The Civil Liabilities of Air Traffic Control Personnel in New Zealand

by

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Introduction

As a contracting State to the Chicago Convention of 1944, New Zealand is under an obligation to[1]

> (a) Provide, in its territory, airports, radio services, meteorological services and other air navigation facilities to facilitate international air navigation, in accordance with the standards or practices recommended or established from time to time, pursuant to [the Convention];

Article 37 of the Convention mandates the International Civil Aviation Organisation (ICAO) to adapt and amend from time to time, as may be necessary, International Standards and Recommended Practices dealing with the rules of the air and air control practices. New Zealand is also required to keep its own regulations as uniform as possible to the Standards and Recommended Practices, which are contained within the Annexes to the Convention.[2]

The primary legislative source of Air Traffic Control (A.T.C.) in New Zealand is the Civil Aviation Act 1964, which gives the Minister of Transport authority to establish air traffic control services.[3] However, it is the Civil Aviation Regulations 1953 which provide a legislative definition, and under which A.T.C. is constituted. Air Traffic Control is defined in Regulation 4 as[4]

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1 Chicago Convention 1944, Article 28; see Shawcross and Beaumont, *Air Law,* 3rd Ed, Vol 2, 115 for text.
2 Ibid, Article 12.
3 Civil Aviation Act 1964, s 11(2).
4 As amended and reprinted 1980/88.

> . . . a service provided for the purpose of
> (a) Preventing collisions between aircraft;
> (b) Preventing collisions on the manoeuvring area between aircraft and obstructions;
> (c) Expediting and maintaining an orderly flow of air traffic.

The structure of A.T.C. and the powers and duties of its officers can be found in orders made pursuant to the regulations by the Director General of Aviation. For detailed provisions relating to these matters, however, the main document is the Manual of Air Traffic Services (the Manual). The Manual is not seen as being part of the tertiary legislative structure, but merely as an "internal instruction document"; a means by which A.T.C. matters may be regulated by the internal administration of the Ministry of Transport.[5]

In comparison, the powers and duties of road traffic officers, for example, are set out in an act and in regulations, not in tertiary documents; and certainly not in any "internal instruction documents". There has in fact been widespread criticism of the use of tertiary legislation under the Civil Aviation Regulations, and some doubt expressed as to its extent and enforceability. Critics include the 1982 Commission of Inquiry into Air Traffic Control, the Statutes Revision Committee of Parliament in reporting on the Civil Aviation Regulations Amendment (22), and the New Zealand Airline Pilots Association.

It will be apparent from the foregoing examination that in New Zealand, air traffic controllers do not operate under a clear legal structure of their own. This causes a number of difficulties relevant to a discussion of the potential civil liability of Air Traffic Control personnel. The aim of this paper is to assess the extent of this liability within the context of an inadequate legal structure; to discuss the supplementary role of the common law; to identify problems created by the concurrent duties and responsibilities resting on both A.T.C. personnel and civil pilots, and finally to consider the New Zealand position. Extensive reference will be made to American case law; in this area it seems likely that New Zealand will follow the approach taken by other ICAO member states.

Part I
A.T.C. LIABILITY: FIRST PRINCIPLES OF TORT AND THE DUTY OF CARE

New Zealand has no specific legislation which determines civil liability resulting from air traffic services provided by the Government. Subsequently, the question whether A.T.C. can be held liable for the consequence of the instructions it gives must be answered on the basis of the common law. Where an air traffic controller is negligent the common law will assess liability according to the first principles of tort and the "duty of care".

[5] Rennie, H.B. "The Legal Status of Legislation and Publications Containing Air Traffic Control Rules and Procedures", unpublished, 3-4. Presented to the New Zealand Air Traffic Controllers Association Conference, Christchurch 1985.

Before liability can be established, and the negligent air traffic controller compelled to compensate the victim for damage caused by his/her wrongful act or omission, the victim/plaintiff must prove the fulfillment of several conditions.S/he must show that the controller was guilty of some wrongful act or omission; that there was a casual nexus between the wrongful conduct and the damage; and that the damage was both reasonably foreseeable and not too remote. Questions of contributory negligence arise in many aviation cases because the accidents frequently involve a number of proximate causes. In these cases, the Government has only to compensate for a part of the damage proportional to the particular act/omission of the air traffic controller.[6]

The Government, as the employer of A.T.C. personnel, will generally be vicariously liable for negligent acts of its employees.[7] It may also have rights of recourse against the negligent controller. Usually these will involve internal disciplinary measures such as suspension or dismissal; however there is nothing in principle to prevent the Government from suing its negligent employee on the basis of the principle enunciated in *Lister v Romford Ice and Cold Storage Co. Ltd*[8]. Given the extent of damage in aviation accidents however, the potential insolvency of negligent employees makes this an unrealistic option.

