

1973

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Recommended Citation

Philip Silverman, *Vortex Cases: At a Turbulent Crossroads*, 39 J. AIR L. & COM. 325 (1973)
<https://scholar.smu.edu/jalc/vol39/iss3/3>

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VORTEX CASES: AT A TURBULENT CROSSROADS

PHILIP SILVERMAN*

In recent years a number of air crashes have been attributed to wake turbulence. In this article Mr. Philip Silverman discusses the legal aspects of the wake turbulence problem. The duty of air traffic controllers to warn of possible wake turbulence and the nature of that warning are examined herein. Mr. Silverman analyzes the contradictory cases in this area and suggests that in the future the Government will have more success in defending claims brought on this basis.

THE ADVENT of wide-bodied, super-size aircraft has given rise to great concern regarding the hazards of wake turbulence to light aircraft. This concern was highly intensified when a DC-9 crashed while on approach following the approach of a DC-10 to the same runway.¹ The National Transportation Safety Board determined that the "probable cause" of the crash of the DC-9 was an encounter with vortex turbulence generated by the preceding DC-10.²

Vortex turbulence was a problem prior to the introduction of the latest generation of heavy jet aircraft, and the record of litigation demonstrates that the United States Government has borne the

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¹ The crash occurred on May 30, 1972, at Greater Southwest Airport, Fort Worth, Texas. The DC-9 which crashed was preceded by a DC-10, also on a training flight, which had made a "touch and go" landing just prior to the landing approach of the DC-9 to the same runway.

² NTSB REP., NTSB-AAR 73-3 (Adopted Mar. 13, 1973).

major financial responsibility for such accidents. In a paper submitted at a recent Federal Aviation Agency symposium on the topic of wake turbulence, one writer stated:

More than \$3,000,000 have [sic] been paid by the United States Government in judgments in the past three years in wake turbulence cases. These recent cases seem to set a trend extending and broadening the Government's liability where the controller's act is judged to be negligent.³

Though the United States continues to bear the brunt of such litigation,⁴ the last year has seen a definite change in the trend of these cases. The Ninth Circuit's decision in *Lightenburger v. United States*⁵ has had the greatest impact. The district court held that the controller should have given a warning, although there was a twelve to fourteen minute separation between an American Airlines 707 and a Cessna 310 that was attempting a precision approach under adverse weather conditions. The Cessna 310 encountered the vortex turbulence from the preceding B-707 which had executed a missed approach. In reversing, the Ninth Circuit recognized that the controller should only give a warning *if he foresees the possibility of turbulence being a hazard*. It noted that the existence of such turbulence is not necessarily foreseeable, particularly when there is a twelve to fourteen minute separation as existed in that case.⁶

Wake turbulence is a movement of air behind an aircraft. It is invisible to pilot and controller alike. It is not predictable since it is subject to ambient wind; its effect and strength will differ with the size, flap configuration, weight and speed of the aircraft producing it. It develops when air rolls up off the wingtips of an aircraft in flight due to the pressure differentials above and below the wing surface, forming two counter-rotating cylindrical vortices which are commonly called wake turbulence. It is much more severe than "prop wash,"⁷ and can induce an aircraft to roll beyond

³ *How The Courts Look At Wake Turbulence*, by Richard H. Jones, FAA Symposium, March 24, 1971.

⁴ This writer knows of no reported case in the United States in which the pilot was sued alone and recovery had. There are presently between 10-15 wake turbulence cases pending against the United States in various districts.

⁵ 460 F.2d 391 (9th Cir. 1972), *reversing* 298 F. Supp. 813 (C.D. Cal. 1969).

⁶ *Id.* at 395.

⁷ "Prop Wash" is the air pushed back by the rotation of the propellers, which have a much smaller surface area than a wing. "Prop Wash is less severe; it takes less time to dissipate." *Hartz v. United States*, 387 F.2d 870, 874 (5th Cir. 1968).

its control capability. Some measurements have shown peak velocities of the tangential air movements surrounding a vortex core to be as high as 224 feet per second—or 133 knots.⁸

Thirteen years ago the FAA instituted a procedure requiring the controller to issue a caution (using words such as “caution, wake turbulence”) if he foresees the possibility that wake turbulence might have an effect on another aircraft. The inclusion of this procedure “coincidentally” followed the decision in *Johnson v. United States*,⁹ which involved the crash of a light Cessna aircraft following the approach of a B-47 bomber. The plaintiffs claimed that the Cessna had encountered wake turbulence from the B-47 and that the controller was negligent in not warning of its effect. The Government countered that the Cessna had stalled on the approach, and the manual didn’t provide for giving such warnings anyway. The court obviously was not sure; therefore, basing its decision on the “stall” theory, found for the Government. In dicta, however, the court noted that the manuals should provide for wake turbulence warnings.

