Clarke Beryl Claire (as personal representative of the estate of Eugene Francis Clarke) and Others v SilkAir (Singapore) Pte Ltd
[2002] SGCA 26

Case Number : CA 600146/2001

Decision Date : 15 May 2002

Tribunal/Court : Court of Appeal

Coram : Chao Hick Tin JA; Judith Prakash J; Yong Pung How CJ

Counsel Name(s) : Michael Khoo SC, Josephine Low and Andy Chiok (Michael Khoo & Partners) for the appellants; Lok Vi Ming, Ng Hwee Chong and Chan Hoe (Rodyk & Davidson) for the respondent

Parties : Clarke Beryl Claire (as personal representative of the estate of Eugene Francis Clarke) — SilkAir (Singapore) Pte Ltd

Damages – Limitation – Limitation of carrier's liability – Crash of aircraft resulting in loss of lives – Recklessness and wilful misconduct of pilots – Whether crash deliberate – Relevance of human factors to cause of crash – Whether carrier can limit liability for passengers' deaths – arts 25 Warsaw Convention and Warsaw Convention as amended by the Hague Protocol

Civil Procedure – Costs – Principles – Indemnity basis – O 22A r 9(3) Rules of Court

Evidence – Proof of evidence – Burden of proof – Applicable test – Standard of proof -- Nature of standard of proof

Evidence – Admissibility of evidence – Expert opinion – Whether relevant and acceptable – Drawing inferences from facts – When inferences can be drawn -- Doctrine of res ipsa loquitur -- Whether doctrine applicable

Words and Phrases – 'Within the scope of his employment' – art 25 Warsaw Convention

(6) As the appellants had failed to obtain a judgment more favourable than the terms of the respondent's offer to settle, the court awarded indemnity costs pursuant to O 22A r9(3) of the Rules of Court (see 64).

Case(s) referred to

Caswell v Powell Duffryn Associated Collieries Ltd [1940] AC 152
Goldman v Thai Airways International Ltd [1983] 3 All ER 693
Horabin v British Overseas Airways Corporation [1952] 2 QBD 1016
Johnson v American Airlines 20 Avi 18,248
Lloyde v West Midlands Gas Board [1971] 2 All ER 1240
Muhammad Jeffry v PP [1997] 1 SLR 197
Nugent and Killick v Michael Goss Aviation Ltd & Ors [2000] 2 Lloyds' Rep 222
Singapore Airlines Ltd & Anor v Fujitsu Microelectronics (Malaysia) Sdn Bhd & Ors [2001] 1 SLR 241
Singapore Finance Ltd v Kim Kah Ngam (Spore) Pte Ltd [1984-1985] SLR 381
SS Pharmaceutical Co Ltd & Anor v Qantas Airways Ltd [1991] 1 Lloyds Rep 288
The Popi M [1985] 2 All ER 712
Thomas Cook Group Ltd & Ors v Air Malta Co Ltd [1997] 2 Lloyds Rep 399

Legislation referred to

Carriage by Air Act (Cap 32A) s 3(2); Schedule 1 aa 22, 25; Schedule 2, aa 22, 25

Evidence Act (Cap 97) s 47
Rules of Court O 22A r 9(3), O 59 r 19

Judgment

GROUNDS OF DECISION

This is an appeal from the decision of the learned Justice Tan Lee Meng ("the judge"), in which he held that the respondent could limit its liability for the carriage of passengers under a 25 of the Convention for the Unification of Certain Rules Relating to International Carriage by Air 1929 ("the Warsaw Convention") and under a 25 of the Warsaw Convention as amended by the Hague Protocol 1955 ("the Warsaw (Hague) Convention"). Both Conventions have been given the force of law by the Carriage by Air Act (Cap 32A).

The facts

2 On 19 December 1997 at 08:37:13 Coordinated Universal Time, SilkAir Flight MI 185 departed from Jakarta, bound for Singapore. It proceeded without incident to Palembang while maintaining a cruising altitude of 35,000 feet. The last voice transmission from the crew was at 09:10:26, to Jakarta Air Traffic Control ("ATC"). It was not a distress call. The last radar recording from Jakarta ATC which showed that the aircraft was at 35,000 feet was at 09:12:09. The last data recording, at 09:12:41, showed the aircraft to be at 19,500 feet. The aircraft crashed into the Musi River at about 09:13. This occurred in daylight and in good weather. All 97 passengers, five crew, pilot Captain Tsu Way Ming ("Capt Tsu") and First Officer Duncan Ward ("FO Ward") perished. The personal representatives and dependants of all but six of the persons on board came to a settlement with the respondent regarding compensation. The appellants – the personal representatives and dependants of the remaining six persons – sued the respondents. According to the judgment below, some or all of the appellants were also suing the manufacturers of the aircraft (Boeing) and the manufacturers of the aircraft parts in the United States ("the US proceedings"). Mr Khoo SC had denied this at trial, but did not clarify the matter on appeal.

3 The Indonesian National Transportation Safety Committee ("NTSC") carried out a thorough investigation into the cause of the crash. In its Final Report (dated 14 December 2000) ("the NTSC report"), it concluded that the cause was unascertainable due to a lack of evidence. Only 73 percent of the wreckage had been recovered, and not all of it could be used for investigative purposes. The parts of the aircraft which were recovered included the cockpit voice recorder ("CVR"), the flight data recorder ("FDR"), the horizontal stabiliser, the throttle box and some oxygen generators. The data from the FDR was corrected by the manufacturers of the radar, Hughes Raytheon, and further corrected by Boeing and the NTSB. This will be referred to as the "corrected radar data". Simulation tests were conducted by Boeing, the NTSC and Captain John Laming, one of the appellants' expert witnesses.

