TRANSPORT ACCIDENT INVESTIGATION COMMISSION
TE KOMIHANA TIROTIRO AITUA WAKA

Annual Report 2004/2005

Annual Report

of the

Transport Accident Investigation Commission

Te Komihana Tirotiro Aitua Waka

for the period 1 July 2004 to 30 June 2005

Presented to the House of Representatives

as required by section 150 of the Crown Entities Act 2004.

October 2005

27 October 2005

Minister of Transport

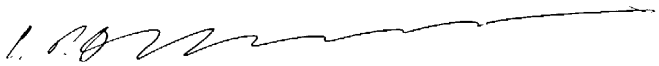
Parliament Buildings

WELLINGTON

Dear Minister

In accordance with section 150 of the Crown Entities Act 2004, the Commission is pleased to submit, through you, its 14th Annual Report to Parliament for the period 1 July 2004 to 30 June 2005.

Yours faithfully



Hon W P Jeffries

Chief Commissioner

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The Commission

The Transport Accident Investigation Commission (TAIC) is an independent Crown entity being a body corporate established by the Transport Accident Investigation Commission Act 1990.

Pauline Winter, Hon Bill Jeffries and Bryan Wyness

Members of the Commission

There are 3 members. These are:

Hon. Bill Jeffries

Chief Commissioner

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 TAIC.

Mr Jeffries was appointed as Chief Commissioner to the Commission in June 1997.

Pauline Winter

Deputy Chief Commissioner

Ms Winter has her own consultancy business INTERPACIFIC Limited. She is the former Chief Executive of Workbridge Inc, and a board member of the Legal Services Agency, New Zealand Institute of Management (Auckland) and the Growth and Innovation Advisory Board. She is a member of the UNITEC and NACEW (National Advisory Council on the Employment of Women) Councils. She chairs the Pacific Business Trust and is a member of the Auckland Regional Economic Development Pacific Business Leaders group.

Ms Winter was appointed to the Commission as Deputy Chief Commissioner in September 2001.

Bryan Wyness

Commissioner

Mr Wyness's industry knowledge is primarily aviation related with particular knowledge in 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 Pilots Licence and Flight Navigator qualification. He is the former Vice President Flight Operations of Air New Zealand and has held appointments with the International Advisory Committee of the Flight Safety Foundation and the Independent Aviation Advisory panel.

Mr Wyness was appointed to the Commission in November 2004.

Offices of the Transport Accident Investigation Commission

WELLINGTON OFFICE

PO Box 10 323

Level 14, St John House

114 The Terrace

Wellington 6036

Telephone: (04) 473 3112

Free Telephone: 0800 188926

Fax: (04) 499 1510

Website: www.taic.org.nz

CHRISTCHURCH OFFICE

Level 1, Terminal Building

Christchurch Airport

Christchurch

Telephone: (03) 358 9801

Free Telephone: 0800 188927

Fax: (03) 358 919

Chief Commissioner's Overview

The historic 1944 international meeting in Chicago, United States of America, attended by delegates from western countries, laid the foundations for the management of international civil aviation. Western Governments foresaw the likely expansion of post-war aviation and the need for Governments generally to establish particular institutions to investigate air accidents for safety, in a similar manner to the judicial oath: *"without fear, favour, affection or ill will".* Thus independent investigating Commissions or Boards were established and over the decades, these Commissions or Boards extended their mandate from civil aviation to include other transportation modes of rail and sea, and in some cases road and pipelines.

New Zealand met its obligations under the ensuing International Civil Aviation Organisation (ICAO) with the creation of the Transport Accident Investigation Commission (TAIC) mandated under the Transport Accident Investigation Commission Act 1990 to investigate the causes and circumstances of transport accidents in New Zealand.

In the last year, as Chief Commissioner of New Zealand's Transport Accident Investigation Commission, I chaired the International Transport Safety Association (ITSA, a group of some 10 similar Commissions and Boards including those from the United States, Canada, Australia and the Netherlands.

Members of ITSA

At the annual ITSA meeting held in Washington DC in March of this year, I along with the Deputy Chief Commissioner, Pauline Winter, viewed a reconstructed TWA300 Boeing 747 at the Washington Academy of the National Transportation Safety Board (NTSB). In 1996, this aircraft, after only a few minutes flight out of New York, appeared to blow up in mid-air. The American authorities at first thought that terrorists had fired a missile at the civilian airliner.

The NTSB pursued a painstaking scientifically based investigation involving recovery from the Atlantic of the aeroplane and its reconstruction, which established that the probable primary cause of the accident was an explosion of the Centre Wing Tank.

At the Washington meeting earlier this year the American investigators explained, with reference to the re-constructed plane, the actual chain of events, which led to the break-up of the fuselage. In identifying the cause of the accident the investigation excluded the terrorist theory and made safety recommendations on fuel tank flammability, fuel tank ignition sources, design and certification standards and maintenance and aging aircraft systems. Implementation of all safety recommendations should reduce the potential for a reoccurrence of this accident. Boeing aircraft, demonstrably, are comprehensively designed for safe operation and any discovered anomaly, as in this case, is meticulously analysed and immediately corrected.

Kym Bills, Australian Transportation Safety Bureau (ATSB), Ellen Engelman (NTSB) and Hon Bill Jeffries at ITSA 2005.

Our own Commission's investigation into the Singapore Airline's tail-strike incident involving a fully laden Boeing 747-400 aircraft at Auckland International Airport in 2003 established the need for a design improvement in the aircraft's electronic equipment. Preparatory to take-off, the pilots made an elementary arithmetical mistake in entering data. As a result, the aircraft was underpowered when attempting to take off, causing a tail strike. The aircraft, despite being damaged, was able to complete the take off and reconfigure for an emergency landing, which was safely carried out without injury to any of the passengers or crew.

The subsequent investigation resulted in a recommendation to Boeing and Honeywell to adopt double-checking electronic equipment, which should avoid any repeat of human error in such calculations. The NTSB adopted the TAICs recommendation and referred the matter to the United States Federal Aviation Administration for implementation by Boeing and Honeywell. It is pleasing to have such international recognition for the quality of the Commission's investigations and recommendations.

These examples illustrate the value of independent, scientifically based investigations into the causes and circumstances of accidents, or incidents, which do not involve damage, injury or fatality (the *"near misses"*). By this feedback, the transport safety system is dynamically engaged in a process of truth-discovery about itself, which contributes to the transport system's continual development and improvement. Transport policy, at its best, is a *"learning organisation"*.

The highlights of the year included the significant increase in funding of the Commission by the Government, due to the advocacy of the then Minister of Transport, Hon Pete Hodgson and his associate the Minister for Transport Safety Hon Harry Duynhoven and the continual improvement in the co-operative monitoring with the Ministry of Transport of the implementation of the Commission's recommendations as to safety improvements. Dialogue and goodwill are essential to the mission of continual development and improvement of transport safety in New Zealand.

In addition, two important statutes affecting the Commission were passed in December 2004 and came into effect on 25 January 2005. The first, the Public Finance Amendment Act, introduced tighter state sector management controls and will have positive input on the Commission's accountability document formats in future. The second, the Crown Entities Act, reinforced the status of the Commission as an independent Crown entity and emphasised its constitutional difference from the other entities in the transport sector, namely the Ministry of Transport (a public service department) and the three transport regulators (classified as Crown entities or individual statutory bodies) namely: the Civil Aviation Authority, the Maritime Safety Authority (now Maritime New Zealand) and the Land Transport Safety Authority (now Land Transport New Zealand).

Parliament's re-affirmed emphasis on the Commission's independence is important in an environment where Government has progressively moved away from a policy of fully privatised systems and again become a re-investor and principal owner and operator of New Zealand's transport infrastructure, particularly in the rail and air modes in which the Commission investigates accidents and incidents (along with marine). The inherent conflicts of interest that are thereby created have been identified to Ministers.

The review by the Ministry of Transport of the Commission's capabilities undertaken in 2004 following the government's Review of the Transport Sector was completed prior to the 2005/2006 Budget Bid.

The Commission's mandate remained unchanged following the reviews, although legislation was passed by Parliament extending the scope and responsibilities of the other transport entities. As a result of the Commission's deliberations on the impacts of its activities, a more proactive communications policy has been adopted towards the principal audiences for the Commission's outputs, particularly with respect to the media but also the general public. This is designed to dispel confusion that arises because of overlapping jurisdictions, such as that of coroners, and to raise the Commission's profile as New Zealand's independent investigator of aviation, rail and marine accidents. The Commission has welcomed the tabling of the Coroners Bill and has contributed supporting submissions to the Select Committee in conjunction with the Ministry of Transport. Overlaps in

between the Commission's and some coroners' investigations have given rise to difficulties that the Bill will largely resolve, assuming it is passed by Parliament in substantially its present form.

During the year and in response to public representations, the Commissioners determined that it was inappropriate to publish certain information on TAICs website relating to investigations prior to its own formation in 1990. While it is entirely appropriate that New Zealanders be reminded that major accidents can occur in this country – and, indeed, have done in the past, it is not appropriate that the Commission publish investigative reports and evidence for which it was not, itself, responsible.

In February, an independent audit of the Commission's compliance with the ICAO Procedures and Standards for Investigations was carried out. An issue highlighted was the fact that the responsibility for compliance with ICAO Annex 13 (governing the procedures and standards) is, in New Zealand, delegated to the CAA, instead of the Commission as the country's independent investigator of aviation accidents and incidents. Whether the delegation ought to be made to the Commission rather than the CAA is a matter for representation to the Minister during the course of next year.

In a small organisation employing only 15 staff, where all of those staff are key, it was unfortunate that resignations were received from the Chief Executive and one of the 9 investigators. In New Zealand there is only a small pool of suitably qualified people capable of performing the exceptional duties of a transport accident investigator. It is essential for the future of the Commission that we maintain effective retention policies for our skilled human resources.

The Commission's thanks are extended to John Britton for his long and exemplary service and to ex-Commissioner Norman Macfarlane who acted as Chief Executive during the process of recruiting. The Commissioners also welcome Lois Hutchinson, as the new Chief Executive, Lois had already taken up the position at the time of writing.

Finally, the Commissioners wish to acknowledge the excellent support received during the year from both of the Ministers, Hon Hodgson and Hon Duynhoven, and from the Secretary of Transport and his staff.

The Commissioners of TAIC with Norman Macfarlane, former Commissioner and Acting Chief Executive.

Hon Bill Jeffries

Chief Commissioner

Chief Executive's Report

2004/2005 has been a busy and challenging year for the Commission. We have had increases in the number of occurrence notifications and in the number of investigations launched.

The number of reports finalised and published was up 26 percent on last year, and included 3 difficult investigations.

Rail occurrences dominated this year. Notifications increased 28 percent on last year, driving up the overall rate of notifications. Whereas notifications decreased for air by 8 percent on last year, and marine notifications remained steady.

Overall investigations launched increased 3 percent on last year with increases in all modalities. Rail again dominating with 53 percent of the investigations launched in the year. The launch rate for rail investigations is 26 percent. This is 14 percent higher than the Commission's overall launch rate of 12 percent for the year. Marine has a 10 percent launch rate and air a 6 percent launched rate.