The first warning procedure was put into effect on February 1, 1961. It read:

When controllers foresee the possibility that departing or arriving aircraft might encounter rotorcraft downwash, thrust stream turbulence or wing tip vortices from preceding aircraft cautionary information to this effect should be issued to pilots. NOTE: Since the existence and effect of turbulence is unpredictable, the provision of the above information does not constitute the placing of responsibility on controllers to anticipate in all cases the need for such information.¹⁰

In addition, another section of the procedure manual designated the specific language, “CAUTION, TURBULENCE (Traffic information),”¹¹ to be used when warning a pilot. The traffic information referred to the aircraft generating the potentially dangerous tur-

⁸ FAA Advisory Circular, AC 90-23D (Dec. 15, 1972).

⁹ 183 F. Supp. 489 (E.D. Mich. 1960).

¹⁰ Air Traffic Control Procedures Manual, ATM-2-A § 411.7, Rev. 1.

¹¹ Air Traffic Procedures Manual, ATM-2-A § 439.18, Rev. 1.

439.18—To issue cautionary information regarding possible rotorcraft downwash, thrust stream turbulence, and/or wing tip vortices: CAUTION, TURBULENCE (Traffic information).

EXAMPLE: CAUTION, TURBULENCE, DEPARTING
AMERICAN ELECTRA.

bulence. Though much litigation based on this provision has followed, there is but a mere handful of reported cases.

The decision in *Furumizo v. United States*¹² was the first in this field that had substantial impact. In that case the controller used the exact language of the handbook when he warned a light aircraft about the wake turbulence of a preceding DC-8. Nevertheless, Furumizo, a student with an instructor pilot on board, took off and apparently encountered the turbulence that caused him to crash. In a lengthy decision the district court reviewed Federal Aviation Agency internal documents which indicated a growing concern with accidents in which wake turbulence encounters were suspected (and which had undoubtedly played a part in the addition of the warning provision in the manual), including the separation minima set forth in the manual and the underlying statutes giving the Administrator authority to determine what procedures to promulgate.¹³ In finding liability, the court held that since no specific standard was set forth in the regulations for separating aircraft on intersecting runways, the matter of separation was left to the discretion of the controllers; the pilots, according to the court, did not know that a clearance was an authorization only and not a command that could be rejected.¹⁴ The court found the controller negligent because he gave the warning without exercise of judgment; rather, the warning issued was "simply a slavish purported following of the 'book' with no attempt to exercise a judgment" and the reasonable exercise of judgment would have been to attempt to "hold up the clearance" in order to "minimize the acute danger."¹⁵

While one may be contented with the result in *Furumizo*, the reasoning seemed a little strained. The court had chosen to disregard other provisions of the regulations stating that the pilot in command of an aircraft (in this case the instructor pilot advising Furumizo, the student pilot) "shall be directly responsible for its operation and shall have *final* authority as to operation of the aircraft."¹⁶ The court also disregarded the definition of a clearance

¹² 245 F. Supp. 981 (D. Hawaii 1965), *aff'd*, 381 F.2d 965 (9th Cir. 1967). The accident occurred on June 19, 1961, at Honolulu.

¹³ 245 F. Supp. at 998-1008.

¹⁴ *Id.* at 1011.

¹⁵ *Id.* at 992.

¹⁶ 14 C.F.R. § 60.2 (1961) (*emphasis added*).

found in the then operative Civil Air Regulations:

Air Traffic Clearance: Authorization by air traffic control, for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specific traffic conditions within a control zone or control area.¹⁷

Further, the regulations provided that:

When an air traffic clearance has been obtained . . . the pilot in command shall not deviate from the provisions thereof unless an amended clearance is obtained. . . .¹⁸

Thus, it is obvious that a clearance was authorization to proceed in relation to traffic conditions for the purpose of preventing collisions between aircraft; the pilot had final authority for the operation of his aircraft including the authority to obtain a different clearance.

The court's reference to a "slavish" following of the book appears to be a bit of unwarranted sophistry. Obviously, judgment was exercised in giving the warning, since the procedure called for it *only* if the controller "foresee[s] the possibility" that a departing aircraft might encounter wing tip vortices from a preceding aircraft.¹⁹ The controller had to foresee, *i.e.* evaluate the possibility of wing tip vortex, encounter and then decide whether to issue a warning, notwithstanding the fact that the phenomenon was unpredictable and could not be anticipated in all cases.²⁰

The Ninth Circuit upheld the district court's decision, stating:

The government maintains that giving this type of clearance transferred to the pilot of the Piper, or left with him the sole responsibility for avoiding the danger. No doubt he had the responsibility.²¹

The result might have been different if the court had stopped at this point. But, the court continued as follows:

[A]nd it may be (we do not decide) that if, after giving the warn-

¹⁷ 14 C.F.R. § 60.60 (1961).