4 The USA Accredited Representative, the National Transportation Safety Board ("NTSB"), disagreed with the NTSC's conclusion. In a letter to the NTSC (dated 11 December 2000), the NTSB suggested that:

> a The accident was not caused by mechanical failure.
>
> b It was likely that the accident was caused by intentional pilot action, which probably included: sustained manual nose-down flight control inputs (more likely

made by Capt Tsu than by FO Ward); intentional disconnection of the CVR; and a decision not to attempt recovery of the aircraft from its dive.

5 The Criminal Investigation Department in Singapore conducted an inquiry into the career history and personal circumstances of the pilots and crew ("the human factors"). In its report, "Investigation into Police Report Lodged by the Singapore-Accredited Representative to the NTSC on 25 August 1999" (dated 14 December 2000) ("the CID report"), it stated that it had found no evidence of suicidal tendencies or of motives to crash the aircraft.

The judge's decision

6 The judge delivered his judgment on 24 October 2001. He described the incident and summarised the NTSC and CID reports. He then set out the relevant provisions of the Conventions and the gist of the parties' cases. He went on to discuss the evidence recovered from the crash site and the parties' respective interpretations of the evidence. He also explored the human factors, which he thought were relevant.

7 The judge made the following findings:

a The accuracy of the corrected radar data was doubtful.

b The value of the simulation tests was limited because: one, they were based on the corrected radar data; and two, they did not envisage a situation where the aircraft had exceeded its normal flight envelope (as was the case here).

c The final set position of the jackscrew of the horizontal stabiliser was unclear.

d It was not shown that the pilots did not attempt to recover the aircraft from its dive.

e It was not shown that the CVR and FDR had been intentionally disconnected.

f The evidence on the human factors did not show any suicidal or murderous intent on the part of the pilots.

g The aircraft was not intentionally crashed.

h The pilots were not guilty of wilful misconduct, hence the respondent could limit its liability under the Warsaw Convention. They also did not act recklessly and with knowledge that the damage would probably result, hence the respondent could limit its liability under the Warsaw (Hague) Convention.

The issues

8 The key issue is whether the respondent can limit its liability under a 25 of the Warsaw Convention and the Warsaw (Hague) Convention. The specific issues are:

(1) Whether the technical evidence revealed the cause of the crash, in particular:

(a) Whether the experts' inferences from the facts are tenable.

(b) Whether the corrected radar data was accurate.

(c) Whether the simulation tests were useful.

(d) Whether the horizontal stabiliser showed that the aircraft had been placed in the maximum nose-down position.

(e) Whether the pilots had attempted to recover the aircraft from its dive.

(f) Whether the CVR and / or FDR had been intentionally disconnected.

(g) Whether there were other possible "causes" of the crash.

(2) Whether the human factors are relevant; and, if so, what they revealed in respect of the following:

(a) The NTSC and CID reports

(b) Capt Tsu

(c) FO Ward

(3) Whether the respondent can limit its liability under the Warsaw Convention.

(4) Whether the respondent can limit its liability under the Warsaw (Hague) Convention.

(5) How the concept of burden of proof applies in this case.

The first issue: the technical evidence

(1)(a) The experts' opinions and other inferences

9 The opinions of experts are relevant under s 47 of the Evidence Act (Cap 97). An opinion will, however, only be accepted if it fulfils the criteria enunciated in *Muhammad Jeffry v Public Prosecutor* [1997] 1 SLR 197:

> … the three criteria for the acceptance of expert opinion evidence, i.e. value, impressiveness and reliability.

If the opinion is purportedly based on facts, it must fulfil a further criterion set out in *Singapore Finance Ltd v Kim Kah Ngam (Spore) Pte Ltd* [1984-1985] SLR 381:

> Where the opinion of an expert is based on reports of facts and empirical

> observations, I have endeavoured to satisfy myself, on a balance of probabilities, whether those facts did in truth exist and whether any inference or inferences drawn from those facts, taken individually and collectively, were sound or not.

Hence the court must consider whether the facts exist, and whether the expert's inferences from those facts are tenable.

10 The appellants' experts were Captain John Laming ("Capt Laming"), Captain Maurie Baston ("Capt Baston") and Mr Macarthur Job ("Mr Job"). The respondent's experts were Professor Denis Howe ("Prof Howe") and Captain Robert Galan ("Capt Galan"). The judge generally preferred the view of the respondent's experts. Capt Laming's evidence was based largely on his simulation tests, which the judge did not find useful. Capt Baston had admitted that, if the corrected radar data was inaccurate, his opinion on the cause of the crash may well change. The judge thought that Mr Job's evidence was "undermined from the very start by his failure to give sufficient attention to the human factors which he himself thought to be relevant". Mr Job also relied heavily on the NTSB's comments on the NTSC report.

(1)(b) The accuracy of the corrected radar data

11 The appellants sought to rely on "Recorded Radar Study" by Cassandra Johnson (dated 2 November 1998), claiming that a copy thereof was not available at trial. This cannot be allowed. First, the judge had refused to admit the document as evidence on 5 September 2001. Secondly, the document had been considered in the NTSC report. Thirdly, if the appellants wanted to have the document admitted as fresh evidence, they should have done so by a motion to adduce fresh evidence. Such a motion would almost certainly have failed.

(i) The views of the appellants' experts

12 According to Capt Laming, the dive was very steep. The rate of descent was about 30,000 feet per minute. In contrast, the normal rate of descent for a Boeing 737 is 2000 to 2500 feet per minute.

13 Capt Baston calculated that the corrected radar data showed that the dive angle was about 56 degrees. "Informal" simulator exercises showed that this was the maximum angle which could have been achieved with cockpit input. However, Capt Baston admitted that he had relied on the corrected radar data without making any independent studies. He also recognised that, if the data was inaccurate, he may well have to change his opinion. We note that Capt Baston later said that he could not vouch for the integrity of the corrected radar data.

