07-001	**Boeing 777 A6-EBC, incorrect power and configuration for take-off, Auckland International Airport**	**22 March 2007**

The Transport Accident Investigation Commission is an independent Crown entity established to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future. Accordingly it is inappropriate that reports should be used to assign fault or blame or determine liability, since neither the investigation nor the reporting process has been undertaken for that purpose.

The Commission may make recommendations to improve transport safety. The cost of implementing any recommendation must always be balanced against its benefits. Such analysis is a matter for the regulator and the industry.

Report 07-001

Boeing 777-300ER

A6-EBC

incorrect thrust and configuration for take-off

Auckland

22 March 2007

Abstract

On Thursday 22 March 2007 at 1615, A6-EBC, an Emirates Boeing 777-300ER, with 357 passengers, 16 cabin crew and 2 pilots on board, started its take-off on runway 05 Right at Auckland International Airport bound for Sydney.

The pilots misunderstood that the runway length had been reduced during a period of runway works and started their take-off with less engine thrust and flap than were required. During the take-off they saw work vehicles in the distance on the runway and, realising something was amiss, immediately applied full engine thrust and got airborne within the available runway length and cleared the work vehicles by about 28 metres.

Safety issues identified included pilot checking processes, the way information critical to the safety of a flight was presented and air traffic control procedures. Safety recommendations to address these issues were made to the Director of Civil Aviation.

An Emirates Boeing 777-300ER

Contents

Figures

Abbreviations

05R	05 Right
23L	23 Left
AC	Advisory Circular
AIP	Aeronautical Information Publication
Airways	Airways Corporation of New Zealand
ATIS	automatic terminal information service
ATS	air traffic services
CAA	New Zealand Civil Aviation Authority
CAR	Civil Aviation Rule
ICAO	International Civil Aviation Organization
kg	kilogram(s)
m	metre(s)
MOWP	method of work plan
TOGA	take-off go-around
UTC	coordinated universal time

Glossary

N_1	speed of the low-pressure engine compressor (fan) stage
NOTAM	a notice to airmen containing essential flight information for those people concerned with flight operations
QNH	an atmospheric pressure setting
V_1	the maximum speed during take-off at which the pilot must take the first action to stop the aircraft within the accelerate-stop distance; and the minimum speed during take-off following the failure of the critical engine at which point the pilot can continue the take-off
V_R	the airspeed during take-off where the pilot begins to rotate the aircraft to the lift-off attitude and climb away

Data Summary

Aircraft registration:	A6-EBC
Type and serial number:	Boeing 777-300ER
Number and type of engines:	2 General Electric GE90-115B turbofans
Year of manufacture:	2005
Operator:	Emirates Airline
Date and time:	22 March 2007, 1615[1]
Location:	Auckland International Airport latitude: 37° 00.48´ south longitude: 174° 47.5´ east
Type of flight:	scheduled air transport
Persons on board:	crew: 18 passengers: 357
Injuries:	crew: nil passengers: nil
Nature of damage:	nil
Pilot in command's licence:	Airline Transport Pilot Licence
Pilot in command's age:	40
Pilot in command's total flying experience:	approximately 14 000 hours
Investigator-in-charge:	K A Mathews

[1] Times in this report are New Zealand standard time (UTC + 12 hours) and are expressed in the 24-hour mode.

1 Factual Information

1.1 History of the flight

1.1.1 On Thursday 22 March 2007 at 1554, the crew of A6-EBC, an Emirates Boeing 777-300ER, call sign Emirates 419, were carrying out their final preparations for a scheduled flight from Auckland International Airport to Sydney. The aircraft was parked at the international terminal, and on board for the flight were 357 passengers, 16 cabin crew and 2 pilots.

1.1.2 The first officer on Emirates 419, whose first language was English, contacted the air traffic delivery controller and received a route clearance for the aircraft. The pilots said that they had listened to the current automatic terminal information service (ATIS) broadcast, Romeo, and had a digital printout of the previous ATIS, Quebec, from an aircraft on-board system. After checking that this information did not differ significantly from Romeo, they used the ATIS Quebec weather information for the aircraft operational performance tool software program of the electronic flight bag[2] to calculate the take-off performance.

1.1.3 Included near the beginning of the verbal ATIS broadcast were the words, "active runway mode normal operations…" and advice that the active runway was 05 Right (05R). Near the middle of the ATIS were the words, "reduced runway length eastern end refer NOTAM B/1203". The first officer did not acknowledge that the pilots had received ATIS Romeo, nor did the controller ask whether the pilots had done so, as was normal practice. The first officer did not request the western extension[3] to runway 05R for the take-off.

1.1.4 The first officer contacted the aerodrome apron control[4] and requested push-back and start-up clearance. The apron controller issued the appropriate instructions and, because it was not a requirement of apron control, did not confirm whether the pilots had received other relevant information such as ATIS or knew that the runway length had been reduced.

1.1.5 About 2 hours earlier, the pilots had flown the aircraft from Sydney to Auckland as Emirates 418. The captain advised that their normal procedure was to use digital ATIS printouts if they were available, and where possible to listen to the first part of the voice ATIS broadcast for any updates before requesting a printout. They had the then current ATIS Papa, which advised that runway 05R was in use, and near the middle of the ATIS were the words, "reduced runway length eastern end refer NOTAM B/1203".

1.1.6 The pilots had NOTAM B/1203 (Appendix A), and at Sydney during their pre-departure stage they had planned for a reduced length landing at Auckland. In the meantime the full length of the runway had been made available temporarily to a departing long-haul flight to Singapore[5]. For traffic sequencing, the aerodrome controller held the Singapore-bound aircraft at the runway holding point and cleared the Emirates pilots to land their aircraft first. Because the full length of the runway was temporarily available, the aerodrome controller advised the pilots that the full length of the runway was available for their landing. The pilots landed the Boeing 777 with an automatic brake setting appropriate for a long landing rollout and taxied normally to the gate.

1.1.7 At 1609 the first officer contacted the aerodrome ground controller for taxi instructions for Emirates 419's return flight to Sydney. The controller gave the pilots instructions to taxi for runway 05R and to hold at taxiway A10 (see Figure 1). The first officer read back the

[2] An electronic information management device that helps pilots to perform flight management tasks more easily and efficiently with less paper.
[3] With prior notice to the aerodrome delivery controller, aircraft departing from runway 05R could backtrack on the runway from taxiway A10 and use a 393-metre runway extension.
[4] For the airport operator's control of aircraft movements on the international apron. This was not an air traffic services function.
[5] With at least 45 minutes' prior notice, the full runway length could temporarily be made available to approved long-haul departing aircraft.

instructions correctly and the controller responded, “That’s correct, and confirm you will depart from alpha ten [A10] reduced length?”. The first officer replied, “That’s correct.”

1.1.8 At 1613 the first officer advised the aerodrome controller that Emirates 419 was approaching taxiway A10 and was ready for take-off. The controller instructed the pilots to hold the aircraft at A10. A short time later the controller cleared Emirates 419 for line-up on runway 05R, and at 1615 cleared the aircraft for take-off.

1.1.9 The first officer was the pilot flying and the pilots set the thrust that they had determined was necessary for an assumed temperature-reduced thrust departure using the full length of the runway from intersection A10. The aircraft began its take-off and accelerated normally.

1.1.10 The pilots said that when the aircraft was nearly halfway down the runway they saw vehicles ahead in the distance on the eastern end of the runway, so the captain immediately applied take-off go-around (TOGA) thrust.

1.1.11 According to data from the aircraft quick access recorder, and separate runway position information, TOGA was applied when the aircraft had travelled approximately 1327 metres (m); i.e. about 41% of the length of the full runway or 61% of the length of the reduced runway. The recorded airspeed at the time was 149 knots. Within 4 seconds the aircraft accelerated to the pilots’ predetermined take-off decision speed (V_1) of 161 knots. The first officer later said that immediately after reaching V_1 the captain called “rotate” when the rotation speed (V_R) of 163 knots was achieved. The aircraft became airborne approximately 190 m before the end of the reduced runway and climbed away steeply.