¹⁸ 14 C.F.R. § 60.21 (1961).

¹⁹ Para. 411.7 Air Traffic Control Procedures Manual, ATM-2-A, Rev. 1, at page 4 *supra*.

²⁰ It is worth noting at this time that the Administrator could have provided a procedure making such warnings mandatory in all cases in accordance with the authority and discretion delegated to him by Congress. 18 USC 1348(c) effective 1961.

²¹ *United States v. Furumizo*, 381 F.2d 965, 968 (9th Cir. 1967), *citing* *United States v. Miller*, 303 F.2d 703 (9th Cir. 1962).

ing, the attention of the controllers had been diverted elsewhere, either by their duties or even fortuitously, so that they did not see the Piper in disregard of the warning, the United States would not be liable. But we are *unwilling* to hold as the government would have us do that when the controller did see the Piper start its take-off, they had no duty to act. The danger was extreme and they knew it. Nothing in the manual says that under such circumstances the controller shall not act.²²

In rejecting the Government's argument that, having foreseen the possibility and done what was called for, the controller had no further duty the court concluded:

But we do not think this directive is fully complied with where, although a first warning has been given, it becomes clear to the controller that another warning is needed and none is given.²³

In retrospect, it was pure speculation and guesswork on the part of the Ninth Circuit to conclude that the pilots would have heeded a second warning had it been given.

The circumlocution of both the Ninth Circuit and the district court in *Furumizo* seemed clearly at odds with the decision in *Franklin v. United States*,²⁴ in which the Seventh Circuit reversed a decision holding the controller negligent for failing to give a warning concerning helicopter vortices. While the lower court in *Furumizo* held the controller to a standard of care greater than was set out in his manual, the Seventh Circuit stated:

The findings of the district court must be considered in the light of general principles of negligence applicable to air traffic control. In the absence of a special statute, the ordinary rules of tort law apply to aircraft accidents.²⁵

Thus while the Seventh Circuit accepted the principles laid down by the Ninth Circuit in *United States v. Miller*²⁶ (that the ordinary rules of tort law applied), the Ninth Circuit, in affirming the lower court in *Furumizo*, apparently departed from its own rulings to put a greater duty on the controller, *i.e.* requiring extra warnings,

²² *Id.* (emphasis added).

²³ 381 F.2d at 968.

²⁴ 342 F.2d 581 (7th Cir. 1965), *cert. denied*, 382 U.S. 844 (1965).

²⁵ 342 F.2d at 584, *citing* *United States v. Miller*, 303 F.2d 703 (9th Cir. 1962).

²⁶ 303 F.2d 703 (9th Cir. 1962), *cert. denied*, 371 U.S. 955 (1962).

beyond the general principles of negligence applicable to air traffic control.

The next two cases on point were *Hartz v. United States*,²⁷ and *Wasilko v. United States*.²⁸

The conclusions reached in these cases conflict with each other and with *Furumizo*. In the *Hartz* case,²⁹ the Fifth Circuit reversed a district court decision in favor of the Government. The passenger and the pilot were allowed to recover under the law of Georgia³⁰ because the controller said, "Watch the prop wash," instead of "Caution, turbulence," when he cleared the aircraft to takeoff.³¹ The finding of controller negligence can be readily understood by recognizing that the warning was inadequate since it referred to "prop wash" instead of "turbulence."

The lower court found that the controller had intended to warn about all the turbulence in the wake of the preceding aircraft when he cautioned about "prop wash." The plaintiffs argued on appeal that there was a vast difference between "prop wash," which dissipates a few hundred feet behind the generating aircraft, and turbulence, which has different physical characteristics and is more hazardous. In reversing, the Fifth Circuit found that the controller was negligent because he did not follow the exact language provided in the manual, *i.e.* "CAUTION, TURBULENCE"³² (suggesting a requirement for "slavishly" adhering to the requirements of the manual).

While finding the controller negligent for not using the exact language provided in the manual, the Fifth Circuit specifically disapproved of the lower court's view, bottomed on the language in the *Franklin* case, that no duty existed independent of the duty created by the procedures manual. The appellate panel wrote:

The trial court concluded that no duty existed 'independent of the duty created by the procedures manual.' We disapprove the view

²⁷ 249 F. Supp. 119 (N.D. Ga. 1965), *rev'd*, 387 F.2d 870 (5th Cir. 1968), *modified*, 415 F.2d 259 (5th Cir. 1969).

