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JUDICIAL AND REGULATORY DECISIONS

AIRCRAFT MANUFACTURER'S LIABILITY FOR DEFECTS IN CONSTRUCTION AND DESIGN

COURT decisions of the past two decades reveal interesting applications of tort doctrines in suits involving aircraft manufacturer's liability for construction defects. While subjecting aircraft manufacturers to strict liability on a warranty theory has never been seriously considered,¹ the courts have achieved a somewhat similar result in using negligence doctrines. An analysis of these decisions indicates that the aircraft manufacturer has great difficulty in avoiding liability for damages resulting from such defects. This conclusion was reached upon an examination of the defenses available to an allegedly negligent manufacturer; the standard of care imposed on a manufacturer for design and construction of airplanes; and questions of causation and burden of proof.

The recent case of *Northwest Airlines v. Glenn L. Martin*² affords an opportunity to observe the effectiveness of the assumption of risk and contributory negligence defenses to the manufacturer. In this case, the airline sued the manufacturer for alleged negligence in the design of a wing splice which broke during flight because of metal fatigue. The court refused to hold the manufacturer liable as a matter of law, but its defenses proved to be so inadequate that the effect of the decision was tantamount to the same result. Martin alleged as affirmative defenses, that Northwest in making an inspection of the plane (1) assumed a risk of a defect in design, or (2) was contributorily negligent in not discovering the defect, and (3) that Northwest was contributorily negligent in failing to equip the plane with radar.

With respect to the issue of assumption of risk, the record reveals that Northwest had every opportunity to know of and appreciate the danger of the defect,³ which, as a matter of fact, one of its own independent expert witnesses had established as being "open and obvious." It is evident that in assumption of risk cases an objective standard of knowledge must be applied, and that a plaintiff cannot be heard to say that he did not comprehend a risk which should have been obvious to him.⁴ Nevertheless, the court held that it was error to submit the assumption of risk question to

¹ Since there is no contract between the manufacturer and the passenger, most courts would refuse to apply a warranty theory in actions between these parties because of the apparent lack of privity. Those cases which do not require privity of contract are usually confined to actions arising from the purchase of defective food. Prosser, Torts §84 (2d ed. 1955). See also *Trans World Airlines v. Curtiss-Wright*, 2 CCH Avi. (4th ed.) 17849 (N.Y.S. Ct., Dec. 1, 1955). The warranty theory may not be available even in manufacturer-airline litigation, where there is a contractual relationship, if the action for breach of warranty was excluded by the purchase agreement as in *Northwest Airlines v. Glenn L. Martin*, 224 F. 2d 120 (6th Cir. 1955), cert. denied, 24 U.S.L. Week 3184 (U.S. Jan. 10, 1956) (No. 538).

² *Supra*, note 1. This case is significant in that it is apparently the first aircraft manufacturer negligence case to reach an appellate court on an issue of substantive law.

³ Northwest maintained a staff of engineers, inspectors, and other personnel at the Martin plant who studied and approved the design of every part of the plane before it was accepted. Upon completion, the Northwest staff reported to their office that the plane was "the most extensively tested plane in commercial aviation history."

⁴ Prosser, Torts §55 (2d ed. 1955).

the jury, reasoning by inference that Northwest could not have known of the risk of danger.⁵ Perhaps the underlying basis for the inadequacy of the assumption of risk defense in a negligence action against the manufacturer for defective construction is that it is almost inconceivable that an airline would operate a plane, which it must be taken to know was in danger of crashing because of so obvious a structural defect. Consequently, it would seem that since the court in the *Northwest case* did not give the question of assumption of risk to the jury, where such action would have been substantiated by the most favorable facts, the aircraft manufacturer cannot rely on this defense in the future with any degree of confidence.

In dealing with the defense of contributory negligence based on the failure to discover the defectively designed wing splice, two basic questions are present: Does the airline have a duty to inspect planes which it purchases? And if not, does an inspection by an airline obligate it to use due care?