1.1.12 The vehicles on the closed eastern portion of the runway were an airport safety officer’s utility vehicle and a 3 m high rubber-removal truck, about 460 m beyond the end of the reduced length of the runway. The vehicles were authorised to be on the closed portion of the runway for programmed work.

1.1.13 The airport safety officer had put his vehicle between the truck and the aircraft and watched Emirates 419 accelerate towards him. When the aircraft was closer than usual to the end of the available runway and still not airborne compared with other similar-sized aircraft, he drove his vehicle to the side of the runway as a precaution. The work crew on the runway also moved to the side but the truck remained on the runway.

1.1.14 The aerodrome controller said that he became concerned when the aircraft was still on the runway past the usual take-off point, and when it got close to the truck after take-off. A report from the safety officer suggested the aircraft might have passed some 20 m above the truck.

1.1.15 Calculations using quick access recorder data and vehicle position information showed that the aircraft wheels were about 103 feet (31 m) above the runway as the aircraft flew over the vehicles, or about 93 feet (28 m) clear of the truck. The aircraft climb rate was 2040 feet (622 m) per minute and increased to 5608 feet (1710 m) per minute 14 seconds later, before it reduced.

1.1.16 After contacting Auckland Control the pilots reviewed the ATIS and NOTAM information and saw the text in the ATIS about the reduced runway length, along with information about aircraft go-around ability after entering the aerodrome circuit.

1.1.17 The first officer asked the controller about the work vehicles and their distance from the end of the runway. The controller advised the NOTAM take-off distance available from the A10 intersection. The pilots then notified the operator of the incident. The aircraft continued to Sydney where the pilots landed it safely about 3 hours later. The operator stood the pilots down from duty and returned them to its headquarters in Dubai.

1.1.18 No one was injured in the incident and no damage occurred.

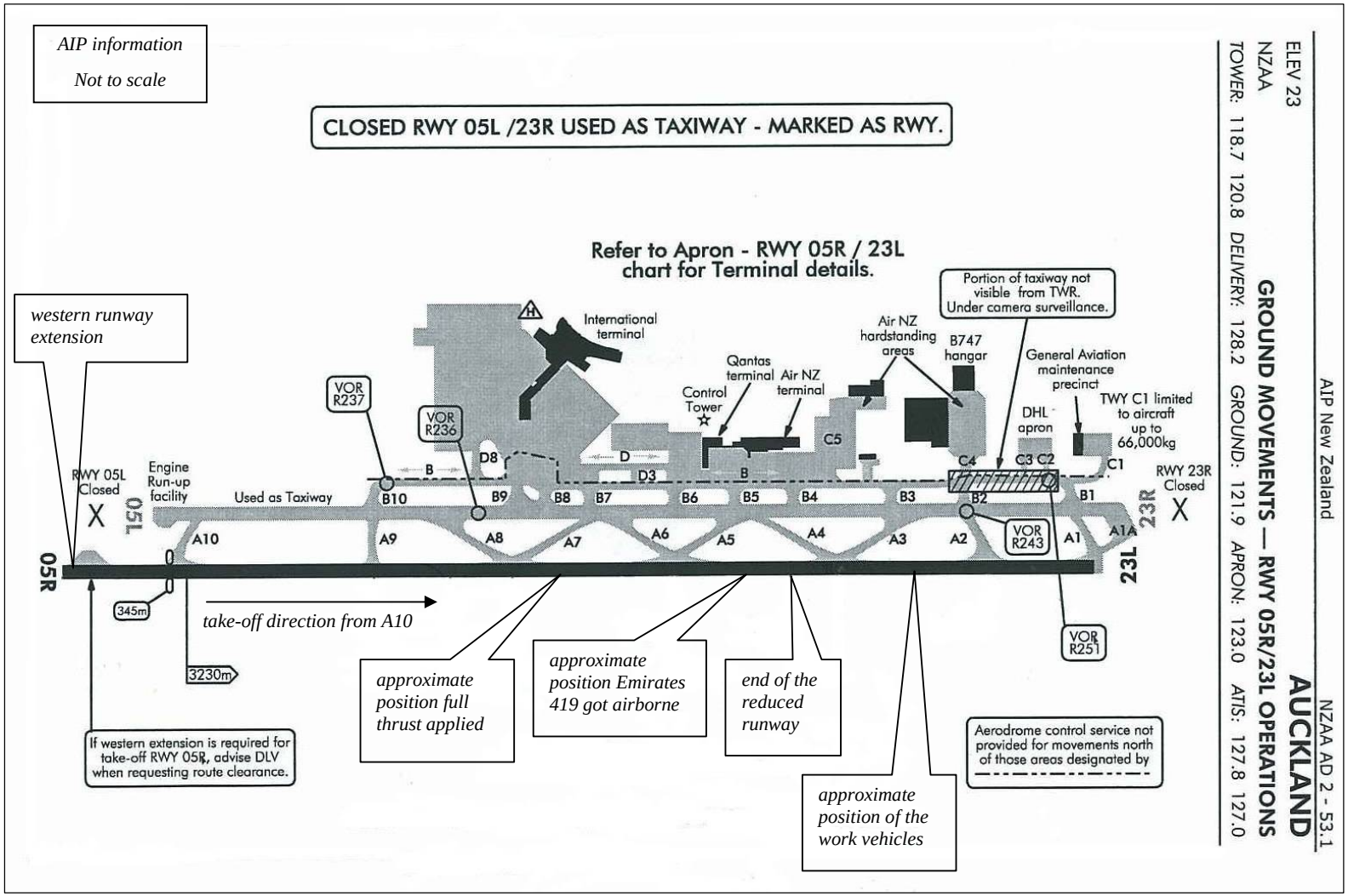


Figure 1
Auckland International Airport

1.2 Pilot information

1.2.1 The captain was aged 40 years and used English as his first language. He held an Airline Transport Pilot Licence valid until 10 August 2007. His associated medical certificate was valid until 30 June 2007. He had flown approximately 14 000 hours.

1.2.2 The captain had been a Boeing 777 pilot with the operator for about 3.5 years. He had been a captain on the Boeing 777 for the previous 18 months. He had previous captain and first officer experience flying Boeing 737, 757 and 767 aircraft. His last pilot proficiency check had been completed on 4 March 2007. A review of the results of the previous 2 proficiency checks found there were no significant concerns, and included a comment on the most recent check that it had been completed to a very good standard.

1.2.3 At the time of the incident on 22 March 2007, the captain had been on duty for approximately 6 hours and had flown about 3 hours. On 21 March he had been off duty on a layover in Sydney. On 20 March he had been on duty for approximately 11.5 hours and had flown 9 hours. On 19 March he had been off duty on a layover in Bangkok.

1.2.4 The captain said he had flown to and out of Auckland more than 30 times in the previous 3.5 years, and that he had flown all modes of approach and departure using the different-coloured pages in the airport approach and landing publications.

1.2.5 The captain advised that the turnaround at Auckland was unrushed, and he and the first officer had gone through the briefing package for the return flight and prepared the cockpit in accordance with standard procedures.

1.2.6 The captain said he and the first officer had received the ATIS broadcast Romeo for departure, which he said was presented in the same way as when they had arrived from Sydney. He said they had the previous printed copy of the digital ATIS but did not "pick" the line that referred to reduced runway length. After reviewing the ATIS they used the operational performance tool software program of the electronic flight bag to calculate the aircraft take-off performance and thrust required for the full length of runway 05R from the A10 intersection. He said they did not see any vehicles on the end of the runway until after the aircraft had begun its take-off roll.

1.2.7 The captain said that after seeing the vehicles on the runway and applying TOGA, the first officer rotated the aircraft at the proper speed and that clearing the vehicles was not a problem.

1.2.8 The first officer was aged 48 years. He held an Airline Transport Pilot Licence valid until 23 June 2010. His associated medical certificate was valid until 1 September 2007. He had flown 12 664 hours.

1.2.9 The first officer had been with the operator since May 2006, flying the Boeing 777. His other flying experience included captaincy and first officer experience on Boeing 737, McDonnell Douglas MD 82 and MD 83 aircraft. His last pilot proficiency check had been completed on 19 January 2007. A review of the results of the previous 2 proficiency checks found they were unremarkable.

