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IFR - The Liability of the Chartmaker

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A California trial lawyer's perspective on the subject of civil liability is necessarily influenced by the "progressive" attitudes of the California courts and by the liberal awards rendered by our juries in personal injury cases. Whether this admitted influence is a positive or a negative one is not particularly relevant, but it has prompted an emphasis in this paper on California law. No effort has been made to examine in depth the potential liability of publishers of instrument approach charts on a state-by-state basis.1

I. Historical Background

In order to understand the chart maker's potential liability, one must have a basic knowledge of what an instrument approach procedure is, what it is not, and how it evolves into a chart which is then utilized by general aviation and professional pilots. In 1926 the United States Congress passed the Air Commerce Act6 which gave to the Secretary of Commerce responsibility for preparing aeronautical charts for commercial and private pilots.7 The responsibility for compilation was delegated to the Coast and Geodetic Survey (now the National Oceanic and Atmospheric Administration).

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3 Id. § 5(b).
By the end of 1927, six “strip maps” covering various U. S. air routes had been published. The need for detailed approach information first was met by a series of sketches and diagrams in the Department’s “Airway Bulletin,” published in 1928. In 1930 airport sketches were published on the back of the first edition of the Sectional Chart Series.

In 1930, Mr. E. B. Jeppesen began flying as an airmail pilot for Boeing Air Transport. Mr. Jeppesen felt that his personal safety would be improved if he had available to him more detailed information with respect to the routes that he was flying. He bought a small notebook in Cheyenne, Wyoming, and began compiling data on airport runway patterns, field lengths, natural and man-made obstacles, and beacon lights. He also drew cross-sections of unusual terrain.

When the government finally installed low frequency radio guides in 1931, Mr. Jeppesen drew his first approach profile which graphically indicated how pilots should descend to the field portrayed. Radio frequencies appropriate for the approach were also noted. Mr. Jeppesen copied by hand a number of notebooks and made them available for friends. He later had fifty copies printed which sold for $10.00 each. The present Jeppesen-Sanderson Company publishes in excess of 6,700 approach procedures from their Denver facility and thousands more from its facility in Frankfurt, Germany.

In 1941, the Coast and Geodetic Survey began work on a series of Instrument Approach and Landing Charts designed to serve the pilot’s needs when approaching an airport on instruments and under conditions of low visibility. The charts were also meant to be a visual aid when the pilot had broken through the clouds and could confirm his location by terrain identification.

In 1943, the Coast and Geodetic Survey began publication of a bound volume of instrument letdown procedures for the Federal

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4 Id.
5 U.S. DEPT. OF COMMERCE, AIRWAY BULLETIN (1928).
7 Id.
8 W. RISTOW, AVIATION CARTOGRAPHY; A HISTORICO-BIBLIOGRAPHICAL STUDY OF AERONAUTICAL CHARTS (2d ed. 1960); U.S. DEPT. OF COMMERCE, NOAA PLAN FOR AERONAUTICAL CHARTING 57 (1971) [hereinafter cited as NOAA PLAN].
Government and a loose-leaf binder of instrument letdown charts with world-wide coverage. The series was expanded as improved navigational devices were installed. In October 1977, the NOS published procedures for 4,348 approaches pertaining to 1,913 airports.  

Prior to 1968, there were multiple federal publications pertaining to criteria applicable to instrument approaches. Recognizing the problems presented by scattered sources for pertinent instrument approach criteria, the Federal Aviation Administration (FAA) began in 1964 to centralize the criteria in what was to be a single publication. In 1967 the U. S. Standard for Terminal Approach Procedures (TERPS) became effective. Approach charts dealing with domestic and U. S. possession approach procedures are prepared in conformance with a form 8260, which in turn is prepared in conformance with form 8260.19.  

Terminal instrument procedures will be provided at civil airports open to the aviation public whenever a "reasonable need" is demonstrated. Requests for new civil instrument procedures will be accepted from any "aviation source" provided the request indicates that the airport owner-operator has been advised of the request. The airport must be found acceptable for instrument flight rules operations following an airport airspace analysis. Prior to establishing or revising terminal instrument procedures for civil airports, the FAA will, as required, coordinate such procedures with the appropriate civil aviation organization.  

The Flight Standards Service Branch (FSSB) and the Flight Inspection Field Office (FIFO) of the Federal Aviation Administration develop the data for new or revised procedures and this

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9 NOAA PLAN, supra note 8, at 61.  
11 See Appendix A; 14 C.F.R. § 97.20 (1977). This form is the successor to what was previously FAA Form 511.  
12 The 8260.19 form is followed by flight procedures specialists to assure a uniform method of presenting data on the 8260 form.  
13 TERPS, supra note 10, at § 120b.  
14 Id. § 121.  
15 Id. § 122a.  
16 Id. § 150b.
data is ultimately published in the 8260 format. The basic information is sent to the National Flight Data Center (NFDC) after the FIFO and the FSSB have reviewed the data and after the proposed approach has been flown. The NFDC will then review all information sent to them and approve or disapprove the proposed Standard Instrument Procedure. If the procedure is approved the NFDC compiles the raw data and publishes it in the textual form of the 8260. The 8260 form and, ultimately, the chart portrayal of the procedure provide the instrument rated pilot with the information necessary to execute the procedure. The text of the newly approved procedure is also published in the Federal Register and becomes law. The NOS and Jeppesen then receive and publish the procedures in their chart format. If after publication of a procedure an unfavorable pattern report is received, the FAA performs an inflight check of the procedure.