The reasons for this overall increase are unclear. Multifactorial elements drive accident events including environmental, social, economic, mechanical and attitudinal factors. There are standard combinations that raise the likelihood of certain events happening. By way of example cost pressures on businesses drive trade-offs in maintaining infrastructure, coupled with operator fatigue, or contemporary attitudes towards recreational substances, at critical points.

In its work the Commission does encounter emerging themes over time of causative factors that stand out amongst the many variables interplaying. In 2002/2003 fatigue in the rail industry, particularly with locomotive engineers, prompted a set of safety recommendations being issued which were aimed at reducing the number of fatigue related accidents and incidents. In this year, substance abuse has given cause for concern, so much so that the Commission has been active in advocating for legal reform in the transport industries, and is now involved with the Ministry of Transport's Substance Impairment Group. This Group involves stakeholders from the transport sector, working together to scope the extent of substance use in the sector, and to make recommendations to the Minister of Transport for improving the management of substance use that supports a safe transport system.

While the Commission can often accurately predict the number of occurrences in any given year, it cannot determine the severity or complexity of the investigations launched. This raises difficulties for the Commission in terms of the resources available to it to carry out its statutory functions.

2004/2005 was an eventful year in terms of the mix of occurrences investigated, and with that mix came a heavy drain on our resources. The nature of the occurrences required us to buy in engineering, scientific and diagnostic capability, which we do not ordinarily have. For example, the marine investigation into the foundering of the fishing vessel *Iron Maiden* off Pandora Bank in Northland required specialist technical assistance from the Royal New Zealand Navy; and the *Convair 580* in-flight break up over Kapiti coast required expensive wreckage retrieval assistance.

For a small organisation, small changes can have large effects. The Commission felt the loss of 2 key staff in the year. Retention of capability in such a specialised environment is an enduring concern. The Commission does experience difficulties in recruiting in what is a tightened labour market that is often short of the skills and experience that are required in successful investigators. Having to recruit for an investigator and Chief Executive Officer added to the strain on the Commission's already lean resources, leading us towards a financial deficit for the year.

The Commission applied for deficit support through the Ministry of Transport to the Minister of Transport, as well as seeking an increase to its baseline funding for 2005/2006. As a result we received an additional $250k to our 2004/2005 baseline, raising Crown revenue received from $2.179m to $2.447m. In addition our baseline funding increased for 2005/2006 by 20 % ($445k). We are appreciative of the Ministry of Transport's efforts on our behalf in helping to secure the increase. Now we look forward to making our contribution towards a safe, secure, integrated transport system in a sustainable manner.

Lois Hutchinson

Chief Executive

Chief Investigator of Accident's Report

The work of accident investigation is both challenging and demanding, but also rewarding.

The aim is to learn, distribute and apply the lessons from accidents and incidents, where unfortunately people have sometimes died or been seriously injured, so that similar occurrences can be avoided in the future.

The suffering and misfortune of those involved in accidents and incidents should not be forgotten; rather they should be used for the good of others who continue with the same or similar endeavours, and for the good of those people using the transport services supplied.

The Commission is charged with investigating the causes and circumstances of those occurrences that are likely to have significance for transport safety, or will allow findings to be established, or recommendations made, that may improve transport safety, without ascribing blame to any person. The Commission's resources, both human and financial, do not allow it to investigate all accidents and incidents. Those occurrences that it chooses not to investigate are investigated by the appropriate regulators. At the time of notification, details of an occurrence are usually sketchy. We have long-established criteria to assist the selection process. With some occurrences, it is immediately obvious whether or not the Commission should investigate. With others, indeed the majority, it is not so obvious. As a result, some investigations are launched but subsequently closed without a report because initial investigation shows that the event was not as significant as first thought. Conversely, with hindsight, some occurrences may have warranted investigation although their significance at the time of notification was not apparent.

During the year, the Commission launched investigations into 11 aviation, 33 rail and 18 marine occurrences, against a forecast of 15 aviation, 20 rail and 20 marine. Of the investigations underway, including some from previous years, 11 aviation, 29 rail and 16 marine investigations were completed and their reports approved for publication by the Commission.

Each investigation presents its own challenges and demands. Inherent in all is the question of how deeply to investigate and whether the Commission has the expertise to do so, or needs the help of external experts. To best serve the improvement of transport safety, it is not sufficient to find out what happened because there are bigger lessons to be learned from knowing why things happened.

The investigation team has faced some significant challenges and demands during this year. Among the investigations completed was the in-flight break-up of a Convair 580 off the Kapiti coast. The wreckage, imperative to establishing the cause and circumstances of the accident, lay strewn on the seabed in about 35 metres of water in an area of strong tidal flows and extremely limited visibility. With the help of New Zealand Defence Force surface vessels and dive team, the Police dive team and a commercial search and dive vessel, the wreckage was located, and about 70% of it, including all those parts required for the investigation, was recovered. The flight data recorder and cockpit voice recorder were recovered, but New Zealand has no facility to download and analyse the contained data. For this, the Australian Transport Safety Bureau laboratory extracted, documented and analysed the data for the Commission.

A marine investigation also involved an underwater search. A fishing vessel foundered off Pandora Bank near North

Cape with the loss of both crewmembers. The position given in the Master's distress call was not precise, thus leaving a large search area. Again the New Zealand Defence Force gave assistance in carrying out a search using one of its surface vessels. The wreck was located in about 45 metres of water, but this time with clear visibility. The Navy vessel was equipped with a remote-operated vehicle from which an extensive underwater video of the wreck was taken. That video gave enough information to negate the need to recover the wreck for the purposes of the investigation. Our thanks and appreciation go to the New Zealand Defence Force for its invaluable help with these investigations. In contrast, another marine investigation involved a fire on a fishing boat that subsequently sank. The boat sank in deep water and was never found, making the determination of the cause of the fire difficult.

The rail investigators faced a large increase in the number of investigations launched during the year. At the beginning of the year, our third rail investigator was only 3 months into his training. He had progressed through to conducting investigations in his own right by the end of the year. The rail team is to be commended for the way it has tackled the increased volume. There was no obvious reason or underlying trend to explain the increase, although there were some investigations that were grouped together. As an example, the Commission investigated 4 fires in the traction motors of Wellington suburban passenger trains. Resulting from the investigations, the operator made some changes to the electrical connection components and procedures, and no further fires have occurred.

In aviation, 4 of the investigations launched involved collisions with terrain, resulting in a total of 9 deaths, and no survivors. Determining the accident causes without on-board witnesses is always difficult. Only one of the aircraft involved was fitted with a flight data recorder and a cockpit voice recorder; the others were not required to be. Again the Australian Transport Safety Bureau downloaded the data from the recorders for the Commission, and our thanks and appreciation go to the staff there for their help and contribution to the investigations.

The year has seen considerable external help being required for component analysis and testing, both mechanically and metallurgically. In aviation there has been the need to test engines, propellers and avionics, in rail fractured wheel and bearing components and electrical circuitry, and in marine engines, control cables, electrical components and circuitry. These tests determine whether each part contributed to the occurrence, and are as important in excluding a part as having not contributed. The challenge is always to know which parts need exhaustive testing, rather than relying on what can be gained from visual examination, supported by other evidence. Generally more testing is required where there are no surviving witnesses, making the investigation reliant on what can be established from the wreckage.

After any accident or incident, particularly those that result in higher media and public interest, there is a natural demand to know quickly from the investigator what went wrong and how the event was caused. Those involved, their families and the public have a need, indeed a right, to have those answers. However, there is also a need, and a correct demand, that the investigation will be as complete as possible, resulting in those affected having confidence in the investigation result. These 2 demands are rarely compatible, and our investigators cannot be drawn into speculation in the early days of an investigation.

Our investigations result in a combination of safety actions taken as a result of the investigation, or safety recommendations made to improve shortcomings identified. The safety actions and the high rate of acceptance of safety recommendations are the Commission's contribution to improvements in transport safety, and are the rewards of the investigations.

During this year, as part of the Commission's communications policy, we have been advising the media each time an investigation has been launched. This has allowed the media to make enquiries of us, and even the limited facts that we can report assist in the media report's accuracy. This policy has certainly gone a long way to fostering a good working relationship with the media sector.

The team currently comprises 4 aviation, 3 rail and 2 marine investigators. Accident investigators are not easy to find, being chosen for their depth of experience relative to their transport industry, and then given specific investigation training, much of which is continually updated with refresher courses.

The Commission strives to conduct its investigation in line with best practice and international standards. To further that aim and to learn from others, Commission staff attend a variety of conferences and seminars, including those for the International Society of Air Safety Investigators, the Flight Safety Foundation, the International Rail Safety Conference, the Marine Accident Investigators International Forum and the ITSA. Additionally the year has seen the Commission assist overseas investigations carried out by the Australian Transport Safety Bureau and the Canadian Transportation Safety Board. Staff from ATSB, NTSB and the Canadian Transportation Safety Board have assisted with some of the Commission investigations.

Formerly a marine accident investigator with the Commission, it has been my privilege to lead the investigation team for the past 3 years, and I take this opportunity to acknowledge their support, their dedication to the task and their collective contribution to transport safety.

John Mockett

Chief Investigator of Accidents

What is Involved in an Investigation?

The investigation team: TAICs 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. The composition of the team depends on the investigation.

On-site investigation: 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. They also have certain powers of entry.

Interviews: 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 they do 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 prevents other people and organisations obtaining investigators records of interviews and discussions and certain other types of information from TAIC. The Transport Accident Investigation Commission Act does not prevent people making statements to anyone else, but those statements must not include or speculate on information provided by TAIC.

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

Tests and research: TAIC engages specialists to provide advice, analysis and opinion on matters not within TAICs own expertise. Laboratories in New Zealand or overseas analyse components and "read out" voice recorders and decipher data recorders.

Safety Recommendations: Safety recommendations are fundamental to TAICs 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. TAIC designates the person or party expected to take action and describes the result it recommends. TAIC consults with the recipient of the safety recommendation prior to finalising the recommendation. Final safety recommendations are usually incorporated in the accident report together with the relevant parts of any replies (if available).

The Report: TAICs report is a summary of the investigation. It contains the relevant facts, analysis, findings and safety recommendations. Before finalising the report TAIC circulates a **preliminary report** to any person 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. TAIC 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. 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. In the case of particularly complex investigation, reports take longer to complete. In addition to

providing reports as outlined above, TAIC makes its reports available on interloan from public libraries, or they may be purchased individually or by annual subscription from TAIC. The TAIC website carries an index of TAIC reports, report abstracts and safety recommendations and status, as well as general information about TAIC.

Public Hearings: TAIC may hold a public hearing if it is likely to provide any significant advantages for determining the causes and circumstances of an accident or incident over TAICs normal procedure of gathering information in camera.

Functions, Responsibilities and Powers

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 is to:

s(4) "…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 amongst 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[1]. 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
   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-

[1] 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.]

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 –

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

      vii. Being on the ship; or

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

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

   b. 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

   c. The ship sustains damage or structural failure that-

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

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

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

   d. There is a loss or escape of any substance or thing that-

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

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

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

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

   f. 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-

   a. The death of, or serious injury to, individuals; or

   b. 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:

"…[t]he 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…"[2]

Other circumstances where the Commission might also investigate are:

- additional occurrences notified to it under the Regulators' statutes as it deems necessary where 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,
- where 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

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.