1.2.10 At the time of the incident on 22 March 2007, the first officer had been on duty for approximately 6 hours and had flown about 3 hours. On 21 March he had been off duty on a layover in Sydney. On 20 March he had been on duty for approximately 11.5 hours and had flown 9 hours. On 19 March he had been off duty on a layover in Bangkok.

1.2.11 The first officer had previously flown to and out of Auckland on 12 August 2006, 9 February 2007 and 7 March 2007.

1.2.12 The first officer said that during the turnaround at Auckland he had had some food before returning to the flight deck and preparing the aircraft for the flight to Sydney. He said that he and the captain had checked the current verbal ATIS broadcast.

1.2.13 The first officer said that it was not until after the aircraft had begun to accelerate down the runway during departure that his and the captain's attention had been drawn to the far end of the runway. At that point they realised there was something on the runway but still some distance away, so the captain applied TOGA thrust. He said they made a normal take-off and "handily" cleared the vehicles.

1.2.14 The pilots advised that because the full runway length had been available when they landed, they shared a belief that it would also be available for their departure. They said that the ATIS words "normal operations" near the start of the verbal broadcast Romeo helped to reinforce that belief and they said they subsequently overlooked some information near the middle of the ATIS. The captain said that the same words in the earlier verbal ATIS to which the pilots had listened before they landed at Auckland caused them to think that NOTAM B/1203 was not active, and that their belief was confirmed when the aerodrome controller told them the full length of the runway was available for landing. They commented that the non-applicable information about the ability of a certain category of aircraft to enter the circuit in the event of a go-around had cluttered the information in the ATIS.

1.2.15 The aircraft operator advised that crews often requested the digital ATIS printout some time before departure in order to begin calculating the take-off performance data. As long as the ATIS information immediately prior to departure did not differ significantly from the earlier ATIS, no change to the data was required. The pilots had a digital printout of the previous ATIS Quebec, and the captain said he had used its information for the calculation of the take-off performance figures once they had the aircraft's actual zero fuel weight, which was obtained about 30 minutes before departure. After listening to the first part of ATIS Romeo and hearing the words "normal operations" in the runway mode information, and confirming that the information for calculating take-off performance had not altered, they had not requested a digital printout. The pilots commented that because the digital ATIS printout from the aircraft ran lines together, it made text interpretation difficult.

1.2.16 The pilots said that when the ground controller asked, "… and confirm you will depart from alpha ten reduced length?" they thought she was referring to the western extension to the runway that they had elected not to use.

1.3 Aircraft information

1.3.1 The aircraft was a Boeing 777-300ER; it was powered by 2 General Electric GE90-115B turbofan engines each capable of producing 115 000 pounds (52 178 kilograms [kg]) of thrust. The aircraft was constructed in the United States in April 2005.

1.3.2 On 22 March 2007, there were no defects that needed the aircraft minimum equipment list discretions to be applied in order for the aircraft to fly. The aircraft was subject to daily inspections, routine service checks and comprehensive scheduled maintenance checks. The last comprehensive check had been an "A" check on 4 February 2007 at 9537 hours, and its next such check was planned for 29 April 2007. Service checks had been last carried out on 11 March and 22 February.

1.3.3 The maximum allowable take-off weight of the aircraft was 340 194 kg. At Auckland its take-off weight was 260 848 kg, including 32 800 kg of fuel.

1.3.4 Aircraft with a large gross weight and hence thrust availability, like the Boeing 777, can use large assumed-temperature reduced-thrust settings for take-off when the additional thrust is not required. Aircraft operators routinely employ this technique to extend the life of aircraft engines, reduce noise and bring about substantial financial savings.

1.3.5 The aircraft operator advised that it only used the assumed temperature method for its reduced-thrust take-offs, and that additional thrust up to the maximum rated thrust could be selected if needed during take-off.

1.3.6 Under the prevailing weather conditions, a reduced-thrust take-off using the full length of runway 05R from the taxiway A10 intersection with optimum flap 5 set, the V_1 was 161 knots and the V_R 163 knots. The N_1 setting for the reduced thrust take-off was 86.4%.

1.3.7 At the same take-off weight using the reduced-length runway from the taxiway A10 intersection with optimum flap 20 set, the V_1 was 143 knots and the V_R 144 knots. The N_1 setting would have been 94.6%. TOGA gave 104.8% N_1.

1.4 Meteorological information

1.4.1 At the time of the incident: the runway was dry; visibility was 50 kilometres; there were a few clouds at 1800 feet (550 m) and some scattered cloud at 2500 feet (762 m); the temperature was 22° Celsius and the dew point 15° Celsius; the surface wind was variable at 5 knots (9 kilometres per hour); and the QNH was 1022 hectopascals.

1.5 Communication and air traffic services

1.5.1 Airways Corporation of New Zealand Limited (Airways) was the air traffic services (ATS) provider at Auckland International Airport. The New Zealand Civil Aviation Authority (CAA) approved Airways under Civil Aviation Rule (CAR) Parts 172, 174 and 175 to provide air traffic, aviation meteorological and aeronautical information services.

1.5.2 The CAA provided guidance material for ATS providers in its Advisory Circulars (ACs) 171, 172, 174 and 175. Airways provided a Manual of Air Traffic Services as part of its exposition. The Manual contained standard operating procedures and other information for controllers. Each ATS unit also had its own local operating orders and procedures.

1.5.3 The Auckland ATS unit was responsible for the provision of ATS, comprising airport and approach control services, to aircraft within the Auckland control zone and that portion of airspace surrounding Auckland and Whenuapai aerodromes.

1.5.4 The CAA carried out programmed annual audits of Airways. The report of the last audit of the Auckland ATS unit, completed in August 2006, was unremarkable and contained no finding notices.

1.5.5 Normal very-high-frequency transceiver communication systems were used.

1.5.6 A review of the recorded communications between ATS and the pilots, including ATIS, revealed clear radio communications and no evidence the transmissions were misunderstood or needed any clarification.

1.5.7 Airways produced the ATIS, which was a continuous broadcast of recorded non-control information. The purposes of the ATIS were to improve controller effectiveness and to relieve frequency congestion at high-activity airports by automating the repetitive transmission of essential but routine information. The broadcasts included information such as the active runway, any restrictions and NOTAM information. Pilots usually received an ATIS broadcast before first contacting the approach controller or the local control tower, at a time when cockpit duties were the least pressing and they could read an ATIS several times, or listen to as many repeat broadcasts as desired.

1.5.8 Controllers updated ATIS broadcasts when there was a significant change in the information, such as a change in the active runway, operational status or weather conditions. The ATIS was given a letter designation from the phonetic alphabet, such as Romeo for R. The letter started at Alpha, A, at the beginning of each day and progressed through the alphabet for subsequent changes.

1.5.9 ATIS Romeo was current at the time of the incident and the verbal broadcast read as follows:

AUCKLAND INFORMATION ROMEO ISSUED AT 0306 [1506 local]
ACTIVE RUNWAY MODE NORMAL OPERATIONS REFER FLIGHT GUIDE OR JEPPESEN WHITE PAGES
EXPECT ILS/DME APPROACH RUNWAY 05 RIGHT
RUNWAY CONDITIONS DRY
AIRCRAFT CATEGORY CHARLIE OR BELOW ADVISE APPROACH CONTROL ON FIRST CONTACT IF UNABLE TO ENTER THE AERODROME CIRCUIT IN THE EVENT OF A GO-AROUND
REDUCED RUNWAY LENGTH EASTERN END REFER NOTAM BRAVO 1203
TAXIWAY ALPHA 6 TAXIWAY ALPHA 7 TAXIWAY BRAVO 6 TAXIWAY BRAVO 7 CLOSED
SURFACE WIND VARIABLE 5 KNOTS
VISIBILITY 5O KILOMETRES
CLOUD FEW 1800 FEET SCATTERED 2500 FEET
TEMPERATURE 22
DEWPOINT 15
QNH 1022
CONDITIONS SUITABLE FOR A VISUAL APPROACH
REPORTED 2000 FOOT WIND 045 DEGREES 10 KNOTS
ON FIRST CONTACT WITH AUCKLAND TOWER OR CONTROL NOTIFY RECEIPT OF ROMEO

1.5.10 Airways advised that the term "normal operations" was used in the ATIS to conform to the published Auckland International Airport arrival and departure information in the New Zealand Aeronautical Information Publication (AIP) Flight Guide. There were 3 modes of operation for the airport, normal, special and temporary, distinguished by different-coloured pages. The Publication said that the active runway mode and associated Flight Guide page colour would be broadcast on the Auckland ATIS.

