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Date: **29 January 1999**

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Fax: **0031.23.562 41.20** 566.30.02

Pages: **1 + 14**
(total)

UI/SF/f990101

Dear Mr. Wolleswinkel,

It was a pleasure meeting you in London on Monday. As promised, I am faxing you a copy of an article on the El-Al accident, which attempts to cover the distribution of responsibilities between pilots and controllers in the light of this accident. The views expressed in this paper are personal opinions. The Article will appear in vol. 28 of the *Annals of Air and Space Law*, published by the *Institute of Air and Space Law* of McGill University in Montreal.

I hope that this paper will be useful to your organisation. Do not hesitate to contact me should you wish more research on the subject.

With best regards,

swisscontrol
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F. Schubert

Enclosure:

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AIRCRAFT IN EMERGENCY:

Protection of Pilots, Controllers, and Third Parties on the Surface

by

Francis P. Schubert*

SYNOPSIS

I. Introduction

In the absence of ground-based navigational assistance, during the dawning years of aviation, the commanding pilot bore complete responsibility for the safety of aircraft, passengers, and cargo. The pilot was held fully responsible for taking any necessary measures to avoid collisions with other aircraft, obstacles on the surface, or ground terrain. These presumptions, however, have since become obsolete. Currently in air transportation, there are two main actors sharing responsibility for the safety of air navigation: the commanding pilot and the air traffic control (ATC) agents. Generally, where air traffic control is provided, the pilot controls the direction and maneuvers of the aircraft, while ATC delivers the requisite instructions and clearances to ensure adequate physical separation from other users of airspace. Furthermore, ATC provides air crew with any necessary navigational assistance as required.

As soon as two or more actors are granted effective control over the course of aircraft, the issue of allocating responsibility between them automatically arises. For the purposes of safety, it is essential to determine the scope of competence imposed upon each of the relevant actors, and to specify which one of them retains the power of final decision in situations where

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multiple actors may offer conflicting assessments of the circumstances. The distribution of responsibility between pilot and ATC is a critical issue, particularly whenever legal liability must be allocated between them, following an aircraft accident. The core of most liability claims arising from such accidents hinges upon this question, and the answer must therefore be sought in an abundance of specialized literature and judicial decisions.

Under extreme circumstances, such as any emergency situation, the distribution of responsibility between pilot and ATC has proven acutely problematic. Such situations invariably attract confusion from all sides, resulting in reciprocal yet sometimes diverging expectations. Furthermore, the time available for action and reaction is shortest in cases of emergency. This aspect of allocating responsibility has received significant attention in both legal theory and practice, though it has thus far focused on the respective duties of pilots and ATC to protect the safety of aircraft occupants, to the exclusion of other parties possibly affected.

An aircraft accident in 1992 at Bijlmermeer, the Netherlands, highlights an additional dimension of this issue.[1] In deciding the Bijlmermeer case, the Safety Board court emphasized that "in the handling of emergency situations not only the safety of aeroplane and passengers but also the possible risk to third parties should be taken into account."[2] A large freighter aircraft departing from Amsterdam's Schiphol airport suffered a severe double-engine failure within minutes from take-off. The commanding pilot attempted to fly back toward Schiphol, via the most direct route, for an emergency landing. Instead, the aircraft crashed en route over a residential area, causing dozens of casualties to people on the ground as well as severe property damage.

Aside from the conventional questions raised with regard to the cause of accident, the investigation report contained implicit questions on whether ATC had contributed to the damage caused to third parties on the ground. Specifically, it raised the issue of whether ATC could and should have taken measures that forced the aircraft to pursue an extended course, thereby circumnavigating the endangered residential area. Although the report concluded that ATC did not bear any responsibility in this case, it posed a number of theoretical questions, emphasizing a need to clarify certain aspects of aircraft safety for similar cases in the future.

The issues reflected in the Bijlmermeer case are extremely difficult to resolve through mere theoretical analysis. A conflict of interests naturally arises between the people on-board an aircraft and the people on the ground in the event of aircraft emergency. It is often impossible to protect the interests of one group without infringing upon the interests of another. In effect, if the aircrew proceeds with an emergency landing, it must determine the optimal landing site and flight path to reach that point. Normally, any crew will opt for the maneuver that best serves the interests of aircraft occupants. However, during the approach and landing phases, aircraft may create distinct special risks for third parties on the surface, under the flight path, and in the vicinity of the landing site.

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[1] For a general discussion of the Bijlmermeer disaster, see P. Mendes de Leon & S. Mirmina, "The International and American Law Implications of the Bijlmermeer Air Disaster" (1993) 6:1 Leiden J. Int'l L. 47.

[2] See Netherlands Aviation Safety Board, *Aircraft Accident Report 92-11, EL AL flight 1862, Bijlmermeer, Amsterdam, October 4, 1992* (Hoofddorp, 1994) at 42 [hereinafter *Bijlmermeer Disaster Report*].

At this time, the inherent danger of emergency situations for the ground population underneath any particular flight path must be assessed against the interests of aircraft occupants. The shortest or most direct path of approach to the landing site, while providing optimal protection for the aircraft and its occupants, may involve a disproportionate risk for the ground population underneath this path. The Bijlmermeer disaster also emphasizes the differing perspectives of pilot and ATC over a single situation. The pilot remains in a better position to determine the actions that will primarily spare the aircraft; meanwhile, ATC remains in a better situation to determine the actions that will primarily preserve the interests of an underlying population. The twin determinations may result in conflicting judgments regarding the necessary course of action. Ultimately, one of these considerations must prevail over the other.