In the *Northwest case*, the manufacturer conceded and the court stated that if the airline had not made any inspection of the plane at all, there would be no issue of contributory negligence. But this decision seems to be in conflict with *De Vito v. United Airlines*,⁶ where the airline was held responsible to the passenger for not discovering an error in the manufacturer's instructions on the precautions necessary to meet the dangers of carbon dioxide gas used in fire extinguishers. However, this apparent divergency can be explained by the fact that while the airline owes the passenger a duty of inspection, it owes the manufacturer no such duty.⁷ And, even though the airline fails to inspect and is adjudged guilty of secondary negligence as to the passenger, it may recover such losses from a manufacturer who has been primarily negligent.⁸ Consequently, the manufacturer cannot successfully impose a contributory negligence defense merely because the airline failed to make an inspection which may have uncovered the manufacturing error.

There remains the question of whether an airline is obligated to use care if it undertakes to make an inspection. The court, in the *Northwest case*, reasoned that since the fact that inspections were made in no way increased the risk of harm, the airline should not be penalized for attempt-

⁵ The court arrived at this conclusion from the following language (p. 126):

The evidence that Northwest's representatives did insist upon changes whenever they saw any reason to be dissatisfied leads to the conclusion, at least by negative implication, that they saw no reason to criticize the wing joint. They had no reason whatever *not* to object to anything they might regard as hazardous, and, in fact had been expressly instructed by Northwest to insist on any changes they thought would increase the safety of the airplanes . . . There is no evidence that the danger lurking in the wing joint was so obvious to Northwest representatives who actually did observe it that they must be taken to appreciate that danger. (The emphasis is the Court's.)

⁶ 1951 U.S. Av. R. 181, 98 F. Supp. 88 (1951). The pilot followed the erroneous instructions of the manufacturer and was overcome by carbon dioxide gas entering the cockpit, thereby causing the plane to crash.

⁷ In the *De Vito case*, the passenger sued the airline who made a motion to cross claim liability onto the manufacturer. In that the passenger was a party to the suit, the airline was held to the duty of a carrier, which made it responsible for all but latent defects. Whereas, in the *Northwest case*, the airline settled the passenger's claims, and sued the manufacturer for its losses. The airline was held to the duty of a purchaser which does not require an inspection.

⁸ *Lewis v. United Airlines*, 1941 U.S. Av. R. 245, 29 F. Supp. 112 (1939). *American Airways v. Ford Motor Co.*, 1939 U.S. Av. R. 149, 1 Avi. 809, 17 N.Y.S. 2d 998, *aff'd*, 284 N.Y. 807, 31 N.E. 2d 925 (1935). Also, an airline can recover its losses caused by the negligence of a manufacturer regardless of the fact that in an action by a passenger injured in the accident "that same dereliction would not be a defense to it."

ing in its own interest to conform to a higher standard of care than that imposed on it by law. But the logical implication is that even a careless inspection would free the airline from liability. Such an inference seems to be contrary to the well known tort concept concerning *affirmative conduct*,⁹ which provides that even in the absence of a duty, if a person attempts to aid another, and "takes control of the situation," he is regarded as entering voluntarily into a relation of responsibility, and hence as assuming a duty. Thereafter, he will be held for any failure to use reasonable care. However, since the affirmative conduct theory is usually utilized to construct a duty on behalf of a careless defendant, it is at best only analogous where applied to a contributory negligence situation. Also, it may be effectively argued that the airline did not take sufficient "control of the situation" to bring the affirmative conduct theory into play.¹⁰ In any event, the court in the *Northwest case* made no attempt to reconcile its decision with this well established tort theory, and it seems safe to say that an airline will not be deemed contributorily negligent if it fails to discover a structural defect in making an inspection.

There have been recent developments in aviation safety where radar is used to prevent any encounter with thunderstorms. The manufacturer alleged that the plaintiff-carrier was contributorily negligent in not having this safety equipment. The court held that it was error to give this question to the jury, because it felt that feasible airborne radar was not then commercially available, even though the airline did not assign this as a reason in explaining why it was not installed. A look at the evidence introduced by the manufacturer on the issue of the commercial availability of radar seems to warrant a jury question.¹¹ However, such action may be construed as indicative of a judicial tendency to resolve tenuous questions of fact against the manufacturer for reasons of public policy which will be discussed later.

In the field of aviation as of 1938 certificates of airworthiness are required before a plane can be used for interstate commercial purposes.¹² At first blush it would appear that these certificates could be used as an absolute defense by a manufacturer when charged with negligent design or construction, but the contrary seems to be the result reached. Two questions should be considered in relation to certificates of airworthiness: Can such a certificate be successfully introduced into evidence? And if so, will it serve as a complete defense in a negligence action?