14 Mr Job was the only one of the appellants' experts who attempted to assign detailed figures as to the rate of descent of the aircraft at various altitudes. There was in fact no radar tracking below 19,500 feet, and Mr Job's figures were arrived at by calculation. The judge found it very odd that, given that no one else knew the reason for the lack of radar tracking, it was "obvious" to Mr Job that it was due to the fact that the aircraft descended at a much faster speed below 19,500 feet.

(ii) Prof Howe's view

15 Prof Howe objected to the corrected radar data on two main grounds. First, although he accepted that radar data might have to be corrected, he thought it should have been done only by the

manufacturers. Boeing and the NTSB had re-adjusted the data without giving any reasons for it and any indications of the extent of the corrections. This resulted in large differences. Secondly, although all the experts agreed that a Boeing 737 was not designed to exceed Mach 1 – the speed of sound at the relevant altitude – according to the corrected radar data, the aircraft had exceeded that speed. (The Mach number is the speed along the flight path divided by the local speed of sound.) Unfortunately, there was no evidence on whether the aircraft could have *fallen* towards the ground at a speed greater than the speed at which it was designed to fly. In sum, the appellants had not demonstrated, on a balance of probabilities, that the flight path of the aircraft was that portrayed by the corrected radar data.

(1)(c) The usefulness of the simulation tests

(i) The views of the appellants' experts

16 During cross-examination, Capt Laming admitted that he had not even used the corrected radar data for his tests. He had conducted the tests from a "pilot point of view" and had attempted to achieve the steepest dive possible. He also agreed that a simulator could not fully replicate the motions of an aircraft beyond the aircraft's normal operating limits, but did not know off-hand what those limits were. In any case, he had conducted the tests without subjecting the simulator to motion.

17 Capt Baston recognised that Boeing's tests were problematic because they were not based on any real radar points at all. Hence there is no reason to overturn the judge's finding that the simulation tests were not useful.

(1)(d) The final position of the horizontal stabiliser: whether the pilot(s) intended to exit the normal flight envelope

(i) The views of the appellants' experts

18 It was Capt Laming's view that, to bring the horizontal stabiliser trim setting from the cruise setting (4.5 units) to the forward manual electric trim limit (2.5 units), the pilot would have had to set the manual stabiliser trim for eight to ten seconds. To bring the trim setting from 4.5 units to 3.05 units, it would have taken six to seven seconds. He did not have an opinion on whether it was possible that something other than cockpit input could have caused the nut and screw of the horizontal stabiliser to turn and yield a different reading from that set by the pilot.

19 Mr Job said that it was only remotely possible that the jackscrew ball-nut unit could have rotated after the horizontal stabiliser trim was manually set. He could only base this on his "experience"; he did not have a technical explanation for his view nor was he able to accept or refute the study done by the Cranfield Impact Centre.

(ii) The views of the respondent's experts

20 Capt Galan's view was that the pilots had initiated an emergency descent, but that this went wrong. They did not intend to exit the normal flight envelope. He thought that although an emergency descent comprised three theoretically simple steps, its execution was in actual fact a difficult task. He cited studies to support this.

21 The appellants' counsel tried to have Capt Galan concede that, if there was no rapid depressurisation or faulty indication thereof, the pilots were reckless in initiating the descent in the first place. This was misguided. First, it is a futile exercise to speculate on *why* the pilots initiated an emergency descent, if at all. Secondly, it is all very well for others, with the benefit of hindsight, to say that a pilot should not have done certain acts in response to certain situations. In any case, even if the pilots had made an error of judgment, that alone would not justify labelling them "reckless".

22 From the wreckage photographs and studies by the Cranfield Impact Centre, Prof Howe estimated that the horizontal stabiliser trim might have been set at or found at 3.05 units. He thought that, as there was a failure of the attachment of the ball screw actuator to the horizontal stabiliser, the ball screw could have rotated before impact, and even on impact. He agreed with Mr Job that the trim setting was unlikely to change once the aircraft had hit the ground, but this was based on the assumption that there was no failure of the attachment. Once again, the appellants had not shown, on a balance of probabilities, that the pilots had set the horizontal stabiliser such that the aircraft dived steeply, whether deliberately or recklessly.

(1)(e) Whether any recovery attempts were made

(i) Capt Laming's view

23 In simulator trials, Capt Laming found that standard recovery actions from steep dives were well within normal airline pilot skills. In his expert report, he said that only deliberate setting of the stabiliser trim to the full forward position and full engine power would force an aircraft into a dive as steep as that experienced by Flight MI 185. He agreed that putting the engines at high thrust would lift the plane, such that there would be tension between the downward position and the power-induced lift. However, he thought that, although it was more difficult to put the aircraft into a dive with the engine power on, the aircraft would attain an uncontrollable speed in less time than with the power off.

(ii) Prof Howe's view

24 Prof Howe's interpretation of the evidence was to the contrary. His testimony on this point is worth reproducing:

> Q … what was found of the wreckage – the throttle box being at full power; power thrust; engines in high rotation; speed brakes not deployed – are they opposite of what would have to be done when an emergency descent has to be made?
>
> …
>
> …
>
> A The pilot initiates an emergency descent for whatever reasons. In his enthusiasm or his anxiety, he overdoes the [rate] of descent and the aircraft starts to [descend] too rapidly and he then wishes to arrest the rate of descent. What does he do? He retracts his speed brakes; he opens his throttles to recover from the high rate of descent that he's in. But he still does not recover

> the aircraft from that high rate of descent, and so the evidence remains in his attempted recovery position.

This is a more convincing explanation than Capt Laming's. The finding below was that it had not been established by the appellants that no recovery attempt had been made. We have not been persuaded to overturn that finding.