This paper addresses the distribution of responsibility between the pilot and ATC in light of the Bijlmermeer disaster. It begins by explaining how statutory responsibility can translate into legal liability. Next, the general responsibilities of the pilot are examined, while the third section contains an explanation of how the nature and scope of these responsibilities may change when an aircraft is subjected to ATC. This discussion focuses on the legal effects of ATC clearances and instructions, but also questions whether these general principles must be modified in cases of emergency. Finally, as a separate issue, the interests of third parties on the surface are examined.

II. The Dynamic Process of Allocating Responsibility

In spite of the depth of debate revolving around the basic question of distributing responsibility between the pilot and ATC, it is impossible to draw any firm conclusions or propose any absolute rules on this topic. Air traffic management is a dynamic activity. In a pendulous movement, technological improvements continue to affect the distribution of responsibility between both actors. In contrast to the earlier situation, where the safe conduct of aircraft lay in the hands of pilots without any ground-based assistance, serious responsibility is presently given to ATC aided by sophisticated assistance systems such as radar.

While the pilot and the ATC are mutually entrusted with specific tasks and duties in contemporary aviation law, both of these actors seem to exert conclusive influence on the conduct of aircraft. Thus, their respective responsibilities are closely interconnected.[3] However, in the words of Bhatt, "the air traffic controller is most vitally concerned with the safety and overall problems of air traffic"[4] in the decision-making context. Nevertheless, trends for the near-future could imply an important reversal of this allocation of

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[3] Their respective duties are interconnected to the extent that many experts argue an international regulation on the liability of ATC could only be envisaged if it simultaneously covered the liability of aircrews. This position was expressed, for example, in the course of the International Civil Aviation Organization (ICAO)'s work on a possible regime for international regulation of ATC. See R.A. Loosli, "La Responsabilité des Contrôleurs de la Navigation Aérienne" (1970) Revue Générale de l'Air vol. 27, 364 at 376; H. Beaubois, "Le Statut Juridique du Commandant d'Aéronef (en droit public et en droit privé)" (1955) vol. IX. Revue Française de Droit Aérien et Spatial 221 at 240; P. Martin & E. de Montlaur Martin, eds., *Shawcross and Beaumont: Air Law*, vol. 1, 4th ed. (London: Butterworths, 1977) at VI/34 [hereinafter *Shawcross & Beaumont*].

[4] S. Bhatt, "Responsibility in International Law: Some Aspects of the Problem of Air Traffic" (1968) 8 Indian J. Int'l L. 413 at 418.

responsibility, with the foreseeable introduction of concepts such as "Free-Flight" or CNS/ATM[5] resulting in greater responsibility for the pilot to prevent collisions.[6] Aside from clearly-identified and specific modifications to the distribution of legal responsibilities, this evolution in the law will continue to leave critical gray areas remaining for future determination.

Consequently, regular inquiries must be addressed to current conditions of regulation that pinpoint the respective responsibilities of multiple actors. Yet there are limits to this process, since the distribution of responsibilities between multiple actors can only be expressed in broad terms. In practice, this distribution will largely depend on the particular circumstances of each case, and the conclusions rendered in one case cannot automatically be extended to the circumstances of another case. Furthermore, in the event of emergency, it is relatively easy to determine *a posteriori* what the behavior of the relevant actors should have been, although it is frequently forgotten that a genuine emergency situation never appears the same in the course of any subsequent investigation.

III. The Responsibility and Liability of ATC

Historically, the allocation of responsibility between pilots and ATC has followed different paths in the common law and civil law traditions. When the first cases involving ATC were litigated, the common law did not accommodate any notion of shared liability. Even if several actors were implicated in the events leading to an accident, liability was allocated only to one of them, usually the person whose actions were decisive in causing the damage. The prevailing legal principles led to an elaboration of the "primary responsibility" theory.[7] In the field of air transportation, primary responsibility rested with the person who held ultimate decision-making power over the conduct of an aircraft. Thus, the actor bearing primary responsibility was equivalent to the person bearing the entire burden of legal liability. The severity of this regime was, however, mitigated by the possibility that a victim who was partially responsible for the accident could not claim compensation from the defendant: "[i]n those days contributory negligence was a complete defence."[8] The common law has since evolved, and presently admits the principle of shared liability,[9] which imposes limits upon the amount of recoverable damages according to shared liability and its corresponding obligations of reparation.[10] The allocation of liability no longer depends upon the person bearing primary responsibility, but rather on an

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[5] Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) is an ambitious program, launched under the auspices of ICAO, which will determine the future long-term framework for air navigation.

[6] Although the introduction of tools such as Airborne Collision Avoidance Systems (ACAS) is frequently considered to entail a reversal of responsibilities, it should be remembered that ACAS was devised as a "safety net" offering last-resort collision assistance in case of a failure of the normal ATC system, and not as an autonomous traffic separation tool.

[7] The primary responsibility theory was developed by American courts. It was a general principle, not limited to ATC, applying to all air transportation cases in which several actors may have contributed to the occurrence of damage, including aviation-induced environmental damages. See *Griggs* v. *Allengheny County*, 396 U.S. 84 (1962). Although it is not officially used in legal terminology, the notion of primary responsibility also appeared in Roman law. Bloch, for instance, refers to "technical responsibility" for a flight. See J.-P. Bloch, *La Responsabilité des Services de la Circulation Aérienne* (Lausanne: René Thonney-Dupraz, 1973) at 35.

[8] I.J. Booth, "Governmental Liability for Aviation Accidents Caused by Air Traffic Control Negligence" (1977) I Air L. 161 at 167. For a court decision, see *Todd* v. *United States*, 384 F. Supp. 1284 (M.D. Fla. 1975).