In *Maynard v. Stinson*,¹³ the manufacturer attempted to introduce a certificate of airworthiness in rebuttal to an allegation of negligent design,

⁹ Prosser, Torts §38 (2d ed. 1955).

¹⁰ The realities of the situation in the *Northwest case* support this conclusion. The evidence showed that the Martin 202 was an assembly of 75,000 parts. There were over five hundred Martin designing engineers on the project, and over 17,000 separate drawings were made. Over 2,000,000 man hours were expended on the design of the plane. By contrast Northwest never had more than three inspectors present at the Martin plant and only one aeronautical engineer.

¹¹ The record reveals that (a) Northwest's pilots had flown aircraft equipped with two types of radar; (b) the equipment which was then available had been tested by Northwest; (c) Northwest's communication's engineer conceded that radar equipment which was available at the time the plane crashed would have been of assistance; (d) Northwest's superintendent of meteorology, speaking as of the time of the crash, confessed that radar would be of assistance in circumventing a thunderstorm area; (e) One of the reasons Northwest decided not to install radar was that it was effective only 95% of the time.

¹² 52 Stat. 917 (1938), 49 U.S.C. §401-611 (1952).

¹³ 1940 U.S. Av. R. 71, 1 Avi. 698 (Wayne County Cir. Ct., Mich. 1937). Recovery was based on the negligent design of the plane's carburetor and exhaust pipes which caused a fire.

but the court refused to receive it in evidence on the ground that the manufacturer had failed to adduce testimony from employees of the Department of Commerce as to the nature and extent of their examination.¹⁴ The manufacturer could not produce the necessary witnesses because the counsel for the Secretary of Commerce refused to allow employees of the Department to testify,¹⁵ and the individual who actually made the inspection could not be found. Consequently, it is not an easy matter to get these certificates into evidence because of the difficulty in producing corroborating testimony, but even when admitted, they do not constitute a complete defense to an allegation of negligence. In one such case,¹⁶ the certificate was allowed, but only as some evidence of the qualifications of the operator and the machine, while in another it was held that air carriers cannot rely on government inspections as a complete fulfillment of their duty of care.¹⁷ It may be concluded then that both the common law defenses of assumption of risk and contributory negligence, and the certificate of airworthiness are of dubious value to an allegedly negligent aircraft manufacturer attempting to avoid liability.

For obvious reasons, it was necessary to assume the aircraft manufacturer's negligence while considering the inadequacy of its defenses, and an inquiry into the duty of care required of a manufacturer in the design and construction of aircraft does not appear to rebut this assumption. That an aircraft manufacturer has a duty to use care has never been doubted,¹⁸ but the crucial question is to the extent of that duty. The court in the *Maynard case* spoke of the manufacturer as only being responsible for those defects in its plane which an ordinary degree of care could have prevented. But "ordinary degree of care" is a legal term of art which requires translation into a comprehensible standard. The *Maynard case* defines the limits of both the knowledge and precautions required of the aircraft manufacturer, by holding the manufacturer accountable only for the knowledge and skill possessed by an airplane designer in the year in which the plane in dispute was designed. This has the effect of protecting the manufacturer from the admission of hindsight evidence on the issue of ordinary care.¹⁹ Also, the court held the manufacturer answerable for taking those precautions which are commensurate with the damages which

¹⁴ The ruling accords with the hearsay evidence rule since the testimony of the parties making out and granting the certificate was theoretically available.

¹⁵ An interesting question is whether the Department of Commerce would be liable for negligence under the Federal Tort Claims Act of 1946. Henry G. Hotchkiss, in *Aircraft Manufacturer's Liability and the Civil Aeronautics Act of 1938*, 16 Geo. Wash. L. Rev. 469 (1948), suggests that there is little doubt but that the granting or withholding of certificates of airworthiness calls for so high a degree of technical skill and, more important, technical judgment as to leave no doubt that it is a discretionary function, and not a ministerial one, thereby continuing the Government's immunity from a tort suit. See also *Dalehite v. United States*, 346 U.S. 15 (1953).

¹⁶ *Bolineaux v. City of Knoxville*, 1937 U.S. Av. R. 145, 20 Tenn. App. 404, 99 S.W. 2d 557 (1935).