In addition to the essential elements of a negligence tort identified above, the plaintiff must also prove that the air traffic controller owed him/her a duty of care, and that the controller breached this duty, thereby causing the forseeable damage. There are two sources of this legal duty; the legislation and internal instruction documents which govern the provision of the A.T.C. service; and the general rules of the common law which govern situations such as the relationship between controller and pilot. See for example, *Gill v United States*[9];

> The Government's duty to provide services with due care to airplane pilots may rest either upon the requirements of procedure manuals spelling out the functions of its air traffic controllers or upon general pilot reliance on the Government for a given service.

In the United States the doctrine that a duty arises out of reliance is known as the "Good Samaritan" doctrine; if A.T.C. undertakes to exercise a practice which gives rise to reliance, it has a duty to continue that practice with due care. In Commonwealth jurisdictions the doctrine can be expressed either as in *Gilbert v The Corporation of Trinity House*[10] where it was held that a person who undertakes performance of duties, however they may arise — via legislation or operation of the common law — is liable for injuries caused by his or her negligent discharge of those duties, or alternatively, particularly useful in respect

[6] Contributory Negligence Act 1947, s 3.
[7] Crown Proceedings Act 1950, s 6.
[8] [1957] AC 555.
[9] 429 F. 2d 1072 (1970) at 1075 per Godbold citing *Hartz v United States* 387 F. 2d 870 (1968).
[10] (1886) 17 QBD 795.

of breaches involving negligent misstatements by air traffic controllers, the principle enunciated in *Hedley Byrne and Co. Ltd. v Heller and Partners Ltd*[11]. Essentially the common law duty of care arises out of the basic undertaking and subsequent reliance between controller and pilot.

The standard of care which must be observed by the controller will vary according to circumstance. If a controller makes a reasonable decision as to a course of action in an emergency s/he will not be liable for negligence if the course of action decided upon turns out to be the wrong, and subsequently injurious, one![12]

> Extreme care is not required, but only ordinary care: the doing or failure to do that which an experienced air traffic controller, having due regard for the safety of others, would do or fail to do under the same or similar circumstances.

However, the converse of this may also be true. American cases have shown that although a breach in an emergency situation (for example) will not always amount to negligence, strict compliance with the prescribed procedures will not necessarily preclude a finding of negligence; a controller may reasonably be expected to do more than what is officially required in the Manual. This will be discussed in Part II below.

The primary concern of the air traffic controller is to ensure the "safe, orderly and expeditious" movement of aircraft within the control zone; s/he must do everything that is reasonable in the circumstances to ensure that this objective is achieved. This may involve going beyond the written letter of the Manual.

Part II
THE CASE LAW — AN AMERICAN SELECTION

The following selection of American case law can be conveniently divided into two categories; situations in which the Government (i.e., A.T.C.) has been held liable, and situations where it has not. This classification may help to illustrate the sensitivity shown by the courts to the particular facts of each case.

A. Situations in which the Government has been held liable

In *Hennesey v United States*[13] three crew members were killed when a cargo airplane departing from San Francisco with a heavy load (after having advised the tower of this fact) deviated from the course prescribed by the controller. Instead of proceeding on the radial through a "gap" area of low terrain with mountains or ridges to the right and left, the plane made an unrequired and unusual turn to the west and subsequently crashed into a ridge less than six nautical miles from departure. The

[11] [1964] AC 465.

[12] Bootsma, "International Aspects of Air Traffic Control Liability", unpublished (1982) 18.

[13] 12 CCH Avi 17-410. Cited in Speiser and Krause, *Aviation Tort Law* Vol 2, New York 1979, 388.

deviation which took the plane dangerously left of the assigned radial was unnoticed on the departure controller's radar scope until 2 minutes 10 seconds after takeoff when the pilot asked: "How do you have us tracking toward . . . the gap?". After requesting and receiving the plane's altitude the tower advised the pilot that he was ". . . left of course of the San Francisco [radial]". The crash occurred nine to fifteen seconds after the commencement of this transmission.