[9] American case law presently refers to "comparative negligence." See *Rudelson* v. *United States*, 431 F. Supp. 1101 (C.D. Cal. 1977).

[10] See, *e.g.*, *Rodriquez* v. *United States*, 823 F.2d 734 (3d Cir. 1987).

evaluation of the "reciprocal duties"[11] of multiple actors. In this respect, the common law has dovetailed with the heritage of Roman law,[12] which has traditionally applied the principle of shared liability. Presently, under either system, when several persons have contributed to the occurrence of an event causing damage, each individual must compensate for this damage up to the amount corresponding to his own responsibility.[13]

IV. The Duties of the Commanding Pilot

Though broadly covered in the introductory paragraphs of several pertinent international regulatory instruments,[14] the practical distribution of responsibility between pilot and ATC remains a difficult process. As clear as the basic principles may appear on paper, their implementation often raises complicated issues, which would require more time to resolve than pilots and controllers will normally have in emergency situations. Furthermore, it appears that an understanding of the basic principles on either side does not necessarily match the theoretical allocation. Controllers traditionally tend to expand the scope of their own duties based upon a strong sense of professional ethics, rather than formal legal requirements, while pilots will habitually place reliance on ATC in excess of the regulatory guidelines.

The responsibilities of a commanding pilot regarding the conduct of aircraft are chiefly explained in Annexes 2[15] and 6[16] to the Chicago Convention, which offer a clear description of the pilot's duties with few references to the incidence of ATC. The concurrent duties for ATC are defined in Annex 11[17] as well as various ancillary regulatory documents.[18] The applicable regulations basically provide for ultimate responsibility in the pilot over the safety of aircraft, occupants, and on-board cargo: "the pilot-in-command of an aircraft shall have final authority as to the disposition of the aircraft while in command."[19] This general principle is widely confirmed in domestic laws.

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[11] S.B. Early, W.S. Garner Jr, M.C. Rueggsegger & S.S. Schiff, "The Expanding Liability of Air Traffic Controllers" (1973) 39 J. Air L. & Comm. 601 at 618. See also *Maryland ex. rel. Meyer* v. *United States*, 257 F. Supp. 768 (D.D.C. 1966). For an Australian court decision, see *Nichols* v. *Simmond*, September 19, 1973, unrep. (Sup. Ct. W.A.-Burt J, 1973).

[12] For an application of this principle, see Cons. d'Etat, 21 November 1984, *Sté d'Assurances Gerling-Konzern et autres c. l'Etat*, reproduced in (1985) vol. 153. Revue Française de Droit Aérien et Spatial 104; Trib. admin. Clermont-Ferrand 1re, 10 January 1984, *Cie Française d'Assurances Européennes c. Ministre des Transports*, reproduced in (1985) vol. 153. Revue Française de Droit Aérien et Spatial 120; Trib. admin. Bordeaux 2e, 21 June 1984, *Union Aéronautique du Périgord et Demain c. Chambre de commerce et de l'industrie de Périgueux et Ministre des transports*, reproduced in (1985) vol. 153. Revue Française de Droit Aérien et Spatial 123.

[13] The allocation of liability may take place, depending on the circumstances of the case and the applicable law, either at the level of direct action or the level of recourse action. See, *e.g.*, *Todd* v. *United States*, *supra* note 8; *Townsend* v. *Piedmont*, 20 Avi. 18,072 (S.D.N.Y. 1986).

[14] See, *e.g.*, *Code de l'aviation civile*, "Règles de l'air," c. II, para. 3.6.1.

[15] See *Convention on International Civil Aviation*, 7 December 1944, 15 U.N.T.S. 295, ICAO Doc. 7300/6 [hereinafter *Chicago Convention*], ann. 2,. 9th ed. (1991) [hereinafter *Annex 2*].

[16] See *Chicago Convention*, *ibid.*, ann. 6, part I, 6th ed. (1995) [hereinafter *Annex 6(I)*]; *Chicago Convention*, *ibid.*, ann. 6, part II, 5th ed. (1995) [hereinafter *Annex 6(II)*].

[17] See *Chicago Convention* , *ibid.*, ann. 11, 10th ed. (1994) [hereinafter *Annex 11*].

[18] See ICAO, *Procedures for Air Navigation Services -Rules of the Air and Air Traffic Services*, ICAO Doc. 4444-RAC/501, 13th ed. (1996) [hereinafter *Procedures for Air Navigation Services*]; ICAO, *Regional Supplementary Procedures*, ICAO Doc. 7030, 4th ed. (1986).

[19] See *Annex 2*, *supra* note 15, § 2.4. See also *Annex 6(I)*, *supra* note 16, c. .3, para. 3.2; *Annex 6(II)*, *supra* note 16, c. 4, para 4.5.1: *Duties of Pilot-in-command* - "The pilot-in-command shall be responsible for the operation and safety of the aeroplane and for the safety of all persons on board during flight time." For an example of national law, see *Swiss Federal Ordinance on the*

French law, for instance, states that "le commandant de bord a, dans tous les cas, la responsabilité de l'aéronef et de ses mouvements."[20]

The explicit words chosen by ICAO, and the lack of detailed reference to ATC, may be interpreted as support for the thesis that those rules contained in Annex 2 should apply whether or not ATC is provided. Nonetheless, countless situations exist in practice where an aircraft will be supported by ground-based assistance in the form of clearances and instructions, which are frequently expressed in a positive manner. More recently, a court has pronounced that "[w]henever a plane is moving, whether on the ground or in the air, the captain has the final and ultimate responsibility. He is, however, in constant contact with ground and guided by the Government control facilities [. . .]. The responsibility is mutual and coordinated at all times."[21]

Therefore, the possibility of compliance with the basic principles set forth in Annex 2 - such as "an aircraft shall not be operated in such proximity to other aircraft as to create a collision hazard"[22] - may be beyond the pilot's immediate control.[23] Therefore, the legal effect of ATC clearances and instructions should be defined, distinguishing between situations where a pilot is bound by ATC interventions and contrary situations where he may claim final authority over the aircraft.

