

IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

FINDING INTO DEATH WITH INQUEST

Form 37 Rule 60(1)

Section 67 of the Coroners Act 2008

Inquest into the deaths of the 17 Victorian residents who died on Flight MH17

Delivered On: 16 December 2015

Delivered At: Coroners Court of Victoria
65 Kavanagh Street
Southbank Victoria 3006

Hearing Dates: 15 - 16 December 2015

Findings of: IAIN TRELOAR WEST, DEPUTY STATE CORONER

Counsel Assisting the Coroner: Sergeant Sharon Wade, Police Coronial Support Unit,
instructed by Ms Erica Capuzza, State Coroner's Solicitor.

I, IAIN TRELOAR WEST, Deputy State Coroner, having investigated the death of

AND having held an inquest in relation to this death on 15 and 16 December 2015

at MELBOURNE

find that the identity of the deceased was

born on

and the death occurred on 17 July 2014

at Donetsk, Ukraine

from:

I (a) INJURY SUSTAINED IN HIGH ALTITUDE AIRCRAFT DISRUPTION

in the following circumstances:

INTRODUCTION

This finding is limited to making formal findings of fact in respect of the deceased person ordinarily residing in Victoria and in doing so, summarising the circumstances surrounding their cause of death, as determined by the Dutch Safety Board, the principal investigative body.

BACKGROUND

1. On 17 July 2014 at 12.31hours,¹ Malaysia Airlines flight MH17 departed Schiphol Airport Amsterdam, on a passenger flight to Kuala Lumpur International Airport. The aircraft, a Boeing 777-200ER was carrying 298 persons, of whom 283 were passengers and 15 were crew. Due to the duration of the intended flight the crew consisted of two Captains, two First Officers and 11 cabin crew members. The occupants of the aircraft were from 10 countries, with 27 Australian citizens, 17 of whom ordinarily resided in Victoria.

¹ All times referred to in this Finding are in Central European (Summer) Time, (local (summer) time in the Netherlands).

2. Prior to departure, an air traffic control flight plan was prepared and filed, detailing route information that included flying over the eastern part of Ukraine, where a civil conflict between armed groups and Ukrainian armed forces had been ongoing since April 2014. This airspace was unrestricted. As the aircraft was passing through the area, radar surveillance data showed it flying at a flight level of 33,000 feet, and on a constant heading and at a constant speed. Flight operations were normal up until 15.20 hours when communication with the aircraft was lost. However, a signal from the aircraft's fixed Emergency Locator Transmitter automatically activated two seconds later. No distress messages from MH17 were received by air traffic control.
3. Subsequent information revealed that the aircraft had been destroyed over open farmland with the main wreckage parts coming down in an area at the south-west corner of the village of Hrabove in the province of Donetsk. In the aftermath, a total of six sites with wreckage were identified over many square kilometres, indicating an in-flight break-up of the aircraft.
4. The location of the crash site was, and remains, an area subjected to ongoing hostile military action between armed groups and Ukrainian forces. Because of this, part of the area where the aircraft wreckage and bodies had come to rest was hard to access. Nevertheless, Ukrainian emergency services mounted a recovery operation immediately after the crash. Their work was done in difficult circumstances but to a standard that aided in the successful identification of many of the victims. There was no evidence to suggest that the deceased were treated other than with respect and dignity at all times.

IDENTIFICATION

5. The deceased identification process initially commenced in Ukraine and was then transferred to the Netherlands. The remains of the passengers and crew were transported by the Royal Netherlands Air Force and Royal Australian Air Force and the identification process continued at Hilversum Medical Military Base, south-east of Amsterdam.
6. On 19 July 2014, an Australian Federal Police led deployment commenced, involving over 80 Disaster Victim Identification (DVI) specialists from various Australian and New Zealand agencies and jurisdictions.