(1)(f) Whether the CVR and / or the FDR had been intentionally disconnected

25 The CVR records sounds in the cockpit. The CVR stopped recording at 09:05:15.6. Data from the FDR was used to reconstruct the aircraft's flight path. The last recorded data recovered from the FDR was that at 09:11:27.4.

(i) The views of the appellants' experts

26 Capt Laming thought that the FDR could not have tripped without the pilots' knowledge, because there would have been a warning light above the pilots' heads. He pointed out the circuit breaker panel was at the back of the pilot's seat and that it would have been difficult for the co-pilot to see a pulled circuit breaker. During cross-examination however, he admitted that he could not comment as an expert on the possibility of progressive electrical failure leading to the cessation of CVR and FDR functions.

27 Capt Baston agreed with the NTSC that the cause of the CVR and FDR stoppage could not be determined.

(ii) Prof Howe's view

28 Prof Howe raised the possibility of progressive power failure, especially in view of the fact that the transponders had stopped working at about the same time as the CVR and FDR. The appellants tried to disprove this theory, but to our minds, it is not any less likely than their assertion that the CVR and FDR had been deliberately disconnected. In any case, as we point out at 58, the appellants had to prove their *own* case on a balance of probabilities, and not merely show that their explanations were more probable than the respondent's or that the respondent's explanations were unlikely to be true. The respondent did not have to convince the court that its theories held absolutely true. For this reason, we do not think it necessary to discuss this issue at length here. We agree with the judge that the appellants had not shown, on a balance of probabilities, that the CVR and the FDR had been deliberately disconnected.

(1)(g) Other possible "causes" of the crash

29 The respondent raised some possible "causes" other than suicide. The first was mechanical failure. The NTSC did not rule this out, as only 73 percent of the aircraft was recovered. The second possible cause was rapid depressurisation. While the NTSC thought this unlikely, the respondent's experts did not rule it out. They pointed out that: one, not all the oxygen generators were recovered, so the investigators could not say that none had been activated; and two, even if none had been activated, this may have been because there was no time to do so. The third possible cause was a false indication of depressurisation. The judge found that, on balance, mechanical failure, rapid

depressurisation and a false indication of depressurisation had not been proved to have caused the crash. As he stated, that finding demonstrated how difficult it was to prove the cause conclusively. The discussion at 28 applies here too.

The second issue: the human factors

(2)(a) The NTSC and CID reports

30 The judge considered the NTSC report, but declined to consider the CID report as the appellants' counsel did not have the opportunity to cross-examine the CID's witnesses. With respect to the learned judge, as the appellants' counsel had not cross-examined either the NTSC's witnesses or the CID's witnesses on the human factors, the status of both reports should have been the same. The appellants said that those parts of the NTSC report relating to the human factors should not have been considered for the same reason. If the appellants' argument was taken to its logical conclusion, the NTSB report should not have been considered either, as the respondent's counsel had not cross-examined the makers of that report.

(2)(b) Capt Tsu

31 The NTSC and CID reports found that Capt Tsu had good relations with his family. Although he had lost some money in the stock market, he had a net worth of more than $580,000 at the time of the crash. He had several insurance policies, all but one of which had been bought significantly prior to the crash. The commencement date of the remaining policy was to be 19 December 1997, the day of the crash, but Capt Tsu did not know this. His behaviour before the crash was normal.

(i) The Manado incident

32 The most controversial aspect of the human factors related to three incidents in Capt Tsu's career. The first incident will be referred to as the "Manado incident". On 3 March 1997, Capt Tsu and First Officer Lawrence Dittmer ("FO Dittmer") flew from Singapore to Manado. FO Dittmer claimed that Capt Tsu had executed a series of "S-bends" to attempt to bring the aircraft to the correct altitude for a normal landing.

33 The incident was not as serious as the appellants made it out to be. First, for safety reasons, FO Dittmer had recommended landing on a runway different from that allocated and Capt Tsu had agreed. It was because of this decision, and not because of Capt Tsu's handling of the aircraft, that the aircraft was at too high an altitude for a normal landing. This was not noted by the judge nor by the appellants. Secondly, FO Dittmer could not give specific details about the speed or angle of the manoeuvres. This was curious, given that he was the co-pilot. Thirdly, although Capt Tsu had failed to report the incident, so had FO Dittmer. Both were disciplined for this. It should be noted, however, that an Inquiry Panel found that the charge of mishandling the aircraft against Capt Tsu was not proven. Fourthly, no passengers had complained about the incident.

(ii) The CVR incident

34 The second incident will be referred to as the "CVR incident". On 24 June 1997, Capt Tsu and FO Dittmer flew from Singapore to Jakarta. The pilots discussed the Manado incident before takeoff. Capt

Tsu pulled out the circuit breaker of the CVR to preserve the recording and wanted to move the aircraft back to the gate to have the recording downloaded. He later changed his mind and reset the CVR. The Inquiry Panel found him guilty of deliberately disabling equipment essential for the proper conduct of the flight. Capt Tsu was reprimanded and removed as a Line Instructor Pilot.

35 This incident was not as serious as the appellants made it out to be either. First, the motivation behind Capt Tsu's action was to preserve a conversation regarding the Manado incident, an inquiry into which was underway. This motivation was specific and one-off. Secondly, Capt Tsu had checked the Minimum Equipment List before he pulled out the circuit breaker, to ensure that the safety of the aircraft would not be compromised by his action. Thirdly, Capt Tsu had informed FO Dittmer that he intended to pull the circuit breaker before he did it. His action was open, not surreptitious.