²⁸ 300 F. Supp. 573 (N.D. Ohio 1967), *aff'd*, 412 F.2d 859 (6th Cir. 1969).

²⁹ The *Hartz* accident occurred November 10, 1961, at Atlanta, Georgia.

³⁰ Georgia follows the doctrine of comparative negligence between a plaintiff and defendant. GA. CODE ANNOT. § 94-703 (1965).

³¹ *Hartz v. United States*, 387 F.2d 870, 874 (5th Cir. 1968).

³² Air Traffic Control Procedures Manual, ATM-2-A, Rev. 1. *See also* note 10 *supra*.

that the duty of an FAA controller is circumscribed within the narrow limits of an operations manual and nothing more. We approve of the view expressed by the Court of Appeals for the Second Circuit. . . .³³

The court went on to accept the view the Second Circuit adopted in *Ingham v. United States*.³⁴ There the Government was held liable under a provision in the manual that provided for information to be given to a flight concerning changes in weather conditions when the controller thought it was necessary to the flight. The controller had failed to advise Eastern Flight 512 of a change in visibility from one mile to three-fourths of a mile because it was still above the minima required for the approach.³⁵

The district court found that the pilot, Mr. Hartz, was experienced since he had over 2,000 hours flight time,³⁶ a subscription to the Flight Information Manual,³⁷ and membership in the Aircraft Owners and Pilots Association.³⁸ The court pointed out that the pilot handbook for the aircraft, a Bonanza H-35, specifically warned about the hazards of wake turbulence. Thus the district court found specifically that the pilot had knowledge of and was aware of the hazard of wake turbulence³⁹ (unlike the stipulation

³³ *Hartz v. United States*, 387 F.2d 870, 873 (5th Cir. 1968), citing *Ingham v. Eastern Air Lines*, 373 F.2d 227 (2d Cir. 1967).

³⁴ 373 F.2d 227 (2d Cir. 1967), cert. denied, 389 U.S. 931 (1967).

³⁵ In spite of the testimony of an Eastern Air Lines' training supervisor that he would have expected the captain to attempt the approach even if he had been advised of the change, this "proximate cause" issue was resolved against the United States.

³⁶ *Hartz v. United States*, 249 F. Supp. 119, 125 (N.D. Ga. 1965), rev'd, 387 F.2d 870 (5th Cir. 1968), modified, 415 F.2d 259 (5th Cir. 1969).

³⁷ Since 1956, the FAA-issued Flight Information Manual, now the Airman's Information Manual, had contained a paragraph in the "Good Operating Practices" section which read in part as follows:

Turbulence caused by large aircraft can be severe and is capable of causing complete loss of control to light aircraft. Under certain conditions, particularly calm air, the turbulence caused by large aircraft can remain in an area for several minutes. Be on the alert for first sign of turbulence when taking-off and landing behind large aircraft; allow adequate spacing, maintain higher than normal speeds, use the windward side of runway, and maintain a flight path to the windward, of the preceding aircraft. . . .

³⁸ Three issues of the AOPA magazine, *THE PILOT*, containing articles on "Wake Turbulence" were placed in evidence.

³⁹ *Hartz v. United States*, 249 F. Supp. 119, 125 (N.D. Ga. 1965), rev'd, 387 F.2d 870 (5th Cir. 1968), modified, 415 F.2d 259 (5th Cir. 1969).

and finding by the court of no knowledge in *Furumizo*⁴⁰).

The Fifth Circuit, though reversing for controller negligence, found that the negligence of the controller was "a proximate cause" of the accident.⁴¹ It in no way disturbed the findings of the district court as to the pilot's knowledge of the hazard of wake turbulence.

Thus, on remand for the purpose of determining damages,⁴² the Government's position was that the pilot's negligence was equal to the controller's, and, under the comparative negligence law of Georgia, the claim should be defeated. The court, however, ruled that the pilot was twenty-five per cent negligent and deducted that percentage from the basic award.⁴³ Both sides appealed.

On the second appeal,⁴⁴ the Fifth Circuit, in construing the "carefully chosen language"⁴⁵ of the first opinion that, "[t]he controller's breach of duty clearly was a proximate cause of the crash. . .,"⁴⁶ now decided that on the basis of the whole decision by the first panel, the sole cause of the crash was the Government negligence, notwithstanding the experience and knowledge of the pilot. How three experienced appellate judges could make the mistake, in what the second panel characterized as their "carefully chosen language," between the use of the term "a proximate cause" and "the proximate cause" was not explained.