7. On 21 July 2014, Associate Professor David Ranson² (Dr Ranson) of the Victorian Institute of Forensic Medicine (VIFM) was requested to form part of the Mortuary Overseas Deployment Team of specialist police, forensic odontology, forensic pathology and mortuary science staff to assist with the disaster victim identification procedures. His role was to assist with the forensic pathology aspects of DVI.
8. In August 2014, I attended Hilversum as an observer of the identification process on behalf of Australian Coroners. Identification was undertaken by applying Interpol DVI standards. The underlying principle of the DVI process is that the highest possible quality standards should be applied and that victims should be treated with dignity and respect. The procedure was undertaken by 120 forensic specialists from the Netherlands, Australia, Belgium, Germany, the United Kingdom, Indonesia, Malaysia and New Zealand working in teams in an interdisciplinary manner.
9. Each team worked at a number of examination stations and was responsible for tasks such as collection of fingerprints, photography, removal of clothing and jewellery, external examination for identifying features such as scars or tattoos, collection of bone and muscle biopsies for DNA analysis, recording of the presence of any prosthetic devices, dental examination of the teeth and jaws and dental radiography. A detailed quality assurance check was then undertaken and the information obtained was recorded onto a DVI database.
10. The database aided in the reconciliation of post mortem evidence with collected ante mortem records of all 298 victims. On obtaining a positive match, the evidence in support of the identification was then presented to an International Identification Commission for verification of identity. The Australian Federal Police Chief Scientist and DVI Commander, Dr Simon Walsh, was Australia's permanent representative on the Identification Commission. As I was an observer for a number of presentations to the Commission, I can assure families that the identification of their loved ones was achieved by applying the highest standards to the same procedures that would have been undertaken, had the crash occurred in Australia.
11. All Victorian deceased were positively identified.

² Deputy Director (Forensic Sciences) of the Victorian Institute of Forensic Medicine.

12. The remains of a small number of Australian residents were repatriated overseas for burial or cremation according to the wishes of their families. The remains of all other residents were brought to Melbourne where they were admitted to the Victorian Institute of Forensic Medicine. They were then CT scanned and in order to ensure continuity, an assessment was undertaken by a Forensic Pathologist and Forensic Odontologist to ensure accuracy of paperwork and consistency with the physical description, as set out in the identification report. No irregularities were identified.

CAUSE OF DEATH

13. Restricted conditions determined that it was not feasible to perform a complete autopsy of all deceased and as such, there was no cause of death established on a case-by-case basis. In the absence of autopsy, there is no other evidence to establish individual causes of death from a range of possible death mechanisms. To attempt to do so would be speculative and hence not a basis for making findings of fact. In these circumstances, Dr Ranson believes the cause of death is best stated as, 'Injury Sustained in High Altitude Aircraft Disruption'.³ His opinion is based on his observations of those individuals he examined and his understanding of both high altitude aircraft disintegration, human anatomy and physiology.
14. I accept the cause of death as stated by Dr Ranson as appropriate in the circumstances surrounding the loss of MH17 and in the absence of individual medical certainty. Accordingly, I find that each of the 17 Victorian deceased died of injury sustained in a high altitude aircraft disruption.

INVESTIGATION

15. Through mutual arrangement and consent,⁴ Ukraine requested the Netherlands, the country with the greatest number of nationals on-board, to conduct the incident investigation. The Dutch Safety Board (the Board), as the accident investigation authority of the Netherlands, was tasked to conduct the investigation. The Board was assisted in the delegated investigation by experts from countries having suffered casualties and, in addition, was provided with information from technical advisers in other countries, upon request.
16. On 18 July 2014, the Australian Federal Police (AFP) deployed members to Ukraine and the Netherlands to assist in the recovery and identification of the passengers and to obtain

³ Exhibit 3: Report to the Coroner dated 25 August 2014, *Mechanism and Medical Cause of Death Relating to the Occupants of MH17*, page 8.