V. The Legal Effect of ATC Clearances and Instructions

ATC services were introduced to support the aircrew once the rate and complexity of air traffic increased to the extent that pilots, lacking a comprehensive and contemporaneous picture of the relevant traffic situations, were no longer considered capable of taking all necessary measures for flight safety. Air traffic services are formally defined by ICAO as "a generic term meaning variously flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service)."[24]

The scope of air traffic services covers various types of assistance to aircraft. Personnel in charge of the alerting service and the flight information service do not deliver any clearance or instruction to service users. The purely advisory value of their assistance stems directly from international regulations.[25] ATC, on the contrary, has a decisive impact on controlled flights, as ground operators deliver explicit clearances and instructions. This paper focuses on the

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Rules of the Air, , 4 May 1981, ORA, RS 748.121.11, art. 5 [hereinafter *Swiss Federal Ordinance*].

[20] See *Code de l'aviation civile*, *supra* note 14, art. 2.3. For a French court decision, see Cons. d'Etat, 8 July 1983, *Roullet et S.A. Mounié*, Arrêt du Conseil d'Etat français du 8 juillet 1983, *in* RFDA vol. 37, 1983, p. 363. For American case law, see *Todd* v. *United States*, *supra* note 8; *Rudelson* v. *United States*, *supra* note 9.

[21] See *Neff* v. *United States*, 282 F. Supp. 910 (D.C.D.C. 1968).

[22] See *Annex 2*, *supra* note 15, § 3.2.1.

[23] The principle of shared control over the aircraft is also confirmed, for instance, in *Townsend v. Piedmont*, *supra* note 13. In this case, shared liability between the pilot and the controller was established following an emergency braking which injured a passenger, as the aircraft was not under the sole control of the pilot at the time of the accident.

[24] See *Annex 11*, *supra* note 17, Definitions.

[25] See, *e.g.*, *ibid.*, para. 4.1.1, note: "Flight information service does not relieve the pilot-in-command of an aircraft of any responsibilities and the pilot-in-command has to make the final decision regarding any suggested alteration of flight plan." See also *Procedures for Air Navigation Services*, *supra* note 18 at 10-23, para. 5, note, regarding the use of radar in the flight information service.

status of such clearances and instructions, which are often ambiguous in practice.

The general understanding in the early days of ATC, supported by manifold court decisions, was that these clearances were essentially permissive and non-binding.[26] Additionally, many authors shared this view, remarking an acceptance that "Air Traffic Control services are more advisory than directory."[27] This opinion was strongly supported by ICAO terminology. ATC interventions took the formal denomination of "air traffic control clearances," and were defined as "[a]uthorisations for an aircraft to proceed under conditions specified by an air traffic control unit."[28]

However, with the increased frequency of air traffic, it has become necessary to vest ATC agencies with powers entailing a binding status. This need also arose from improved aircraft performance and technical equipment, which permitted significant reductions in physical separation between aircraft but equally limited the available response time for the aircrew and ATC involved in collision-avoidance measures. This new competence was explicitly acknowledged in the early nineties with the introduction in ICAO terminology of the "air traffic control instructions." They are defined as "[d]irectives issued by air traffic control for the purpose of requiring a specific action."[29]

In the current understanding, ATC clearances and instructions are mandatory. Pilots are consequently obliged to comply. ATC services are required to prevent collisions between controlled flights and the appropriate agents may be held liable for failures to observe this duty. This objective cannot be fulfilled unless pilots execute these instructions and follow these clearances.

However, the mandatory effect of ATC interventions is relative, even under present conditions. An instruction is compulsory, but the commanding pilot is still entitled to question its authority. A received instruction may fail to satisfy the pilot or even compromise aircraft safety, for reasons which are neglected by ATC or not apparent to the controller. In fact, the pilot may request clearance for reasons of sheer convenience, to satisfy a wish to use the shortest route available or to show picturesque scenery to passengers. Whatever the reason, it is the pilot's responsibility to seek new clearances which comply with safety requirements;[30] "[i]f an air traffic control clearance is not satisfactory to a pilot-in-command of an aircraft, the pilot-in-command may request and, if practicable,[31] will be issued an amended clearance."[32]

Furthermore, the growing influence of ATC on flight safety has not fundamentally modified the principle of final authority in the pilot. A commanding pilot, even cases of a controlled flight under Instrument Flight Rules,[33] is not expected to blindly follow ATC instructions. The pilot retains

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[26] See, *e.g.*, *American Airlines* v. *United States* 221 F.2d 62 (D.C. Cir 1955); *New York Airways, Inc.* v. *United States*, 283 F.2d 496 (2d Cir. 1960).

[27] J.T. Keenan, "Case Law and Comments: ATC Liability" (1975) I Air L. 28 at 30.

[28] See *Procedures for Air Navigation Services, supra* note 18 at I-2, Definitions.

[29] *Ibid.*

[30] See *ibid.*, para. 10.1.4.

[31] Note that the use of these words "if practicable" also hints toward the binding value of ATC interventions.

[32] See *Annex 2, supra* note 15, § 3.6.1.1, note 2. See also *Procedures for Air Navigation Services, supra* note 18, § 10.1.4.