1.5.11 The Flight Guide had white and yellow pages for runway 05R and 23 Left (23L) operations. The white pages were used for normal landing operations. The yellow pages were used for special landing operations when the landing thresholds were displaced. If the main runway was unavailable, an emergency parallel runway (05 Left and 23 Right) was operational, in which case temporary green pages were to be used.

1.5.12 In referring to special operations in the arrival and departure section, the AIP advised:

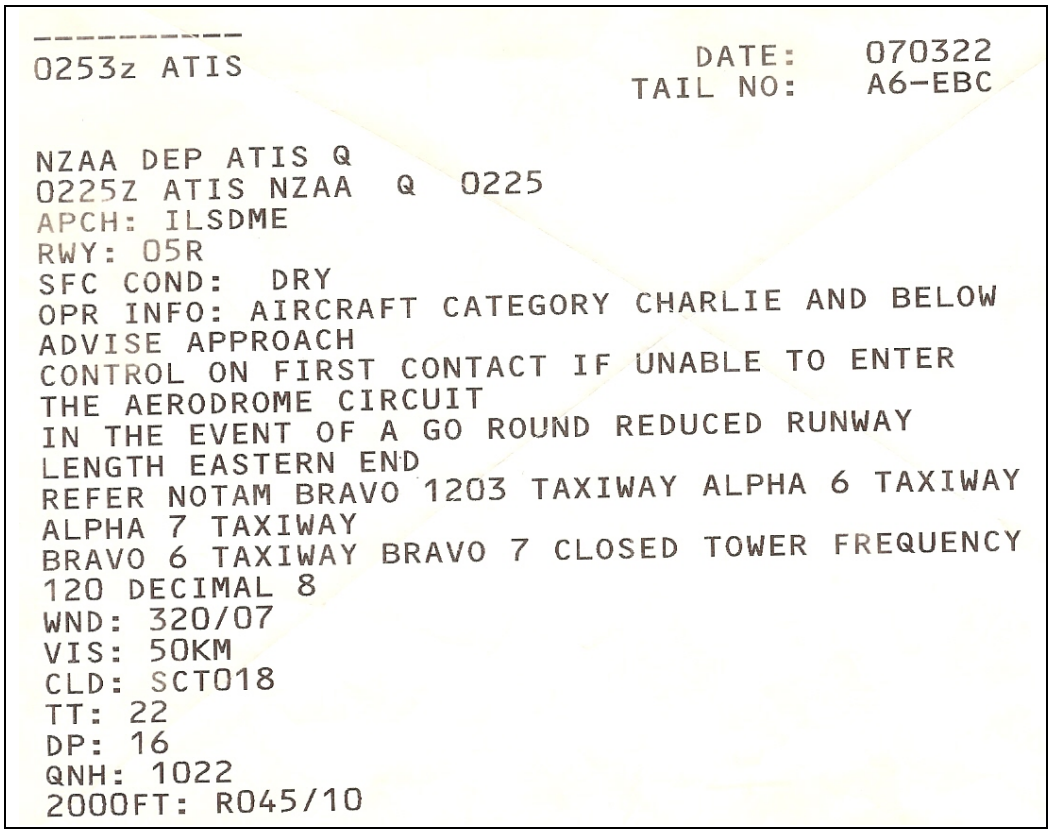
> RWY 05R/23L Special Operations (displaced thresholds – reduced lengths)
> – refer to YELLOW pages.

1.5.13 Airways advised that when runway 23L was the active runway during the period of NOTAM B/1203, the special operations yellow pages applied for landing, because the instrument approaches were altered to allow for the displaced threshold. When runway 05R was the active runway, the white pages applied for landing because the landing threshold and hence the instrument approaches were unaltered, therefore operations were "normal".

1.5.14 The synthesised ATIS Romeo voice took approximately one minute to broadcast and a similar time to read.

1.5.15 The previous ATIS broadcast, Quebec, was issued at 1425 and was worded similarly to Romeo with the same text about reduced runway length. The difference was the surface wind, broadcast as 320 degrees 7 knots.

1.5.16 Airways also transmitted each ATIS via an aeronautical fixed telecommunications network for distribution to aircraft for printout. A copy of the printout of ATIS Quebec that the pilots received from the aircraft system was as follows:



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0253z ATIS                          DATE:    070322
                                    TAIL NO: A6-EBC

NZAA DEP ATIS Q
0225Z ATIS NZAA  Q  0225
APCH: ILSDME
RWY: 05R
SFC COND:  DRY
OPR INFO: AIRCRAFT CATEGORY CHARLIE AND BELOW
ADVISE APPROACH
CONTROL ON FIRST CONTACT IF UNABLE TO ENTER
THE AERODROME CIRCUIT
IN THE EVENT OF A GO ROUND REDUCED RUNWAY
LENGTH EASTERN END
REFER NOTAM BRAVO 1203 TAXIWAY ALPHA 6 TAXIWAY
ALPHA 7 TAXIWAY
BRAVO 6 TAXIWAY BRAVO 7 CLOSED TOWER FREQUENCY
120 DECIMAL 8
WND: 320/07
VIS: 50KM
CLD: SCT018
TT: 22
DP: 16
QNH: 1022
2000FT: R045/10
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1.5.17 When preparing an ATIS, controllers input coded groups into an ATIS input form. The coded groups were expanded into plain text for broadcast on the ATIS, with appropriate pauses. The ATIS message distributed via the aeronautical fixed telecommunications network was a straight text expansion of the coded groups from the ATIS input form. Airways advised that the runway mode information in the ATIS broadcasts was unique to Auckland, so it was not included for distribution because it was not an International Civil Aviation Organization (ICAO) standard field and overseas databases may not have recognised the data or been able to store it.

1.5.18 The Airways Manual of Air Traffic Services contained a section on ATIS and listed its format and update criteria. The section followed the ICAO standards, but did not give any guidance about the length of an ATIS broadcast. ICAO publication Annex 11, International Standards and Recommended Practices, Air Traffic Services, recommended that ATIS broadcast messages should, "… whenever practicable, not exceed 30 seconds, care being taken that the readability of the ATIS message is not impaired by the speed of the transmission...".

1.5.19 Although there was ICAO provision to provide a departure- or approach-specific ATIS, Airways did not separate the ATISs. Some countries with busy airports did provide them and pilots could request a printout of a specific ATIS. When the pilots requested the departure ATIS printout for Auckland they received the full ATIS Quebec, less the runway mode information.

1.5.20 Airways advised that some aircraft operators asked for additional information to be put in the ATIS broadcasts, which if applied could make their transmission lengths problematic.

1.5.21 Controllers were required to advise pilots of any temporary or significant changes that occurred before an ATIS broadcast had been updated. There was no requirement for controllers to repeat information contained within a current ATIS.

1.5.22 The ground controller said in this case, when issuing the pilots with their taxi instructions, she took the additional step of endeavouring to ensure they were aware of the reduced length of runway ahead of them by using the words, "… and confirm you will depart from alpha ten reduced length?".

1.5.23 The AIP required pilots to acknowledge receipt of the ATIS broadcast to ATS, normally when requesting start clearance. Because start at Auckland was obtained from apron control (see 1.6.22), acknowledgement was done, as advised at the end of the ATIS, on first contact with ATS, typically with the delivery controller.