Safeguarding the Commission's Principal Purpose

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 where 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.

Safeguarding the Commission's Independence

Independence is the fundamental operating principal of the Commission, a principal that is shared amongst 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 learnings can be taken for 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.

[2] See Section13 Transport Accident Investigation Act 1990.

Achievements During 2004/2005

Output 1: Determining and reporting on the circumstances and causes of accidents and incidents that occur in New Zealand, and making recommendations to prevent similar accidents in future.

The Commission's activities help to make the transport system more safe and secure.

Introduction

The Commission's activities are directed towards its principal function and output of determining the circumstances and causes of accidents and incidents with the view to avoiding similar occurrences in the future, rather than to ascribe blame to any person.

The activities undertaken can be broadly classified under four sub-outputs. These are

Occurrences Notified

Investigations Launched

Investigations in Progress

Safety Recommendations Issued.

Overall the Commission has averaged 500 notifications of occurrences per annum over the last three financial years. Investigations launched from these notifications averages 52 per annum, with an investigation launch rate from occurrences notified of 10 percent per annum. The number of safety recommendations issued has averaged 83 per annum.

SUMMARY OF

Occurrences Notified

There were 498 occurrence notifications made to the Commission over the year. Figure (1) shows the proportion of occurrences notified for each of the relevant modalities out of the total notifications made.

The pattern of notifications tends to be consistent in the proportions displayed across the years in that air and marine dominate the level of notifications by as much as 10 percent or more when compared with rail notifications, and tend to be close in number to each other as shown in Table (1) below.

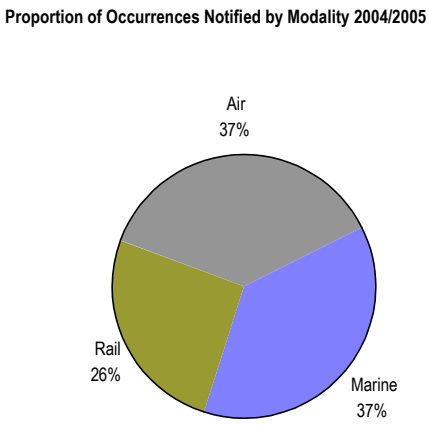


Figure 1

	RELATIVE PROPORTIONS OF OCCURRENCES NOTIFIED BY MODALITY 2002-2005					
MODE	2002/2003	% OF TOTAL	2003/2004	% OF TOTAL	2004/2005	% OF TOTAL
Air	167	32%	203	42%	185	37%
Rail	137	26%	101	21%	129	26%
Marine	214	41%	182	37%	184	37%
Total	518		486		498	

Table 1

There was a 2 percent increase in notifications from last year, driven by rail occurrences. Rail occurrences notified make up 24 percent of the total notifications made over the past 3 financial years – the lowest notification rate of the 3 modalities. However 2004/2005 saw a 28 percent increase in rail on last years notifications, whereas air notifications decreased by 9 percent, and marine notifications increased by 1 percent.

Figure (2) below compares occurrences notified by modality over the past 3 financial years

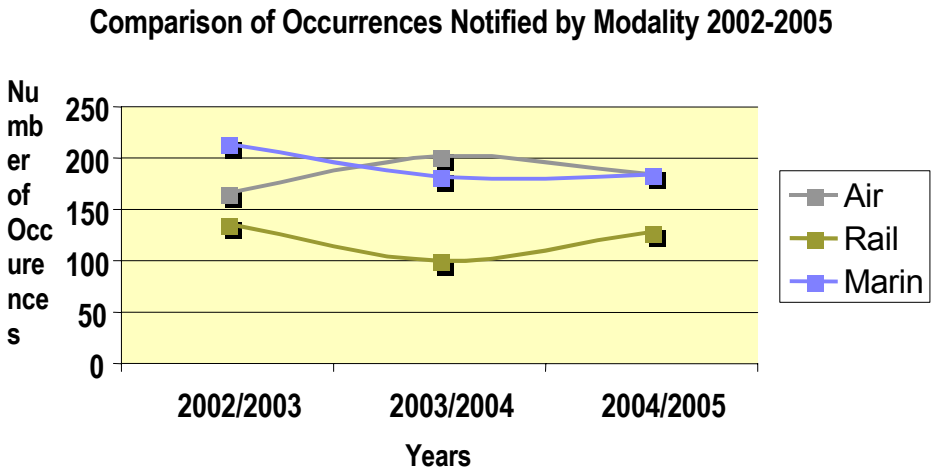


Figure 2

SUMMARY OF

Investigations Launched

There were 62 investigations launched from the 498 occurrences notified to the Commission. This represents a 12 percent launch rate. The average rate across the past 3 years is 10 percent. The rate is steady, reflective of consistent practice in the application of the criteria used to determine whether the Commission ought to investigate an occurrence or not.

Figure (3) below shows the launch rates across the modalities for the past 3 financial years.

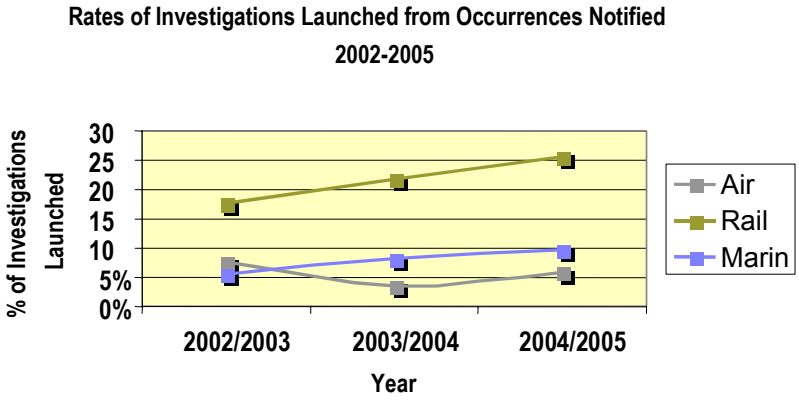


Figure 3

Marine and rail are showing distinct linear growth in the number of investigations launched, with rail (26 percent) demonstrating a higher rate than both marine (10 percent) and air (6 percent)[3]. Rail's rates are consistent with the real growth in occurrences notified.

Figure (4) below shows the proportion of investigations launched for each of the modalities out of the total number of investigations launched.

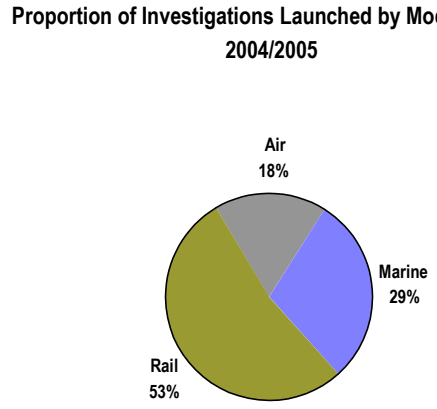


Figure 4

[3] From a statistical perspective the number of occurrences and investigations is small so any percentage change can seem large.

Rail on average receives 26 percent of the occurrence notifications and averages 51 percent of the total investigations launched. Rail's investigation launch rate is 26 percent, double that of the total investigation launch rate. The increases in notifications and subsequent investigations in rail are being driven by efforts to address infrastructure issues within the rail network. The Commission expects that rail notifications will continue to increase in the short term while internal changes are introduced as the new Railways Act 2005 is implemented. The emphasis on a safe and secure rail transport system may drive occurrence reporting more so than previously.

Table (2) below shows the distribution of investigations launched by modality across the past 3 financial years.

RELATIVE PROPORTIONS OF INVESTIGATIONS LAUNCHED BY MODALITY 2002-2005						
MODE	2002/2003	% OF YEAR TOTAL	2003/2004	% OF YEAR TOTAL	2004/2005	% OF YEAR TOTAL
Air	13	27%	7	16%	11	18%
Rail	24	49%	22	50%	33	53%
Marine	12	24%	15	34%	18	29%
Total	49		44		62	

Table 2

Overall the number of investigations launched does follow the pattern of occurrences notified, albeit at a higher rate for 2004/2005 as is shown in Table (3) below.

COMPARISON OF NOTIFICATIONS/INVESTIGATIONS LAUNCHED 2002-2005					
	2002/2003	2003/2004	DIFFERENCE	2004/2005	DIFFERENCE
Notifications	518	486	-32 (-6%)	498	12 (%)
Investigations Launched	49	44	-5 (-10%)	62	18 (41%)
Ratio	1:10	1:10	0	1:9	

Table 3

SUMMARY OF

Investigations in Progress

There were 50 investigations open at the end of the financial year. There are 3 main stages to the investigation process. Stage 1 starts with the launch of an investigation and ends with the Commission's approval of a draft preliminary report. Stage 2 involves the release of the preliminary report to affected parties for consultation in terms of sections 9(2) and 14(5) of the Act. Stage 3 involves the Commission's approval of the draft final report as final but not yet publishing the final report. Table (4) below shows the distribution of open investigations across the transport modalities. The level of work in progress is consistent with the increase in investigations launched, with rail showing a significant increase in stage 1.

INVESTIGATIONS OPEN BY MODALITY AT YEAR END JUNE 2005					
MODE	STAGE 1	STAGE 2	STAGE 3	TOTAL	% OF YEAR TOTAL
Air	8	1	2	11	22%
Rail	20	5	2	27	54%
Marine	7	2	3	12	24%
Grand Total	35	8	7	50	100%
% of Total	70%	16%	14%	100%	

Table 4

Work completed showed a 26 percent increase on last year with each modality increasing its output. Rail published the most reports, accounting for 48 percent of the reports finalised and published, followed by marine (29 percent), and air (23 percent). Table (5) shows the number of investigations finalised and published over the past 3 financial years.

	COMPARISON OF INVESTIGATIONS APPROVED AS FINAL & PUBLISHED				
	2002/2003	2003/2004	DIFFERENCE	2004/2005	DIFFERENCE
Air	11	6	-5 (-45%)	9	3 (50%)
Rail	16	17	1 (6%)	20	3 (18%)
Marine	7	11	4 (57%)	14	3 (27%)
Total	34	34	0 (0%)	43	9 (26%)

Table 5

Not all investigations launched end with a report. Approximately 18 percent of investigations launched on average are ceased. Reasons for not concluding the investigation through to publishing a report include:

- ascertaining that the occurrence notified does not meet the criteria for accident investigation under the Commission's legislation
- finding on initial enquiry that the occurrence is not as significant as first thought
- finding that there are no lessons to be learnt from the occurrence.

Table (6) below shows the number of investigations ceased without publishing a report.

INVESTIGATIONS CEASED WITHOUT PUBLISHING A REPORT

MODE	2002/2003	2003/2004	2004/2005	TOTAL
Air	3	1	2	6
Rail	1	4	9	14
Marine	3	3	2	8
Total	7	8	13	28
% of Investigations Launched	14%	18%	21%	

Table 6

Notable Investigations Finalised in 2004/2005

From time to time some investigations stand out; these may be because of the degree of difficulty experienced through evidence recovery or the complexity of the investigation. Below are 3 such examples, one from each mode.