The trial concluded that the proximate cause of the crash was the controller's negligence in not detecting the course deviation and in failing to warn the plane sooner than he did. The court also stressed that all testimony in the case had been[14]

> . . . overwhelmingly to the effect that good, standard practice would . . . require departure control, watching the scope and seeing [the aircraft] make a substantial deviation leading it off course out of its protected airspace and toward a hazard . . . to call the pilot . . . and tell him about it . . . and if the danger continues, to warn the pilot to make a right turn to intercept the proper radial and thus return to safe airspace.

In *Harris v United States*[15] a controller's negligence was held to be the sole proximate cause of the crash of a Cessna. The controller, after realising that the pilot was unfamiliar with the airport area that contained unmarked poles and lines not plainly visible, and that there was an optical illusion produced by the terrain surrounding the airport, observed that the pilot was falling below normal approach height. Nevertheless the controller failed to warn the pilot of an unmarked transmission line located about seven hundred feet from the end of the runway, into which the plane crashed.

The court found as a fact that the airplane could have gained sufficient altitude to avoid the line up to five seconds before it struck it. The controller had forty-four seconds before the crash to give the necessary warnings to the Cessna pilot, but instead had called a flight service colleague to choose a flight plan for a military plane in a conversation which consumed the forty-four seconds.

In *Furumizo v United States*[16] the court found under the circumstances that the controller was required to go beyond the letter of the regulations and had to exercise "reasonable care" in the prevention of a collision. A student pilot of a light Piper aircraft was cleared for takeoff behind a DC-8 jet and was warned in accordance with the Manual as to the possibility of a hazard created by the DC-8's wake-turbulence. The pilot took off, was caught in the wake-turbulence and crashed. The controller was held to have been negligent; he had not done enough in the circumstances to caution the pilot to avoid the wake-turbulance, despite the Government's argument that the Manual required no more than the giving of "cautionary information".[17] The court held that a second warning should have been given when the controller realised the

[14] Ibid.
[15] 333 F. Supp. 870 (1971).
[16] 381 F. 2d 965 (9th Cir. 1967).
[17] Ibid, 968, per Duniway, Circuit Judge.

aircraft had started its takeoff immediately, i.e., in disregard of the first warning.

B. Situations in which the Government has been held not liable

In *Hamilton v United States*[18] a Cessna 310 and a Piper Apache (both Visual Flight Rules flights) collided while trying to land on the same runway. Three claims were made against the controllers;

1. that the controllers placed two aircraft in a position of peril by authorising two simultaneous straight-in approaches;
2. that they failed to warn of an emergency and to inform each aircraft of the other's position; and
3. that they had given instructions that directly caused the collision.

The court concluded that the controller was not liable under any of the claims. He had in fact told both aircraft to make a straight-in approach to the same runway, but did not know and had no reason to believe that the aircraft would approach the runway simultaneously. Further, although he was under an obligation to act when he had reason to know an emergency situation existed, when the time came to make a split second decision it was more important that he try to avoid the collision by giving instructions rather than warning the pilots of the emergency. Under V.F.R. the controller was not under a duty to inform aircraft in the same vicinity of each other's position; the controller had to give attention to all aircraft within the control zone and not just one. The pilots proceeding on V.F.R. were held negligent.

In *American Airlines, Inc. v United States*[19] A.T.C. personnel were held not negligent after having granted, and then failed to revoke, permission to an airline flight to make a visual approach. The crash caused by a failure by the pilots to maintain sufficient altitude as the plane was completing its approach base leg at a point about two miles from the end of the runway. The court held that if a clearing for landing is granted the operation of the aircraft then becomes the sole responsibility of the pilot and the controller is not to interfere except as specifically required by the manuals.

Delta Air Lines, Inc. v United States[20] involved an International Flight Rules flight. The approach controller was held to have failed in four respects to give standard advice to a DC-9 that crashed while making an instrument approach to the runway. Three out of the four failures involved violation of specific mandatory Manual provisions. The court ruled that the controller had a duty to both the crew and passengers to comply more fully with the Manual provisions, but the Government was ultimately exonerated due to the lack of a causal connection between the controller's acts/omissions, and the crash which was proximately caused by the pilot's failure to attempt to go around in the last

[18] 497 F. 2d 370 (1974).
[19] 418 F. 2d 180 (1969).
[20] 561 F. 2d 381 (1977).

stages of flight after missing the original approach.