But in the case of *Wasilko v. United States*,⁴⁷ in which the crash also occurred on an intersection takeoff, no recovery was allowed for the pilot when it was shown, as in the *Hartz* case, that the pilot was familiar with the hazards of wake turbulence from his military and Civil Air Patrol experience, even though no warning at all had been given to the pilot. Indeed, the court wrote:

The clearance to use an intersection takeoff did not relieve Pilot Wasilko from his final authority and responsibility in the control

⁴⁰ *Furumizo v. United States*, 245 F. Supp. 981, 991 (D. Hawaii 1965).

⁴¹ *Hartz v. United States*, 387 F.2d 870, 874 (5th Cir. 1968).

⁴² The passenger's case was easily disposed of by the court on the remand, and no appeal taken from this award. *See* 10 AV. L. REP. 18,209 (N.D. Ga. 1968).

⁴³ *Hartz v. United States*, 10 AV. L. REP. 18,209 (N.D. Ga. 1968).

⁴⁴ Only one member of the original three judge panel which had heard the first appeal, heard the second appeal.

⁴⁵ *Hartz v. United States*, 415 F.2d 259, 262 (5th Cir. 1969).

⁴⁶ *Hartz v. United States*, 387 F.2d 870, 874 (5th Cir. 1968) (emphasis added).

⁴⁷ 300 F. Supp. 573 (N.D. Ohio 1967), *aff'd*, 412 F.2d 859 (6th Cir. 1969). This crash occurred at Cleveland, Ohio on October 27, 1961, just 14 days before the *Hartz* crash.

and operation of his plane. Nor was the intersection takeoff clearance an order that he was blindly bound to follow.⁴⁸

Further, the court stated:

With final authority and responsibility for the operation of his Beechcraft Bonanza resting on Pilot Wasilko, it is concluded he could not rely on the tower's clearance or absence of cautionary wing tip vortex warning as a legal excuse for not exercising due care for his own safety.⁴⁹

The court in *Wasilko*, however, did allow recovery for the pilot's ten-year-old son who accompanied him and was also killed in the crash.

On appeal, the Government argued that in light of the pilot's knowledge of the hazard, the absence of a warning could not be a proximate cause. This was the same argument that was ignored in the *Hartz* case. The Sixth Circuit, however, dodged the issue completely, and, in a *per curiam* decision, merely decided that none of the trial court's findings were clearly erroneous and left the parties as they were.

These four cases, *Furumizo*, *Hartz*, *Franklin*, and *Wasilko* present a paradox. In *Franklin*, the court concluded that ordinary rules of negligence applied to air traffic control. Yet in *Furumizo* and *Hartz* the courts sought to enlarge the controller's duties beyond the standards of care set up by the Administrator in the manuals. In *Furumizo*, the controller had followed all the procedures exactly as required, yet the Government was held liable; in *Hartz*, the Government was held liable for not following the procedures exactly. In *Wasilko* the pilot was not allowed to recover because of his knowledge of the vortex phenomenon and the fact that *final* authority rested with him; in *Hartz*, the pilot who also had the same *final* authority and was acknowledged to be experienced, was completely exculpated. It seemed that the Government would be held liable in any turbulence case almost on a "no fault" basis, and the inconsistencies in *Furumizo*, *Hartz* and *Wasilko* would make the Government's defense of a vortex case impossible.

The *Lightenburger* decision presented an even greater anomaly. As was mentioned earlier, the lower court held there was a wake

⁴⁸ *Wasilko v. United States*, 300 F. Supp. 573, 598 (N.D. Ohio 1967).

⁴⁹ *Id.* at 599.

turbulence encounter even though twelve to fourteen minutes separated the alleged generating aircraft and the accident aircraft, and that even under those circumstances, the pilot of the twin engine Cessna 310 aircraft should have been given a warning. It also found the controller negligent for not using prescribed language for terminating the PAR (Precision Approach Radar) approach that the Cessna was attempting to execute, and for giving additional assistance to the flight beyond the middle marker.

The Ninth Circuit, in reviewing the district court's lengthy decision, "accepted" the court's finding of a wake turbulence encounter⁵⁰ stating, *inter alia*:

The Federal Aviation Agency (FAA) and the PAR controllers working with the FAA have a duty to warn a pilot when it appears to them that the pilot may encounter a wing tip vortex.⁵¹

Thus the court acknowledged that a warning was not mandatory in every instance. The court went on to discuss the unforeseeability that such turbulence would last for twelve to fourteen minutes. But more importantly, the court also found that the failure to use the exact language in terminating the approach was not a proximate cause of the crash. In this regard the court continued:

Even if we assume that it was negligence not to have issued the warning [that the plane was beyond the middle marker and below the glide path] with the precise terminology of the regulation, there was no causal connection between such negligence and the crash. . . . Although the court speculated that the failure to use uniform phraseology 'might induce confusion and disorientation' . . . or 'possibly . . . disorientation' . . . there was no finding that Gordon became disoriented, and such a finding would have been inconsistent with the Court's other finding: [that the plane was uncontrollable because of a vortex encounter].⁵²

The court reversed the finding of Government liability on the ground it was clearly erroneous.