(iii) The Kunming incident

36 The third incident will be referred to as the "Kunming incident". On 20 November 1997, Capt Tsu and an unnamed co-pilot were supposed to fly from Singapore to Kunming. On takeoff, an engine failed to achieve *target* thrust and hence the pilots flew back to Singapore. Because the aircraft did not have fuel dumping capacity, it exceeded the maximum landing weight allowed at Changi Airport. Capt Tsu failed to record the overweight landing and received a "be more mindful" letter from the respondent.

37 Once again, the appellants overstated the seriousness of the incident. First, the appellants' claim that the engine failed to achieve *sufficient* thrust was not universally accepted: Capt Galan and Captain Ganapathy (the respondent's Chief Pilot) said that the engine thrust was above the minimum takeoff thrust, which meant that the thrust was sufficient. Secondly, Captain Anthony Leong (the respondent's Deputy Chief Pilot) and even Capt Baston agreed that Capt Tsu was faced with judgment calls which had to be taken very quickly, for example: whether to apply full thrust and risk harsh braking should the takeoff be rejected, or to take off with lower thrust; whether to stay airborne to achieve acceptable landing weight, or land while overweight. Thirdly, Capt Tsu's failure to record the overweight landing was an administrative breach and did not jeopardise the safety of the aircraft.

38 The NTSC and CID reports found that Capt Tsu was not unduly upset by these incidents and their consequences. Furthermore, the appellants could not say that the respondent had wilfully omitted to discipline Capt Tsu or that it was wrong to have allowed him to assume command of Flight MI 185. The respondent had conducted inquiries into all the incidents and disciplined the pilots involved according to the gravity of their breaches.

(2)(c) FO Ward

39 The NTSC and CID reports found that FO Ward had good relations with his family and friends. He had no financial problems and had rather significant savings for his age. He had an insurance policy, which had been bought many years ago. He did not have any disciplinary or other career problems. His behaviour before the crash was normal.

Limitation of liability

40 Article 17 Para 1 of the respondent's General Conditions of Carriage for Passengers and Baggage

provides:

> Carriage hereunder is subject to the rules and limitations relating to liability established by the Convention unless such carriage is not international carriage to which the Convention applies. In international carriage as defined by the Warsaw Convention the liability of the Carrier for each passenger is limited to the sum of 125,000 French gold francs or its equivalent (US equivalent approximately $10,000); and in international carriage as defined by the Warsaw Convention as amended at The Hague, 1955, the liability of the Carrier is limited to 250,000 French gold francs or its equivalent (US equivalent approximately $20,000).

Article 1(2) of both Conventions defines "international carriage" as:

> any carriage in which, according to the agreement between the parties, the place of departure and the place of destination… are situated either within the territories of two High Contracting Parties or within the territory of a single High Contracting Party if there is an agreed stopping place within the territory of another State, even if that state is not a High Contracting Party…

41 Singapore is a High Contracting Party to both Conventions, but Indonesia is a High Contracting Party only to the Warsaw Convention. Hence the carriage of those passengers who bought single trip tickets to Singapore was governed by the Warsaw Convention, and the carriage of those passengers who bought return tickets to and from Singapore was governed by the Warsaw (Hague) Convention.

The third issue: limitation of liability under the Warsaw Convention

42 Article 22(1) provides:

> (1) In the carriage of passengers the liability of the carrier for each passenger is limited to the sum of 125,000 francs… Nevertheless, by special contract, the carrier and the passenger may agree to a higher limit of liability.

Article 25 provides:

> (1) The carrier shall not be entitled to avail himself of the provisions of this Convention which exclude or limit his liability, *if the damage is caused by his wilful misconduct* or by such default on his part as, in accordance with the law of the court seised of the case, is considered to be equivalent to wilful misconduct.
>
> (2) Similarly the carrier shall not be entitled to avail himself of the said provisions, if the damage is caused as aforesaid by any servant or agent of the carrier acting within the scope of his employment. (*emphasis added*)

43 The English text speaks of "wilful misconduct" or "such default… as… is considered to be equivalent to wilful misconduct". The French text uses "*dol*" or "*une faute qui… est considr comme quivalente au dol*". It should be noted that, in England, only the English translation of the Warsaw Convention text was given effect to by the Carriage by Air Act 1932 (now repealed). In contrast, s 3(2) of the Singapore Carriage by Air Act provides that the French text of the Warsaw Convention shall prevail. Singapore is thus in a rather strange situation with regards to the Warsaw Convention, because its

courts generally follow English case law but, unlike the English courts, they regard the French text of the Warsaw Convention as paramount.

(a) "Wilful misconduct"

44 There are a number of definitions, but one of the most-cited is found in *Horabin v British Overseas Airways Corporation* [1952] 2 QBD 1016:

> To be guilty of wilful misconduct the person concerned must appreciate that he is acting wrongfully, or is wrongfully omitting to act, and yet persists in so acting or omitting to act regardless of the consequences, or acts or omits to act with reckless indifference as to what the results may be.

It is not easy to apply the myriad formulations, which are often slight variations on one another. One of the most useful, practical, tests is that enunciated in *Thomas Cook Group Ltd & Ors v Air Malta Co Ltd* [1997] 2 Lloyds Rep 399:

> 1 The starting point when considering whether.. the acts or omissions of a person entrusted with goods of another amounted to wilful misconduct is *an enquiry about the conduct ordinarily to be expected in the particular circumstances*.
>
> 2 The next step is to ask *whether the acts or omissions of the defendant were so far outside the range of such conduct as to be properly regarded as "misconduct"*…
>
> 3 It was next necessary to consider *whether the misconduct was wilful*.
>
> 4 … *Wilful misconduct is far beyond negligence*, even gross or culpable negligence.
>
> 5 … A person wilfully misconducts himself *if he knows… that it is misconduct* on his part in the circumstances to do or to fail or omit to do something *and yet*:
>
> > (a) *intentionally* does or fails or omits to do it or
> >
> > (b) *persists* in the act, failure or omission *regardless of the consequences* or
> >
> > (c) *acts with reckless carelessness*, not caring what the results of his carelessness may be. (A person acts with reckless carelessness if, *aware of a risk* that goods in his care may be lost or damaged, *he deliberately* goes ahead and *takes the risk, when it is unreasonable in all the circumstances for him to do so*.)
>
> 6 The final step is to consider *whether the wilful misconduct… caused the loss* of or damage to the goods. (*emphasis added*)