⁴ International Civil Aviation Organization, Annex 13-Aircraft Accident and Incident Investigation (para 5.1).

evidence. The AFP members included specialists in DVI, forensics, criminal investigations and intelligence.

17. Initially, due to conflict, it was not possible for Dutch and other foreign experts to enter the wreckage areas because of the assessed safety risks. This resulted in coordinated access being delayed by several months.
18. Both Voice and Flight Data Recorders were located and analysed. It was established that both devices stopped recording at 15.20:03 hours. Further investigations revealed that the transmission of radar surveillance data from flight MH17 also ended at this time.
19. All pieces of recovered wreckage were examined for damage patterns, failure mechanisms and any traces of external objects that could have struck the aircraft. A frame matching the forward fuselage and cockpit area of the aircraft was built and a three-dimensional reconstruction of that section was undertaken by laying wreckage debris over it. Forensic examination of this section found patterns of damage and foreign objects that indicated the aircraft was penetrated by a large number of high-energy objects from outside the aircraft, which was not consistent with damage from any known failure mode of the aircraft, its engines or systems.
20. From impact damage observed on the available wreckage of the cockpit, investigators believe the total number of hits of high-energy objects was well over 800. Investigators found that the direction of both the perforating and non-perforating fragments originated from a single location outside to the left and above the cockpit. It was determined that this damage, together with a shock wave from the blast, resulted in a loss of structural integrity and led to an in-flight break-up of the aircraft.
21. Perforation and ricochet damage caused by multiple high-energy objects, enabled investigators to conclude that the implicated device was a surface-to-air missile carrying a fragmentation warhead that was detonated by a proximity fuse. Forensic evidence determined that the weapon was a 9N314M model warhead. It was further determined that the Buk surface-to-air missile system is the only weapon system to carry one of the distinctive pre-formed fragments in its warhead and that such a missile system was present in the region at the time of the incident.
22. In addition to aircraft parts, a number of parts that did not originate from the aircraft or its contents were recovered from the wreckage area. Forensic examination revealed that the

shape and form of these parts⁵ was consistent with parts found on a 9M38 series surface-to-air missile.

FINDINGS OF THE BOARD

23. The Board issued a preliminary report of its findings in September 2014 and delivered its final report in October 2015 with a number of findings being made, including the following:

- i. *The in-flight disintegration of the aeroplane near the Ukraine/Russian border was the result of the detonation of a warhead. The detonation occurred above the left hand side of the cockpit. The weapon used was a 9N314M model warhead carried on the 9M38 series of missiles, as installed on the Buk surface-to-air missile system.*
- ii. *Other scenarios that could have led to the disintegration of the aeroplane were considered, analysed and excluded on the available evidence.*
- iii. *The airworthy aeroplane was under the control of Ukrainian air traffic control and was operated by licensed and qualified flight crew.⁶*

24. The question of who is to blame for the destruction of the aircraft was not considered by the Board as a criminal investigation is being undertaken in order to gather evidence and to bring the perpetrators to justice. The criminal investigation is being undertaken by a Joint Investigation Team coordinated by the Netherlands public prosecutor and is ongoing, with the expectation it will continue until at least mid-2016.

25. As such and because it is not the role of this Court to attribute blame or make any finding that a person or persons are guilty of an offence, the criminal responsibility for the deaths does not form part of the scope of this inquest.

SURVIVAL ASPECTS / EXTENT OF AWARENESS

26. On the available evidence, the Board concluded that three occupants of the cockpit⁷ died instantly after the impact of the missile particles. In respect of the other occupants, the environmental conditions of the mid-air break-up and fall of MH-17 exposed them to a range of physical and physiological forces. The Board stated:

[t]here were no pre-formed fragments found in the bodies of the other occupants. As a result of the impact, they were exposed to extreme and many different, intersecting factors: abrupt deceleration and acceleration, decompression and associated mist

⁵ An engine nozzle, part of a stabilizer fin and a data cable.