Additional cases, all decided in 1972, have focused the responsibility for wake turbulence avoidance on the pilot. One factor influencing the changing trend may be that since the earlier deci-

⁵⁰ *Lightenburger v. United States*, 460 F.2d 391, 394 (9th Cir. 1972).

⁵¹ *Id.*, citing *United States v. Furumizo*, 245 F. Supp. 981, *aff'd*, 381 F.2d 965 (9th Cir. 1967).

⁵² *Id.* at 397.

sions in *Furumizo*, *Hartz*, and *Wasilko* the FAA has embarked on a broad educational program in an attempt to familiarize pilots with the hazards of wake turbulence and methods of avoidance. In 1965, the FAA distributed a small booklet entitled "Wake Turbulence" to all active pilots, *i.e.* those who had pilot certificates with current medical certificates.⁵³ A film was produced and circulated throughout the country and safety seminars and meetings were held. The Airmans Information Manual, Part I included a full explanation of wake turbulence and avoidance procedures.

Thus, in *Thingulstad v. United States*,⁵⁴ the district court, finding in favor of the United States, wrote:

The primary responsibility for the safe operation of an aircraft is upon the pilot Moreover, the pilot must exercise ordinary care for his own safety under the circumstances which confront him All of the information contained in FAA Advisory Circular AC 90-23A (plaintiff's exhibit 9), concerning the nature and danger of wing tip vortices is chargeable to pilot Thingulstad This pilot had been flying since 1957, and, according to his wife's testimony, received and regularly read various publications directed to pilots. At least one of these publications, the August 1965 issue of the A.O.P.A. Pilot Magazine, was admitted into evidence as government's exhibit M and contained an article detailing the danger of wake turbulence.⁵⁵

In *Sanbutch Properties v. United States*,⁵⁶ an experienced pilot flying into San Francisco International Airport crashed when he encountered wake turbulence. The controller had given no warning.⁵⁷ The court, in finding for the Government, discussed the relative duties of the controller and the pilot:

The pilot of 53Q:

- (a) Had a duty to be aware of the hazard of wake turbulence;
- (b) Had a duty to be aware of the procedures recommended for avoidance of wake turbulence, and was aware of them;

⁵³ This testimony was given by James W. Nimmo during the Lightenburger trial. Some of Mr. Nimmo's testimony was discussed by the Ninth Circuit. *See* 460 F.2d at 395.

⁵⁴ 343 F. Supp. 551 (S.D. Ohio 1972). *See* Gill v. United States, 285 F. Supp. 253 (E.D. Tex. 1968); *Wasilko v. United States*, 300 F. Supp. 573 (N.D. Ohio 1967), *aff'd*, 412 F.2d 859 (6th Cir. 1969).

⁵⁵ *Thingulstad v. United States*, 343 F. Supp. 551, 556-7 (S.D. Ohio 1972).

⁵⁶ 343 F. Supp. 611 (N.D. Cal. 1972).

⁵⁷ This case involved a claim for property damage only.

(c) Had a duty to obtain all available information concerning the flight, including weather and wind information;

(d) Had a duty to comply with authorizations, clearances and instructions of Air Traffic Control; and

(e) Had a duty to operate the aircraft in a careful manner so as not to endanger the life or property of another.

If the controller has a reasonable basis to give an advisory, he should give it. If he has no reasonable basis, he should not. . . .

The procedures under which air traffic controllers engage in the providing of advice and assistance to pilots do not impose an absolute duty to warn of the hazard of wake turbulence, but rather provide for the discretionary transmission of an advisory, which is wholly secondary to the avoidance responsibility of the pilot. The failure to transmit a discretionary advisory, or warning, to a pilot of the hazard of wake turbulence where the air traffic personnel are fully engaged in the performance of duties having a higher priority, cannot be the proximate or concurring proximate cause of an accident resulting from an encounter with wake turbulence where the pilot knew, or should have known, of the hazards and avoidance procedures, and was on notice and aware of the presence and proximity of generating aircraft.⁵⁸

In *Robinson, et al. v. United States*,⁵⁹ the first case involving a flight service station, plaintiffs claimed that the flight service specialist had been negligent in failing to warn of wake turbulence. The turbulence was claimed to have caused the crash of a Beech Queenaire even though a four to five minute separation was shown.⁶⁰ Since it was about two o'clock a.m., the tower was not in operation. The flight service station manual provided that wake turbulence advisories are part of the airport advisory to a landing aircraft, if the specialist foresees the possibility that turbulence might be a hazard. The court rejected the claim that there had been a wake turbulence encounter, finding in part:

25. The absence of a warning concerning wake turbulence or that the DC-9 had made a low approach 5 minutes before is not negligence under the facts and circumstances above found to exist.