1.5.24 The Manual of Air Traffic Services stated that pilots who did not comply with the AIP read-back requirements would be requested to read back the appropriate information. The delivery controller said that if pilots did not acknowledge receipt of the current ATIS, it was normal practice for the controller to challenge them, and to write confirmation of the receipt on the aircraft flight progress strip. The controller could not recall why she did not challenge the pilots in this instance, but said her normal practice was to question pilots if they did not acknowledge receipt of the ATIS.

1.6 Airport and airport operator information

1.6.1 Auckland International Airport was the largest airport in New Zealand and normally remained operational 24 hours per day. The airport was situated near sea level and had one main concrete runway, 05R and 23L. The main airport taxiway was also a standby parallel runway, for emergency operations only.

1.6.2 Auckland International Airport Limited was the airport operator and was responsible for the airport operations. The CAA approved the airport operator to provide aerodrome services and issued it with an aerodrome operating certificate under CAR Part 139: Aerodromes – Certification Operation and Use.

1.6.3 The CAA provided guidance material for airport operators in its AC 139 series. AC139-05 provided guidance on operational safety during works on aerodromes.

1.6.4 The CAA carried out programmed annual audits of the airport operator. A review of the last audit report that had been completed in August 2006 found it was unremarkable and contained no finding notices.

1.6.5 Included in the airport operator's exposition to the CAA was how it would control work and provide safety during aerodrome works. The airport operator was required to establish a method of work plan (MOWP) before starting any major construction work on the aerodrome, unless the runway was closed. When preparing the MOWP the airport operator was to consult with the major aerodrome users, the aerodrome ATS unit and any works contractors. Among other things, the MOWP was to include any restrictions to aircraft operations and the issue of a NOTAM for the information of pilots.

1.6.6 The airport operator had prepared an MOWP for the works in progress at the time of the incident and had issued version 3 on 15 March 2007. The start date was listed as 19 March 2007 and the completion date as 8 April 2007. The MOWP was sent to the concerned parties and the aircraft operator confirmed that it had received a copy.

1.6.7 When preparing the MOWP and reducing the available runway length, the airport operator had to ensure that an obstacle clearance safety fan provided obstacle clearance to all aircraft during take-off and landing, including those aircraft with reduced performance following an engine failure (see Figure 2). The ICAO standards called for the fan to start no closer than 60m from the end of the available runway. In this case the airport operator's operations manager had started the fan 150m from the end of the reduced length of the runway, which gave additional safety.

1.6.8 For take-off, to provide the obstacle clearance fan, no obstacle could be higher than 1 m at the first 62.5 m horizontally from the start of the fan. For each additional 62.5 m horizontally, obstacles could progressively be a further 1 m in height, e.g. at 125 m from the start of the fan no obstacle could be higher than 2 m. A 3 m obstacle such as the rubber-removal truck could be no closer than 187.5 m to the start of the fan, or 247.5 m to the end of the available runway. The obstacle clearance fan widened progressively as it extended out.

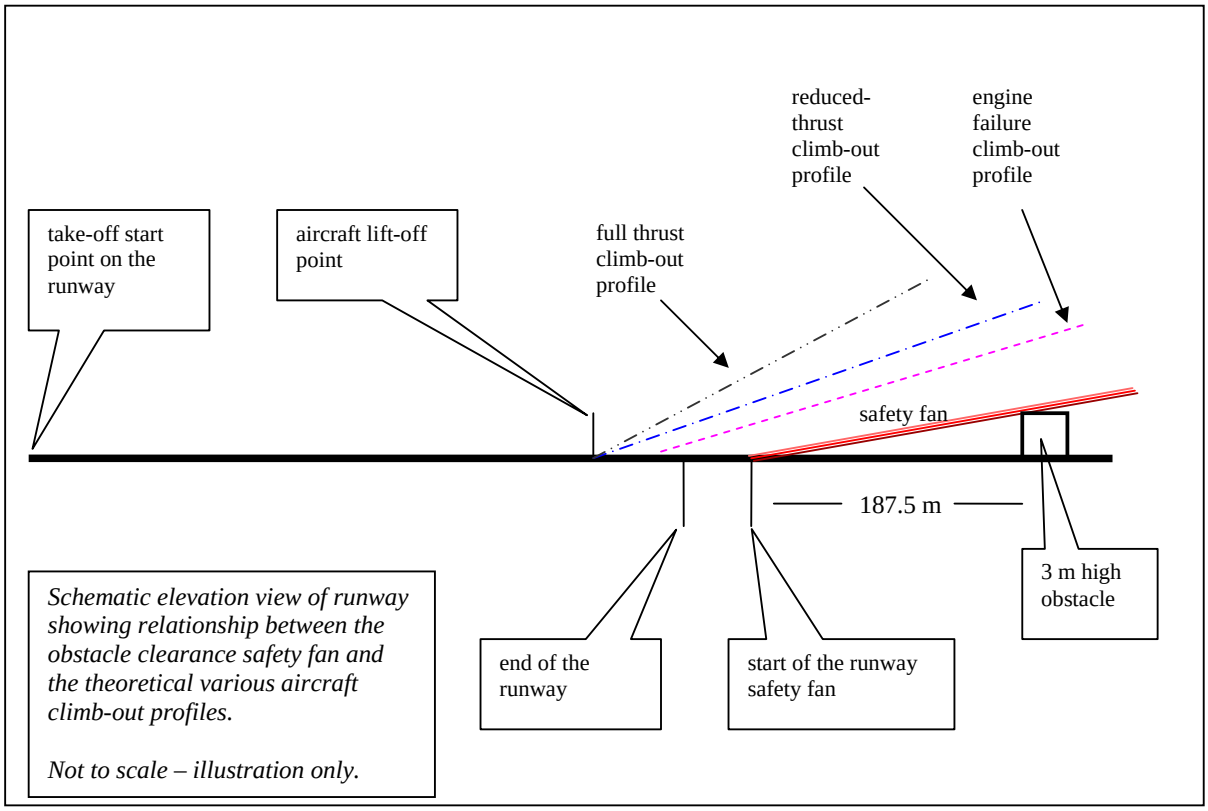

Figure 2
Illustration of aircraft runway performance

1.6.9 The airport operator had prepared NOTAM B/1203 about the works and had included it for information within the MOWP.

1.6.10 NOTAM B/1203 was issued effective from 0700 on 18 March 2007 until 1700 on 8 April 2007, and was valid daily from 0700 to 1700. Near the start of the NOTAM was the advice that for runways 05R and 23L operations works were in progress east of the runway 23L threshold, and that reduced runway length applied for take-off and landing. The NOTAM said that activation of the restrictions would be by ATIS or ATS. The restrictions would not be activated when the runway was wet. Within the body of the NOTAM were the applicable take-off and landing distances for each runway.

1.6.11 Runway 05R at Auckland was in use at the time of the incident. The runway included a western extension of 393 m for take-off only. The full take-off distance available using the western extension was 3836 m and the accelerate-stop distance, or take-off run available, was 3623 m. The take-off run available from taxiway A10 was 3230 m.

1.6.12 With NOTAM B/1203 in effect, the runway ended just before taxiway A4, but taxiways A4 and A3 remained open for aircraft. Taxiways A1 and A2 were closed. The take-off distance available from taxiway A10 was 2320 m and the take-off run available was 2170 m. The take-off distance available using the western extension was 2670 m, and the take-off run available was 2520 m.

1.6.13 Permanent distance marker boards were situated opposite each taxiway, but the airport operator had blanked off the boards for the entire period the NOTAM could be effective, including the time of the incident.

1.6.14 There was no physical barrier across the end of the reduced length of runway. Wing bars on each side depicted the end of the runway.

1.6.15 The airport operator usually held monthly aerodrome user meetings to discuss various issues about the airport. Those regularly attending the meetings included the CAA, the aerodrome ATS provider and Air New Zealand.

1.6.16 The airport operator's operations manager had recently visited a number of single-runway international airports in England and Europe, and discussed runway maintenance with the airport operators. Some operators applied curfews and carried out as much runway maintenance as possible during those periods to minimise disruptions and to reduce the risk to aircraft. In each case there was some alternative airport readily available within a reasonable distance to operators who needed to operate during the curfew periods.