Aviation

Report 03-006, Convair 580 ZK-KFU, loss of control and in-flight break-up, Kapiti coast, 3 October 2003

On Friday 3 October 2003 at 2126, Convair 580 ZK-KFU was on a scheduled night freight flight from Christchurch to Palmerston North, when it was observed on radar to enter a tightening left turn and disappear. Attempts to contact the aircraft were unsuccessful and a search for the aircraft was started.

The aircraft had impacted on the sea about 10 km north of Paraparaumu about vertically and at high speed. The crew of 2 was killed on impact.

After crossing Cook Strait the aircraft probably became heavily iced up while descending through an area of severe icing, and stalled after flying level for a short time. The crew was unable to recover from the ensuing spiral dive and the aircraft broke up as it descended.

Safety issues identified included:

- the need for all pilots and operators to have a better understanding of aircraft icing
- the use of air reports to alert pilots to hazardous meteorological conditions
- the adequacy of aircraft, operator and CAA documentation to assist pilots encountering adverse weather conditions, particularly for Instrument Flight Rules (IFR) and night freight operators in icing conditions
- the adequacy of the installation, performance and capabilities of cockpit voice and flight data recorders
- the requirement for a suitable tracking device to be readily available to find underwater location beacons

Safety recommendations were made to the Director of Civil Aviation and the operator to address these issues.

The wreckage of ZK-KFU.

Rail

Report 04-127, express freight Train 952 and stock truck and trailer collision, Browns Road level crossing, Dunsandel, 19 October 2004

On Tuesday 19 October 2004 at about 0840, express freight Train 952 collided with a stock truck and trailer at Browns Road level crossing in Dunsandel, between Rolleston and Ashburton. Flashing lights and bells protecting the level crossing were working at the time of the collision.

The locomotive remained upright and on the rails but sustained major damage. The truck and trailer unit was extensively damaged.

The locomotive engineer was uninjured but the truck driver suffered extensive injuries.

Express freight Train 952 and the damaged truck and trailer (Courtesy of NZ Police).

The safety issues identified were:

- the adequacy of the warning devices at the level crossing
- the use of land alongside the railway line immediately south of the level crossing.

No safety deficiencies in the rail operating system were identified.

Safety recommendations were made to the Chief Executives of New Zealand Railways Corporation, Transit New Zealand and Selwyn District Council to address these issues.

Marine

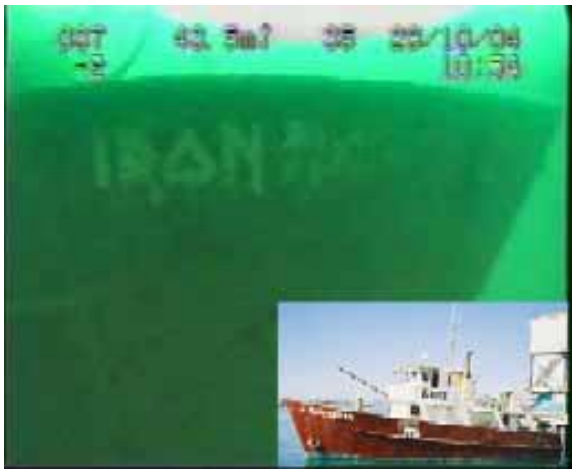
Report 04-212, fishing vessel *Iron Maiden,* foundering off Pandora Bank, Northland, 16 August 2004

On Monday 16 August 2004, the restricted limit fishing vessel *Iron Maiden* foundered to the south of Pandora Bank, off the Northland west coast, with the loss of the 2 crew. The boat was on a delivery voyage from Mangonui on the east coast to Raglan about halfway down the west coast of the North Island.

At 1908, the skipper of the *Iron Maiden* sent a distress signal, which was simultaneously received by Far North Coast Guard Radio and Taupo Maritime Radio.

The skipper said that the boat was taking on water and that the crew were going to abandon ship in the near future. In his last transmission shortly after 1911, the skipper said they were to the west of Pandora Bank, but did not give a precise position.

An extensive search and rescue operation was mounted and a helicopter located the boat's liferaft at about 2242. The helicopter pilot and observer could not confirm whether anyone was in the liferaft, and the weather conditions prevented winching operations.



The *Iron Maiden,* in approximately 45 metres of water.

One of the searching vessels recovered the body of the skipper at 0422 the following morning, but the body of the other crewman was not found.

The safety issues identified included:

- crew certification on restricted limit fishing boats
- the use of drugs while in command of a boat
- arrangements for the rapid freeing of water from the decks of a boat.

Safety recommendations were made to the Director of Maritime Safety and the General Manager Trade and Education of the Seafood Industry Council to address these issues.

SUMMARY OF

Safety Recommendations Made

A total of 119 safety recommendations were issued over the year. This is 46 (63 percent) more than last year. The proportion of safety recommendations made across the modalities out of the total made is shown in Figure (5) below

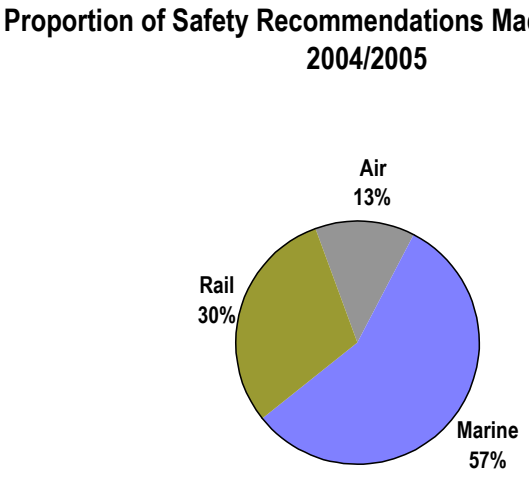


Figure 5

Safety recommendations coming out of marine investigations increased substantively when compared with the previous 2 years – see Figure (6) below.

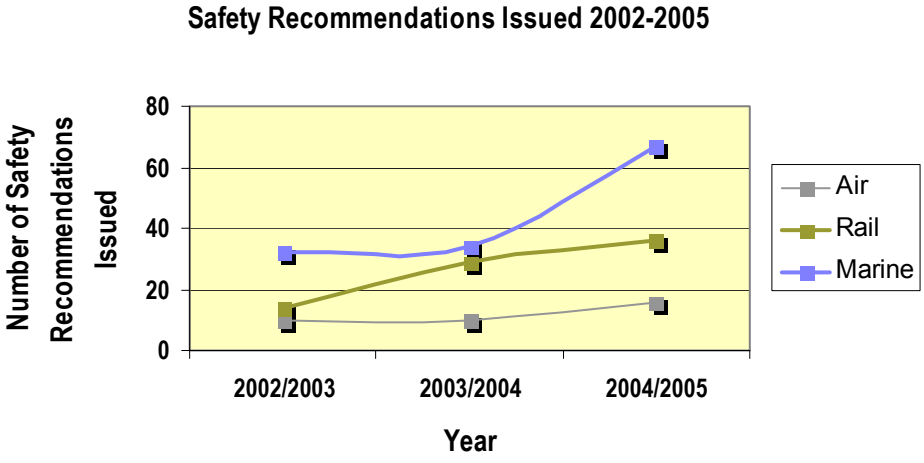


Figure 6

All modalities show an increase in the number of safety recommendations issued, however marine safety recommendations issued increased 97 percent on last year. Notwithstanding this there is internal consistency in the relative proportions of safety recommendations coming out of the modalities across the years of interest, as Table (7) below shows. Marine averages 53 percent of total safety recommendations made per annum with a range of +/- 10 percent, yet it accounts for 29 percent of investigations launched, on average, suggestive perhaps of the complexity or severity of the occurrences investigated and the number of interested parties involved.

RELATIVE PROPORTIONS OF SAFETY RECOMMENDATIONS MADE BY MODALITY 2002-2005						
MODE	2002/2003	% OF YEAR TOTAL	2003/2004	% OF YEAR TOTAL	2004/2005	% OF YEAR TOTAL
Air	10	18%	10	14%	16	13%
Rail	14	25%	29	40%	36	30%
Marine	32	57%	34	47%	67	56%
Total	56		73		119	

Table 7

NUMBER OF SAFETY RECOMMENDATIONS ACCEPTED				
MODE OF TRANSPORT	2002/2003	2003/2004	2004/2005	TOTAL
Air	10	9	14	33
Rail	12	20	29	61
Marine	21	25	54	100
Total Safety Recommendations	44	55	98	194

Table 8

NUMBER OF SAFETY RECOMMENDATIONS WITH ACCEPTANCE DECISION PENDING				
MODE OF TRANSPORT	2002/2003	2003/2004	2004/2005	TOTAL
Air	0	1	4	5
Rail	2	5	4	11
Marine	9	5	3	17
Total Safety Recommendations	12	12	12	33

Table 9

NUMBER OF SAFETY RECOMMENDATIONS DECLINED				
MODE OF TRANSPORT	2002/2003	2003/2004	2004/2005	TOTAL
Air	0	2	2	6
Rail	0	2	0	2
Marine	2	4	9	16
Total Safety Recommendations	2	9	11	24

Table 10

Safety Recommendation Implementation

Safety recommendations are an important feature of the Commission's work. They are the culmination of a thoroughgoing investigative process where evidence is evaluated and findings based on fact are made.

Safety recommendations are made based upon the findings, with the wider public interest in mind. The Commission will issue safety recommendations that go to improving the safe operation of the involved modes so that lives are saved and transportation is made safer and more secure.

It is a tradition amongst the global community of safety investigation agencies that safety recommendations made are normative. This means the safety investigator's focus is on what is in the public interest rather than the cost effectiveness of the safety recommendations made. With this in mind the implementation of many safety recommendations is not readily achievable within short time spans because of policy, legislative and infrastructure constraints. The Commission is mindful of the length of time required for some safety recommendations to be fully implemented, so intent to implement is important. However, good intentions are not enough in the long run. It is action that supports safe transportation. The Commission does monitor the implementation of its safety recommendations.

This section reports on the implementation of all safety recommendations (SRs) developed after 4 October 2000, and any SRs made before that date for which the need has been reaffirmed by more recent investigations.

Because SRs can take some time to implement, the Commission's comments below address only the SRs that have been open for more than one year since the Commission issued the SR.

Chart representation of SR implementation over time

NUMBER OF SAFETY RECOMMENDATIONS OPEN (SRS)				
MODE OF TRANSPORT	ISSUED OVER YEAR	CLOSED OVER YEAR	OPEN AT END OF YEAR	OPEN LONGER THAN 1 YEAR SEE NOTES BELOW)
Air	16	4	34	22
Rail	36	38	75	38
Marine	67	59	106	52
Total SRs	119	101	215	112

Table 11

Aviation Safety Recommendations Open Longer than One Year

Of the 22 safety recommendations, 18 are to the CAA, the others being to operators and manufacturers. Of those to the CAA, 12 involve amendments to Rules, which would be expected to take more than a year. Three of the safety recommendations relate to mountain flying, and after considerable other support work, only the finalisation of Advisory Circulars to the Rules remains outstanding for closure. Also of note is the safety recommendation relating to marking of wires. This large project is almost complete with the expectation that the safety recommendation will be closed soon.