The court made it quite clear, however, that if the causal connection had been present, the Government would clearly have been liable.

It is from much of the American litigation that the air traffic controller's duty has evolved from a narrow one to a wide one.[21] The early cases recognised that the controller's duty only went as far as the standard of care required by the procedure manuals; and once the controller met these requirements, s/he was held to have fully discharged his or her obligations.[22] This view was abandoned in later decisions and A.T.C. was required to do something more than strictly follow the operating procedures; *Ingham v Eastern Airlines, Inc.* was the first case to recognise this.[23]

In light of the *Furumizo*[24] decision where the controller was held to a higher duty than that laid down in his Manual, recent cases have also indicated a significant departure from the previously held view that under V.F.R. conditions the pilot is primarily responsible for the control of his or her aircraft. These decisions have obliged A.T.C. to take any reasonable action to prevent accidents.

Part III
THE RELATIVE RESPONSIBILITIES OF PILOTS AND AIR TRAFFIC CONTROLLERS

The problem of defining the exact scope of the controller's duty often arises due to the fact that both pilot and controller are under concurrent duties. There appears to be a conflict in our legislation; while regulations 59 and 60(f) of the Civil Aviation Regulations 1953 clearly place the primary responsibility for the operation of the aircraft on the pilot-in-command, regulations 19 and 37 oblige the pilot to comply with A.T.C. instruction unless a departure is absolutely necessary in the interests of safety. The increasing complexity of air traffic, however, has led to a greater reliance by the pilot on the air traffic controller.

The nature of the concurrent duty of pilots and controllers was well explained by Wallace J in the Australian case of *Nicholls v Simmonds and Royal Aero Club*[25].

> Whilst it is true that the Visual Flight Guide Manual prepared by the Civil Aviation Department for pilots lays it down that it is the pilot's responsibility to maintain separation from other flights and that they are not to rely upon the air traffic controller giving an alert of possible collision hazard, nevertheless the very framework of the Guide casts duties upon pilots, inter alia, to seek permission to land and requires such pilots to go around once requested by the controller. In my view where there is a duty to submit and obey there is a corresponding duty to, inter alia, warn of danger within the limits of practicability in the performance of the controller's duty and having regard to the circumstances prevailing in each particular case.

[21] Supra at note 12, at 24.
[22] See *Smerdon v United States* 135 F. Supp. 929 (1955).
[23] 373 F. 2d (2nd Cir. 1967).
[24] Supra at note 16.
[25] (1975) W.A.R., 1 at 16-17.

Although it has never been suggested that the primary responsibility for the operation of aircraft has shifted from pilot to controller, the American cases have made it clear that a pilot can only be held primarily responsible for the operation of his or her aircraft after having been informed of all the facts necessary for safe flight. There is a clear statement to this effect in *Spaulding v United States*[26];

> Before the pilot is held legally responsible for his aircraft, he must know [or be held to have known[27]] those facts which are material to the operation of his plane. An important source of this information is tower personnel, air traffic controllers, and service station personnel.

In the earlier case of *Hartz v United States*[28] where a small private aircraft crashed in wake-turbulence of a DC-7 when the controller gave warning not in accordance with the standard phraseology prescribed by the Manual, the court was of the opinion that the pilot was not liable for the operation of his aircraft as the warning was so inadequate that he did not know, or could not have known, those facts material to the safe operation of the aircraft. The pilot could not have been expected to make a reasonable decision to take off until he had all the information supplied (or which should have been supplied) by A.T.C.

Four standards of the concurrent pilot/controller duties were enunciated in *American Airlines, Inc. v United States*[29].

(1) The pilot is in command of the aircraft, is directly responsible for its operation, and has final authority as to its operation.
(2) Before a pilot can be held legally responsible for the movement of his aircraft he must know or be held to have known those facts which were then material to its safe operation. Certainly the pilot is charged with that knowledge which in the exercise of the highest degree of care he should have known.
(3) The air traffic controller must give the warnings specified by the manuals.
(4) The air traffic controller, whether or not required by the manuals, must warn of dangers reasonably apparent to him, but not apparent in the exercise of due care, to the pilot.