1.6.17 The Auckland airport operator considered that a curfew at the airport would not be practicable and that it was important to New Zealand that it remained open at all times. A number of international long-haul operators depended upon the airport always being available for their operations to New Zealand to be viable. New Zealand had few alternate airports for large long-haul aircraft in comparison with most other states.

1.6.18 The airport operator scheduled as much runway maintenance work as possible during the night when the frequency of flights was low. However, some maintenance had to be done during daylight hours, such as the work on the eastern end of runway 05R at the time of the incident. In addition to the work at the end of the runway, the airport operator had used the opportunity to remove rubber from the runway, which was an ongoing necessity.

1.6.19 Christchurch International Airport had one main runway that could accommodate large long-haul aircraft. A shorter cross-runway was unsuitable for those aircraft. The airport was the only normal alternate for such aircraft flying to Auckland, and likewise Auckland was the only alternate airport for Christchurch. Air New Zealand had an arrangement with the New Zealand Defence Force to use Ohakea Air Force Base as an alternate.

1.6.20 The Christchurch airport operator scheduled much of its planned main runway maintenance during the night, when few large aircraft used the airport. Runway resurfacing work was scheduled during the summer months. The cross-runway was used where possible for smaller aircraft when there was work being done on the main runway. If necessary the airport operator would carry out work during daylight hours. If the runway length was reduced, operators would be notified and a NOTAM issued.

1.6.21 Christchurch airport normally remained operational 24 hours per day and the operator did not impose a curfew for similar reasons to those of the Auckland airport operator.

1.6.22 The Auckland airport operator provided an apron tower for control of international aircraft movements on the apron, including push-back and start-up. The apron tower did not provide an ATS function. The airport operator said pilots usually confirmed that they had received the ATIS when contacting the apron tower for push-back and start-up clearance. There was no obligation on the apron tower personnel to confirm that pilots had such information or were aware of any runway restrictions. This was done when pilots first contacted ATS.

1.7 Flight recorders

1.7.1 The aircraft was equipped with a digital flight data recorder and a quick access recorder, along with a solid state cockpit voice recorder covering the last 2 hours of flight.

1.7.2 The quick access recorder data, which provided data similar to that of the flight data recorder, relevant to the incident was recovered and analysed. The cockpit voice recorder data was not available for the incident because of the intervening flight time to Sydney of over 2 hours.

1.7.3 Data from the quick access recorder was used to determine a number of aircraft parameters, including its acceleration rate before and after the application of TOGA. The aircraft had accelerated to 149 knots airspeed at the time thrust was increased and it had to accelerate another 14 knots only to reach its predetermined rotation speed, which took approximately 4 seconds. A review of the before-TOGA acceleration rate indicated that had thrust not been increased, the aircraft should have taken no longer than 2 extra seconds to reach its rotation speed. Using a mean groundspeed of 155 knots, the aircraft would have travelled approximately another 159m along the runway in those 2 extra seconds.

1.8 Organisational and management information

1.8.1 The Director of Civil Aviation had issued the aircraft operator a foreign air operator certificate under CAR Part 129, Foreign Air Transport Operator – Certification, to conduct flights into and out of New Zealand. The certificate had been reissued on 28 July 2005 and was valid until 27 July 2007.

1.8.2 The aircraft operator conducted a number of flights each week to and from Auckland and Christchurch international airports using Boeing 777 and Airbus A340 aircraft.

1.8.3 The CAA issued the air operator certificate on the basis that the operator was already certified under another competent aviation authority that met ICAO standards. The CAA conducted yearly ramp checks on the operator, and the last check had been on 6 December 2006 on an Airbus A340 that had arrived at Christchurch from Dubai via Sydney. The check included an inspection of crew records and aircraft and flight documentation and an interior and exterior inspection of the aircraft. No finding notices were raised and the report said the airline inspector was extremely confident with the standard of operation he had observed.

1.8.4 The CAA did not express any concerns about the aircraft operator, and its database did not reveal any previous serious incidents or accidents in New Zealand involving the operator. ATS advised that from its experience it did not have any concerns about the operator.

1.8.5 The aircraft operator's flight operations manual required pilots as part of their flight preparation and planning to obtain, in oral or written form, necessary information such as ATIS broadcasts, and for each pilot to scrutinise and apply that information. Information provided by the operator showed that it had adopted and was further developing the concept of threat and error management, which helped pilots to identify and manage operational threats. Threats were those things that could increase operational complexity, and which if not handled properly could decrease safety margins. Reduced runway length was an example. Underpinning threat and error management was a requirement for pilots to adhere to published procedures to help identify threats.

1.8.6 The aircraft operator said it stood the pilots down from flight operations after the incident to ensure their availability to assist the investigation and while waiting for the initial occurrence investigation findings. The captain returned to duty on 16 April 2007 and the first officer on 20 April 2007, after taking some leave.

1.8.7 The aircraft operator advised that during the stand-down period its safety department discussed the event with the pilots, with particular emphasis being placed on responsibilities, threat awareness and maintaining a professional mistrust. The operator said its fleet management had also counselled the pilots regarding their responsibilities according to the flight operations manual about pre-flight preparation and departure briefing, and the necessity of maintaining a high level of awareness while operating in an environment of known ongoing construction. The operator said the pilots gained a better understanding of the required extra vigilance and their expanded responsibilities.

2 Analysis

The event

2.1 The flight was a routine scheduled service between Auckland and Sydney. The pilots were qualified, experienced international pilots, who were familiar with Auckland International Airport.

2.2 There was no evidence that the pilots were under any undue pressure or suffering from fatigue or stress-related issues. There were no transceiver issues, and the radio communications were clear and coherent. The weather was not considered to have been a factor because the flight was during the afternoon in good visibility.

2.3 Despite the above and the fact the correct information about the reduced runway length was accessible by normal means and the pilots had that information, they did not fully scrutinise the ATIS information and made an error in that they believed the full runway length was available for their take-off. Consequently, they began their take-off with a larger reduced-thrust setting and different optimum flap setting on the aircraft than were required for the available runway length, which was about 1060 m less than the full length of the runway.

2.4 Because of the length of the runway, the pilots did not see the vehicles on the end of the runway until the take-off was well advanced. Once they saw the vehicles, they immediately recognised that something was amiss, and the captain's quick action in applying full thrust ensured the aircraft became airborne about 190 m before the end of the available runway, and cleared the work vehicles by about 28 m.

2.5 At no stage did the aircraft fly below the obstacle clearance fan at the end of the runway and endanger the work crew. However, the airport safety officer's concern and his actions are understandable because there was uncertainty over whether the aircraft would be airborne before the end of the available runway. The controller's worry that the aircraft had not rotated at the expected point on the available runway also demonstrated that the take-off appeared to be irregular.

2.6 Large reduced-thrust take-offs could appear unusual to the observer because the aircraft may use a significant portion of the runway. The evidence in this case showed that had the captain not increased thrust, the aircraft would have taken approximately 2 further seconds to reach its planned rotation speed, and been about 30 m from the end of the available runway when it got airborne. If the full-length runway had been available, the take-off would have been normal. Had the pilots planned for a reduced-length take-off, the aircraft would have become airborne some distance earlier than it did.

2.7 The most significant threat to the safety of the aircraft related to the pilots rejecting the take-off before achieving the planned V_1 of 161 knots, which was more hazardous than continuing the take-off. They had not determined the correct V_1 of 143 knots because of their error in believing a longer runway distance was available. After they saw the work vehicles, the pilots had no ability to recalculate V_1 and reconfigure the aircraft. Even if they had been able to determine the proper V_1 speed, it would have been invalid because of the aircraft configuration and because more runway had been used in accelerating to that speed with the reduced thrust. Had they rejected the take-off between the point on the runway where the correct V_1 was achieved until the planned V_1 of 161 knots, the aircraft would have overrun the end of the available runway and entered the closed portion of the runway where work vehicles and personnel were present.

2.8 Given the situation in which the pilots found themselves after recognising their error, with less available runway than planned and the speed of the aircraft approaching the planned V_R, the captain had little choice but to take the action he did by applying full thrust, continuing the take-off and having the first officer rotate the aircraft at the planned V_R of 163 knots. The relative

light weight of the aircraft and its surplus engine thrust ensured that the aircraft climbed away quickly from the runway.