Rail Safety Recommendations Open Longer than One Year

Of the 38 safety recommendations, 7 are to the Land Transport Safety Authority (now Land Transport New Zealand), the others being to Toll Rail, ONTRACK, various territorial councils and a maintenance provider. With the restructuring of ownership within the rail industry, safety recommendations made initially to Tranz Rail, the predecessor of Toll Rail, had to be allocated appropriately between Toll Rail and ONTRACK, which took over ownership of the rail network. Three safety recommendations to Land Transport New Zealand concerning management of substance impairment and fitting of locomotive event recorders and train control voice recording facilities will possibly be cancelled because these issues have been addressed by other processes. Actions subsequent to safety recommendations concerning reviews of level crossings, both public and private, are underway but will inevitably take some time due to the scope of the work required. Other safety recommendations concern particular locations of level crossings where accidents have occurred. The reviews of these are in conjunction with territorial councils and in some cases Transit New Zealand. Again, work is underway on these recommended projects.

Marine Safety Recommendations Open Longer than One Year

Of the 52 safety recommendations, 23 are to the Maritime Safety Authority (now Maritime New Zealand), the others being to a variety of operators, Safe Ship Management providers, regional councils and overseas organisations. Some considerable preparatory work and discussion has taken place between TAIC and Maritime New Zealand, with the expectation that many of the outstanding safety recommendations will be closed in the coming months, through either direct implementation or the safety recommendations being cancelled due to changes in industry or common practices that make them no longer applicable. Similarly to the safety recommendations made to the CAA, 11 of the safety recommendations relate to amendments to Rules, which would be expected to take more than a year. Others, for example the long-term monitoring of recreational boating education initiatives, will by their very nature take several years to be completed.

NUMBER OF SAFETY RECOMMENDATIONS CLOSED ACCEPTABLE				
MODE OF TRANSPORT	2002/2003	2003/2004	2004/2005	TOTAL
Air	202	9	4	215
Rail	183	13	38	234
Marine	123	13	55	191
Total Safety Recommendations	509	36	98	640

Table 12

NUMBER OF SAFETY RECOMMENDATIONS CLOSED CANCELLED				
MODE OF TRANSPORT	2002/2003	2003/2004	2004/2005	TOTAL
Air	189	0	0	189
Rail	37	3	0	40
Marine	22	0	4	26
Total Safety Recommendations	248	3	4	255

Table 13

Notable Safety Recommendations

As with notable investigations that were finalised in 2004/2005 sometimes there are safety recommendations that stand out. Below are 3 investigations, one from each mode, which generated such safety recommendations.

Aviation

Report 03-006, Convair 580 ZK-KFU, loss of control and in-flight break up, Kapiti Coast, 3 October 2003

On Friday 3 October 2003 at 2126, Convair 580 ZK-KFU was on a scheduled night freight flight from Christchurch to Palmerston North, when it was observed on radar to enter a tightening left turn and disappear. Attempts to contact the aircraft were unsuccessful and a search for the aircraft was started.

The aircraft had impacted on the sea about 10 km north of Paraparaumu about vertically and at high speed. The crew of 2 was killed on impact.

After crossing Cook Strait the aircraft probably became heavily iced up while descending through an area of severe icing, and stalled after flying level for a short time. The crew was unable to recover from the ensuing spiral dive and the aircraft broke up as it descended.

A Convair 280, similar to ZK-KFU.

Safety Recommendation 046/04

The Commission made to *Airfreight NZ* the following safety recommendation:

> That *Airfreight NZ* review and update the company manuals and procedures to ensure they are correct and provide the best available guidance for pilots to detect, avoid and escape from adverse or hazardous conditions.

Airfreight NZ replied that:

> *Air Freight* has conducted an internal review of its policies and procedures and will liaise with the New Zealand Civil Aviation Authority to ensure 'best practice' principles are applied and/or developed

Safety Recommendation 047/04

The Commission recommended to the Director of Civil Aviation that he:

> use the report to re-emphasise to pilots and operators the hazards of icing, in particular tailplane icing and freezing rain.

This recommendation was accepted.

Safety Recommendation 051/04

The Commission recommended to the Director of Civil Aviation:

> that the CAA complete the recommendations of the independent report, New Zealand Aircraft Icing Hazards, in particular:
>
> a. ensure all IFR operators provide adequate written guidance for operations in adverse or hazardous weather conditions,
>
> b. audit air operators to ensure they have clear and unambiguous procedures for avoiding not only turbulence and thunderstorms, but also severe icing conditions, and
>
> c. ensure pilot training requirements for inadvertent flight into hazardous meteorological conditions are adequately defined for commercial operations under Civil Aviation Rules, Parts 121, 125 and 135.

This safety recommendation was accepted.

These safety recommendations were important for the following reasons:

046/04

Recognising the combination of aircraft type and the unique role in which it is used, the safety recommendation will assist the pilots of Convair aircraft to be better prepared to handle unforseen hazards that may be encountered during their night freight operations around New Zealand.

047/04

To use the subject accident as an example to pilots generally of the continuing hazards associated with severe icing in New Zealand, including understanding the phenomenon of freezing rain. To increase pilots' knowledge of tailplane icing and how to recognise a tailplane icing-induced stall, thereby helping to avoid entering the stall or to assist in recovering from a tailplane-induced stall.

051/04

The effect of this recommendation will be to improve the knowledge and understanding of all pilots, and therefore their ability to avoid or handle safely inadvertent flight into hazardous meteorological conditions.

Rail

Safety Recommendations

04-109, passenger express Train 804, *Tranz Alpine* stalled and slid back, Otira Tunnel, 28 March 2004

Passenger express train 804.

On Sunday 28 March 2004, at about 1541 shortly after entering the Otira Tunnel Train 804, the Greymouth to Christchurch *Tranz Alpine* passenger express, with 268 passengers and six crew on board, stalled and slid backwards. The locomotive engineer eventually brought the train under control but when he attempted to move forward again the locomotives could not develop traction and the train stopped.

After a second unsuccessful attempt to move the train forward, the locomotive engineer was authorised by train control to set back to Otira where extra locomotive power was attached for the trip through the Otira Tunnel to Arthur's Pass.

Contributing factors and safety issues identified included:

- the loss of traction experienced by the locomotives
- the failure of the locomotive sanding equipment to operate correctly
- a residue of coal dust and moisture on the railhead within the tunnel
- the inability to establish radio communication between the locomotive engineer and train controller
- the imbalance of axle weight distribution on locomotive DCP4801
- the lack of filtering of locomotive sand
- the loss of situational awareness by the locomotive engineer.

Two safety recommendations were made to the Chief Executive of Toll NZ Consolidated Limited.

Safety Recommendations 081/04 and 082/04

The Commission recommended to the Chief Executive of Toll NZ Consolidated Limited that he:

> develop and introduce appropriate specifications for the supply of locomotive sand that include quality assurance procedures to ensure the sand is fit for purpose. (081/04)

and

> develop a regime to ensure that locomotive driving and idling wheelset axle weights are maintained within tolerance. (082/04)

These recommendations were accepted.

The safety recommendations were important for the following reasons:

081/04

There were no documented specifications held by Tranz Rail for the supply of locomotive sand so foreign material, including pebbles of various sizes, could be mixed with it. The absence of such a specification, together with the wide range of suppliers, meant that variations in the quality of the delivered product to the various locomotive depots could be expected. Checks of the sand quality were not required and neither was there a process for sifting it prior to loading into the locomotive sand boxes, so there was no physical defence in place to prevent foreign material from entering into the sanding equipment with sand.

082/04

The imbalanced weight distribution on the driving wheels of DCP4801 affected the adhesion of the locomotive for both tractive effort and its ability to assist DCP4559 with holding the train on the grade while under independent braking. Had the weight distribution on the driving wheels of DCP4801 been as designed, the traction gained may have averted the stalling, despite the absence of sand

Marine

Investigation 04-214, passenger freight ferry, *Aratere*, loss of mode awareness leading to near grounding, Tory Channel, 29 September 2004

On Wednesday 29 September 2004 at about 1720, the passenger freight ferry *Aratere* was entering Tory Channel from Cook Strait when it failed to make a programmed course alteration while in automatic steering. The navigational bridge team had to intervene and make a manual alteration of course to prevent the *Aratere* grounding at full speed on the north side of the channel.
Safety issues identified included:

- the adequacy of bridge resource management
- the adequacy of training in the use of all integrated bridge systems
- the adequacy of contingency planning for safety critical situations on board
- the adequacy of procedures covering the receipt and dissemination of information from the International Maritime Organisation.

Safety recommendations were made to the General Manager Operations, the InterIsland Line and the Director of Maritime Safety to address these issues.

Safety Recommendation 043/05

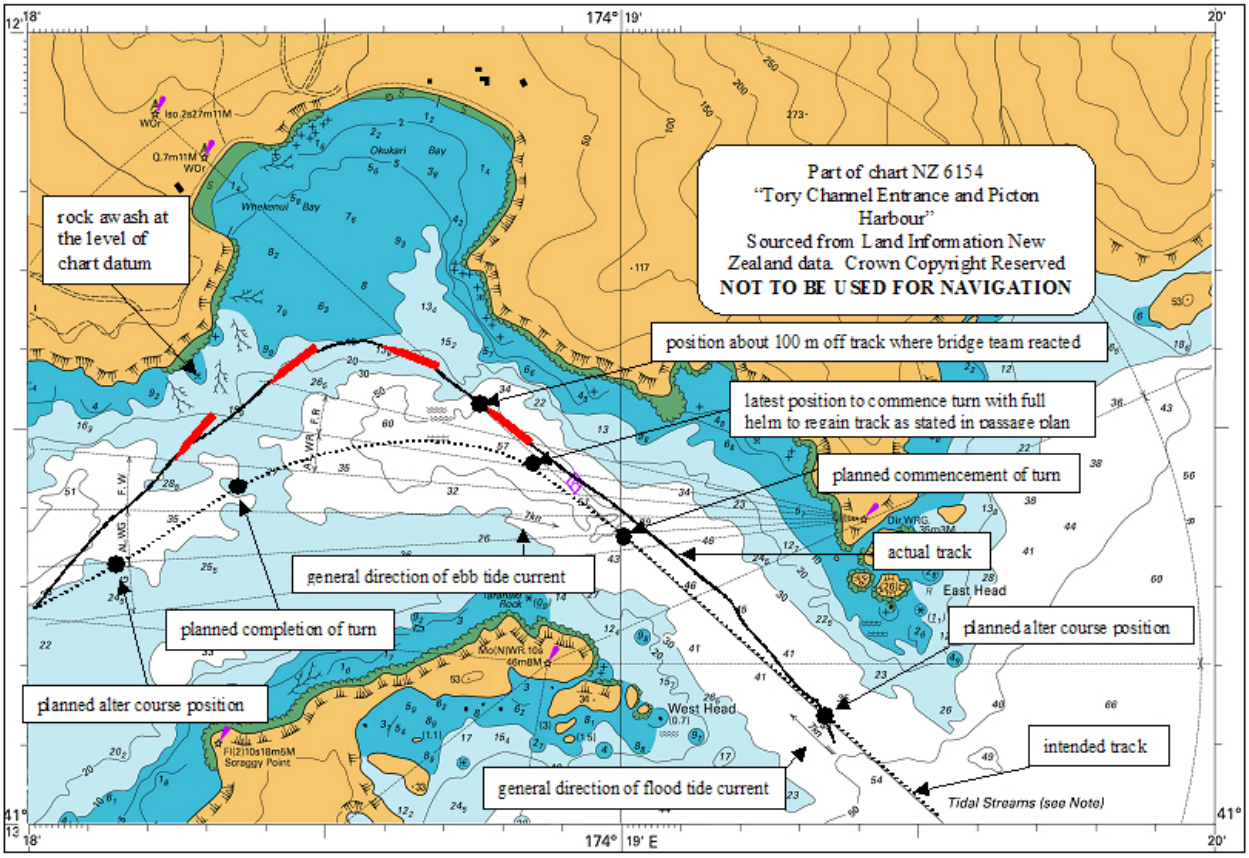
The Commission recommended to the Interislander Line that:

> they instigate a programme of training and practice to reinforce bridge resource management techniques amongst members of bridge navigation teams on board the companies vessels.