In that case an aircraft crashed after failing to maintain sufficient altitude while approaching to land in a thunderstorm. The court held that the pilot failed to exercise due care because the possible presence of downdrafts should have been reasonably apparent to him. Hence, the failure to warn of this possibility could not have been a proximate cause of the crash.[30]

A fifth standard was later added by the District Court for the Middle District of Florida in the 1975 case of *Todd v United States*[31]. It has

[26] 455 F. 2d 222 (1972) 226.
[27] This has been included in statements made in earlier cases, e.g., *American Airlines, Inc. v United States,* supra at note 19.
[28] 387 F. 2d 870 (1968). *Hartz v United States* is another example where the Government was held liable on similar facts to *Furumizo.*
[29] Supra at note 19.
[30] Another good illustration of these duties can be found in *Blount Bros. Corp. v State of Louisiana, Bd. of Com'rs* 333 F. Supp. 327 (1971).
[31] 384 F. Supp. 1284 (1975) 1291.
[32] Supra at note 12, at 28.

been claimed,[32] however, that the decision constitutes a departure from the fourth standard in *American Airlines*. The fifth standard reads:

> Determined by the facts of the case, due care requires an air traffic controller to issue clearances in accordance with F.A.A. manuals and over and beyond the requirements of the Manual the clearances must be reasonably designed to ensure the safety of aircraft flight.

It is probable that this standard does depart from the fourth standard; even if the danger is apparent to the pilot the controller must ensure that clearances are reasonably designed to ensure the safety of aircraft flight.

Visual Flight Rules/Instrument Flight Rules Conditions

If the fifth standard enunciated in *Todd* is to be applied in determining the respective liabilities of pilots and air traffic controllers, the courts will need to make a distinction between V.F.R. and I.F.R. situations. If a court applied the fifth standard to a V.F.R. flight it could be argued that this would effectively remove the primary responsibility for the safe operation of the aircraft from the pilot and place it upon the controller.

Instrument Flight Rules are a set of rules which the pilot must follow when s/he executes a flight in conditions of poor visibility. Visual Flight Rule conditions can simply be thought of as "good weather" conditions. The specified meteorological minima for V.F.R. operations can be found in the tertiary legislation.[33] Obviously the role of the air traffic controller, and the relationship between pilot and controller will vary depending upon the set of rules in accordance with which the pilot decides to fly his/her aircraft. It was observed in *Calarie v United States*[34];

> Under I.F.R. the pilot has less discretion in conducting his flights. A pilot under V.F.R. navigates on visual cues, whereas a pilot under I.F.R. is presumed to be unable to see other aircraft or the ground, so he is guided by air traffic controllers.

The result is that the primary concern of the air traffic controller is with I.F.R. aircraft; the giving of advice and assistance to V.F.R. has been held to be subject to the workload created by the "earlier" duty to I.F.R. traffic.[35]

Consequently, in V.F.R. conditions emphasis will tend to be placed on the pilot's primary responsibility; in practice when an aircraft is flying in accordance with V.F.R. the pilot will often be in a better position to watch for hazards than the air traffic controller on duty. Failure by a controller to warn of danger, therefore, may not constitute negligence in such conditions; the controller will only be under a duty to warn in circumstances which place him/her in a better position to watch for hazards and forsee harm. This has been referred to as the "superior van-

[33] Civil Aviation Safety Order 1, Appendix 1.

[34] 18 Avi Cas 18, 393. Cited in Shawcross and Beaumont, *Air Law* (4th ed 1986) Vol 1, Div 6, Ch. 22, 36.

[35] For example, in *Murff v United States* 598 F. Supp. 290 (1984).

tage point" theory.[36] The duty arises because the controller is often "possessed of greater experience, superior observations facilities and localised information". [37]

The court in *Richardson v United States*[38] made some relevant observations after considering a number of cases involving the respective duties of A.T.C. and pilots. A balancing process is involved; the vantage point of the pilot will be weighed against the tower's superior knowledge or awareness of the pilot's danger.[39]

> Those negligence cases dealing with the respective duties of pilot and tower personnel are frequently plagued with what seems to be a paradox. This Air Traffic Controller must perform certain functions necessary to the maintenance of a high degree of aviation safety, yet the pilot is burdened with the ultimate responsibility for the prudent handling of his aircraft . . . The interrelationship existing between pilot and ground personnel can be characterised as one requiring extensive cooperation . . . The pilot must be supplied with those pertinent facts that he is not in a position to ascertain for himself. Accordingly, the Air Traffic Controllers are under a duty to provide certain information and warnings to the pilot so that he has the opportunity to make a competent decision as to the operation of the aircraft . . .