2.9 Theoretically, there was also a risk of the aircraft encroaching into the obstacle clearance safety fan at the end of the available runway had an engine failure occurred between the predetermined V_1 and when the aircraft was safely above the runway. However, because the aircraft was rotated only seconds after full thrust was selected, and did safely clear the work zone, that risk was slight.

Understanding the pilots' error

2.10 What needs to be understood is why the 2 experienced pilots made the information-processing error they did, which then compromised the safety of the aircraft, its occupants and the ground personnel.

2.11 The pilots had the correct flight information, including the relevant charts, ATIS and NOTAM information. They had studied NOTAM B/1203 for their flight earlier that day from Sydney to Auckland, were familiar with its contents and knew that the available runway length at Auckland could be reduced. Accordingly they expected a reduced-length landing on runway 05R. An updated ATIS when Emirates 418 was en route to Auckland advised that the NOTAM was active, but the words "normal operations" at the start of the verbal ATIS caused the pilots to think there were no runway restrictions.

2.12 Before Emirates 418 landed, the airport operator had returned the runway to its full length temporarily in response to a request by the crew of a departing long-haul aircraft. For traffic sequencing ATS held the departing aircraft so that Emirates 418 could land first. Because there was a temporary change to the information contained in the current ATIS broadcast that could have affected Emirates 418, the controller advised the pilots of the change, i.e. that the full runway length was available for their landing.

2.13 The pilots subsequently completed a normal full-runway-length landing using sufficient brake for a long roll-out.

2.14 Because of the words in the verbal ATIS and the change to full runway length, the pilots formed a mindset that the runway restrictions had been removed for the day, and that the full runway length would be available for their return flight to Sydney about 2 hours later.

2.15 The pilots' turnaround at Auckland was routine, but during that time the available runway length was again reduced. The ATIS broadcast was updated during that time, but it continued to advise that the available length of runway 05R was reduced at its eastern end and to refer to NOTAM B/1203. Because of the pilots' mindset, they might have subconsciously believed the ATIS was updated to reflect a removal of the runway length restriction, following the controller's advice that the full runway length was available for landing.

2.16 The words "active runway mode normal operations…" at the start of the current verbal ATIS broadcast reinforced the pilots' mistaken belief that the full runway length was available. This misled the pilots into thinking that operations were normal and inadvertently to overlook the information in the middle of the ATIS that advised reduced runway length was in effect. Consequently, they believed they had no reason to apply the NOTAM information about reduced runway length.

2.17 Airways believed that in this situation it was restricted by the word choice in the AIP arrival and departure information about Auckland International Airport to use "normal operations" in the ATIS broadcast, because the instrument approaches and landing threshold were unaltered, therefore operations were "normal". This was a matter of interpretation, because the AIP did imply that reduced runway lengths were sometimes "special operations". The difficulty was that if "special operations" was referred to, pilots could use incorrect approach charts for landing on runway 05R because its threshold was not displaced.

2.18 Although the situation may have seemed normal to ATS, clearly the situation facing the pilots for their take-off was non-normal. What the pilots needed to break their mindset was some early confirmation that things were "not normal", rather than the unintentional reinforcement the ATIS provided that they were "normal".

2.19 The ATIS also contained about 11 seconds of permanent information about an aircraft category that was not relevant to the pilots' flight. This information, which appeared immediately before the critical information about the reduced length at the eastern end of the runway, helped to clutter an already busy ATIS and to obscure the critical runway length information. While the printed copy of the ATIS broadcast did not contain the runway mode "normal operations" reference, its word order and presentation, with no punctuation or line separation, made it potentially misleading and difficult to read, and thus obscured the critical runway length information. Because the verbal ATIS broadcast was about twice as long as the 30 seconds recommended by ICAO, it created the potential for pilots to filter information, which appeared to be the case with the Emirates 419 pilots.

2.20 When the pilots did not diligently follow standard checking procedures and listen to and read all of the ATIS information as they prepared the aircraft and planned for the return flight, they circumvented a defence against error. Had they properly scrutinised the ATIS, the error could have been avoided. Instead they shared a mistaken view about the runway length and prepared the aircraft for departure on the basis of that flawed view.

2.21 The action the aircraft operator took with the pilots following the incident should have heightened their awareness regarding their pre-flight responsibilities for their identification of potential threats, and helped them to avoid similar errors.

2.22 Although the pilots had a responsibility to follow all procedures and ensure they received, understood and applied the relevant ATIS information, from a human factors perspective their error was understandable. The ATIS broadcast was the usual means of alerting the pilots to the critical piece of information that runway restrictions were in effect, but it was not robust enough in its word choice and construction to break their mindset to ensure they understood that critical information. Instead, the verbal ATIS broadcast inadvertently reinforced their mistaken belief that things were normal.

2.23 Because the pilots had not identified any runway threats, they were denied the opportunity to apply the principles of threat and error management and manage correctly the threat posed by a reduced-length-runway departure.

2.24 To help reduce the potential for similar errors, ATS should ensure that ATIS information, regardless of the means of transmission, has a clear word and sentence structure, is unambiguous, contains only information that is of a critical and non-permanent nature and complies as closely as possible with the ICAO-recommended length. When operations are non-normal, the ATIS broadcasts should not contain information that suggests, or encourages pilots to believe, they are normal.

2.25 Because Airways published the AIP information that it believed restricted its word choice for an ATIS broadcast at Auckland International Airport, it could enhance the AIP information so that the words "normal operations" are not selected for use in ATIS broadcasts when any non-normal operations are in effect.

2.26 While the pilots' omission to acknowledge that they had indeed received ATIS Romeo, and the delivery controller's oversight in not questioning them to ensure they had received it, did not contribute to the incident, these omissions meant that the normal closed communications loop concerning receipt of the ATIS was not achieved as it should have been before the pilots proceeded. Because the ATIS was an internationally used method of improving controller effectiveness and relieving frequency congestion, it contained essential information and needed verification that it had been received.

2.27 Although the ground controller used her initiative in an attempt to ensure the pilots knew the runway length was reduced, the pilots misunderstood the controller's question and thought the reference was to the runway extension behind them. As a result, the additional defence the controller provided was frustrated. To help prevent similar occurrences, ATS should introduce standardised procedures that require controllers, as a back-up to the ATIS information, to always warn pilots when runway restrictions are in effect, using phraseology that ensures there can be no misunderstanding. This action will aid controllers and help pilots to avoid similar errors.

2.28 The runway works in place at the time were correctly documented, notified and programmed in accordance with normal processes. Although the airport operator fitted in as much runway work as practicable during the less busy air traffic periods, some work such as the work at the end of the runway could be carried out only during the day and the operator needed the flexibility to achieve this. Runway rubber removal was an ongoing process, and although the rubber removal at the time of the incident was in addition to the work at the end of the runway, the operator's decision to use the opportunity to do this work was understandable.

2.29 The airport operator could help to reduce the likelihood of similar occurrences by reducing the opportunities for error by ensuring runway work is kept to only essential items during normal heavy air traffic periods. Whether a curfew period for heavier periods of maintenance could be introduced is something the airport operator should continue to explore as a means of enhancing safety.

2.30 The airport operator's safety action (see 4.2) in having the apron tower personnel advise pilots whenever there are runway works or reduced runway length in effect will provide an additional defence for international flights against similar occurrences at Auckland.

3 Findings

Findings are listed in order of development and not in order of priority.

3.1 The pilots were appropriately qualified, rested, authorised and fit for the flight.

3.2 The aircraft was serviceable and its records indicated that it had been maintained in accordance with its schedules.

3.3 An information processing error by the pilots led them to believe the full runway length was available for departure when it had been reduced, so they began their take-off with less thrust than required for the available length of runway.

3.4 The pilots' error stemmed from a mindset they had developed from their landing a few hours earlier that the runway length restrictions had been removed, and their insufficiently thorough pre-flight checking process.

3.5 The captain's prompt application of full thrust after the pilots saw the obstruction on the end of the runway ensured a safe outcome to the take-off.

