

David Boughen Memorial Address Aviation Law  
Association of Australia and New Zealand Conference  
18 October 1999

***"The Disclosure in Evidence of Black Box Recordings"***

The Honourable P de Jersey - Chief Justice of  
Queensland

Salutations

I am very pleased to have the opportunity to deliver this year's David Boughen Memorial Address. I knew David personally for the whole of his career at the Queensland Bar. I knew him as a person of accomplishment. High intellect, creativity and a reaching for excellence, meant that his contribution was ever memorable and valued; and that his tragic death significantly diminished a community which both respected and admired him. I commend the Aviation Law Association for helping maintain David's memory through this Address, and I am honored to be in the position to deliver it.

We know the cause of David's death, but he would not I think regard it as insensitive that I speak today on a matter central to the issue of air disaster: the so-called "black box" flight recorder which, in large aircraft, contain sound recordings from the cockpit and radio transmission, and information about flight parameters. No-one could these days sensibly gainsay the public value of these devices. Yet as I will explain, their introduction followed a stand-off between those objectively concerned about enhancing airline safety, and airline crew concerned about disciplinary proceedings. To us lawyers, there is the added particular dimension of damages claims: in what circumstances may evidence of cockpit conversations be led to advance a claim for damages for, say, negligence? These issues gain topicality from recent case-law and legislative developments in New Zealand, to which I will come. Let me first say something of these fascinating devices, and how they have been used in the past.

The term "black box" is primarily used to describe the "cockpit voice recorder" - a unit found in large aircraft which, as the name suggests, records conversations between flight crew members in the cockpit of a plane, as well as radio transmissions and communication with air traffic control centres. These units continually overwrite past recordings, holding in memory the most recent 30 to 180 minutes of cockpit noise. Generators driven by the plane's engines power the cockpit voice recorder: when the engines stop, so does the recorder. I am told the casing is not in fact black, but bright orange with reflective strips for added visibility. The words "Flight Recorder do not open" are stamped on the casing. Bear in mind

these devices end up regrettably in remote locations.

"Black box" is also sometimes used to describe the "digital flight data recorder". This is another flight recording unit, which keeps a record of an aircraft's operating data : for example, recording time, altitude, airspeed, vertical and longitudinal acceleration, pitch and roll attitude and the thrust of each engine.

Black boxes are of course designed to withstand aeroplane crashes, hence Jerry Seinfeld's asking why entire *planes* were not made of black box material. In an informative series of websites on "the Design and Use of Black Box Flight Recorders and Cockpit Voice Recorders", Ms Caroline Fagence lists the tests required by United States Aviation Authorities to be carried out on black boxes, including fire, water, pierce and static tests and a crash impact test involving the firing of the black box from a cannon into an aluminium wall! And so we may be confident black boxes will remain intact after aeroplane crashes, providing potentially vital, detailed information on the happenings inside the plane prior to the accident. Sometimes this will offer clues as to the cause of a crash. An example given in a *Journal of Air Law and Commerce* article, "the Status of Flight Recorders in Modern Aircraft", by Carol Roberts (Vol 43, pp 271- 287), was the Eastern Airlines L-1011 crash near Miami, Florida in December 1972. The black box record indicated the pilot and co-pilot had become "so pre-occupied with a malfunction of the nose landing gear position indicating system that they failed to notice that the autopilot altitude hold had disconnected", allowing the plane to descend and crash. The aircraft was destroyed and 99 persons killed.

Black box recordings may fill a void of information in circumstances where flight crew are killed or severely injured and unable to testify as to what occurred. Recall incidents where investigators "piecing together the wreckage" of an aircraft which has crashed, with limited available inferences, are suddenly enlightened with the locating of the black box recorder : very often the vital key to understanding what went wrong.