(b) "Within the scope of his employment"

45 According to *Carriage by Air (2001)* by Fountain Court Chambers at 10.77, the English courts have applied the ordinary case law meaning of this phrase. The authors cite a test in *Salmond & Heuston on the Law of Torts (21 ed)*:

> … an act is done in the scope… of employment if it is either
>
> (1) a wrongful act authorised by the master, or
>
> (2) a wrongful and unauthorised mode of doing some act authorised by the master.

The respondent correctly pointed out that suicide, murder and dangerous stunts would not fall within the scope of employment. No carrier authorises such acts. In any such circumstance, the pilot would be on a frolic of his own. It would not be an act committed in furtherance of the carrier's business.

(c) Application to the facts

46 The question of whether the pilots were guilty of wilful misconduct is very difficult to answer, simply because of the limited facts available. We could not answer the first two questions in *Thomas Cook* – what conduct was expected in the circumstances and whether the pilots' conduct fell outside the expected range – because we do not know what those circumstances were. The experts discussed the possible "causes" of the crash, but at the end of the day, it was still anyone's guess what the actual "cause" was.

47 The third question – assuming misconduct was established, whether it was wilful – can only be partly answered (see 48). The fourth question was whether negligence did not amount to wilful misconduct. This is most pertinent to the case of an attempted recovery. We do not know what happened: did the pilots not even attempt to recover the plane from its dive; did they so attempt but fail because they were reckless; or did they so attempt but fail because they were negligent or careless? If the last-postulated situation is true, the pilots were not guilty of wilful misconduct.

48 The fifth question will be dealt with next. As for the first part, because we can not answer the first two questions, we do not know whether the pilots would subjectively have known whether their acts or omissions amounted to misconduct. As for the second part, the appellants have not shown that the pilots intentionally did the act or omitted to do an act (this is also implied by the concept of *dol*). First, the corrected radar data and tests did not establish that the trajectory of the aircraft was very steep. Secondly, the condition of the horizontal stabiliser did not lead one to conclude that the aircraft had been manually programmed to dive as steeply as it could. Thirdly, the appellants could not show that the CVR and FDR had been intentionally disconnected. Neither can we judge whether the pilots had persisted regardless of the consequences or acted with reckless carelessness. We do not even know the situation which the pilots faced, hence it is very difficult for us to appreciate the decision they had to make, and the risks appurtenant to each choice.

49 The answer to the seemingly simple sixth question – whether the pilots' acts or omissions caused the crash – also cannot be adequately given. Firstly, we cannot ascertain what the cockpit inputs were. Secondly, because we do not know the circumstances prevailing at that time, we cannot know whether there was something which the pilots should have done but omitted to do.

The fourth issue: limitation of liability under the Warsaw (Hague) Convention

50 Article 22(1) provides:

> (1) In the carriage of persons the liability of the carrier for each passenger is limited to the sum of 250,000 francs… Nevertheless, by special contract, the carrier and the passenger may agree to a higher limit of liability.

Article 25 provides:

> The limits of liability specified in Article 22 shall not apply *if it is proved that the damage resulted from an act or omission of the carrier, his servants* or agents, *done with intent to cause damage or recklessly and with knowledge that damage would probably result*; provided that, in the case of such act or omission of a servant or agent, it is also proved that he was acting within the scope of his employment. (*emphasis added*)

51 The first thing which should be noted is the narrowness of a 25. The Australian Court of Appeal said in *SS Pharmaceutical Co Ltd & Anor v Qantas Airways Ltd* [1991] 1 Lloyds Rep 288:

> … art. 25 … suggests a rigorous standard in order to qualify for full recovery from the air carrier. One of two criteria established is intentional damage. That will be rare indeed, particularly in flight, where the lives of many crew and passengers are inevitably at stake. That *extreme exception* gives a clue, without more, to the high stringency involved also in the alternative ground of exception… So too does the context. For *this is an exception from a compensation regime which is obviously meant to be one of general application*… a study of the minutes of the *Working Group which developed that [Hague] Protocol* shows conclusively that *its purpose was to limit even more rigorously the circumstances of escape from the general regime of limited entitlement, when compared to* the already strict regime which had obtained under *the Warsaw Convention* itself. (*emphasis added*)

The point that the compensation regime provided for in a 22 was meant to be the rule rather than the exception was reinforced by the UK delegation to the Hague conference (quoted in *Singapore Airlines Ltd & Anor v Fujitsu Microelectronics (Malaysia) Sdn Bhd & Ors* [2001] 1 SLR 241):

> The UK agrees with the view that, *as a reasonable limit is set to the operator's liability in return for giving the claimant a right to secure compensation without the burden of proof of negligence*, the Convention should limit very narrowly indeed, that is to those where there is an element of criminal intent, the cases where liability is unlimited. (*emphasis added*)

It should be noted that the maximum liability for each passenger as provided for in the Warsaw (Hague) Convention is double that in the Warsaw Convention.

52 What are the elements of liability under a 25? The court in *Goldman v Thai Airways International Ltd* [1983] 3 All ER 693 said:

> … the article requires the plaintiff to prove the following:

> (1) that the damage resulted from an act or omission;
>
> (2) that it was done with intent to cause damage, or
>
> (3) that it was done when the doer was aware that damage would probably result, but he did so regardless of that probability;
>
> (4) that the damage complained of is the kind of damage known to be the probable result.