This recommendation was accepted.

Safety Recommendation 043/05

This safety recommendation was important, as bridge resource management is a crucial element of safe ship operation. In this incident, less than adequate bridge resource management was identified as contributing to the incident and identified the need for ongoing training.



Map of the entrance to Tory Channel

Investigations Launched with Safety Action outcomes

Occasionally it is not necessary to make safety recommendations because deficiencies identified during an investigation lead to safety actions being taken. Safety actions are equally important outcomes as any safety recommendation may be. The following is an example of such safety actions.

Investigation 04-123,electric multiple unit traction motor fires, Wellington suburban network, 7 May 2004-30 September 2004

Between Friday 7 May 2004 and Thursday 30 September 2004, 4 incidents involving traction motor fires on Tranz Metro electric multiple (EM) unit passenger services occurred on the Wellington suburban passenger network. This report

incorporates reports 04-114, 04-122 and 04-124. These incidents occurred on 4 different driving sets, and all resulted in smoke entering the passenger compartments.

There were no injuries to passengers or crew in any of the incidents.

Safety issues identified included:

- the use of incorrect crimp lugs in cable connections
- inadequate crimping of connections
- the ability to inspect connections
- poor maintenance procedures
- lack of awareness of critical points associated with quality crimp joints
- potential for connector bolts to work loose because of vibration.

Because of the similarities arising from each incident, all incidents have been combined into one report.

In view of the safety actions taken by Toll NZ Consolidated Limited no safety recommendations have been made.

Safety Actions

Toll Rail advised that the following steps were being taken in the Tranz Metro EM unit depot in an attempt to rectify the problems:

- Toll Rail was employing an electrical engineer to review the problems and become involved in the fixes
- Tranz Metro was intending to start replacing the lugs on all traction motor cables with new 35 mm lugs which were due to arrive from the manufacturer on 4 October 2004
- a staff member was being put on late shift to undertake the replacement work; it was anticipated this would start on Monday 11 October 2004. The plan was that one car would be done per day and 5 cars per week, which would see the 44 EM cars finished by Christmas 2004.

Our investigation has established that there have been a number of related facts, which have contributed to connector failures and the resulting fires. The key issues identified include:

- incorrect crimp lugs being used – crimp lugs were substituted for a larger (50mm) size when stocks of the correct lug were unavailable
- inadequate crimping due to inability to mechanically crimp the larger 50mm lugs
- potential for the connector bolts to work loose from track vibration
- difficulty inspecting the connection due to design of the electrical insulation.

Although the specification for the crimp lugs was exceeded, increasing the conductive area, this is ineffective, as the manual crimping process did not ensure a good contact between the lug and cable. These factors created the potential for a high-resistance join that would result in overheating. Although the EM sets have operated for a number of years without previous connector failure this cannot be eliminated as a contributing cause as the connector, encased in an insulating sleeve, is not readily visible.

Mechanical Safety Actions

Toll Rail have initiated the following safety actions:

- all EMs will be fitted with new, correctly sized lugs. This involves inspecting each EM set, each set having 16 connections. This work is proceeding at the rate of one car per day
- the quality assurance process has been reviewed and tightened to ensure that material supply is controlled to prevent future use of inappropriate material
- all crimping will be done hydraulically and no mechanical crimping will be accepted, both at the EMU depot and Alstom Hutt. Additional hydraulic crimping machinery has been provided to the EMU Depot for this to occur
- all connections will be tightened to specific torque
- a design change is being investigated to enable easy inspection of the connection. This will allow Toll Rail to include this inspection in the maintenance schedule to assess the condition of connections on a regular basis.

All key personnel including relevant Alstom staff have been fully involved in the investigation and follow-up and are assisting in remedial action.

A SNAPSHOT OF

Costs of Investigations

The Commission does experience periods where it runs deficits driven by the mix of occurrences presenting in any given year.

While the Commission can forecast the number of occurrences of which it will likely be notified in any given year, it cannot forecast the scale or complexity of the occurrences when they do occur. An aircraft breaking up over the ocean provides its own unique investigative challenges when compared with a break-up over open terrain, for example, as does a ship sinking in deep waters against a ship running aground on a sand bar.

The Commission has begun to examine the cost of the accident investigations it undertakes, with the long-term view of supporting effective and efficient accident investigation, without compromising the quality or rigor of the investigations undertaken. Work planned for 2005/2006 will be looking at a classification index of occurrence complexity and determining associated costs so that the Commission can develop a framework of standardised cases and costs to support ongoing business planning.

Costs of Investigations Finalised in 2004-2005

Overall $740k of direct costs went to the investigations finalised in 2004/2005. 4 investigations accounted for $312k or 42 percent of the total direct costs. Figure (7) shows the proportion of direct costs across the modalities.

Proportion of Direct Costs of Investigations by Modality 2004/2005

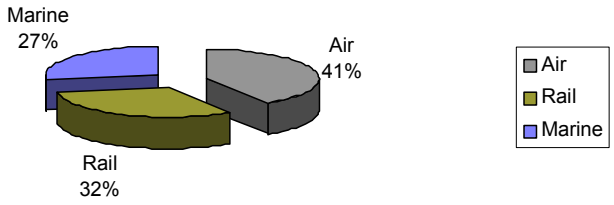


Figure 7

AIR INVESTIGATIONS

The Commission finalised 9 air investigations with total direct costs of $301K. Occurrence 03-006 *Convair 580, loss of control and in-flight break-up over Kapiti coast* accounted for 74 percent of the total direct costs for the year. The distinguishing feature of this occurrence is the aircraft broke up in flight falling into the sea. After an extensive underwater search lasting nearly a week in difficult conditions, the aircraft wreckage was identified. The wreckage lay in about 35 metres of water and was subject to 2 strong currents, and poor visibility in the water. In total about 70 percent of the aircraft by weight and about 15 percent of the cargo was recovered to a secure facility for further examination. The recovery operation took about 7 weeks to complete. The recovery costs of the wreckage account for 62 percent of the total direct costs for the investigation, and 46 percent of the total direct costs of all the aviation investigations for the year.

If we exclude 03-006, the average hours spent on investigations for air were 187 hours with an average cost of $9,937 per investigation.

Aviation Investigations 2004/2005 Direct Costs of Investigations

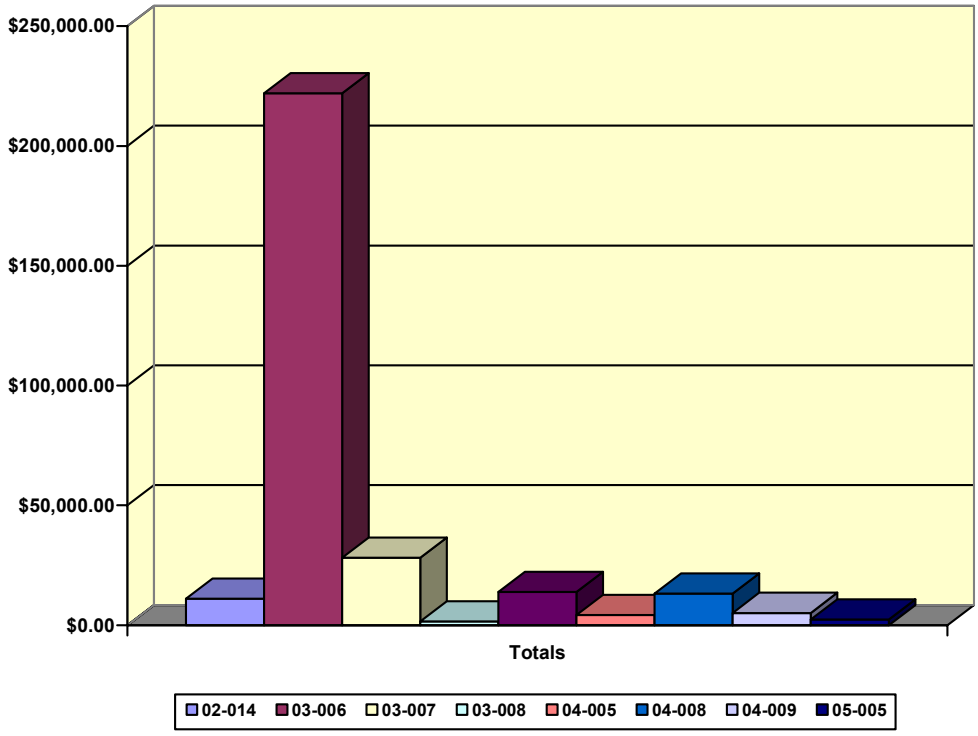


Figure 8

RAIL INVESTIGATIONS

The Commission finalised 29 rail investigations with total direct costs of $236k. The average time spent on rail investigations was 151 hours at an average cost of $8,147 per investigation.