[33] In other words, the cases where ATC bears the greatest influence.

ultimate responsibility for flight safety. ATC does not substitute for a pilot's duty to regard aircraft safety. Pilots are reminded that "[i]t is essential that vigilance for the purpose of detecting collisions be not relaxed on board an aircraft in flight, regardless of the type of flight or the class of airspace in which the aircraft is operating, and while operating on the movement area of an aerodrome."[34] The preservation of the pilot's final authority is expressed, for instance, in French aviation law, which states that "[l]es clairances ne dégagent en aucune façon la responsabilité du commandant de bord vis-à-vis de l'exercice d'une vigilance constante en vue d'éviter les abordages avec d'autres aéronefs et les collisions avec les obstacles ou le sol."[35]

This principle is also illustrated by several court decisions. In *Churchill Falls Corporation Ltd & Atlantic Aviation of Canada Ltd* v. *Her Majesty the Queen*,[36] the pilot of a descending aircraft had received ATC clearance to follow an approach procedure which had been withdrawn. Compliance with the instruction resulted in a ground collision. The court ruled that ATC was negligent, but not liable in law, and held that the pilot retained a duty to refuse clearance that proceeded from an obsolete procedure. The court accepted the view that once clearance has been delivered and accepted by the pilot, it is no longer the responsibility of ATC to monitor the descent of that aircraft.[37] Moreover, it seems that ATC agents who issue compulsory instructions are not expected to be infallible, as "[a]n air traffic controller is not supposed to give his attention to any one aircraft [. . .] if other aircraft are present."[38]

The sustained view of final authority in the pilot implies that a pilot is entitled - and compelled – in emergency situations to deviate from the received instructions or from the rules of the air:

> The pilot-in-command of an aircraft shall, whether manipulating the controls or not, be responsible for the operation of the aircraft in accordance with the rules of the air, except that the pilot-in-command may depart from the rules of the air in circumstances that render such departure absolutely necessary in the interests of safety.[39]

Likewise, "an aircraft shall adhere to the current flight plan [. . .] submitted for a controlled flight unless a request for a change has been made and clearance obtained from the appropriate air traffic control unit, or unless an emergency situation arises which necessitates immediate action by the aircraft."[40]

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[34] See *Annex 2, supra* note 15, § 3.2, note.

[35] See *Code de l'aviation civile, supra* note 14, c. II, para. 3.6.1. For American case law, see *United States* v. *Schultetus*, 277 F.2d 322 (5th Cir. 1960); *Todd* v. *United States, supra* note 8.

[36] See *Churchill Falls Corporation Ltd & Atlantic Aviation of Canada Ltd* v. *Her Majesty the Queen* (10 July 1974), Nos. T-1414-71 & T-274-72 (Federal Court of Canada, Trial Division).

[37] For continental law, see, Conseil d'Etat, 21 November 1984, *Caisse nationale suisse d'Assurance en cas d'accidents, Gerling-Konzern AG, Kunststoff-Technik AG c. Etat français, Ministre des transports, Ministre de la défense*, published in RFDA, vol. 153, 1985, p. 104 . In this decision, full liability for the accident was allocated to the pilot, although the received clearances contravened applicable regulations. The court found that it was the pilot's duty to verify the acceptability of a clearance. This decision was later modified *Sté d'Assurances Gerling-Konzern et autres c. l'Etat, supra* note 12, which found shared liability between both actors.

[38] *Franklin* v. *United States*, 497 F.2d (7th Cir 1965). See also *Ward* v. *United States*, 462 F. Supp. 667 (N.D. Tex. 1978); *Coatney* v. *Berkshire*, 500 F.2d 290 (8th Cir. 1974); *Shawcross & Beaumont, supra* note 3 at VI/33.

[39] See *Annex 2, supra* note 15, § 2.3.1. For an example of national law, see *Swiss Federal Ordinance, supra* note 19, art. 5(1); *Code de l'aviation civile, supra* note 14, c. II, art. 2.1, which was confirmed by *Arrêt Roullet et S.A. Mounié, supra* note 20.

[40] *Annex 2, ibid.*, § 3.6.2.

Several authors adopt this conclusion. Beaubois notes that "on peut dire que les suggestions ou même les ordres venus du sol ne peuvent être retenus par le commandant d'aéronef que s'ils ne mettent pas la sécurité en péril."[41] In the same way, Booth reckons that aircrew "are expected and indeed legally not able to follow ATC directions if necessary for safety reasons."[42]

In summary, ATC clearances and instructions are binding in nature. Pilots are, however, entitled to request amended clearances whenever the original one is deemed unsuitable for any reason. These amendments will normally be granted, as far as practicable, but ATC is not obliged to grant them. Only in the last resort, when compliance with the received clearance would compromise safety, the pilot is entitled and obliged to deviate from the clearance,[43] "in which event as soon as circumstances permit, after such emergency authority is exercised, the appropriate air traffic services unit shall be notified of the action taken and that this action has been taken under emergency authority."[44]

The borderline between a situation of safety requirements and one in which the pilot may exercise final authority is extremely difficult to establish in practice, and may only be defined in light of the specific circumstances of each case. The principle of ultimate responsibility in the pilot does not create immunity from liability for ATC with the implication that, regardless of any assistance rendered, the pilot remains responsible for aircraft safety. Instead, the only permissible implication would be that before allocating liability the court will investigate the options actually available to the pilot for avoiding an accident and the appropriate handling of these options by the pilot.[45] Weather conditions, and more specifically the prevailing visibility at the time of accident, play a key role in appreciating the duties of a commanding pilot. Under acceptable conditions of visibility, the primary duty of a pilot "to see and avoid" is not superseded by the parallel duty of ATC to avoid collisions between controlled aircraft.[46] Evidently, this principle applies when the aircraft operates under visual flight rules, whether controlled or not.[47] Hatfield argues that "[t]he

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[41] Beaubois, *supra* note 3 at 240. See also L. Barnes & W. MacDonald, "Search for the Legal Liability of Air Traffic Controllers" (1969-1970) 1-2 Transp. L.J. 187 at 189.