The meaning of "within the scope of his employment" has been discussed at 45.

a "Recklessly and with knowledge that damage would probably result"

53 Element (3) requires some clarification. In *SS Pharmaceutical Co Ltd*, the clause was said to involve "one composite concept". It is hence wrong to attempt to construe "reckless" in isolation and to ask whether it should be given an objective or subjective meaning: *Goldman*.

54 It is however possible to attribute an objective or subjective meaning to "knowledge". Courts in common law and most other jurisdictions agree that the knowledge must be subjective: *Air Law (4 ed)* by Shawcross & Beaumont Vol 1 at VII (447); *Carriage by Air (2001)* by Fountain Court Chambers at 10.72. In *Nugent and Killick v Michael Goss Aviation Ltd & Ors* [2000] 2 Lloyds' Rep 222, Dyson J classified the relevant "knowledge" as follows:

> a Actual conscious knowledge: "actual knowledge in the mind of the pilot at the moment at which the omission occurs".
>
> b Background knowledge: "knowledge which would be present to the mind of a person if he… thought about it".
>
> c Imputed knowledge: "knowledge which a person ought to have but does not in fact have".

Dyson J held that only actual conscious knowledge would suffice for a 25 because it is difficult to draw the line between such knowledge and the knowledge in categories (b) and (c) above. With regards to background knowledge, he said:

> If a person fails to apply his mind to a fact because he has temporarily forgotten it, he has no more and no less actual knowledge of that fact at the time of his act or omission than a person who fails to apply his mind to it because he has been temporarily distracted.

With regards to imputed knowledge, he said:

> It is not sufficient to show that, by reason of his training and experience, the pilot ought to have known that damage would probably result from his act or omission.

Auld LJ agreed that background knowledge did not fall within a 25, but Pill LJ dissented on that point.

55 As for "probable", the court in *Goldman* said that it means "something is likely to happen… In other words, one anticipates damage from the act or omission".

b Application to the facts

56 As was the case with the Warsaw Convention, large gaps in the information render insoluble the issue of whether the pilots intended to cause the crash or were reckless and knew that damage would result. The second requirement – intent to cause damage or recklessness with knowledge that damage would result – will be discussed first. As discussed at 48, the evidence did not support a conclusion that the pilots intended to cause the crash. If intent could not be proved, could recklessness with knowledge of damage be shown? The court in *Goldman* said:

> One cannot… decide whether or not an act or omission is done recklessly without considering the nature of the risk involved.

In that case, the court knew what the risk was: the risk of injury should the passengers not be told to fasten their seatbelts during turbulence. This was not so here. The discussion at 48 also applies here. It is also impossible for a court to ascertain whether the pilots had actual conscious knowledge of the risks, as these risks are unknown.

57 As for the first requirement, one cannot say – even on a balance of probabilities – that cockpit input had caused the crash and the lives of all on board. As for the third requirement, it is clear that such a consequence would have been envisaged by a pilot who either intended to cause a crash or who took the risk that his acts or omissions would cause the aircraft to leave its normal flight envelope. However, it is not clear that Capt Tsu and FO Ward intended to crash or to take that risk, and hence that they had envisaged that consequence.

The fifth issue: the burden of proof

(a) Burden and standard of proof

58 The appellants were mistaken when they stated that there is a "higher burden of proof in a civil case where there are allegations of misconduct". The *burden* of proof was on the appellants. At the risk of stating the obvious, we cite *Murphy on Evidence (7 ed)* by *Peter Murphy* at 4.1.5:

> If the claimant bears the burden of proof, and fails to persuade the court that his case has been proved on the balance of probabilities, judgment should be given for the defendant. Moreover*, the test is not whether the claimant's case is more probable than the defendant's, but whether the claimant's case is more probably true than not true*. (*emphasis added*)

At various junctures, the appellants seemed to have forgotten that their task was to prove their own case on a balance of probabilities, not to show that their explanations were more probable than the respondent's.

59 The *standard* of proof is on a balance of probabilities, but a higher degree of probability is required in respect of particularly serious allegations: *Carriage by Air* (2001) by Fountain Court Chambers at 10.82. The appellants said it was unclear whether the judge had required a higher degree of probability, and that, in any case, he was wrong in requiring the appellants to show that the pilots

had intended to commit suicide. They cited Dyson J in *Nugent and Killick*, who said it was not necessary to prove suicidal intent and that "reckless manoeuvres in the sky by non-suicidal pilots", though extremely rare, would suffice for a 25 of the Warsaw (Hague) Convention. The first point to note is that the appellants could not allege that the pilots *intended* to cause the crash without also alleging that the pilots also intended to commit suicide; this was recognised by the judge. The second point is that the judge not only considered the presence of suicidal intent, but also considered whether the pilots were *reckless* so as to come within either or both Conventions. Hence the appellants' contentions on this point are without merit.

(b) Drawing inferences

60 The appellants urged the court to draw the inference that pilot action probably caused the aircraft to depart from its cruising altitude and then crash, *without having to make a finding on why the aircraft departed from its normal flight envelope*. Lord Wright said in *Caswell v Powell Duffryn Associated Collieries Ltd* [1940] AC 152:

> … the precise manner in which the accident occurred cannot be ascertained as the unfortunate young man was alone when he was killed. The court therefore is left to inference or circumstantial evidence… *There can be no inference unless there are objective facts from which to infer the other facts which it is sought to establish*... But if there are no positive proved facts from which the inference can be made, the method of inference fails and what is left is mere speculation or conjecture. (*emphasis added*)

61 The appellants submitted that the following were "positive facts" which supported the inferences they urged on the court. Our comments are in italics.