However deducing the cause of a plane crash even from black box recordings may not be a simple process. As Peter McMahon QC, formerly Mr Justice McMahon of the New Zealand High Court, warned Aviation Law Association Conference attendees in 1982, there is room for human error in the interpretation of such recordings, and that may lead to incorrect conclusions. Mr. McMahon's warning was engendered by his own investigation as Royal Commissioner into the 1979 crash of an Air New Zealand DC10 at Mt Erebus, Antarctica. The aircraft had flown directly into the side of the mountain, seemingly without its crew knowing it was there. This was ultimately found to be a result of the "white-out" phenomenon, the illusion created in Arctic and Antarctic areas, whereby to the crew of an aircraft flying in pale solid overcast conditions over unrelieved white snow landscape, undulations and slopes in the landscape ahead disappear so that the surface appears flat. In this case, the absence of apparent panic in the pilot and co-pilot's conversations, conflicted with the transcribed evidence from the digital flight data

recorder. The Chief Inspector of Air Accidents Report said that data established a last minute violent attempt to avoid crashing. It showed a sudden application of left rudder and upwards pitch to 10.9 degrees nose-up, occurring in the last few seconds before the crash. These were assumed by transcribers to have been instigated by the pilot. The Royal Commissioner Mr McMahon, reading the report of the accident and confused by the conflicting evidence drawn from the two flight recorders, postulated the theory later found to be correct - that the digital flight data recorder transcribers had incorrectly interpreted the evidence. Not knowing of the "white-out" illusion, they had, according to Commissioner McMahon, transcribed the information on the assumption that the flight crew had not seen the mountain due to cloudy conditions, but must have seen it a few seconds prior to impact. The left rudder and upwards pitch were found, on re-examination of the black box, to have occurred in the seconds following the impact, not before. Commissioner McMahon warned:

"in connection with all investigations, find out all the facts first before coming to any conclusion.

And in the case of aircraft disasters, do not tell the black box what to say. Let the black box tell you." (P 693)

Let me come now more directly to the question how these facilities can, and should, be used. This will involve some brief excursus back into history.

The issue of the purposes for which black box evidence should be used has been contested ever since the introduction of these recorders. This is part of a commonly held general concern that investigations into flight accidents be focussed on preventing further accidents, than on the apportionment of blame. In the June 1997 edition of the International Society of Air Safety Investigators publication, *Forum*, the distinguished US pilot and safety professional Charles Miller reminds the reader that "...air safety and accident/incident investigations have hazard prevention as their ultimate goal, as opposed to blame assessment for judicial proceedings." ("Accident Prevention Management: the three faces the investigator can expect to see", pp 10 - 13) The widespread concern that black box evidence be restricted to use in accident investigations is reflected in the 1994 amendment to the Chicago Convention on International Civil Aviation. Annex 13 of that Convention, dealing with aircraft accident investigation, provides in clause 5 that a State conducting an accident investigation shall not make certain records, including cockpit voice recordings, available for purposes other than accident investigation, "unless the appropriate authority for the administration of justice in that state determines that their disclosure outweighs the adverse domestic and international impact such action may have on that or any future investigations...". This question of when black box evidence should be disclosed has shaped the history of the use of such recorders in Australia, summarised in part in an interesting article in the tenth volume of *Air Law*, "The Use of Cockpit Voice Recording as Evidence" (1985, pp 176 - 180).

Despite their being of obvious worth as a tool in flight accident investigation, Australian pilots expressed reservations about the use of black boxes in aircraft after a Board of Accident Inquiry first recommended them in 1960. There were fears that cockpit voice recordings would be used in disciplinary action by employers, or as evidence in prosecutions for failure to comply with Air Navigation Regulations, or as a basis for the Department of Aviation canceling or suspending crew licenses. The pilot s Federation, the A.F.A.P., was moved to oppose black box installations. Fortunately the Federation softened, reaching an informal agreement with the Director General of Civil Aviation specifying conditions required for the installation of black boxes in aircraft flown by members of the Federation. Black boxes could be installed, but only on the condition that use of the information be limited to investigation of aircraft accidents, and then only if one of a number of conditions was present: -

"a. when a flight crew member was killed in the accident, or so badly injured that recollection of the events preceding the accident was impaired,

b. when the Minister has indicated an intention to appoint a Board of Accident Inquiry to investigate the accident,

c. when a flight crew member had requested that the record be analyzed, to determine a point on which other evidence might be in conflict, or

d. if in a particular case, at the request of the investigator, the Federation and the flight crew agreed that use of the record would throw light on the cause or a particular aspect of the incident." (*Air Law* vol X(3) p 177)

An Air Navigation Order was then made requiring the installation of cockpit voice recorders in all aircraft of a maximum take off weight exceeding 5, 700 kg, used in regular public transport operations. Hence my earlier reference to "large" aircraft.

My primary point this morning is to touch on the question of the admissibility of evidence of these recordings in civil court proceedings, and it is to that issue I now turn.