[42] *Rudelson* v. *United States*, *supra* note 9 at 166. See also *Shawcross & Beaumont*, *supra* note 3 at VI/30.

[43] See I.H. Ph Diederiks-Verschoor, *An Introduction to Air Law*, 4th rev. ed. (Boston: Kluwer, 1991) at 113; *Shawcross & Beaumont*, *ibid.* at VI/31A.

[44] See *Annex 2*, *supra* note 15, § 3.6.2. See, *e.g.*, Barnes & McDonald, *supra* note 41 at 189; H. Geut, "The Pilot and the Air Traffic Controller - Division of Responsibilities" (1988) XIII Air L. 256 at 262; Hector Perucchi, in ICAO, Conseil de l'OACI, 116ème session, Travaux juridiques de l'Organisation – Rapport sur la responsabilité des services de contrôle de la circulation aérienne C-WP/8066 (1 October 1985) at 18, note 1; *Shawcross & Beaumont*, *ibid.* at VI/31A.

[45] See Trib. admin. Versailles, 11 June 1991, *Société Airlec, Société la Paternelle Risque Divers c/ Aéroports de Paris*, reproduced in (1992) vol. 181. Revue Française de Droit Aérien et Spatial 76 at 76.

[46] See, *e.g.*, W. Turley, *Aviation Litigation* (Colorado Springs: Shepard's & McGraw, 1986) at 100. See *contra* B. Barker, "TCAS: Blunder Locker or Traffic Tool?" *Air Forum* (14-16 October 1992) 92, Geneva: "In modern aviation there is no longer room for the old see-and-avoid concept".

[47] As to the responsibilities of pilots under visual flight rules, see *Tilley* v. *United States*, 375 F.2d 678 (4th Cir. 1967). In this case, the ATC was first declared liable for failing to anticipate an adverse meteorological phenomenon, which degenerated into an emergency. Nonetheless, the appeal court reversed this decision and applied the principle of primary responsibility of the pilot. See also *Rodriguez* v. *United States*, *supra* note 10; P.B. Larsen, "Liability of Air Traffic Control Agencies to Foreign Air Carriers" (1964) II Diritto Aereo 115 at

pilot, and not the air traffic controller, has the primary responsibility for preventing collisions between aircraft operating under VFR in VFR weather conditions."[48]

In any case, this principle is also widely applied by courts to aircraft operating under instrument flight rules (IFR). The pilot of an aircraft following IFR bears shared liability once it is established that she could reasonably have been expected to see the conflicting aircraft or obstacle if she had paid sufficient attention, and if she could have thus avoided the collision.[49] ATC will be fully liable if it is proven that the aircraft pilots were unable to see each other and thereby avoid the accident.[50]

VI. The Role of ATC in Cases of Emergency

Beyond general principles, neither international nor national regulations provide much guidance for the behavior of ATC in the event of an emergency declared by aircrew. These provisions address specific in-flight contingencies such as unlawful interference,[51] radio communication failure,[52] and emergency descent.[53] However, "[t]he various circumstances surrounding each emergency situation preclude the establishment of exact detailed procedures to be followed."[54] Thus, it is widely expected that "personnel shall use their best judgement in handling emergency situations."[55] In practice, this discretion must be exercised during various situations in which deviation from standard statutory procedures is necessary, but it is often difficult to assess the extent to which a pilot or a controller may deliberately violate applicable regulations even to protect the aircraft and the interests of its occupants.

The following basic guidelines can be extracted, as an aid to determining the respective responsibilities of pilots and ATC, from existing regulations and jurisprudence. First, an emergency situation does not affect the primary responsibility of the pilot for flight safety. A pilot is better-placed to assess the gravity of situations and choose the most appropriate actions to handle emergencies. In *Ward v. United States*, the court held that: "[t]he responsibility for determining the course of action to be followed under these emergency circumstances rested with the pilot [. . .] by virtue of the Federal Aviation Regulations and the custom and practice of the aviation industry."[56] In the event

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[48] C. Hatfield, "Problems of Representation of Air Traffic Controllers in Mid-Air Litigation" (1982-1983) 48 J. Air L. & Comm. 1 at 14; *Coatney* v. *Beckshire*.

[49] See *Colorado Flying Academy* v. *United States*, 506 F. Supp 1221 (D. Colo. 1981); *Allegheny Airlines* v. *United States*, 420 F. Supp. 1339 (7th Cir. 1976). For an Australian court decision, see *Nichols* v. *Simmond*, *supra* note 11. For a French court decision, see Cons. d'Etat, 26 July 1982, *Ministre de la Défense et Ministre des Transports c. Société Iberia et Mutualidad de seguros des Instituto nacional de industria*, published in RFDA, 1982, vol. 36, p. 505; Conseil d'Etat, 26 July 1982, *Ministre de la Défense et Ministre des Transports c. Société Spantax et Cie La Equitativa*, published in RFDA, 1982, vol. 36, p. 503.

[50] See *Eastern Air Lines* v. *Union Trust Co.*, 221 F.2d 62 at 78 (D.C. Cir. 1955); *Universal Aviation Underwriters* v. *United States*, 496 F. Supp. 639 (D. Colo. 1980); *Re Air crash near Cerritos CA* (11 August 1989), (D.C. CA) unreported; *Re Air crash near Cerritos, California*, 23 Avi. 18,435 (1992).

[51] See *Procedures for Air Navigation Services*, *supra* note 18, § 16.3.1

[52] See *ibid.*, § 17.