⁶ Exhibit 1: Dutch Safety Board, *Crash of Malaysia Airlines flight MH17* (October 2015), page 9.

⁷ Captain, First Officer and Purser.

formation, a decrease in oxygen level, extreme cold, strong airflow, the aeroplane's very rapid descent and objects flying around.

As a result, some occupants suffered serious injuries that were probably fatal. In others, the exposure led to reduced awareness or unconsciousness within a very short time. It was not possible to ascertain at which moment the occupants died. The impact on the ground was not survivable.

The Dutch Safety Board did not find any indication of conscious actions performed by the occupants after the missile's detonation. It is likely that the occupants were barely able to comprehend the situation in which they found themselves.⁸

27. In addition to the Board's report on survival aspects, I have had the benefit of two reports⁹ by Dr Ranson and a detailed 'first principles analysis'¹⁰ by Dr Andrew P Hunt, a Defence Scientist in Thermal Physiology.¹¹
28. Whilst it could be determined that the three occupants of the cockpit died instantly, this could not be established for the other occupants of the aircraft, as individual autopsies were not performed. The occupants were a mixed population on a routine passenger flight, hence there would be variability in health status and physiological reserves. In addition, it cannot be determined what physical trauma any one of the deceased sustained from the initial damage to the aircraft. In these circumstances, it is not possible to ascertain the level of individual awareness or time of death of any deceased with medical certainty.

EVIDENCE OF DR RANSON AT INQUEST

29. Dr Ranson gave evidence at inquest where he expanded on his reports and findings. He described the DVI process that took place, its various teams and its five main phases (see paragraph 9 of this finding) and commented on the vast DVI experience of VIFM officers generally and previous work undertaken. Dr Ranson clarified that his work in Hilversum did not form part of the criminal investigation.
30. Dr Ranson then explained that the remains of Australian residents that were returned to Victoria were examined by him again at VIFM; this was a limited examination for the purpose of documenting the remains received, performing CT scanning and taking

⁸ Exhibit 1: Dutch Safety Board, *Crash of Malaysia Airlines flight MH17* (October 2015), page 166.

⁹ Ibid; Exhibit 3 Dr Ranson's report dated 25 August 2014; and Exhibit 4 his supplementary report, *Mechanism and Medical Cause of Death Relating to the Occupants of MH17* dated 15 December 2015.

¹⁰ A first principles analysis describes a process of applying fundamental knowledge to describe the likely consequences of complex situations.

¹¹ Dr Andrew P Hunt, Australian Government, Department of Defence, Defence Science and Technology Group, *Environmental Impact and Physiological Strain on Passengers and Crew of Flight MH-17* (2015). A statement containing Dr Hunt's biography and credentials was tendered to the Court at inquest as Exhibit 2.

photographs. Labelling and numbering was checked again and arrangements were made for return of the remains to the appropriate Australian states and territories for burial or cremation. AFP officers remained in close liaison with families of the deceased.

31. Dr Ranson commented that his first report was prepared shortly after his return from the Netherlands, where he personally examined about one quarter to one third of the remains of Australian deceased. Dr Ranson acknowledged the first principles analysis and report subsequently prepared by Dr Hunt and that, as a result of the findings of that report, Dr Ranson prepared his second report dated 15 December 2015.
32. Regarding Dr Ranson's proposed cause of death, he commented that the word 'injury' referred to a wide variety of damage to the body, and noted that not all people were affected by the same injuries.
33. Finally, Dr Ranson noted the evidence in the report of the Board and the AFP regarding the finding of an oxygen mask on one passenger.¹² Dr Ranson stated that this was difficult to address and he was aware of the DNA analysis result – being that no DNA could be extracted from the mask. Dr Ranson commented that in 'high air flow' incidents, loose items of clothing are often found to have been removed and that it is therefore highly unlikely that it would have remained on following the missile detonation.