3.6 The pilots' error compromised their ability to reject the take-off or maintain obstacle clearance safely in the event of a loss of engine thrust, and exposed the flight and ground personnel to unnecessary risk.

3.7 The current ATIS broadcast did not properly fulfil its intended purpose of conveying essential but routine information to the pilots because:

- it was about twice as long as that recommended by ICAO
- it contained permanent information
- its words "normal operations" contradicted the reference later in the ATIS that advised "reduced runway length".

3.8 Although the ATIS broadcast contained the correct information about the runway length restrictions, its word choice helped to reinforce the pilots' mindset that the runway length was normal when it was not, and its construction was not robust enough to break that mindset.

3.9 The Auckland AIP arrival and departure information inadvertently restricted ATS's word choice for ATIS broadcasts so that it implied that operations were normal when a non-normal runway restriction was in effect.

3.10 The format of the printed version of the ATIS broadcast made it confusing to read, and some interpretation was required to determine the length and content of each sentence. This format contributed to the pilots' information-processing error.

3.11 ATIS broadcasts were the only normal means used to alert pilots to critical runway information, such as when length restrictions were in effect. Had another defensive layer been established that required controllers to use standardised, unambiguous phraseology to warn pilots whenever runway restrictions were in effect, the pilots' mindset would likely have been broken.

3.12 While it did not contribute to this incident, the pilots and the controller inadvertently removed a defence against error when they did not confirm the pilots had received the current ATIS broadcast. Confirmation of receipt of the current ATIS was necessary to ensure that pilots had correct aerodrome information to plan safely for a departure or landing.

3.13 Although the runway works and their scheduling did not directly contribute to this incident, any unnecessary works during normal traffic periods at major airports increase the opportunities for errors and the potential for an occurrence.

4 Safety actions

4.1 Airways advised the Commission that:

- within an hour after the occurrence it had issued an instruction to the Auckland control tower team stating, "All aircraft are to be advised by Delivery/Ground and Tower when reduced length operations are in use"
- within 3 hours of the occurrence, material regarding circling and overshoots was removed from the ATIS
- from 0330 on Saturday 24 March, landing distance and take-off distance available figures were added to the ATIS
- at an Auckland airport operator's operational task force meeting, the word "normal" appearing at the commencement of the white pages ATIS was raised and will be investigated to see if another option is possible.

4.2 Auckland International Airport Limited advised the Commission that:

- it has enhanced the apron tower procedures to ensure that pilots are always informed of any runway works or reduced runway length.

4.3 Subsequent to the event, Emirates advised the Commission that:

- immediately after the incident it had issued a company NOTAM regarding Auckland International Airport. The NOTAM information advised pilots that because of runway works a portion of the runway could be closed at short notice, as per the existing state NOTAM. It urged pilots to be alert to the status of the runway and whether it had been shortened, and to use all available means, such as ATISs, ATS and NOTAMs, to determine the runway length, and to utilise the appropriate aircraft performance for the runway length

- it had reviewed other destinations with works in progress, such as Dubai, Kuwait and Bahrain, and where necessary had issued company NOTAMs to clarify state NOTAMs and had recommended NOTAM changes to the concerned states.

5 Safety recommendations

Safety recommendations are listed in order of development and not in order of priority.

5.1 On 23 October 2007 the Commission recommended to the Director of Civil Aviation that he require Airways to:

Ensure that ATIS broadcasts at all applicable airports, regardless of the means of format and transmission of ATISs, have clear word and sentence structures, are unambiguous, never imply that things are normal when they are not, contain no permanent information and conform as closely as possible to ICAO-recommended standards. (029/07)

Enhance the Auckland International Airport AIP arrival and departure information so the words "normal operations" are not selected for use in ATS communications when any non-normal operations are in effect. (030/07)

Enhance ATS procedures so that controllers, in addition to what may be contained in ATIS, always unambiguously warn pilots when runway restrictions are in effect. (031/07)

Ensure controllers always confirm that pilots acknowledge receipt of the current ATIS broadcast. (032/07)

5.2 On 23 October 2007 the Commission recommended to the Director of Civil Aviation that he instruct Emirates to:

Educate all its pilots to always strictly apply normal checking procedures, to thoroughly scrutinise all the available flight information, particularly ATIS broadcasts, and to always acknowledge receipt of the ATIS. (033/07)

5.3 On 23 October 2007 the Commission recommended to the Director of Civil Aviation that:

Although the runway works did not directly contribute to this incident, he satisfy himself that the aerodrome operating certificate holders for major airports in New Zealand have established adequate procedures and taken the precautions necessary to ensure that the frequency and extent of runway works are such that they do not impose unnecessary risk to aircraft operations. (034/07)

5.4 At the time of publishing this report no responses to the recommendations were available. The responses will be published later on the Commission's website.

Approved on 25 October 2007 for publication

Hon W P Jeffries
Chief Commissioner

Appendix A

NOTAM B1203

(B1203/07 NOTAM)
A)NZAA B)0703181900 C)0704080500
D)DAILY 1900 TO 0500
E)RWY 05R/23L WIP EAST OF RWY 23L THR. REDUCED LEN FOR TKOF AND LDG
WILL APPLY. FULL LEN LDG NOT AVBL. RESTRICTIONS NOT ACTIVATED WHEN RWY WET.
ACTIVATION OF RESTRICTIONS WILL BE BY ATIS OR RTF. AIP NZAA AD 2-31.6,
AUCKLAND ARRIVAL/DEPARTURE (5) - RWY 05R/23L DISPLACED THR INFO REFERS.
PUBLISHED ZULU AND VULCAN YELLOW CHARTS APPLY FOR DTHR. RWY 23L. THR
DISPLACED 1100M. PAPI AVBL S SIDE OF RWY GIVING 73FT THR XNG HGT. ALL LDG
ACFT USE PAPI TO AVOID WORKS AREA. INSET THR MARKED BY ILLUMINATED HIGH INTST
GREEN WING MARKERS BOTH SIDES OF RWY. HIGH INTST ALS, LOW INTST ALS AND RCLL
NOT AVBL. DEP ACFT SHOULD APCH RWY FM TWY A3. IF REQUIRED BY ACFT PERFORMANCE
TWY A2 AND CLSD PORTION OF RWY 23L BTN TWY A2 AND DTHR ARE AVBL FOR TKOF WITH
30 MIN PRIOR NOTICE. FULL LENGTH TKOF AVBL TO APPROVED LONG HAUL INTL ACFT
WITH 45 MIN PRIOR NOTICE. EFFECTIVE DIST AVBL RWY 23L:
LDA 2535M
LDA EXIT TWY A10 2170M
TORA/ASDA 2535M
TODA 2735M
TORA/ASDA FROM TWY A2 3235M
TODA FROM TWY A2 3435M
RWY 05R. DEP ACFT SHOULD APCH RWY FM TWY A10, RCLL NOT AVBL. LDG ACFT PLAN TO
VACATE RWY NO LATER THAN TWY A3. CLSD PORTION OF RWY 05R WEST OF TWY A3 IS
AVBL FOR LDG. EFFECTIVE DISTANCES AVBL RWY 05R:
LDA 2190M
LDA EXIT TWY A3 2320M
TORA/ASDA FM TWY A10 2170M
TODA FM TWY A10 2320M
TORA/ASDA FM WESTERN EXTENSION 2520M
TODA FROM WESTERN EXTENSION 2670M
CAUTION, REVISED FULL LEN DISTANCES APPLY TO APPROVED LONG HAUL INTL ACFT
REQUIRING FULL LEN RWY 05R TKOF, 45 MIN PRIOR NOTICE IS REQUIRED. RWY LEN IS
REDUCED BY 20M. REVISED FULL LEN ASDA/TORA FM WESTERN EXTENSION 3615M
REVISED FULL LEN TODA FROM WESTERN EXTENSION 3828M
REVISED FULL LEN ASDA/TORA FROM TWY A10 3210M
REVISED FULL LEN TODA FROM TWY A10 3423M
MEN AND EQPT WILL VACATE WORK SITE FOR FULL LEN OPS)

END.

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