned and output expenses incurred, as compared with the forecast revenues and output expenses outlined in the statement of forecast service performance adopted at the start of the financial year.

The audit was completed on 24 September 2007, and is the date at which our opinion is expressed.

The basis of our opinion is explained below. In addition, we outline the responsibilities of the Commissioners and the Auditor, and explain our independence.

Basis of Opinion

We carried out the audit in accordance with the Auditor-General's Auditing Standards, which incorporate the New Zealand Auditing Standards.

We planned and performed the audit to obtain all the information and explanations we considered necessary in order to obtain reasonable assurance that the financial statements and statement of service performance did not have material misstatements, whether caused by fraud or error.

Material misstatements are differences or omissions of amounts and disclosures that would affect a reader's overall understanding of the financial statements and the statement of service performance. If we had found material misstatements that were not corrected, we would have referred to them in our opinion.

The audit involved performing procedures to test the information presented in the financial statements and statement of service performance. We assessed the results of those procedures in forming our opinion.

Audit procedures generally include:

- determining whether significant financial and management controls are working and can be relied on to produce complete and accurate data;
- verifying samples of transactions and account balances;
- performing analyses to identify anomalies in the reported data;
- reviewing significant estimates and judgements made by the Commissioners;
- confirming year-end balances;
- determining whether accounting policies are appropriate and consistently applied; and
- determining whether all financial statement and statement of service performance disclosures are adequate.

We did not examine every transaction, nor do we guarantee complete accuracy of the financial statements or statement of service performance.

We evaluated the overall adequacy of the presentation of information in the financial statements and statement of service performance. We obtained all the information and explanations we required to support our opinion above.

Responsibilities of the Commissioners and the Auditor

The Commissioners are responsible for preparing financial statements and a statement of service performance in accordance with generally accepted accounting practice in New Zealand. The financial statements must fairly reflect the financial position of the Commission as at 30 June 2007 and the results of its operations and cash flows for the year ended on that date.

The statement of service performance must fairly reflect, for each class of outputs, the Commission's standards of delivery performance achieved and revenue earned and expenses incurred, as compared with the forecast standards, revenue and expenses adopted at the start of the financial year. The Commissioners' responsibilities arise from the Crown Entities Act 2004 and the Transport Accident Investigation Commission Act 1990.

We are responsible for expressing an independent opinion on the financial statements and statement of service performance and reporting that opinion to you. This responsibility arises from section 15 of the Public Audit Act 2001 and the Crown Entities Act 2004.

Independence

When carrying out the audit we followed the independence requirements of the Auditor-General, which incorporate the independence requirements of the Institute of Chartered Accountants of New Zealand.

Other than the audit, we have no relationship with or interests in the Commission.

S B Lucy
Audit New Zealand
On behalf of the Auditor-General
Wellington, New Zealand

The Commission's Functions and Role

The Commission is an independent Crown entity as defined in section 7 of the Crown Entities Act 2004. Its purpose and functions are set out in the Transport Accident Investigation Commission Act 1990.

In addition, the Commission is a Commission of Inquiry, having the same powers as are conferred on a Commission of Inquiry by the Commission of Inquiry Act 1908. As a Commission of Inquiry its powers are limited to aviation, rail and marine occurrences only.

Principal Purpose

The Commission's principal purpose as described in the Act, s(4), is to:

> *"… determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future, rather than to ascribe blame to any person."*

The Commission's purpose is common among other nations that have adopted a safety ethos and are committed to improving transport safety in their respective countries. Countries such as Canada, the United States and Australia support national agencies devoted to conducting independent investigations of transport accidents and incidents without ascribing blame[10]. In this regard New Zealand takes its place in the global community, contributing to the advancement of safety in transport both domestically and internationally.

The Meaning of Accident

The meaning of an accident is defined under the Act by cross-referencing to the definition of accident as defined in the:

- Civil Aviation Act 1990 for air accidents
- Railways Act 2005 for rail accident and
- Maritime Transport Act 1994 for maritime accidents.

For the purposes of aviation occurrences an accident is:

> "… an occurrence that is associated with the operation of an aircraft and takes place between the time any person boards the aircraft with the intention of flight and such time as all such persons have disembarked and the engine or any propellers or rotors come to rest, being an occurrence in which –

1. A person is fatally or seriously injured as a result of –
   a. Being in the aircraft; or

10 Canada: Transportation Safety Board of Canada [www.bst.gc.ca]
Australia: Australian Transport Safety Bureau [www.atsb.gov.au]
United States: National Transportation Safety Board [www.ntsb.gov]

b. Direct contact with any part of the aircraft, including any part that has become detached from the aircraft; or

c. Direct exposure to jet blast –

Except when the injuries are self inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to passengers and crew; or

2. The aircraft sustains damage or structural failure that –

a. Adversely affects the structural strength, performance, or flight characteristics of the aircraft; and

b. Would normally require major repair or replacement of the affected component.