Procedures pertaining to airports outside of the United States and the United States territories are not based upon TERPS nor are they made available to the NOS or to Jeppesen in the 8260 format. Most foreign countries, however, are members of the International Civil Aeronautical Organization (ICAO). Members of the ICAO publish Aeronautical Information Publications (AIP's), which include instrument procedure charts applicable to airports within their jurisdiction. The NOS and Jeppesen subscribe to the AIP's and when an AIP chart is received it will be republished in their format.

At the present time there are in excess of 4,000 domestic instrument approaches. With this figure in mind, one can begin to appreciate the number of man-made and natural obstructions that are to be found in the immediate vicinity of these approaches. The

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17 The following discussion of procedures leading to publication of instrument approach charts is based on information provided to the author by the Jeppesen-Sanderson Co.

18 The ICAO is presently headquartered in Montreal, Canada, and virtually every country is a member of this organization. The Peoples Republic of China, Viet Nam, Cambodia, and Laos are among the non-member countries.

19 The AIP's provide detailed approach procedure information, including approach charts.

20 See Appendix B for a reproduction of one AIP.

21 Information provided to the author by the Jeppesen-Sanderson Co. If the Americas and the Pacific are included there are approximately 7000 procedures presently published.
chart publisher necessarily relies upon the accuracy and completeness of the information provided to them in the 8260 form or the equivalent AIP presentation.\footnote{As a practical matter it is impossible for a chart publisher to make an independent determination as to the accuracy of the data provided in the source material.}

As will be discussed more fully below, approach charts have been criticized for lack of clarity. The chart publisher utilizes "commonly understood" symbology to relate information in an abbreviated, schematic form. The symbols and their meanings are described in the legends that are made available to the chart subscriber along with the charts. While symbols and legends are intended to assist pilots in identifying and understanding pertinent information on a given approach, the legends have been criticized as inadequate in their translation of the symbology.

In order to evaluate the liability of the chart publisher, it is important to have some conceptual notion of what limitations, practical or otherwise, are to be placed upon the publisher's "duty" to educate the already instrument rated pilot. It should not be unreasonable for the chart publisher to assume that the pilots utilizing the procedures have previously received training in approach chart interpretation. To appreciate the potential liability of the chart publisher, it must be recognized that thousands of instrument approaches are being made daily throughout the world. Approaches are being made by relatively low time general aviation pilots in aircraft having only the most basic instrument equipment as well as by 747 captains using the most sophisticated equipment available.

Approaches are generally classified into precision\footnote{These would include a complete Instrument Landing System (ILS) approach, see TERPS, supra note 10, §§ 900 et seq., or an approach utilizing precision radar. See id., §§ 1000 et seq.} and non-precision approaches.\footnote{A non-precision approach might utilize a localizer and ILS without glide slope, the localizer back course, the VOR, the VOR/DME, the non-directional beacon (NDB), or the ASR approaches. See generally TERPS, supra note 10.} Each approach requires different data.\footnote{While the approaches differ in execution, the format for the chart includes a Plan and Profile view in every case. See Appendix C.}

As can be seen in the appended 8260 form,\footnote{Appendix A.} the information pertaining to a prescribed procedure is quite detailed. While the pub-
lished chart will include the information specified in the 8260 form, the publisher has some discretion in how the required information is to be presented.

The chart publisher faces a practical problem in deciding whether discretionary information should be volunteered. Too much information on a 4 x 7 inch approach chart can prove more cluttering than clarifying. How proficient or deficient should the chart publisher assume the instrument rated pilot to be? Assuming the specified minimum altitudes provide adequate terrain and obstacle clearance, should the publisher be required to identify obstructions along the approach course?

Aircraft litigation is frequently spawned by accidents that occurred because the pilot's performance, for reasons known or unknown, fall below his "normal" level of proficiency. Intoxication, fatigue, illness, preoccupation, and inattentiveness are a few of the disabilities that frequently lead to accidents and near accidents. In addition to accurately depicting data specified and required by the 8260 form or the equivalent AIP, what, if anything, must a chart producer do to protect the pilot against a lapse in his own proficiency?

The chart publisher should be permitted the reasonable expectation that a pilot using an instrument approach chart will have successfully completed a well thought out and comprehensive course on instrument flying. One would hope that such a course would include an in-depth study of typical approach charts; how they are to be read, and what information is contained therein.

II. NEGLIGENCE AND THE CHART PUBLISHER

Negligence is often an available theory of recovery that can be pursued in air crash litigation when a chart is alleged to be deficient. Whether a negligence theory is pursued through trial is often dependent upon whether a strict products liability theory is available to the plaintiff.

When an injury or a wrongful death suit is filed following an

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27 Adequate clearance is defined as a clearance consistent with the TERPS specification. See, e.g., TERPS, supra note 10, § 221 and Appendix 1, at 2.

28 This should include, at least, charts depicting the ILS, ADF, VOR, and VOR/DME procedures. See notes 23-24, supra.

29 See Part III, infra.
aircraft accident there are frequently multiple defendants. The chart publisher’s potential exposure is often closely associated with the potential exposure of instrument manufacturers, air traffic controllers, and flight personnel. Whether one or all of the potential defendants are sued will depend upon the nature of the accident, the solvency or insurance status of the potential defendants, and upon tactical considerations too numerous to mention here. Workmen’s compensation statutes in many jurisdictions prohibit the pursuit of negligent employers and co-employees who would otherwise be named as defendants. If a suit is filed by a passenger or a survivor of a passenger all potential defendants are generally named and served. If a suit is filed by a crew member or by the crew’s employer (generally for a hull loss), the crew’s fault, if any, will be raised only by way of defense.