¹⁷ *Kamienski v. Bluebird Air Service*, 1944 U.S. Av. R. 50, 321 Ill. App. 340, 53 N.E. 2d 131 (1944).

¹⁸ *Sellers v. Champion Spark Plug Co.*, 1929 U.S. Av. R. 61, 1 Avi. 126, 150 Miss. 473, 116 So. 883 (1928). This was perhaps the first case on the subject and was resolved on an issue of fact; demonstrating by inference that even at that early date the question of law was not deemed worthy of discussion by the court.

¹⁹ This was acknowledged in the *Northwest case* when the court refused to permit the airline to use evidence of the modifications in the wing joint, made by the manufacturer after the damage was discovered, to show what the manufacturer should have done in the first place.

will likely result, if they are not taken.²⁰ Since the magnitude of possible harm in plane accidents is so serious,²¹ it does not seem unreasonable to hold the manufacturer responsible for taking almost all possible known safeguards. Consequently, it may be deduced from the *Maynard case* that the care required of an aircraft manufacturer compels it to take any precaution which could have averted the defect responsible for the accident in question, unless such precaution was unknown to those ordinarily skilled in designing and constructing airplanes at the time.

The doctrine of *res ipsa loquitur*²² has been useless in proving the alleged negligence of the manufacturer: first, because of a lack of expert knowledge concerning aviation hazards, and second, because of the absence of "exclusive control" in the manufacturer at the time of the crash. However, more recent decisions in passenger-airline litigation have held that the flight safety record now established justifies the conclusion that negligence is the most likely explanation when a plane crashes.²³ The "exclusive control" requirement has also been limited so that the manufacturer no longer need have actual control over the product at the time of the accident.²⁴ Consequently, future application of *res ipsa loquitur* to cases of negligence in the design and construction of aircraft would come as no great surprise.

Insofar as the defect responsible for the accident may not have been the result of faulty production, there is the question of who has the burden of proving whether the defective condition was caused by the manufacturer's negligence. This issue arose in *McCoy v. Stinson*,²⁵ a Canadian case, where there was some question as to whether a wing fitting broke as a result of improper welding by the repairman-defendant or for some other unknown reason. The court held that where the plane has been in use over a period of months, damage could happen which the manufacturer could not possibly prove in court, and consequently could not be held responsible for proving. The owner of the plane was held answerable for showing that the condition

²⁰ In the language of the court (p. 72):

"Ordinary care in cases where the result of a slip will be slight and unimportant is not sufficient care to fill the requirements of ordinary care where the result of a failure to exercise it will be dangerous or destructive of human life."

²¹ Prosser, Torts §84 (2d ed. 1955). Ordinary care is not considered solely in light of the magnitude of possible harm, but also in view of the probability of defects, the cost of effective inspection, and the customs of the business. However, magnitude of possible harm seems to be the determining factor in aircraft manufacturer cases.

²² *Res ipsa loquitur* enables a plaintiff to present his case to the jury without specific allegations of negligence. The conditions usually stated as necessary for the application of the principle of *res ipsa loquitur* are three: (1) the accident must be of a kind which does not ordinarily occur in the absence of someone's negligence; (2) it must be caused by an agent or instrumentality within the exclusive control of the defendant; (3) it must not have been due to any voluntary action or contribution on the part of the plaintiff. Prosser, Torts §42 (2d ed. 1955).

²³ *United States v. Kesinger*, 190 F. 2d 529 (10th Cir. 1951); *Lobel v. American Airlines*, 192 F. 2d 217 (2d Cir. 1951). See McLarty, *Res Ipsa Loquitur in Airline-Passenger Litigation*, 37 Va. L. Rev. 55 (1951).

²⁴ There is now quite general agreement that the fact that the plaintiff is sitting on the defendant's stool when it collapses, or has possession of an exploding bottle, or a loaf of bread with glass baked inside of it, or is using an appliance, which the defendant has manufactured, will not prevent the application of *res ipsa loquitur*. Some courts have said that it is enough that the defendant was in "exclusive control" at the time of the indicated negligence. Prosser, Torts §42 (2d ed. 1955).