The question of the admissibility of black box evidence in *court* proceedings first came before the High Court of Australia in 1975, in *Australian National Airlines Commission v Commonwealth & Canadian Pacific Airlines Ltd* (1975) 132 CLR 582. An aircraft operated by the Australian National Airlines Commission, now, in a general way, Ansett, collided with a taxiing aircraft operated by Canadian Pacific Airlines. There was extensive damage to both planes. The Commission issued proceedings in the High Court against the Commonwealth and CP Air, alleging

negligence on the part of the airport controller who had given clearance to take off, and claiming damages for repairing the plane and consequential losses. CP Air denied negligence on its own part, and alleged contributory negligence in any event, against the Commission. It counterclaimed against the Commission and the Commonwealth for the damage to its own plane.

This accident had been investigated by the Transport Department under the authority of Air Navigation Regulations. The investigator had come into possession of the black box from the Commission's aircraft. But none of the pre-conditions for the use of the information was satisfied. And so the black box was returned to the Commission, unused.

CP Air reactivated the issue in the High Court action. It sought an order for discovery and inspection of the black box tape. It submitted that conversations between crew members were relevant to its case of contributory negligence, because the recording contained evidence of the time when the Commission's crew became aware of the CP aircraft's presence on the runway. Both the Commission and the Commonwealth objected to the tape being made available to CP Air. Not surprisingly the Federation, not a party to the action, intervened to oppose any order being made. The officer-in-charge of the air safety investigation branch of the Transport Department swore that were the order made, the Federation may seek to have cockpit voice recording equipment withdrawn from all Australian aircraft, jeopardizing public safety.

The application was heard by Justice Mason, as the Chief Justice then was. He listened to the tape. He observed that the conversations were indeed relevant to the issue of contributory negligence, and that the objection to production and inspection could not be sustained. The possible detriment to the public interest through industrial action by the Federation, was outweighed by the other detriment to the public interest which would ensue were access denied. Why? Incidental to each party's right to a fair trial is the right to present all relevant evidence supporting the case. Withholding relevant documents from parties to litigation, unless justified by the strongest considerations of public interest, may undermine confidence in the administration of justice. Notwithstanding this important decision, the legislative reinforcement awaited another Board of Accident Inquiry report, and about a decade.

Amendment of the *Air Navigation Act* 1920 (Cth) regulated the use of black box evidence in court. One starts with the stipulation that black box recordings are not admissible in evidence in any criminal proceedings against a crew member in an Australian Court. As to civil proceedings, although the statute is concerned to establish that recordings are generally inadmissible, the court has a discretion to receive the evidence. A party to damages proceedings in respect of personal injury, death or even damage to property may apply to the court for an order that black box evidence be admissible in the proceedings. The court is obliged to "examine" the black box recording, which presumably means listen to it, and may

order that the recording, in whole or in part, be admissible. But the court must first be satisfied of three matters. They are :

"(i) that a material question of fact in the proceedings will not be able to be properly determined from other evidence available to the court; and

(ii) that the cockpit voice recording, or a part of the cockpit voice recording, if admitted in evidence in the proceedings, will assist in the proper determination of that material question of fact; and

(iii) that, in the circumstances of the case, the public interest in the proper determination of that material question of fact outweighs the public interest in protecting the privacy of members of crews of aircraft". (s 19HF(3))

The court then appears to take on a discretion to admit the evidence, which one assumes would ordinarily be exercised favourably to the applicant.

We have seen the concern that characterized the Federation's attitude to the installation of these devices. That concern apparently had to be met in these statutory amendments. Accordingly, where black box evidence is admissible in court proceedings, s19HH(2) further limits its use, deeming it not to be evidence for the purpose of determining the liability of a crew member as such, by contrast, I suppose, with the airline operation. The use of black box recordings in disciplinary action by employers is also prohibited by s19HJ, which under subsection 2 has effect "despite any other law or anything in any agreement". The statutory limitations on the use of black box evidence would thereby appear to meet the concerns of the Federation.