There ordinarily will be no particular difficulty in applying the traditional negligence standard of reasonable care to the design and portrayal on the approach chart of an instrument procedure, as to the topography identified, obstructions noted, etc. This is not to say that when the standard is applied the outcome will be predictable. Presumptively, if a pilot collides with an obstacle during an instrument approach while on course and while he is above the prescribed minimum altitude, the specified procedure is an unreasonable one. Whether the chart publisher should be found negligent for the publication of the procedure would depend, in part, on whether the 8260 form prescribed the minimum altitude at the point of impact and, if it did, whether the chart publisher could reasonably have been expected to discover the potential danger. If the minimum was incorrectly charted, there would be little question of the publisher’s negligence. If the chart was a republication of an AIP portrayal, the chart publisher would have had little opportunity to independently determine whether the minimums specified were adequate.30

If the chart publisher were to deviate from the minimums specified in the 8260 form or AIP by increasing minimums, and should an accident occur, one can readily anticipate the argument of plaintiff’s counsel: if the aircraft had been at the lower altitude specified by the 8260, the mid-air collision would not have oc-

30 The impracticality of requiring the chart publisher to survey approaches firsthand, see note 22, supra, is compounded where foreign countries are involved.
curred; the icing would have been less difficult to deal with; the storm would have been less intense; the effect of depressurization less dramatic; etc.

Where contributory negligence operates as a complete bar to a negligence action, and where the plaintiff's recovery can be defeated by a showing of crew negligence, the negligence cause of action is either not pleaded or, if pleaded, it will frequently be dismissed either before trial or before the case is argued. Similar, though less compelling, tactical considerations exist where comparative negligence principles apply.

In all too many crew cases the claim is one for wrongful death, and a clear and accurate picture of the crew's use and interpretation of an approach chart is difficult, if not impossible, to reconstruct. This reconstruction may be possible if there is a clear and complete reproduction of a cockpit voice recorder. While plaintiffs' counsel can argue in a negligence case that an obstacle was negligently omitted from the chart, or that the information provided was presented in a manner likely to confuse the crew, defense counsel can respond that the crew's inattentiveness or confusion contributed to the cause of the accident. In most jurisdictions, plaintiffs' counsel will be able to avoid a comparison of the pilot's fault with that of the chart publisher if he is permitted to pursue a strict liability theory.

III. STRICT LIABILITY AND THE CHART PUBLISHER

The manufacturer or seller of a defective product may be held strictly liable for injury caused by his product. The primary policy

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22 A recent Ninth Circuit decision, Pan-Alaska Fisheries, Inc. v. Marine Constr. & Design Co., 565 F.2d 1129 (9th Cir. 1977), holds that a plaintiff's contributory fault will reduce a strict liability recovery by that percentage of the total fault attributable to the plaintiff's conduct. See notes 72-77 and accompanying text, infra.

23 See RESTATEMENT (SECOND) OF TORTS § 402A (1965):

Special Liability of Seller of Product for Physical Harm to User or Consumer

(1) One who sells any product in a defective condition unreasonably dangerous to the user is subject to liability for physical harm thereby caused to the ultimate user or consumer, or to his property, if

(a) the seller is engaged in the business of selling such a product; and
consideration behind product liability is one designed to protect the consumer who is injured by a "defect" in a mass-produced product. 34

Before a suit can be decided on a product liability instruction, it must be established that the chart publisher designed and sold a "product." Approach charts are published for all domestic airlines and most international airlines as well as for general aviation instrument rated pilots, and the consuming public at large. Arguably, therefore, a loss caused by a defective chart could be spread among the many subscribers. 35

Some jurisdictions have held that the strict liability doctrine and Uniform Commercial Code warranty provisions do not apply to the rendition of certain personal services. 36 These courts have found that a "service" has been provided rather than the sale of a "good" or "product" where: (1) There is a pure personal service transaction and no tangible chattel is involved in the transaction, as in the case of a soils engineer who gives his opinion on whether or not a particular building site is suitable; 37 or, (2) A defendant

(b) it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold . . .

34 See id., Comment (c): [T]he justification for . . . strict liability has been said to be that the seller, by marketing his product for use and consumption, has undertaken and assumed a special responsibility toward any member of the consuming public who may be injured by it; . . . that public policy demands that the burden of accidental injuries caused by products intended for consumption be placed upon those who market them, and be treated as a cost of production against which liability insurance can be obtained . . .