²⁵ 1940 U.S. Av. R. 84, 1 Avi. 698, Ontario Supp. (1938). Defendant welded a gusset onto a wing fitting of the plaintiff's plane which was found broken upon an examination of the wreckage.

which resulted in the crash could not have been introduced between the delivery of the plane and the accident. However, this is of little consequence in many cases, especially those involving improper design, where the defect is of such a nature that it can be easily traced back to the manufacturer.²⁶

Many of the cases discussed in this article seem to be of such a technical nature that a jury will not always be capable of rendering a fair and considered judgment of the evidence. When one bears in mind the extent of damage to the plane and the difficulty of determining the causes of the aircraft crashes through examination of the wreckage, plus the possibility of fatigue and oversteering, etc., it is not difficult to conclude that such matters are beyond the realm of knowledge and experience of the average juror. A contemporary Canadian case declared that those cases involving the weighing and consideration of scientific evidence fall into the category which "is better tried by a judge alone, than by a judge with a jury."²⁷ However, the elimination of the right to trial by jury in ordinary civil actions in this country can come only by way of statute.²⁸ Consequently, the aircraft manufacturer's liability hinges on the ability of twelve untrained minds, depending at best on conflicting expert testimony, to decide questions of fact involving technical and complex concepts of aeronautical engineering. This is unfortunate, but a factor which the manufacturer cannot overcome.

It appears then that the courts, in disposing of aircraft manufacturer negligence cases with common law tort doctrines, are placing the brunt of the loss resulting from structural defects on the manufacturer. However, this seems to be a satisfactory solution in that it is identical with the conclusion arrived at when the same problem is approached from the viewpoint of public policy.

It is clear that the court, in the *Northwest case*, acted in the public interest in not allowing the manufacturer to base its common law defenses on the airline's inspection program. The purpose of the inspection was to aid in the production of safer commercial aircraft. Even though the accident was not averted in this case, such a program is undoubtedly beneficial in the aircraft industry as well as the public. But, if *Northwest* had been found guilty of assumption of risk in making the inspection, or of contributory negligence in not discovering the defect, then, more than likely, that would have spelled the finish of the inspection program. Thus it would seem highly improbable that any airline would risk liability by making an inspection which is beyond its legal duty.

But the *Northwest case* is not alone, for it seems that the public interest is being served whenever the aircraft manufacturer is found liable for losses resulting from manufacturing defects. This conclusion can best be explained on the grounds that the manufacturer is in the best position to prevent structural defects and distribute the loss.

²⁶ The defects in the three leading cases were obviously of a manufacturing origin and there was no question of cause. In the *Maynard case*, the carburetor and exhaust pipes were too short; there was an error in the instructions on how to use fire extinguishers in the *De Vito case*; and, in the *Northwest case*, the wing splice was improperly designed.

²⁷ *Nystedt v. Wings, Ltd.*, 1940 U.S. Av. R. 151, 1 *Avi.* 1036, 51 *M.R.* 63 (1940). The plaintiff was desirous of a trial by jury since a previous trial, *Galer v. Wings, Ltd.*, 1938 U.S. Av. R. 177, 1 *Avi.* 778, 47 *M.R.* 281 (1938), by another passenger and arising out of the same accident, resulted in an adverse determination by a judge sitting without a jury. The facts of the case are briefly as follows: The accident occurred when the propeller blade sheared off near the hub. The judge felt that the failure was due to faulty design, but that the flaw was not known to those skilled in the science and art of designing planes at the time.

²⁸ Note, 16 *J. Air L. & Com.* 240 (1949).

The passenger obviously can neither prevent nor distribute the loss, but can only bear it alone, or refrain from air travel. The airline has the means to distribute the loss to the passengers, but is not in a good position to prevent it. Only the manufacturer can prevent its own errors by being more careful. But such care need not impede the making of changes and improvements which would benefit commercial aviation, for the manufacturer can distribute a reasonable share of the loss to the consumer in the form of increased prices. However, no manufacturer can afford to allow this loss to vastly exceed that incurred by a competitor. Therefore, a rather close balance should be achieved in that a manufacturer must be careful, but is not so restricted that it cannot risk technological advancements.

Thus it would appear that a manufacturer of commercial aircraft is held strictly liable for damages caused by defects in structure or design, for this result is achieved regardless of whether common law tort doctrines are applied or whether the decision rests on public policy considerations.