PREVENTION: COMMENTS AND RECOMMENDATIONS

34. At the conclusion of its report the Board commented:

*Passengers travelling by air should be able to rely on the operator of their choice to have done all that is possible to operate the flight safely and that states have ensured that the airspace used for their flight is safe. When selecting flight routes operators should in turn be able to rely on states restricting or closing their airspace if it is unsafe for civil aviation. Airlines should be able to assume that states that have or have access to information about risks and threats in foreign airspace ensure that this information, if required, results in advice or warnings on the use of that airspace.*¹³

35. The Board identified the need for urgent improvements in order to ensure flight safety when using airspace over conflict zones. Unrestricted airspace is not, by definition, always safe. It found that the current structure and functioning of the system of civil

¹² It is unknown whether this passenger was a Victorian, Australian or other resident.

¹³ Exhibit 1: Dutch Safety Board, *Crash of Malaysia Airlines flight MH17* (October 2015), page 263.

responsibilities does not always lead to an adequate assessment of the risks associated with overflying conflict zones. A number of recommendations¹⁴ were made concerning:

- i. the management of the airspace in states dealing with an armed conflict in their territory;
- ii. the manner in which countries and operators assess the risks of flying over conflict zones; and
- iii. the accountability of operators regarding their choice of whether or not to fly over conflict zones.

36. The Board's recommendations are directed to strengthening regulations, the way in which responsibilities are allocated and fulfilled and collaboration between parties.

CONCLUSION

37. I have considered all the above in light of the preamble, purposes and objectives of the *Coroners Act 2008* (the Act), the terms of section 67, the specific obligations to 'avoid unnecessary duplication of inquiries and investigations' and to 'expedite the investigation of deaths',¹⁵ the desirability of proceeding therapeutically, minimising delay¹⁶ and ensuring the coronial system operates in a fair and efficient manner.¹⁷

38. I accept and adopt the findings of the Dutch Safety Board, and I note the conclusions and recommendations made by the Board as a result of its investigation. I also note that the criminal investigation is ongoing. There is scope under section 77 of the Act to consider reopening the coronial investigation should compelling new facts and circumstances become known in the future, and if it is appropriate to do so.

39. The circumstances surrounding the deaths of the passengers and crew of Flight MH17 had a profound impact on those who knew and loved them, as well as all over the world, especially as it became apparent that the aircraft had been shot down. This was particularly apparent at the conclusion of the inquest when some of the attending families prepared and read moving reflections of their loved ones and the impacts of their deaths. It is therefore fitting that a comprehensive investigation and enquiry was made into the circumstances surrounding their deaths. Many questions were raised including questions about what

¹⁴ Exhibit 1: Dutch Safety Board, *Crash of Malaysia Airlines flight MH17* (October 2015), pages 263-266.

¹⁵ Coroners Act section 7.

¹⁶ Coroners Act section 8.

¹⁷ Coroners Act section 9.

exactly occurred, why the aeroplane was flying across an area of armed conflict and who is to blame for the crash.

40. Whilst the evidence before me enables me to find that the deaths of the 17 Victorian residents were the result of the actions of another person or persons, I am not able to make any findings as to who caused the deaths. I note that the criminal investigation of the crash is ongoing. It is the role of the criminal investigation to assign criminal responsibility or blame for the deaths.

41. I extend my sincere thanks to the families of the deceased for their attendance at and contribution to the inquest.

42. I convey my sincere condolences to _____ family and friends.

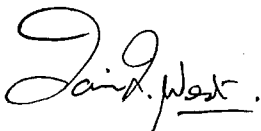
I direct that a copy of this finding be provided to the following:

The family of

Dr Simon Walsh, Chief Scientist, Australian Federal Police

Sergeant Sharon Wade, Police Coronial Support Unit.

Signature:



IAIN WEST
DEPUTY STATE CORONER

Date: 16 December 2015