35 Id.


contracts to "render service" in repairing or installing a non-
defective product (tangible chattel).\textsuperscript{38}

In \textit{Reminga v. United States},\textsuperscript{39} an unreported opinion, the plain-
tiff sued the United States and a map company for injuries caused
by an aircraft accident, alleging negligence on the part of the
United States and the map company. Although the court decided
only a jurisdictional issue, it considered the character of the de-
fendant map maker's business. In holding that the map maker
engaged in an activity which led to significant contacts with the
forum state, the court noted:

The injuries which gave rise to this action are such which could
reasonably have been foreseen once defendant embarked upon
such a \textit{business} \textit{venture}. Defendant knew, or should have known,
that people who used their \textit{product} would rely upon its accuracy
as a matter of course, and justifiably so. Further, defendant should
have anticipated the magnitude of potential harm which might
result if its aeronautical maps were erroneously or negligently
\textit{manufactured} and relied on. This is exactly what plaintiffs here
claim. It would be fair to say, then, that defendant's \textit{business} has
a realistic impact upon this State beyond that merely resulting
from its dollar volume or number of contracts with customers in
this State.\textsuperscript{40}

When the courts have chosen to characterize a transaction as
a "service" rather than a sale of a "product," it has generally been
because the underlying rationale for strict liability did not apply.
Policy considerations upon which the service versus product distinc-
tion is made were discussed in \textit{LaRossa v. Scientific Design Co.}\textsuperscript{41}
Here, the defendant contracted to design, engineer, and supervise
the construction of a new plant for the production of a commercial
chemical. During the final steps in setting up the plant, which con-
sisted of loading a catalyst in the form of pellets into a reactor, one
of the plant owner's employees was subjected to dust generated
by the loading operation. The plaintiff claimed that the loading
process was unsafe, but did not contend that the pellets themselves
were unsafe. The court drew a distinction between professional

\textsuperscript{40} \textit{Id.} (emphasis added).
\textsuperscript{41} 402 F.2d 937 (3d Cir. 1968).
engineering, design, and construction services, and injuries suffered "in the use of a mass-produced article." It recognized that one of the main policy reasons behind strict liability was the recognition that a mass producer of a product should, as a matter of public policy, bear the responsibility as an insurer against a defect in the product which causes harm to the consumer. The court found that professional services do not lend themselves to the doctrine of tort liability without fault because they lack the elements which give rise to the doctrine. The chief ingredient missing is a mass-produced good or product.

When a transaction involves both professional or personal services, as well as the transfer of title or possession of a product, a number of courts refer to the "essence of the transaction" in determining whether strict liability will apply. In this context the nature of the service involved generally relates to professional opinions offered by engineers, architects, accountants, physicians, dentists, and other recognized professional specialists. When the essence of a transaction is a service, all aspects of the transaction are considered to be part of that service, even though a product or tangible physical object is directly related to the service.

A chart publisher who prepares an approach chart by gathering information already specified by the appropriate authority and who depicts that information in such a manner as to be more readily and efficiently used by instrument rated pilots, may fairly be seen as providing a service rather than a product. If an approach chart is to be considered a "product," then an engineer's report and an architect's plan might also be considered "products." The omission of a supporting member from an architect's plan or an error in the structural engineer's report may cause damage or injury. Liability in such cases has traditionally been contingent upon a showing of negligence.

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42 Id. at 940, 942.
43 See, e.g., Williams & Lee Scouting Service, Inc. v. Calvert, 452 S.W.2d 789 (Tex. Civ. App.—Austin 1970, writ ref'd); Magrine v. Krasnica, 94 N.J. Super. 228, 227 A.2d 539 (1967) (essence of transaction where dentist provides both service and a product is that of a service).
In *Gagne v. Bertran*, quoted with approval in *Samuelson v. Chutich*, Justice Roger Traynor wrote:

Thus the general rule is applicable that those who sell their services for the guidance of others in their economic, financial, and personal affairs are not liable in the absence of negligence or intentional misconduct.

... 

The services of experts are sought because of their special skill. They have a duty to exercise the ordinary skill and competence of members of their profession, and a failure to discharge that duty will subject them to liability for negligence. Those who hire such persons are not justified in expecting infallibility, but can expect only reasonable care and competence. They purchase service, not insurance.43

Precedent governing the liability of professional architects or engineers may also have application to the professional cartographers who prepare the approach chart. All are experts in their field; each is sought out because of his special training and skills. In *DeBardeleben Marine Corp. v. United States*,44 a tugboat was damaged in a fire and explosion when it struck a natural gas pipeline that did not appear on the navigational charts issued by the United States Coast and Geodetic Survey. The ship owner filed an action against the United States based on the chart's inaccuracy. The Court held that "the government . . . must bear the burden of using *due care* in the preparation and dissemination of such charts . . ."45 A strict product liability standard was not applied. While the court appeared to rely on the standard of due care rather than a product liability approach, its emphasis may have been prompted by the unresolved question as to whether the United States can be considered a product manufacturer.

In *Williams and Lee Scouting Service, Inc. v. Calvert*,46 the defendant company employed agents to obtain information on recent oil exploration developments. This information, along with the information obtained from public records and from other periodicals, was distributed to subscribers in the form of periodic

44 451 F.2d 140 (5th Cir. 1971).
45 *ld. at 149* (emphasis added).
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reports. The Texas Court of Civil Appeals rejected the claim that this constituted a “sale” of “tangible personal property,” holding that the essence of the transaction was the supplying of the information.

Chart publishers provide information to thousands of subscribers on sheets of paper. It has been argued that it is the information, not the paper, which is the essence of the transaction; the paper is merely the method by which the information is made available. If, instead of furnishing a chart portraying an approach, the publisher were to provide a pilot to advise the crew of the procedures to be followed in effecting an approach, the publisher would surely be furnishing a service. If the pilot were to fail to notify the crew of information essential for a safe approach, he and his employer would be held responsible for any resulting harm. Liability might be based upon a theory that the publisher was negligent in hiring this particular pilot, or upon the imputed negligence of the pilot. There would be no product, and hence no basis for the application of strict liability.