If the fifth standard enunciated in *Todd v United States*[40] is given too strict an application, especially to V.F.R. situations, serious doubts may be raised as to where the primary responsibility for safe flight actually lies. The better view seems to be that this responsibility still rests with the pilot, and that[41]

> . . . the function of tower personnel is merely to assist the pilot in the performance of the duties imposed, not relieve him of those duties.

Part IV
CONCLUSION

It is important to define the precise scope of the controller's duty. S/he may be required to consider and assess the importance of a great number of varied and complex factors within a short space of highly pressured time;[42]

> . . . position, type, speed and direction of movement of aircraft desiring to land; the estimation of their future positions; the number and capabilities of aircraft wishing to depart from the airport; the pattern, length, direction and condition of runways available for use; wind speed and direction; noise abatement requirements, wake-turbulence, and traffic information . . .

All of these factors, together with the constant technological advances in aircraft, will necessarily serve to place circumstantial restrictions in what can be expected of the air traffic controller.

[36] The Hon. P.T. Mahon QC, "The Legal Responsibilities of the Controller at Work"; Address to the 1985 NZATCA Conference at p. 6.
[37] Ibid, citing the court in *Gill v United States* 429 F. 2d 1072 (1970), 3.
[38] 372 F. Supp. 921 (1974).
[39] Ibid, 925.
[40] Supra at note 31.
[41] *United States v Miller* 303 F. 2d 703 (1962) 710-711.
[42] Wengelin DJ in *Allen v United States* 370 F. Supp. 992 (1973) 999-1000.

At the same time, increased availability and accuracy of information via technological developments of a different nature serve to increase the demands placed on A.T.C. personnel. Better information may place the controller in a "superior vantage" position to that of the pilot, who may in turn have no alternative but to increase reliance on the controller and his/her instructions. Inevitably the controller must accept increased legal responsibility, although the courts, in dealing with concurrent liabilities, should take the opportunities provided by *American Airlines, Inc. v United States*[43] and *Todd v United States*[44] to reach a just and equitable apportionment of responsibility on the facts of each particular case.

Concurrent responsibility difficulties are not the only difficulties to be overcome in the struggle to define the precise scope of A.T.C. duties. In holding controllers bound to perform duties extending beyond the scope of those contained in their official manuals the lead provided by the American courts has aroused concern in A.T.C. and civil aviation circles generally within New Zealand. The controller does not know what is expected of him/her; i.e., whether total compliance with the official Manual will be sufficient to meet common law requirements. As the technical rules contained in the Manual have been shown by the American courts to be sometimes ambiguous, contradictory, and insufficient in the interests of safety, the common law has readily found new duties and tasks for the controller, thereby expanding the potential liability of A.T.C.. Until the area is reformed, the two legal sources must operate side by side to ensure the protection of third parties' pecuniary and non-pecuniary interests.

There are indications that the New Zealand attitude towards A.T.C. liability will, given an opportunity, closely follow the approach taken by the courts in the United States. The writer believes that approach was accurately described by the Hon. P.T. Mahon in an address to the 1985 Convention of the New Zealand Air Traffic Controllers Association:[45]

> The air traffic controller is not the insurer of the safety of the flight. His duty is to keep the plane under observation and to identify, so far as is reasonably possible, the emergence of any fact or set or circumstances which may be unknown to the pilot and which may be leading to danger. If the controller warns the plane promptly of these facts, he has discharged his legal responsibility towards the plane and its occupants. The basic question will always be — did the controller use diligence in searching for imminent danger which the pilot may not have identified?

Prospects for reform — perhaps by way of a legislative "aeronautical" code — are not good. There is no impetus or sense of urgency, due no doubt to the absence of A.T.C. litigation in New Zealand. The deficiencies in the present law remain unidentified. It is hoped that this situation will change before, and without, the suddenly and painfully enforced awareness that a major air disaster would provide.

[43] Supra at note 19.
[44] Supra at note 31.
[45] Supra at note 36, at 12.