The legislation sets up some other quite stringent safeguards, directed towards preserving the privacy of the recordings. For example, when a court "examines" the recording, only the Judge and legal representatives will ordinarily be present, and the court is statutorily reminded that it may by order prohibit publication or communication to any person. Finally, s19HK renders it an offence "intentionally or recklessly" to publish a recording, or information drawn from it, except during an accident investigation, or, effectively, with the court's leave. Remember, of course, that even if the court will not admit a recording in civil proceedings, evidence may still be given, if available, of what transpired in the cockpit: but as I say, "if available", and it would invariably be of lesser quality. In this careful legislative catalogue, s 19HL confirms the continuing admissibility of such other evidence.

The admissibility of black box evidence in New Zealand has only very recently been regulated by statute, on 10 September 1999. The New Zealand Court of Appeal, in *New Zealand Airline Pilots Association Inc v Attorney-General* [1997] 3

NZLR 269, had considered issues in this area arising from an Ansett De Havilland DHC-8 crash at Palmerston North on 9 June 1995. The cockpit voice recorder and digital flight data recorder were recovered and analysed by the Transport Accident Investigation Commission. On 23 July 1996, Justice McGechan, of the New Zealand High Court, granted an interim injunction, sought by the Airline Pilots Association to restrain the T.A.I.C. from including edited parts of the CVR transcript in a draft report. Independently, the police, through the Attorney-General, brought separate proceedings for access to the black boxes and a transcript of the cockpit voice recordings. The police were interested in whether a charge of manslaughter should be brought. The two proceedings were heard together. Justice Panckhurst held that police were entitled to access black boxes and their transcripts under warrant. However in considering whether or not to issue a warrant, a District Court Judge was required to weigh the terms and purpose of Annex 13 of the Chicago Convention, previously mentioned. His Honour also held that the T.A.I.C. was able to include extracts of black box transcripts in its report.

The main issue before the Court of Appeal was whether Annex 13 of the Chicago Convention formed part of New Zealand law and thus bound New Zealand authorities, preventing disclosure of black box information except in terms of the Convention. The Court of Appeal held that while full effect had been given locally to some of the provisions of the Convention, it was not, as a whole, part of New Zealand law. The power to issue a search warrant was accordingly unqualified, and police could access black box recordings for purposes including investigating whether criminal offences had been committed.

It is the *Transport Accident Investigation Commission Amendment Act* of 1999 which established a regime of regulation in relation to the use of black box evidence in New Zealand. The New Zealand regime is similar to Australia's.

The new Part 3 inserted into the principal Act provides that cockpit voice recordings are inadmissible in any proceedings against a member of a flight crew of a non-military aircraft. (s14D(2)) In civil proceedings not against a flight crew member, the recordings are admissible if the amount of damages claimed exceeds the maximum civil jurisdiction of the District Courts and if the High Court grants an order for disclosure sought by a party to the proceedings. (s14F) In granting an order, the court must first determine, on the balance of probabilities, that "the interests of justice in the disclosure of the record outweigh the adverse domestic and international impact the disclosure may have on the investigation to which the record relates or any future investigation into an accident or incident." (s14F(3)) This appears to be legislative recognition of Annex 13 to the Chicago Convention. Interestingly, under s 14E black box recordings may also be disclosed *prior* to the commencement of civil proceedings. The same requirement with respect to amount of damages must be satisfied, and on application to the High Court by a person intending to commence civil proceedings, the High Court must be satisfied that requirements are met to make an order for disclosure. Again therefore the court is required to weigh up the interests of justice. It must also be satisfied that

the applicant may be entitled to claim relief in a proceedings of this kind, and that "it is impossible or impracticable for the person to formulate the person's claim without reference to the record sought" (s14E(3)(a)(ii)).

And so one sees the status of black box evidence in Australian and New Zealand courts is generally similar, with the parliaments taking an approach protective of flight crews, but recognizing the social utility of facilitating civil claims.

And what of the black box in the future? Caroline Fagence reports that flight recorder technology is becoming more and more sophisticated, with the development even of recorders of video images, inside cockpits and from the wings and tails of planes. There is the real possibility of using them in Formula 1 racing cars. With air travel so rightly, closely monitored in this way for safety, why could not similar devices one day be used for accident prevention in other forms of public transport? It is foolhardy to make predictions in this era of almost exponential technological progression. But allowing for the history of the development of the black box, with an understandable focus on safety, it is nevertheless good to see an established facility for the use of the evidence in relation to civil claims. One hopes of course that there will need be no recourse to it. But there is great social utility in facilitating claims where they are justified, and with a nudge from the courts, the parliaments do seem to have "got it right".