The distinction between the physical properties of printed materials and the intangible thoughts, ideas, and information conveyed by such materials was recognized in Cardoza v. True. The Cardoza case involved the scope of a book dealer’s implied warranty regarding a cookbook. The court found it “unthinkable” that standards imposed on the quality of goods sold by a merchant would require him to evaluate and be held responsible for the thought processes of the many authors and publishers with which he dealt. The court further observed that publishers are not held liable where injury occurs through the use of products advertised in (as opposed to endorsed by) their publications, noting that strict liability has long been deemed inappropriate in such circumstances. The court stated:

The common theme running through these decisions is that ideas hold a privileged position in our society. They are not equivalent to commercial products. Those who are in the business of distributing the ideas of other people perform a unique and essential function. To hold those who perform this essential function liable regardless of their fault when an injury results would severely restrict the flow of ideas they distribute. We think that holding the

40 342 So. 2d 1053 (Fla. 1977).
bookseller liable under the doctrine of implied warranty would . . . have the effect of imposing liability without fault not intended by the Uniform Commercial Code.\textsuperscript{50}

Similarly, in \textit{MacKown v. Illinois Publishing \& Printing Co.},\textsuperscript{51} the court refused to hold a newspaper liable for injuries allegedly sustained by one of its readers when the reader used a dandruff remedy, recommended to the author by a reputable physician. When one understands the role that the chart publisher plays in gathering and disseminating information in a graphic format, one can appreciate the difficulty encountered in attempting to determine whether the essence of the chart publisher's involvement is one of providing a service or a product.

Misuse of a product is frequently raised as a defense in a strict liability action, although misuse is also relevant in determining whether the product was defective.\textsuperscript{52} Misuse is also relevant in determining whether the defect was a proximate cause of the injury, since the misuse itself may be found a proximate cause. The requirements for a proximate causal relationship between the conduct or product being examined and the loss or injury sustained has been both a professorial dream and a practical dilemma. Difficult questions of foreseeability further complicate this issue. The following example may assist in identifying the problem.

Assume that a chart publisher has properly portrayed the minimum altitude specified by the 8260 form for a given approach. Assume further that an obstruction located on the approach course is not identified either on the 8260 or on the approach chart, but that its vertical penetration is well below the specified minimum. An inattentive pilot descends below the minimum and collides with the unidentified obstruction. It is subsequently learned that the minimum prescribed in the 8260 was not in compliance with the obstruction clearance criteria as set forth in TERPS and that had the minimum been in compliance and had the pilot made the same error (i.e., the same descent below minimums), the aircraft would have cleared the obstruction.

Among the questions raised by the preceding hypothetical are

\textsuperscript{50} \textit{Id.} at 1056-57.
\textsuperscript{51} 289 Ill. App. 59, 6 N.E.2d 526 (1937).
\textsuperscript{52} \textit{See} \textit{Restatement (Second) of Torts} § 402A, Comment (h) (1965).
the following: Should a chart publisher ever be held responsible where its publication is entirely consistent with the 8260 and not subject to misinterpretation? Where a pilot admittedly errs in an approach, what margin for error must be provided? What obligation does the publisher have, if any, to independently attempt to evaluate the adequacy and/or accuracy of the information provided in the 8260 or in the equivalent AIP?

If the pilot in the above example descends 100 feet below the specified minimums, is it not speculative to assume that had the minimums been increased he would not have continued in his descent to a similar end. In California, the trier of fact would have to determine whether the pilot's "misuse" of the chart was foreseeable.\(^5\)

Pertinent to this point is the court's holding in *Swain v. Boeing Airplane Co.*,\(^4\) in which the personal representatives of American Airlines employees, killed in a training flight of a Boeing jet, brought actions for wrongful death alleging that the aircraft was carelessly and defectively designed. During trial, the defense of contributory negligence was raised, although it would ordinarily not be a defense in a strict liability case.\(^5\) The defendant argued that the plane had been put through violent maneuvers and that it had been flown unskillfully during the training maneuver. After having introduced the evidence of misuse, the defendant withdrew its defense of contributory negligence. Following a verdict for the defendant the plaintiff appealed, asserting that the trial court erred in permitting the jury to consider the possible misuse of the aircraft. The Court of Appeals rejected this contention, Judge Friendly writing:

However, even under the principle of strict liability, the manufacturer is liable only if the plaintiff proves the accident was caused by delivery of the article in a "defective condition," which is to say "not safe for normal handling and consumption." [cita-

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\(^5\) In California, a product manufacturer will be held liable despite the misuse of the product if the misuse is found to have been reasonably foreseeable. Cronin v. J.B.E. Olson Co., 8 Cal. 3d 121, 501 P.2d 1153, 104 Cal. Rptr. 433 (1972).

\(^4\) 337 F.2d 940 (2d Cir. 1964).