[53] See *ibid.*, § 16.4.

[54] *Ibid.*, § 16.1.1.

[55] *Ibid.* Similar wording is used in most national ATC handbooks. See, *e.g.*, United States, *Terminal Air Traffic Control Manual*, Doc. 7110.8, § 1800.

[56] *Ward* v. *United States*, *supra* note 38 at 671.

of an endangered flight, the ATC is expected to play a more narrow role, limited to providing the crew with relevant information that assists the pilot in handling the emergency. For instance, "[w]hen a pilot requests an emergency approach to a specific airport, the responsibility of the air traffic controller is to comply with the pilot's request to the extent possible, given the existing facilities and traffic conditions [. . .]. No other duty is or should be imposed upon controllers."[57] Nevertheless, ATC is obliged to take positive action in directing any other traffic outside of the danger area.

As long as ATC intervention is confined to assisting the pilot, pursuant to a request by the crew, the controller cannot be held liable when the pilot fails to save the aircraft and its occupants. If ATC provides unsolicited assistance to the pilot, however, the matter is resolved differently. American legal experts have suggested an "affirmative act" theory, which states that ATC is liable for damage resulting from a piloting maneuver - executed upon unsolicited instruction from ATC and intended to reinstate safe flying conditions – if such damage would not have occurred without ATC intervention. Eastman, for instance, refers to the common law rule that an individual may be liable for offering unsolicited assistance that places another individual in greater risk of danger than existed prior to the act.[58]

Finally, certain situations also arise in practice that may constitute a true nightmare for ATC, and therefore deserve specific mention. Pilots encountering difficult flight conditions may hide the nature or magnitude of their peril because their flight licenses do not allow them to fly under downgraded visibility conditions. For example, pilots may encounter instrument flight rule conditions, although they are licensed for visual flight rules only. Most pilots would faithfully report these difficulties, while others may refrain from declaring an emergency for fear of subsequent administrative penalties, even as the problem becomes obvious to ATC. Still other pilots may wait too long before announcing a danger situation, such that no assistance can be given by the ATC, without violating relevant ATC rules and procedures. In these circumstances, ATC is understandably reluctant to provide assistance, fearing that they will be held responsible for possible failure subsequent to their clearances and instructions.

ICAO regulations can help furnish an answer to such situations, however, by stating that "[c]learances issued by controllers relate to traffic and aerodromes conditions only and do not relieve a pilot of any responsibility whatsoever in connection with a possible violation of applicable rules and regulations."[59] This provision explicitly supports the view that ATC bears no liability, with respect to assistance or other services offered, for aircraft which are placed in emergency by irregular behavior.

VII. Protection of Third Parties on the Surface

The preliminary investigative report from the Bijlmermeer case contains no recommendations for the interrelation between pilot and ATC concerning

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[57] See *ibid.* at 672 & 674. In support of this view, the American *Terminal Air Traffic Control Manual* requires controllers to base assistance to pilots in emergency on information and requests received from pilots. See *US Terminal ATC Manual, supra* note 55, § 1801.

[58] See S.E. Eastman, "Liability of the Ground Control Operator for Negligence" (1950) J. Air L. & Comm. vol. 16, p. 170 at 170.

[59] *Procedures for Air Navigation Services, supra* note 18, § 10.1.5.

third parties on the surface.[60] The investigating board, later identifying this critical issue, concluded that "[a]lthough Air Traffic Control was not a contributing factor to the accident the Board believes that improvements can be made with regard to the handling of in-flight emergencies."[61] Evidently, protection for the interests of third parties on the surface is closely connected to the handling of emergency situations, since these interests are not normally jeopardized outside of emergency circumstances.

There are at least two ways in which emergency situations implicating third parties on the surface differ in substance from ordinary circumstances and alter the distribution of responsibility between pilot and ATC. First, as noted earlier, the interests of third parties cannot be protected without risking the interests of aircraft occupants (and vice-versa). The potential extent of damages to aircraft occupants and to third parties on the surface may differ in quantity, but both sets of interests should be ranked equally in quality, regardless of the number of people involved on either side.[62] It is fundamental to determine whether pilots or ATC have the power to finally decide which set of interests shall prevail over the other.

Second, even though the commanding pilot is better-situated to assess the gravity of a situation regarding the safety of aircraft and its occupants, she may have little or no knowledge of the location of third parties on the surface. Furthermore, she will usually have little time to give attention to this matter, as the handling of contingency situations may require full attention. On the other hand, many factors will not be apparent to the ATC, such as the actions that are necessary to keep the aircraft in flight until it can safely land. Thus, it is wise for the ATC to avoid any attempt to interfere with the conduct of these aircraft. Due to knowledge of the control area under his responsibility, the ATC is the only actor that can consider the interests of third parties under the flight path. Hence, the interests of either group of potential victims is placed in the hands of two distinct actors, one of whom must render the final decision for the appropriate course of action in a situation where there is little time or possibility for coordination measures. Consequently, "[i]t is unclear how aircraft in distress might be routed to avoid densely populated areas."[63]

From the perspective of aircraft operation, the risk created by aircraft for third parties on the surface was acknowledged long ago in the Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface, signed at Rome on 7 October 1952.[64] Unfortunately, the regulations that apply specifically to the pilot include few direct references to protection of third parties on the surface. Annex 2, for instance, states that "[a]n aircraft shall not be operated in a negligent or reckless manner so as to endanger life or property of others."[65] There are also other provisions, such as minimum flight altitudes,

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[60] See *ibid.*

[61] *Bijlmermeer Disaster Report, supra* note 2 at 42.