26. Even if there was a wake turbulence encounter, the absence

⁵⁸ 343 F. Supp. at 616.

⁵⁹ The crash occurred at Mobile, Alabama on August 26, 1969. The plaintiffs were from Texas and the case was tried in Dallas.

⁶⁰ This separation was between the Queenaire and the preceding DC-9 which was on a training flight and executing touch and go's or missed approaches to the runway.

of a warning when there was a five minute time lapse between the two aircrafts is not unreasonable under the facts.

27. Even if there was a wake turbulence encounter, the absence of a warning was not negligence and was not a proximate cause of the accident as the FSS operator could not have reasonably been expected to foresee any such wake turbulence encounter in this case.⁶¹

As a matter of law the court also concluded that:

3. The pilot in command is responsible for and the final authority as to the safe operation of the aircraft and on the occasion in question here he had full control over the aircraft at the time of and just preceding the crash.

4. A Flight Service Specialist is not responsible for the safe operation of the aircraft by the pilot.

5. There is a duty to warn of wake turbulence only if it is reasonably foreseeable, which depends on the circumstances in each case.⁶²

On May 4, 1973, less than a month after the appeal was argued, the Fifth Circuit, *per curiam*, affirmed the decision.⁶³

Of even greater interest is the Canadian opinion in *Sexton et al. and Wilson v. Boak et al.*,⁶⁴ because it was decided even before the reversal in *Lighenburger*, or the decisions in *Thingulstad*, *Sanbutch*, and *Robinson*. The Canadian court in *Sexton*, however, did have the benefit of the decisions in *Hartz*, *Johnson*, *Wasilko*, and *Lighenburger*. Yet the court, even though concluding there was a wake turbulence encounter but no warning, wrote:

From listening to the tape and reading the material it is apparent that an economy of transmissions must be imposed if the tower is to deal with those transmissions essential to its function. To require of the controller that he foresee and warn the pilot of any possibility of error on his part would render impossible any practical use of the airport. If someone could not get on the air it might well be argued that unnecessary talk constituted negligence. In 1968 it was well-known that the 707 was a hazard to the Aztec in the form of a strip at least five miles long and there was no

⁶¹ *Robinson v. United States*, CA 3-3984-A, statement of facts (N.D. Tex.) (not otherwise reported).

⁶² *Robinson v. United States*, CA 3-3984-A, conclusions of law (N.D. Tex.) (not otherwise reported).

⁶³ *Robinson v. United States*, Docket 72-3176 (5th Cir. 1973) (not yet reported).

⁶⁴ 12 Av. L. REP. 17,851 (1972).

need to remind the pilot of the obvious. Visibility was good and visual flight rules were in effect.

It is my view that, prior to landing clearance and while on visual flight rules, responsibility for adequate separation lies with the pilot. In none of the great number of exhibits relative to airman-ship and procedure at airports is it suggested that the tower should warn of turbulence or prescribe separation distances prior to land- ing clearance.

There was no evidence from the pilots called that they had ever heard a tower warn of turbulence on initial or approach clearance. Nor was there any evidence suggesting a basis for the tower assuming any responsibility regarding separation distance except on, and immediately adjacent to, the runway.⁶⁵

The controversy, however, is by no means resolved. In another recent decision, *Yates v. United States*,⁶⁶ the Government was held liable for failing to give a warning, when a Cessna 172 was fol- lowing a TWA Boeing 707. The transmission by the controller to “[k]eep your traffic in close behind behind that TWA jet, there’s others behind you”⁶⁷ was crucial to the court’s decision. The court, however, seemed to think that in order for the Cessna to land on the runway and avoid any turbulence encounter from the jet that had preceded it, the Cessna had to leap-frog over the jet.⁶⁸

All the cases reported emphasize the underlying conflict of controller versus pilot and the issue of warning as opposed to no warning. The National Transportation Safety Board in its report on the DC-9 accident at Ft. Worth, capsulized the problem when it wrote:

3. Finally, the flightcrew’s complacent attitude toward the tower controller’s “caution turbulence” advisory might have resulted from the “cry wolf” syndrome. This syndrome might well have existed in this case because the crew of the DC-9 had successfully com- pleted two approaches behind the DC-10 without apparent dif- ficulty. Frequent caution advisories without resultant encounter with a vortex may lead pilots to disregard such notices.⁶⁹

The above comment, however, misses the mark since the pur- pose of a warning, if given, is to alert or remind the pilot to utilize

⁶⁵ *Id.* at 17,856-57.