\(^5\) See Barth v. B.F. Goodrich Tire Co., 265 Cal. App. 2d 228, 71 Cal. Rptr. 306 (1968) (failure of plaintiff to discover defect in tire held to be no defense); Sweeny v. Matthews, 94 Ill. App. 2d 6, 236 N.E.2d 439 (1968) (failure of plaintiff to realize that concrete nail was likely to shatter held to be no defense).
tion omitted]. The inference of the existence and causality of a defect would indeed be bolstered if the manufacturer admitted that improper use played no part in the accident. But Boeing's withdrawal of the contributory negligence defense for lack of affirmative proof as to who was misusing the plane in no way conceded that the plane was not being misused; it remained for the jury to decide whether the plaintiffs had sustained their burden of showing that the crash was due to a defect rather than to negligent operation or some other cause for which the manufacturer would not be responsible.56

It would appear from Judge Friendly's opinion that he drew a distinction between what might be considered a pilot's contributory negligence in the operation of his aircraft and the pilot's "misuse" of the aircraft. Should it be alleged that a chart publisher designed a product that led a crew into a misinterpretation of the procedure, one could readily see how the defense would raise the pilot's lack of training, inattentiveness, etc. When these issues are raised in defense of a particular procedure or chart, it would be necessary for a court to determine whether the pilot's contributory error would be better described as negligence or whether it would rise to the level of product misuse.

There is no single definition of "defect" that applies to all situations.57 Some courts have applied the "merchantibility test," holding that a defect under strict tort liability principles does not differ from a breach of the implied warranty of merchantibility.58 According to this definition, a product is not defective when it is reasonably fit for its intended purpose. The Restatement provides that the seller may not be held liable when he delivers the product in a safe condition, and where subsequent mishandling renders the product dangerous by the time the accident occurs.59 This test focuses on the safety of the product when it is used for its intended purpose and in a reasonably foreseeable manner. Some courts apply what may be termed the "reasonable consumer ex-

56 337 F.2d at 942 (emphasis added).
59 See Restatement (Second) of Torts § 402A, Comment (g) (1965).
pectation test." This test is also described in the Restatement, and focuses on the reasonable expectations of the user. To establish a "defect" it must be found: (1) that the product was in a condition not contemplated by the consumer; and, (2) that the condition rendered the product unreasonably dangerous.

In determining whether a defect renders a product unreasonably dangerous, recent cases have tended to take a broad view of the question, requiring the jury to consider virtually all aspects of the product and the use to which it can foreseeably be put. Illustrative of this approach is Byrns v. Riddell, where the court cited Dorsey v. Yoder with approval in requiring the following factors to be considered in determining whether a defect rendered the product unreasonably dangerous:

1. the usefulness and desirability of the product;
2. the availability of other and safer products to meet the same need;
3. the likelihood of injury and its probable seriousness;
4. the obviousness of the danger;
5. common knowledge and normal public expectation of the danger (particularly for established products);
6. the avoidability of injury by care in the use of the product (including the effect of instructions or warnings);
7. the ability to eliminate the danger without seriously impairing the usefulness of the product or making it unduly expensive.

While many jurisdictions have struggled with the problem of providing the trier of fact with guidelines to be used in determining whether the product can be considered defective in its design, little progress has been made. Whether it is possible for a lay jury to judge the design adequacy of an instrument approach procedure is a question beyond the scope of this article.

In January 1978, the California Supreme Court added to the
trial lawyer's confusion with the Barker v. Lull decision. In Barker, the court attempts to outline the type of proof that a plaintiff must present in a product design case. The court had previously concluded in Cronin v. J.B.E. Olson Co. that the "unreasonably dangerous" element of Section 402A should not be incorporated into the plaintiff's burden of proof in a product liability case. The court pointed out in Barker that a manufacturing or production defect is readily identifiable because the defective product is one that differs from that which the manufacturer intended. This type of defect was compared with an alleged design defect, which cannot be identified simply by comparing the injury-producing product with the manufacturer's plans, since by definition the plans will reflect the allegedly defective design.

The court recognized that when a product is claimed to be defective because of an unsafe design, the "contours" of the defect concept may not be self-evident. Where such is the case the court acknowledged that the trial judge may find it necessary to explain more fully the "legal meaning" of defect. Having acknowledged the problem, the court concluded that a product is defective in design if the product "has failed to perform as safely as an ordinary consumer would expect when [the product is] used in an intended or reasonably foreseeable manner," or, if the plaintiff proves that the product proximately caused the injury, if the defendant fails to prove that "in light of relevant factors . . . the benefits of the challenged design . . . [outweigh] . . . the risk of danger inherent in the design."

In the context of an allegedly defective instrument approach, who qualifies as the "ordinary consumer"? Would the pilot who is familiar with instrument procedures be the ordinary consumer, or would an untrained lay juror who is exposed to a totally artificial "crash course" on chart design and IFR procedures be considered the "ordinary consumer?" Where the ordinary consumer has no meaningful pretrial expectations as to how a product should

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7 8 Cal. 3d 121, 501 P.2d 1153, 104 Cal. Rptr. 433 (1972).
8 20 Cal. 3d at 432, 573 P.2d at 456, 143 Cal. Rptr. at 238.
9 The "course" would be artificial in the sense that the influence of advocacy on the presentation of information could not be avoided.
perform is the first Barker definition to be disregarded, or will it still be available when the evidence is in and the consultants for both plaintiff and defendant have presented their contrary views? The first Barker definition requires that the product has been used in an intended or reasonably foreseeable manner. If it is alleged that an approach chart was misinterpreted by a crew because of the chart's propensity for misinterpretation, it is reasonable to conclude that the chart was not being read "as intended." If, in order to establish that it was used "as intended," the plaintiff need only show that the chart was being used to effect an instrument approach, the qualification is essentially meaningless. If this more general definition is given to the "as intended" requirement it becomes difficult to articulate a situation where an "unintended" use of an approach chart could lead to an accident.