[62] See *In re Air Crash Disaster near Chicago, Ill., etc.*, 644 F.2d 594 (1981), where ATC was not an issue. See also *Air Crash Disaster near Cerritos, California, on August 31, 1986*, 23 Avi. 18,435. In this case, ATC was a contributory cause of the airplane's crash onto the property of third parties on the surface. Whereas, in most cases, the number of deaths on the ground are smaller than the number of casualties in the aircraft, most of the damage was inflicted to third parties on the ground in the Bijlmermeer case.

[63] See "El Al Crash Report Raises Ground Safety Issue" [7 March 1994] Av. Wk & Sp. Tech. at 38.

[64] See *Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface*, 7 October 1952, ICAO Doc. 7364 [hereinafter *Rome Convention 1952*].

[65] *Annex 2, supra* note 15, §.3.1.1.

stating that

> [e]xcept when necessary for take-off or landing, or except by permission from the appropriate authority, aircraft shall not be flown over the congested areas of cities, towns or settlements or over an open-air assembly of persons, unless at such height as will permit, in the event of an emergency arising, a landing to be made without undue hazard to persons or property on the surface.[66]

The regulations are similarly silent regarding the duties of ATC regarding protection of third parties on the surface. The courts have confirmed that the responsibilities of ATC are not restricted to protecting the interests of airspace users, but extend further to the underlying population, and ATC agencies have a duty to compensate for any damage to third parties on the ground by aircraft that collide on account of fault by the ATC.[67] In addition, air navigation services are responsible for the definition of departure, arrival, and cruise flight procedures[68] that are intended to guarantee the safe passage of aircraft over terrain. These procedures not only ensure the safety of aircraft directly, but also protect the interests of third parties on the ground indirectly.

The investigating board in the Bijlmermeer case, instituted to recommend possible measures for avoiding any repetition of the catastrophe, was not charged with resolving these conceivable conflicts of responsibility. Obviously puzzled by the complexity of this issue, the board nevertheless suggested that the traditional distribution of responsibilities should not be affected by the interests of third parties on the surface, and confirmed the principle of final authority or responsibility of the pilot regarding aircraft operation.[69] This view is fully supportable, since it is the aircraft operator who creates a potential risk for third parties on the surface while flying aircraft over a populated area. This basic principle underscored the Rome Convention, which imposes strict liability on the aircraft operator for any damage caused to third parties on the surface. Thus, it is only fair that the final decision concerning the appropriate action to adopt in case of an emergency should rest with that party who creates the risk.

The board delivered concrete recommendations to "[e]xpand the training of pilots and ATC personnel to include the awareness that in the handling of emergency situations not only the safety of aeroplane/passengers but also the risk to third parties especially residential areas should be considered."[70] The critical dimensions of this issue and the identifiable gray areas in the existing regulations, however, prompted the board to refer the matter to ICAO for further consideration.

The interests of third parties on the surface should be taken into account in the following manner. Pilots should be trained to systematically advise ATC of their intentions, in the handling of emergency situations, pending permissive circumstances. Advice from the pilot in such conditions will raise the controller's awareness of possible consequences to an underlying population. If any particular risk arises, the controller should communicate these possible consequences to the pilot, as well as the location of critical areas related to the

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[66] *Ibid.*, § 3.1.2

[67] See *Shawcross et Beaumont. On Air Law*, 2nd ed. (London: Butterworths, 1951) at 664, note 5. For a court decision, see *Re Air crash near Cerritos, (11 August 1989), 23 Avi. 18,435 (1992).*

[68] See ICAO, *Aircraft Operations*, ICAO Doc. 8168, PANS-OPS, 4th ed. (1993).

[69] See *Bijlmermeer Disaster Report*, *supra* note 2 at 42.

[70] *Ibid.* at 47.

aircraft's position and proposed flight path. If appropriate, he should suggest an alternative course of action. Intervention by the controller should not take the form of positive instruction. In the end, the pilot must make his own assessment in weighing the interests of aircraft occupants, which may endanger third parties on the surface; the pilot may also consider the interests of the underlying population, which can require a prolongation of the emergency situation with additional risks to aircraft occupants. The pilot remains responsible for final decisions over any actual maneuvers she deems necessary to safe handling of the emergency.

VIII. Conclusion

In allocating responsibilities for aircraft operation, the fundamental principle denotes that the pilot holds final decision power regarding the safety of aircraft and its occupants. Our discussion concludes that this rule remains unaffected by various circumstances. In particular, ATC assistance does not relieve the pilot of this final authority, regardless of the clearances and instructions delivered. Moreover, it is suggested that in emergency situations ATC should play a smaller role of rendering advice and information, with a view to avoiding any possible negative interference with endangered aircraft.

The need to protect the interests of third parties on the surface is a special facet of emergency situations. As emphasized in the Bijlmermeer case, this subject raises specific issues normally absent in emergencies, such as a conflict of interest between endangered aircraft and underlying populations and the likelihood that different actors receiving different pictures of a critical situation will influence the flight course. In most of these cases, the controller is optimally situated to impose measures that protect the interests of third parties on the surface. Therefore, the general principle of the pilot's final authority could be re-examined in light of these cases. An argument in support of this view could be that underlying populations are comprised of "innocent" parties placed at risk by aircraft operators, and consequently the protection of their interests should take precedence over the interests of aircraft occupants.

In any event, the pilot's final authority should not be altered by possible implications flowing from the presence of third parties on the surface. The responsibility of the pilot remains intact, and the role of ATC should be limited to transmitting relevant information regarding the location of populated areas, along with possible advice on how to minimize limit the risk caused to third parties. Ultimately, the weighing of these interests should rest with the pilot, who thereby retains final authority regarding aircraft operation.