> a The aircraft went into a steep descent following deliberate acts (depressing the stabiliser trim settings for at least eight seconds, pushing the throttles to maximum thrust and not deploying the speed brakes): *it was not proved that the descent was steep because the accuracy of the corrected radar data was called into question. It was certainly not shown that the pilots committed these acts. Neither was it shown that the descent was caused by these acts, if they were indeed committed.*
>
> b These acts were inconsistent with any emergency descent procedure: *this was not a fact either, as the experts were divided on whether the act of pushing the throttles to maximum thrust (if really committed) would cause the aircraft to lift or to dive.* In any case, the pilot(s) were trained to execute emergency descent procedures. *See 54 on background knowledge.*
>
> c The relatively small impact area was consistent with the appellants' case that the aircraft was driven to the ground: *it was true that the impact area was relatively small, but it was not a fact that this was consistent with the appellants' interpretation. The appellants could not pass off what they sought to prove as a fact.*
>
> d The judge did not find that any mechanical failure occurred: *while the judge did not make a positive finding of mechanical failure, he refused to rule it out as a possible cause.*

The appellants could point to very few "positive proved facts". Moreover, we find it difficult to draw the inferences which the appellants urged us to draw, especially because their arguments were not clearly preferable to the respondent's.

(c) Res ipsa loquitur

62 The appellants sought to rely on *res ipsa loquitur* to fill in the gaps in their case, but this is not allowed. The maxim was explained in *Lloyde v West Midlands Gas Board* [1971] 2 All ER 1240:

> It means that a plaintiff prima facie establishes negligence where: (i) it is not possible for him to prove precisely what was the relevant at or omission which set in train the events leading to the accident; but (ii) on the evidence as it stands at the relevant time it is more like than not that the effective cause of the accident was *some* act or omission of the defendant or of someone for whom the defendant is responsible, which act or omissions constitutes a failure to take proper care for the plaintiff's safety.

As the maxim only allows the plaintiff to establish negligence, it cannot be used to establish intent or recklessness under the Warsaw (Hague) Convention: *Air Law (4 ed)* by Shawcross & Beaumont Vol 1 at VII (69). Similarly, the American court in *Johnson v American Airlines* 20 Avi 18,248 refused to apply the maxim to the Warsaw Convention:

> The doctrine of *res ipsa loquitur* provides a means of establishing negligence from certain facts… We refuse… to extend the doctrine to prove an intentional tort.

(d) Conclusion on the burden of proof

63 Lord Brandon said in *The Popi M* [1985] 2 All ER 712, which concerned a lost ship:

> … it is always open to a court, even after the kind of prolonged inquiry with a mass of expert evidence… to conclude… that the proximate cause of the ship's loss, even on a balance of probabilities, remains in doubt, with the consequence that the shipowners have failed to discharge the burden of proof which lay on them.

He later said:

> No judge likes to decide cases on burden of proof if he can legitimately avoid having to do so. There are cases, however, in which, owing to the unsatisfactory state of the evidence or otherwise, deciding on the burden of proof is the only just course for him to take.

It is understandable if relatives and friends of the deceased are frustrated that lengthy investigations and a full-blown trial have yielded no conclusive cause. But a court of law cannot ignore the relevant substantive law and the rules of evidence in order to offer what may be a false sense of closure.

Costs

(a) Offer to settle

64 The respondent had offered to compensate the appellants S$332,000 for each deceased passenger under O. 22A of the Rules of Court, but the appellants rejected the offer. Order 22A r 9(3) provides:

> (3) Where an offer to settle made by a defendant –
>
> (a) is not withdrawn and has not expired before the disposal of the claim in respect of which the offer to settle is made; and
>
> (b) is not accepted by the plaintiff, and the plaintiff obtains judgment not more favourable than the terms of the offer to settle,
>
> the plaintiff is entitled to costs on the standard basis to the date the offer was served and the defendant is entitled to costs on the indemnity basis from that date, unless the Court orders otherwise.

As the judge had held that the respondent was entitled to limit its liability (the limits being US$10,000 and US$20,000 per deceased passenger under the Warsaw and Warsaw (Hague) Conventions respectively), the appellants had failed to obtain a judgment more favourable than the terms of the offer. Hence we order costs to be awarded as provided in r 9(3).

(b) Costs of more than one solicitor

65 The respondent asked the court to certify costs for more than one solicitor under Order 59 r 19 of the Rules of Court:

> 19. –(1) Costs for getting up the case by and for attendance in Court of more than one solicitor for a party shall not be allowed unless the Court at the hearing or within 7 days thereof so certifies.
>
> (2) Such costs may be allowed notwithstanding that the solicitors are members of the same firm of solicitors.

We find the request justified. We certify costs for two solicitors for both parties.

Conclusion

66 The only plank in the appellants' case was the NTSB report and its sheer vehemence. On a number of previous occasions, the NTSB has been wrong in its assessments of aircraft accidents. We do not think they are yet the last word in aviation accident investigation. The judge also noted that the appellants' position in these proceedings was inconsistent with the stand of the plaintiffs (who may include the appellants) in the US proceedings. In Singapore, the appellants alleged that pilot action caused the crash; in the US, the appellants claimed that mechanical failure caused the crash. It would be strange if the courts of both countries, urged by the plaintiffs in both suits, came to diametrically opposed conclusions.

67 In our judgment the respondent is entitled to limit its liability under the Conventions. Accordingly

we dismiss the appeal with indemnity costs and order that the security deposit together with accrued interest be released to the respondent or its solicitors.

Sgd:

YONG PUNG HOW
CHEIF JUSTICE

Sgd:

CHAO HICK TIN
JUDGE OF APPEAL

Sgd:

JUDITH PRAKASH
JUDGE