Whether the chart was being used as intended is a moot question in California if the chart is found less safe than expected and if it is found to have been used in a "reasonably foreseeable manner." If the plaintiff contends that the chart was subject to misinterpretation, it could be argued that the misinterpretation, though not intended, was reasonably foreseeable. The determination of foreseeability will again be made by the lay trier of fact. In order for the trier of fact to fairly assess the reasonable foreseeability of an alleged misinterpretation he or they would presumably have to understand the proficiency expected of an IFR rated pilot and his "reasonable" fallability. An error that would be considered by a Certified Flight Instructor to be indicative of gross incompetence might be considered by a jury to be reasonably foreseeable.

Under the second definition in Barker the threshold question is whether the product design proximately caused the loss. If an accident occurred because of an erroneous minimum or because of an unidentified obstruction which penetrated a prescribed minimum, there would be little question of proximate cause. It is also difficult to imagine what "benefits" there might be to such a design. If an error could not be specifically identified and if the allegation is of a propensity for misinterpretation, a determination of proximate cause becomes difficult if not altogether speculative.\[70\]

\[70\] If the crew survives or if there is an intact cockpit voice recorder there may be evidence to support a finding that the asserted misinterpretation actually occurred.
As a practical matter, it is difficult to hypothesize a chart deficiency which would support a finding of a product defect that would not also lead the trier of fact to find against the producer on a negligence theory.\(^7\) The major distinction between the product liability cause of action and a cause of action for negligence in providing this service lies in the available defenses.

A recent Ninth Circuit opinion may be the harbinger of a more logical approach to the allocation of fault between plaintiffs and defendants in a case involving an allegedly defective product. In *Pan-Alaska Fisheries, Inc. v. Marine Construction and Design Co.*,\(^72\) the supplier of a diesel engine was found to be liable on a theory of negligence for selling an engine with a defective fuel filter, which ruptured causing the eventual destruction of a fishing boat. The owner of the boat, Pan-Alaska, obtained judgment against the supplier, N.C. Marine, but the district court reduced the award in proportion to the contributory negligence of Pan-Alaska, which the court found to be two-thirds responsible for the loss of the ship. Pan-Alaska appealed. The court of appeals reversed the trial court, holding that strict product liability is applicable in admiralty. More importantly, the Ninth Circuit held that, notwithstanding the fact that N.C. Marine's liability to Pan-Alaska was based on strict product liability, Pan-Alaska's judgment must be reduced by the relative percentage of its own negligence:

\[\text{Our inquiry then is whether or not the relative degrees of each party's fault or responsibility can be compared in order to apportion the relative percentage of the liability to each party. Or, in other words, does the doctrine of comparative negligence (comparative fault) apply as a partial defense to a claim based on the concept of strict product liability? We believe that it can.}\]\(^73\)

Under the traditional common law, contributory negligence on the part of a plaintiff was a complete bar to his recovery on a theory of negligence. When the doctrine of strict product liability evolved, public policy considerations dictated that contributory

\(^7\) A failure on the part of the publisher to include an obstruction that is not identified in the 8260 form or AIP source material could conceivably support a strict liability allegation but could not reasonably support a finding of negligence for which lack of due care must be shown.

\(^72\) 565 F.2d 1129 (9th Cir. 1977).

\(^73\) Id. at 1137.
negligence, in its strictest sense, should not be a defense to such a cause of action. Many jurisdictions have abrogated the absolute defense of contributory negligence in negligence cases in favor of the system of comparative negligence or comparative fault. The Pan-Alaska case represents the next logical step in this evolution. Under the doctrine of comparative negligence, a finding of negligence on the part of the plaintiff would not bar his recovery but would reduce the full value of his claim by the percentage of his fault which contributed to his injuries. In Pan-Alaska, the Ninth Circuit held that the plaintiff's comparative fault should be considered in cases of strict products liability. "[W]e feel that the public policy reasons for strict products liability do not seem to be incompatible with comparative negligence. The manufacturer is still accountable for all the harm from a defective product, except that part caused by the consumer's own conduct."

The court in Pan-Alaska held that all of the plaintiff's conduct contributing to the cause of his loss or injury can be compared to the defendant's liability, regardless of the labels attached to that conduct. Plaintiff's counsel will frequently argue that a crew's failure to discover or guard against an alleged design defect is not a defense in a product liability case. The logic of the Pan-Alaska court in dealing with this argument is inescapable.

If, for example, the user's conduct in failing to discover or guard against the product's defect is highly irresponsible and the product's defect is slight, it offends our sense of justice and fair play to impose the whole loss on the manufacturer in the name of imposing the burden of defective products on manufacturers as one of the costs of doing business. There is no reason why other consumers and society in general should bear that portion of the burden attributable to the plaintiff's own blameworthy conduct.

See generally V. Schwartz, Comparative Negligence (1974).


Id. at 1139. California has recently adopted the Pan-Alaska approach in Daly v. General Motors Corp., 2 Cal. 3d 724, 575 P.2d 1162, ___ Cal. Rptr. ___ (1978). The majority opinion in this four-to-three decision is well reasoned and warrants a careful reading.