Except engine failure or damage that is limited to the engine, its cowlings, or accessories, or damage limited to propellers, wing tips, antennas, tyres, brakes, fairings, small dents, or puncture holes in the aircraft skin; or

3. The aircraft is missing or is completely inaccessible …"

For the purposes of maritime occurrences an accident is:

"… an occurrence that involves a ship and in which –

1. A person is seriously harmed as a result of –

a. Being on the ship; or

b. Direct contact with any part of the ship, including any part that has become detached from the ship; or

c. Direct exposure to the wash of the ship or interaction (other than direct contact) between 2 ships; or

2. Being involved in the salvage of any ship, except where the injuries are self-inflicted or inflicted by other persons, or when injuries are to stowaways hiding outside the areas normally available to passengers and crew; or

3. The ship sustains damage or structural failure that –

a. Adversely affects the structural strength, performance, or seaworthiness of the ship; or

b. Would normally require major repair or replacement of the affected component; or

c. Poses a threat to the safety of the people on board the ship; or

4. There is a loss or escape of any substance or thing that –

a. May result, or has resulted, in serious harm to any person; or

b. May pose a risk, or has resulted in damage, to the ship or other ships; or

c. May pose a risk, or has resulted in damage, to any property (whether or not on board the ship); or

5. A person is lost at sea (whether or not subsequently found) or is missing; or

6. The ship is foundering, capsizing, being abandoned, stranding, missing, or has foundered, capsized, been abandoned, stranded, been in a collision, or has had a major fire on board…"

For the purposes of rail occurrences an accident is:

"… an occurrence associated with the operation of a rail vehicle or the use of railway infrastructure or railway premises that causes –

1. The death of, or serious injury to, individuals; or
2. Significant damage to property …"

The Meaning of Incident

As for the meaning of accidents, incidents are similarly defined under the Act by reference to the:

- The Civil Aviation Act 1990 for air accidents;
- Railways Act 2005 for rail accidents; and
- Maritime Transport Act 1994 for maritime accidents.

For the purposes of aviation occurrences an incident is:

"… any occurrence, other than an accident, that is associated with the operation of an aircraft and affects or could affect the safety of the operation."

For the purposes of maritime occurrences an incident is:

"… an occurrence, other than an accident, that is associated with the operation of a ship and affects or could affect the safety of the operation …"

For the purposes of rail occurrences an incident is:

"… an occurrence, other than an accident, that is associated with the operation of a rail vehicle or the use of railway infrastructure or railway premises that placed, or could have placed –

a. a person at risk of death or serious injury; or

b. property at risk of significant damage …"

Principal Function

The Commission's principal function is described in the Act as being:

> "… [the] investigation of accidents and incidents."

The Commission does not investigate all aviation, rail and marine accidents and incidents. It investigates those occurrences notified to it under section 27 of the Civil Aviation Act 1990, section 13(4) of the Railways Act 2005, and section 60 of the Maritime Transport Act 1994. On receiving notification of an occurrence from any of the regulators the Commission must then determine whether the notified occurrence happened in circumstances that have, or are likely to have, significant implications for transport safety, or may allow the Commission to establish findings or make recommendations that may increase transport safety. If, in its determinations, the Commission affirms the above then it must investigate. The Commission's powers of investigation extend to any air, rail or marine occurrence that involves "… any combination of military and non-military persons, transport related things, or transport related services …"[11].

Other circumstances where the Commission might also investigate are:

- additional occurrences notified to it under the regulators' statutes as it deems necessary. When the Commission has chosen not to investigate, the Minister of Transport may direct it to undertake an investigation;
- those occurrences not notified but the Commission would have investigated had it been notified.

Other Functions

In addition to investigating accidents and incidents the Commission has 7 other functions. These are:

- to make such enquiries as the Commission considers appropriate in order to ascertain the cause or causes of accidents and incidents
- to co-ordinate and direct all such investigations and to determine which other parties (if any) should be involved in such investigations
- to prepare and publish findings and recommendations (if any) in respect of any such investigation
- if requested by the Minister, to deliver a written report on each investigation to the Minister, including any recommendations for changes and improvements that it considers will ensure the avoidance of accidents and incidents in the future
- to co-operate and co-ordinate with other accident investigation organisations overseas, including taking evidence on their behalf
- when notifications of occurrences from the regulators have not been received, to request from the appropriate regulator further information as the Commission considers appropriate regarding any accident the Commission believes is required to be investigated under section 13(1) and (2) of the Act
- to perform any other function or duty conferred on the Commission by the Act or any other Act.

11 See Section 13 Transport Accident Investigation Commission Act 1990.

Powers

The Commission, in addition to having the powers of a Commission of Inquiry, has a number of other powers including powers of entry, powers of investigation, power to prohibit or restrict access to a site of any accident or incident, and power to seize, test and detain evidence, or have it moved to a nominated place.

The importance of confidentiality

To be effective in carrying out its principal function and safeguarding its principal purpose, the Commission is obliged to keep its records of evidence confidential. Confidentiality of witness interviews is the cornerstone of a no-blame investigative regime. The fundamental premise of a successful Commission investigation is that affected parties can speak to Commission investigators with the utmost confidence that what they say will not incriminate them, or be used as evidence against them at some later stage. The legislation under which the Commission operates recognises this premise and endeavours to protect the disclosure and admissibility of the Commission's investigative information. There are some circumstances where disclosure may be required. The Act specifies the circumstances in which disclosure is permissible. These circumstances pertain to the Commission's own investigative activity, or through Court Orders; otherwise it is an offence to disclose records. In addition the Commission's investigators cannot be compelled to give evidence in any proceedings to which the Commission is not a party.

The Importance of Independence

Independence is the fundamental operating principle of the Commission, a principle that is shared among all other similarly constituted organisations across the globe. This is to ensure public confidence in an investigative system that is free from bias and conflict and the threat of sanction, in order that a proper determination of circumstances and cause can be made so that what is learnt can contribute to the overall improvement of transport safety. It is for this reason that the Commission is identified as an independent Crown entity and required to act independently when carrying out its functions and duties, and exercising its powers.

Staff of the Transport Accident Investigation Commision

Back row: Paul Bird, Ian McClelland, Captain Iain Hill, Dr Robin Griffiths, Peter Williams, Peter Miskell, Ropati Telea.
Middle row: Vernon Hoey, Captain Tim Burfoot, Ailsa Wong-She, Ken Mathews, Seka Ojdrovic, Captain Doug Monks, Dennis Bevin.
Front row: Lois Hutchinson, Satbhama Narayan.

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