⁶⁶ 12 Av. L. REP. 17,921 (D. New Mexico 1972).

⁶⁷ *Id.* at 17,924 (Finding of fact, #31).

⁶⁸ *Id.* (finding of fact, #30).

⁶⁹ NTSB Report, AAR 73-3 at 15.

procedures to avoid any encounter. Thus the lack of a resultant encounter with a vortex is exactly the result desired.

Thus the key issue in vortex litigation will continue to be whether a warning should have been given. It now seems clear that a party seeking recovery when a warning was given has a formidable task, although depending on circumstances, the question will remain whether the controller, in giving the warning, was "slavishly" adhering to the manual or creating a "cry wolf" syndrome. Nevertheless, in cases when warnings have been given and even more importantly when no warning was given the issues of the pilot's experience, familiarity with the airport, and correctness of the warning will remain subjects on which litigation may turn. For example, in *Yates*, a no warning case, though the investigation and testimony revealed that the pilot was knowledgeable concerning wake turbulence the court obviously took into consideration that the decedent was a "low time" pilot.⁷⁰

Since the giving of a warning remains a matter of discretion with the controller, based upon the circumstances under which he is operating in the tower, it appears that the most reasonable rule for the courts to follow in evaluating whether a warning was appropriate, or its omission negligent, is conclusion number five in the *Robinson* case, that: "There is a duty to warn of wake turbulence only if it is reasonably foreseeable, which depends on the circumstances in each case."⁷¹ The circumstances to be considered will include, *inter alia*, the weather conditions, time and distance separation of air traffic, type and position of aircraft in the traffic pattern, visibility, the controller's general experience, the history of arrivals and departures before the accident being litigated, and which of these factors, if any, the controller considered.

The Government will continue to have its responsibilities for giving warnings tested, although it may become increasingly difficult to sustain a wake turbulence case against the United States because of the recent decisions that limit the duty of the controller to anticipate a vortex encounter and place a greater burden on the pilot to avoid such encounters. Plaintiffs will also have to meet

⁷⁰ *Yates v. United States*, 12 AV. L. REP. 17,921, 17,925 (1972) (finding of fact, #43).

⁷¹ *Robinson v. United States*, CA 3-3984-A (N.D. Tex.) (not otherwise reported).

a greater burden to show that a vortex encounter actually did occur, in contrast to the type of testimony, often presented during trials in which this writer represented the Government, generally to the effect that (i) the plane was seen to wobble and gyrate and, (ii) an expert opinion that the accident was caused by a wake turbulence encounter. Since the FAA has done more research and is now more knowledgeable in this area, turbulence cases will require more skilled preparation in all respects to counter the Government's defense that there was in fact no wake turbulence encounter.

But even if a vortex encounter is shown under conditions where no warning was given, it may not necessarily result in Government liability because much of the emphasis has been transferred to the pilot. Thus, in appropriate cases, greater consideration will be given to making the pilot, flying school, or air taxi service a defendant as well as the Government.

Although the FAA originally emphasized the hazard of wake turbulence to aircraft that were taking off or landing,⁷² with the advent of TCA's (Terminal Control Areas) in places such as Washington, D.C., Miami, Boston, San Francisco, and other large airports that attempt to control different types of aircraft at different altitudes within an enlarged control area or control zone by use of radar vectors, the phenomenon of vortex turbulence must be assessed with respect to its relationship to air traffic control system capacity, in both terminal and en route operations.

As long as there is mixed traffic in terminal areas there will continue to be wake turbulence cases. All wake turbulence cases except *Wenniger v. United States*,⁷³ have occurred during landings or takeoffs. The new concepts and developments in navigation procedures will create new possibilities of wake turbulence encounter even away from airports. The new era of jumbo jets will make such encounters inevitable even when traffic separation and

⁷² The first provision for warning dealt with only "departing or arriving" aircraft.

⁷³ 234 F. Supp. 499 (D. Del. 1964), *aff'd*, 352 F.2d 523 (3d Cir. 1965). Although the court in *Thingulstad v. United States*, 343 F. Supp. 551 (S.D. Ohio 1972), treated the case as an "en route" accident, the aircraft in that case was in communication with the tower and on approach for landing. The airplane in the *Wenniger* case was a truly en route aircraft which had not filed any flight plan and did not communicate with any air traffic control facility.

a warning is afforded, as was demonstrated in the recent Ft. Worth accident.⁷⁴

We can continue to look for wake turbulence cases in all areas, but the trend against the Government will ease sufficiently to permit a greater sharing of responsibility by pilots, and the flying schools and air taxi operators that employ them.

⁷⁴ See note 2 *supra*.