565 F.2d at 1139-40.
IV. Conclusion

The chart publisher's exposure under a Pan-Alaska approach is fascinating to consider. Certainly if the publisher should fail to properly designate the minimums required by the 8260 form, fault on the part of the publisher could be readily established. If it were alleged that the chart design was defective in that it was subject to misinterpretation, the subtlety of the design deficiency and the expected proficiency of the pilot would be determinative of the chart publisher's ultimate exposure. Where such a comparison of crew and chart publisher's fault is permitted, and where both the crew and the chart publisher are defendants, other questions are raised: (1) If the more responsible defendant is uninsured or underinsured, must the less responsible defendant bear the entire loss or a disproportionate share of the loss; and (2) if one party defendant should settle, should the remaining defendant retain or lose its right to recover from the settling defendant the difference between the amount paid in settlement and the amount the defendant would have been assessed if there had been no settlement.8

Many jurisdictions which recognize strict product liability allow a plaintiff whose contributory fault was a concurring cause of the injury to recover the full value of his loss if a product defect can be proven.9 Courts have stated that since comparative negligence is a concept based on negligence and since a product may be found defective without negligence, the two tort concepts should not be compared.80 Assuming the tort system survives the continuing scrutiny of our legislative bodies, it is reasonable to expect that the courts will begin to focus on the comparative fault of the plaintiff and defendant without regard to whether the theory pursued is one in negligence or product liability. The logic of the Pan-Alaska case is sound, and if it should find broad acceptance, the product manufacturer may obtain a degree of relief where the fault of

8 These questions are considered in a recent California Supreme Court opinion. American Motorcycle Ass'n v. Superior Court, 20 Cal. 3d 578, 578 P.2d 899, 146 Cal. Rptr. 182 (1978).
80 See note 53 and accompanying text, supra.
80 RESTATEMENT (SECOND) OF TORTS § 402A, Comment (n) (1965). The logic of this position has never been demonstrated satisfactorily to the author. See W. PROSSER, LAW OF TORTS 522 (4th ed. 1976).
others, including the plaintiff, can be proven. The allocation of fault would not produce the harsh result associated with a contributory negligence defense, but would promote a more equitable distribution of the loss.

In analyzing the potential liability of the chart publisher, one need only refer by analogy to other cases dealing with negligence and product liability. The problems faced by the chart publisher are not unique but must be dealt with on a case-by-case basis. While a chart publisher’s case may be decided by a lay jury which lacks experience in chart design and instrument approach procedures, they suffer from no greater disability than jurors dealing with complex accounting questions, anti-trust litigation, automobile and aircraft design, and literally hundreds of other subjects which are commonly presented to a jury of our “peers.”

The potential exposure of the chart publisher can only be described as staggering. The service provided is absolutely essential to safe air navigation, and all who benefit from the service will have to bear the cost of insuring the publishers’ continuing service.
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<th>TERMINAL ROUTES</th>
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<td>Navy W/P</td>
<td>300/8.0</td>
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<td>and hold.*</td>
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### DAY AND NIGHT MINIMUMS

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**Procedural Data / Notes:**
1. ASR.
2. RVR 2600' authorized Runway 13.
3. Glide Slope computer setting 2.95°.
4. Reference facility elevation - GSW-560'; AOW-850'; and SCY-440'.
5. Lighted highway paralleling Runway 17-35 to the West may be mistaken for runway lights during periods of reduced visibility.
6. Horizontal Distance MDA to MAP on GS 1.7 NM.

**AIRPORT AND ELEVATION:**
- Greater Southwest International
- Dallas-Ft. Worth Field 568'

**FACILITY IDENT:**
- RNAV Run 31, Amdt. 1, 20 May 71

**SUP. AMDT. DATED:**
- 18 Mar 71
INSTRUMENT APPROACH CHART - ICAO

**ATIS** 145.5MHz 128.2MHz 280MHz

**APP** 119.1MHz

**PAR** 119.5MHz

**TWR** 118.7MHz

HONG KONG INTERNATIONAL
ILS-FEED-IN FROM RACE TRACK USING LLZ RWY 31

BEARINGS ARE MAGNETIC ELEVATIONS IN FT AMSL

See write-up in BRC 4-5-12

**ILS** HK LLZ 103.3MHz GP 313.9MHz OM/MM 75MHz

**ATIS** 128.2MHz 8 TRACK USING LLZ RWY 31

**THITP**... WIN LEG ELEV...

**A V 0 TURN** III HOLDING PATTERN USING 450FT AS 9N0U 0 LEG 1050 ALT OUTSIDE APPROVED INITIAL APPROACH LANE)

**350FT**... RW 315...

**2000FT**... WHAT ALT TILL INTERCEPTING GP

**4500FT**...holm PATTER USING ITI LI APPROVED INITIAL APPROACH LANES

**550FT**...holm PATTER USING ITI LI APPROVED INITIAL APPROACH LANES

**1895FT**...holm PATTER USING ITI LI APPROVED INITIAL APPROACH LANES

**540FT**...holm PATTER USING ITI LI APPROVED INITIAL APPROACH LANES

**6400FT**...holm PATTER USING ITI LI APPROVED INITIAL APPROACH LANES

**2000FT**...holm PATTER USING ITI LI APPROVED INITIAL APPROACH LANES

**OCL FOR ILS APPROACH IS 300FT.**

**OCL FOR ILS APPROACH WITH GP INOPERATIVE:**

**OCL 999FT**

**CROSS MM NOT BELOW 800FT**

APPENDIX B
APPENDIX C

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