Rail Investigations 2004/2005 Direct Costs of Investigations

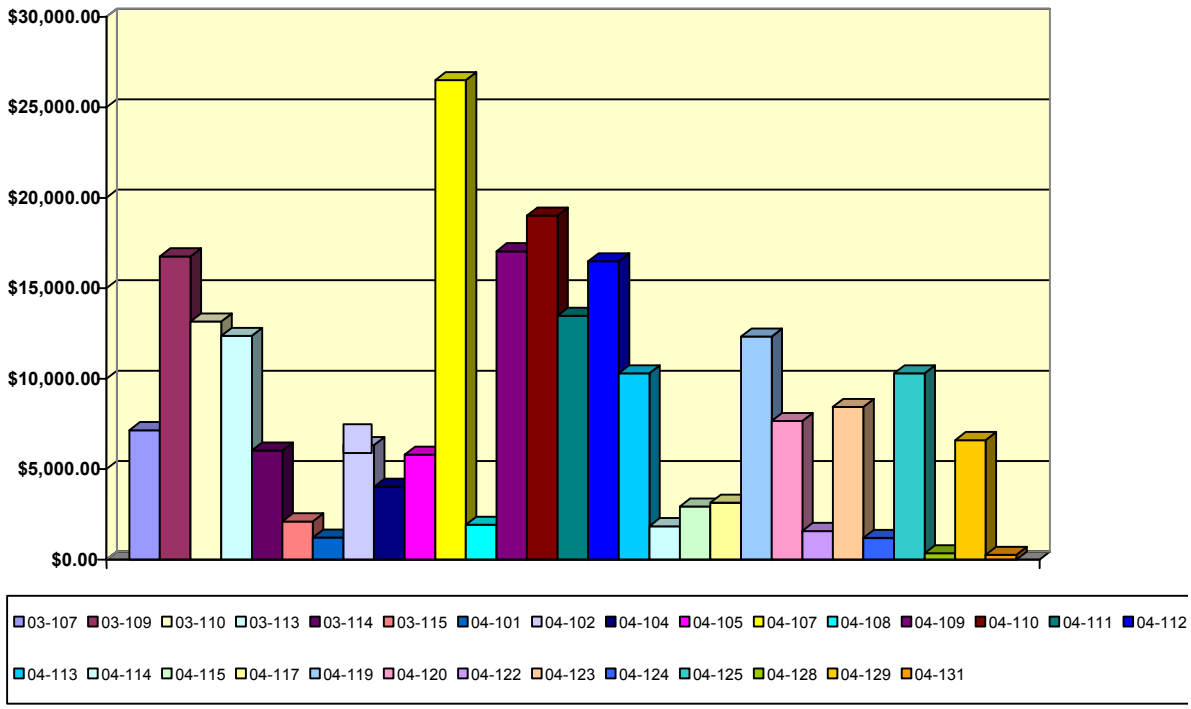


Figure 9

MARINE INVESTIGATIONS

The Commission finalised 16 marine investigations with total direct costs of $201k. The average time spent on marine investigations was 216 hours at an average cost of $12,600 per investigation. Investigation into occurrence 04-212 has skewed the average investigation time and cost for Marine investigations. This investigation relates to the foundering of the fishing vessel *Iron Maiden* off Pandora Bank. The bulk of the costs went to investigator time spent working with the New Zealand Defence Force to firstly locate the wreck of the *Iron Maiden*, then with the aid of a remote-operated vehicle, to inspect the wreckage. The New Zealand Defence Force gave its time to the Commission. Without its assistance the costs of the investigation would have been substantially more than they were.

Marine Investigations 2004/2005 Direct Costs of Investigations

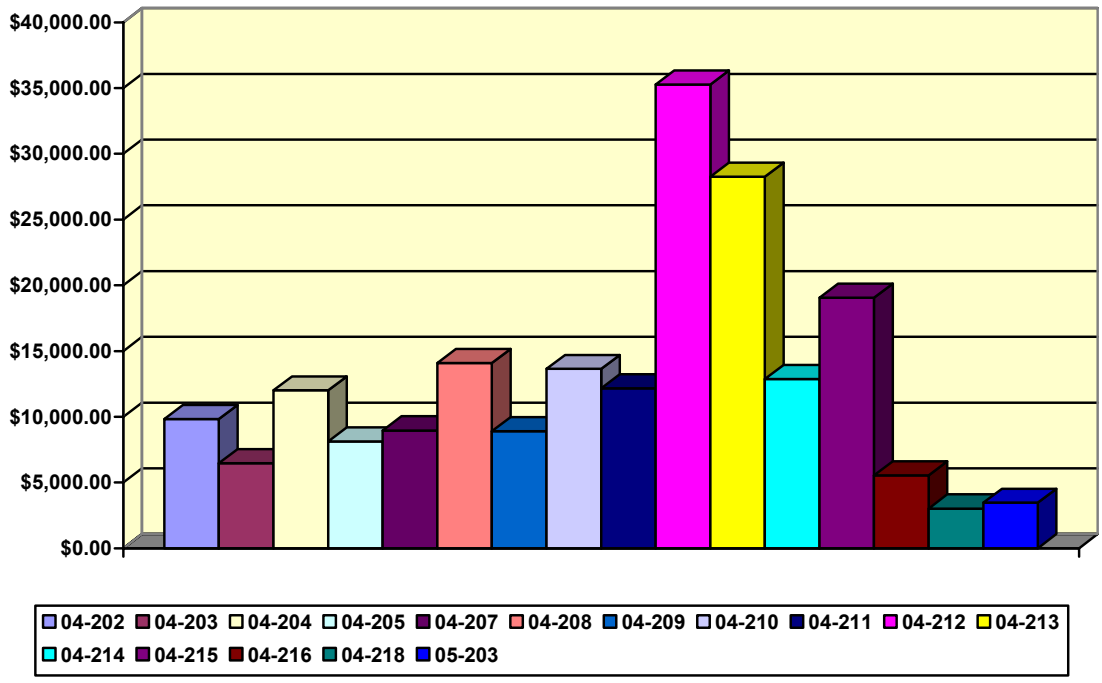


Figure 10

Statement of Responsibility

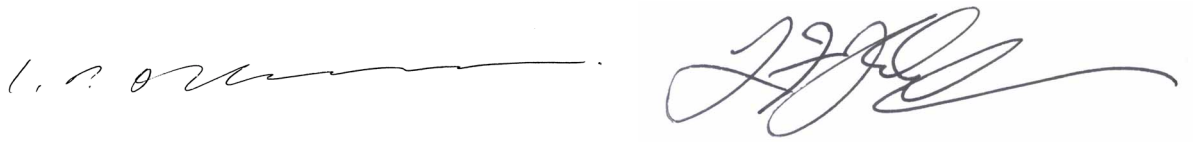
For the Year Ended 30 June 2005

In the financial year ended 30 June 2005, the Commissioners and management of the Transport Accident Investigation Commission were responsible for:

(a) The preparation of financial statements and the judgements therein

(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

Lois Hutchinson
Chief Executive

Dated 27 October 2005

Statement of Accounting Policies

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

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
Motor vehicles	5.6
Furniture and fittings	10 – 18
Office equipment	2.5 – 8.0
EDP equipment	3.3 – 4.2

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 to suppliers and receivables from customers.

f. Statement of Cash Flows

Cash comprises monies held in the Commission's bank accounts and short-term deposits

Investing activities relate to the sale and purchase of fixed assets.

Financing activities comprise the change in equity and debt capital structure of the Commission.

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 1994 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 period under review.

Statement of Financial Position

As At 30 June 2005

	Note	ACTUALS 30/06/05 ($)	BUDGET 30/06/05 ($)	ACTUALS 30/06/04 ($)
Assets				
Fixed Assets	1	82,368	157,000	104,283
Current Assets				
Cash at bank		387,909	116,000	214,965
Short-term deposits		150,000	300,000	300,000
Receivables	2	3,698	-	-
Accrued interest		4,747	6,000	3,619
Prepayments and advances		36,580	20,000	16,837
Total current assets		582,934	442,000	535,421
Total assets		665,302	599,000	639,704
Represented by:				
Liabilities and taxpayers' funds				
Current Liabilities				
Payables and accruals	3	166,879	180,000	151,184
Provision for employee leave entitlements	4	111,820	100,000	102,885
Total current liabilities		278,699	280,000	254,069
Taxpayers' Equity		386,603	319,000	385,635
Total liabilities and taxpayers' funds		655,302	599,000	639,704

Hon W P Jeffries
Chief Commissioner

Lois Hutchinson
Chief Executive

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

Statement of Financial Performance

For the year ended 30 June 2005

	Note	ACTUALS 30/06/05 ($)	BUDGET 30/06/05 ($)	ACTUALS 30/06/04 ($)
Revenue				
Crown revenue		2,422,444	2,172,000	2,172,444
Other income		4,708	6,000	7,242
Profit on sale of fixed assets		-	-	2,068
Interest earned		23,058	23,000	23,396
Total revenue		2,450,210	2,201,000	2,205,150
Expenditure				
Audit fees		2,177	8,000	8,632
Commissioners' fees		56,360	65,000	72,430
Depreciation		-	45,000	-
Buildings		894	-	894
EDP equipment		21,379	-	19,869
Office furniture, fittings and equipment		9,904	-	10,292
Motor vehicles		-	-	6,073
Leases, rentals and outgoings		134,108	130,000	133,016
Capital charge	5	30,851	29,000	24,062
Personnel costs		1,534,204	1,354,000	1,239,539
Loss on sale of fixed assets		3,663	-	-
Other operating costs		655,702	610,000	659,393
Total expenditure		2,449,242	2,241,000	2,174,200
Net surplus/(deficit)		968	(40,000)	30,950

Statement of Financial Performance

For the year ended 30 June 2005

	Note	ACTUALS 30/06/05 ($)	BUDGET 30/06/05 ($)	ACTUALS 30/06/04 ($)
Opening taxpayers' equity at 1 July		385,635	359,000	260,685
Plus:				
Net surplus/(deficit)		968	(40,000)	30,950
Total recognised revenues and expenses for the year		968	(40,000)	30,950
Capital injection		-	-	94,000
Closing taxpayers' equity at 30 June		386,603	319,000	385,635

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 2005

	Note	ACTUALS 30/06/05 ($)	BUDGET 30/06/05 ($)	ACTUALS 30/06/04 ($)
Cash flows from operating activities				
Cash was received from:				
Crown revenue		2,422,444	2,172,000	2,172,444
Other income		1,010	-	6,727
Interest received		21,930	27,000	22,232
		2,445,384	2,199,000	2,201,403
Cash was disbursed to:				
Payments to suppliers		852,395	716,330	836,640
Payments to employees		1,525,269	1,454,000	1,342,424
Capital charge		30,851	29,000	24,062
Net cash flows from operating activities		36,869	(330)	(1,723)
Cash flows from investing activities				
Cash was received from:				
Sale of fixed assets		11,855	-	2,068
Cash was applied to:				
Purchase of fixed assets		25,780	98,000	21,366
Net cash flows from investing activities		(13,925)	(98,000)	(19,298)
Cash flows from financing activities				
Cash was received from:				
Capital contribution from the Crown		-	-	94,000
Cash disbursed to:				
Payment of surplus to the Crown		-	-	-
Net cash flows from financing activities		-	-	94,000
Net movement in cash for the period		22,944	(98,330)	72,979
Opening bank balance		514,965	514,965	441,986
Closing bank balance		537,909	416,635	514,965

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 2005

	30/06/05	30/06/04
	($)	($)
(Deficit)/Surplus from Statement of Financial Performance	968	30,950
Add Non-Cash Items		
Depreciation	32,177	37,128
(Profit)/loss of sale of fixed assets	3,663	(2,068)
	36,808	35,060
Add/(Less) movements in Working Capital Items		
Decrease /(increase) in receivables	(3,698)	2,673
Decrease /(increase) in accrued interest	(1,128)	(1,164)
Decrease /(increase) in advances and prepayments	(19,743)	1,997
Increase /(decrease) in creditors and accruals	15,695	(76,770)
Increase /(decrease) in provisions	8,935	5,531
Total working capital items	61	(67,733)
Net cash flows from operating activities	36,869	(1,723)

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 2005

		COST	DEPRECIATION	ACCUMULATED DEPRECIATION	BOOK VALUE
1.	**Fixed assets**	($)	($)	($)	($)
	2005				
	Buildings	29,798	894	14,171	15,627
	EDP Equipment	118,629	21,379	90,229	28,400
	Office furniture, fittings and equipment	216,872	9,904	178,531	38,341
	Motor vehicles	-	-	-	-
		365,299	32,177	282,931	82,368
	2004				
	Buildings	29,798	894	13,277	16,521
	EDP Equipment	93,069	19,869	68,849	24,220
	Office furniture, fittings and equipment	216,650	10,292	168,626	48,024
	Motor vehicles	33,737	6,073	18,219	15,518
		373,254	37,128	268,971	104,283

2. Receivables	30/06/05 ($)	30/06/04 ($)
Gross receivables	3,698	-
Less: provision for doubtful debts	-	-
Net receivables	3,698	-

3. Payables and accruals	30/06/05 ($)	30/06/04 ($)
Trade creditors	15,443	27,501
GST	61,120	31,608
Commissioners fees accrued	2,400	-
Accrued expenses	87,916	92,075
Total payables and accruals	166,879	151,184

4. Provision for employee leave entitlements	30/06/05 ($)	30/06/04 ($)
Annual leave	82,545	73,610
Retirement leave	29,275	29,275
	111,820	102,885

5. Capital charge

Levied at 8% on the taxpayers' funds for 2005. For the 2004 year the rate was 8%.

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 consist 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 Westpac Bank; the term is due to mature on 13 July 2005, and the rate is 5.85%. The Term Deposit that was held with National Bank matured during the year. The rate for this was 5.75%. 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	2005	2004
$000		
$100-$110	4	1
$110-$120	1	0
$120-$130	2	1
$130-$140	0	0
$140-$150	1	0
$170-$180	0	1
$180-$190	1	0

The Chief Executive left in March 2005 and his total remuneration and benefits are in the $180,000 to $190,000 band. There was an Acting Chief Executive from that date and his total remuneration and benefits were less than $100,000.

8. Commission members

Commission members earned the following fees during the year:

Member	Fees	
	2005	2004
Hon WP Jeffries (Chief Commissioner)	$27,000	$31,500
Ms PA Winter	$14,122	$20,578
Mr NA Macfarlane – term ended 21 October 2004	$7,278	$20,352
Mr B Wyness – appointed November 2004	$7,958	$0

9. Statement of commitments

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

	30/06/05	30/06/04
	($)	($)
Less than 1 year	111,609	75,100
1 – 2 years	111,609	23,950
2 – 5 years	117,792	7,983
5 + years	5,987	0
	346,997	107,033

Note: Christchurch office lease is currently on a month-to-month basis at a rate of $717.67 plus GST per month.

A sub-lease for two offices on Level 9, 114 The Terrace, Wellington was signed to take effect from July 2003 until March 2004 with a right of renewal every three months from that date. Rental is $1,300 per month plus GST.

The Wellington office lease was renewed in March 2005.

10. Statement of contingent liabilities

There were no contingent liabilities existing at balance date. (2004: Nil.)

Statement of Objectives And Service Performance

For outputs in the year ended 30 June 2005

Outcome

There are 5 transport sector outcomes sought by the Government. These are:

- the transport system supports national and regional economic development
- the transport system is made safer and more secure
- the transport system is inclusive, accessible and affordable to all users
- the transport system contributes to positive health outcomes
- transport uses land and other resources more effectively

The Commission contributes to making sure the transport system is made safer and more secure

Output Class

The Commission's activities form part of the non-departmental output classes, specifically the output class "reporting on aircraft, rail and marine accident and incident investigations that occur in New Zealand"[4]. This output class includes promulgating safety recommendations and reporting the implementation status of the Commission's safety recommendations, as well as funding international co-operation and exchange of accident information with similar safety investigation bodies overseas.

Output Class Measures

There are 2 main output class measures. These go to quantity of reports provided and timelines of reports provided

[4] See The Treasury, *"Estimates of Appropriation for the Government of New Zealand 2004",p1324.*

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Quantity

PERFORMANCE MEASURE: REPORTING ON ACCIDENT OR INCIDENT INVESTIGATIONS: NUMBER OF NEW INVESTIGATIONS INITIATED	TARGET 2004/2005	ACTUAL 2004/2005	PERCENTAGE OF TARGET
TRANSPORT MODE			
Air	15	11	80%
Rail	20	33	165%
Marine	20	18	90%
Total	55	62	113%

Table 14

Timeliness

The Commission's performance against agreed timeliness measures is shown in Table 15 below.

MEASURE	AIR	MARINE	RAIL	COMMENT
A preliminary report on a major accident will be issued within 12 months of the accident occurring.	N/A	N/A	N/A	There were no major accidents in each of the modalities for the reporting period.
At least 90 percent of investigations into non-major occurrences will be finalised by the Commission within 9 months of the occurrence.	11 Investigations finalised 4 > 9 months* 64% < 9 months Adjusted response time excluding offshore assistance provided: 1 > 9 months 87.5% < 9 months	16 Investigations finalised 1 > 9 months 94% < 9 months	29 Investigations finalised 14 > 9 months 52% < 9 months	* Of the 4 air investigations not finalised within the target time frame, 3 were investigations outside of the Commission's own jurisdiction, being overseas investigations where the Commission was assisting. Assistance was provided to Australia in 2 investigations of 20.5 and 12.5 months' duration, and to Canada for one investigation of 10.5 months' duration.
Availability of investigators: 24 hours per day, 365 days per year	Achieved	Achieved	Achieved	

Table 15

Report of the Auditor General

Audit New Zealand

AUDIT REPORT

TO THE READERS OF THE TRANSPORT ACCIDENT INVESTIGATION COMMISSION'S FINANCIAL STATEMENTS FOR THE YEAR ENDED 30 JUNE 2005

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 of the financial statements of the Commission, on his behalf, for the year ended 30 June 2005.

Unqualified opinion

In our opinion the financial statements of Commission on pages 45 to 55:

- comply with generally accepted accounting practice in New Zealand; and
- fairly reflect:
  - the Commission's financial position as at 30 June 2005;
  - the results of its operations and cash flows for the year ended on that date; and
  - its service performance achievements measured against the performance targets adopted for the year ended on that date.

The audit was completed on 27 October 2005, 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 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.

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. 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 disclosures are adequate.

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

We evaluated the overall adequacy of the presentation of information in the financial statements. 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 in accordance with generally accepted accounting practice in New Zealand. Those financial statements must fairly reflect the financial position of the Commission as at 30 June 2005. They must also fairly reflect the results of its operations and cash flows and service performance achievements for the year ended on that date. The Commissioners' responsibilities arise from the Public Finance Act 1989 and the Transport Accident Investigation Commission Act 1990.

We are responsible for expressing an independent opinion on the financial statements and reporting that opinion to you. This responsibility arises from section 15 of the Public Audit Act 2001 and the Public Finance Act 1989.

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

Matters relating to the electronic presentation of the audited financial statements

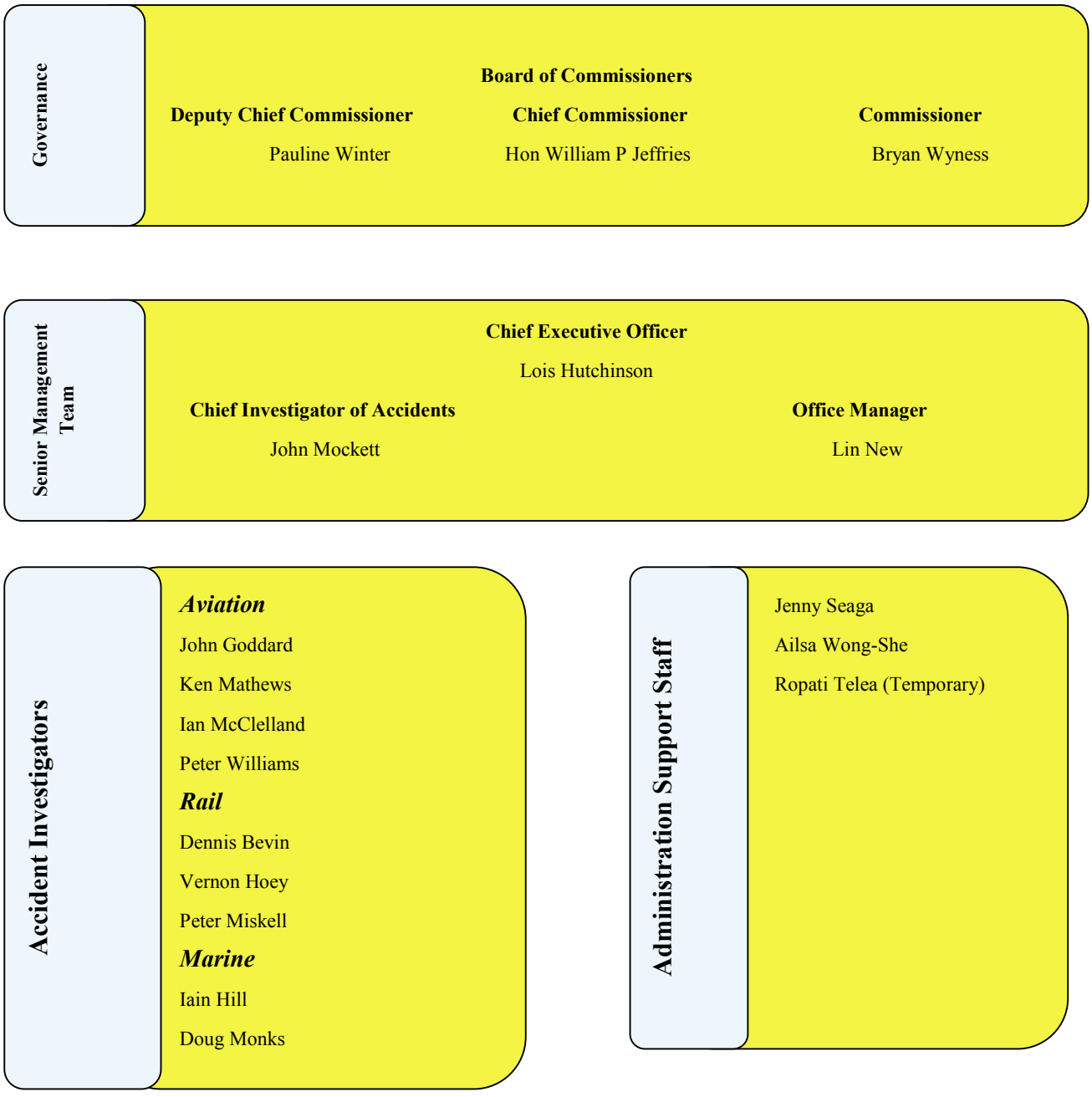
This audit report relates to the financial statements of the Transport Accident Investigation Commission (the Commission) for the year ended 30 June 2005 included on Commission's web site. The Commissioners are responsible for the maintenance and integrity of the Commission's web site. We have not been engaged to report on the integrity of the Commission's web site. We accept no responsibility for any changes that may have occurred to the financial statements since they were initially presented on the web site.

The audit report refers only to the financial statements named above. It does not provide an opinion on any other information which may have been hyperlinked to/from these financial statements. If readers of this report are concerned with the inherent risks arising from electronic data communication they should refer to the published hard copy of the audited financial statements and related audit report dated 27 October 2005 to confirm the information included in the audited financial statements presented on this web site.

Legislation in New Zealand governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

Transport Accident Investigation Commission

Organisational Structure



The organisational structure above is current as at 1 October 2005. At 30 June 2005, the Chief Executive was Norman Macfarlane who was acting and the administration support staff included Audrey Childs.

Staff of the Transport Accident Investigation Commission as at 30 June 2005.


TRANSPORT ACCIDENT
TE KOMIHANA
COMMISSION
TITOTIRO AITUA WAKA
INVESTIGATION