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**Nos. 03-5017/5018**

**UNITED STATES COURT OF APPEALS  
FOR THE SIXTH CIRCUIT**

**JUDY GREENE, Executrix of the Estate of** )  
**Donald Greene, Deceased,** )

*Plaintiff-Appellee/Cross-Appellant* )

**WAUSAU INSURANCE COMPANY,** )

*Intervening Plaintiff-Appellee (03-5017)* )  
*Intervening Plaintiff (03-5018),* )

**v.** )

**B.F. GOODRICH AVIONICS SYSTEMS,** )  
**INC. d/b/a B.F. Goodrich Aerospace,** )  
**Avionics and Lighting Division, n/k/a** )  
**Goodrich Avionics Systems, Inc.,** )

*Defendant/Third-Party Plaintiff* )  
*Appellant/Cross-Appellee* )

**UNITED TECHNOLOGIES** )  
**CORPORATION** )  
**d/b/a Sikorsky Aircraft,** )

*Defendant* )

**PETROLEUM HELICOPTERS, INC.,** )

*Third-Party Defendant.* )

**ON APPEAL FROM THE  
UNITED STATES DISTRICT  
COURT FOR THE EASTERN  
DISTRICT OF KENTUCKY**

**OPINION**



**BEFORE: COLE and ROGERS, Circuit Judges; COHN, District Judge\***

**AVERN COHN, District Judge.** This is a products liability case arising out of a helicopter accident. Defendant-Appellant B.F. Goodrich Avionics Systems, Inc. (Goodrich) appeals the district court’s denial of Goodrich’s motion for summary judgment of Plaintiff-Appellee Judy Greene’s (Greene) manufacturing defect claim and the district court’s subsequent denials of Goodrich’s motions for judgment as a matter of law and motion for judgment notwithstanding the verdict after a jury returned a verdict in favor of Greene.<sup>1</sup> Greene cross-appeals a pre-trial order granting partial summary judgment to B.F. Goodrich and an evidentiary ruling by the district court. Because we find that Greene failed to produce sufficient evidence to create an issue of fact for the jury that there was a manufacturing defect, we **REVERSE** the judgment of the district court and **REMAND** for proceedings consistent with this opinion.

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\* The Honorable Avern Cohn, United States District Judge for the Eastern District of Michigan, sitting by designation.

<sup>1</sup> The parties refer to the motions made under FED. R. CIV. P. 50 as motions for “judgment as a matter of law” and “judgment notwithstanding the verdict.” In 1991, however, Rule 50 was amended and the terminology changed to refer to these motions as a motion for judgment as a matter of law and a renewed motion for judgment as a matter of law. We hereafter refer to these motions using the current language of Rule 50.

## **I. BACKGROUND**

### **A. Factual Background**

On the night of June 14, 1999, a Sikorsky 76-A helicopter, aircraft registration number N2743E, owned by Petroleum Helicopters, Inc. (PHI) and piloted by decedent Donald Greene (Greene), crashed into a wooded hillside near Jackson, Kentucky. In addition to Greene, pilot-in-command Ernest Jones (Jones) and two medical technician passengers, Sheila Zellers and Brian Harden, died in the accident.

The helicopter took off from Julian Carroll Airport just after 8:00 p.m. in heavy fog. Because visibility was approximately one-quarter to one-eighth of a mile, Greene was forced to rely almost exclusively on the helicopter's navigational instruments. Less than two minutes after the aircraft's liftoff, an exchange between Greene and Jones recorded on the cockpit voice recorder (CVR) indicated that Jones told Greene that the helicopter was in a right-hand turn and descending. The exchange between Greene and Jones continued as follows:

8:08:05 p.m. Greene:	“Okay I think my gyro just quit.”
8:08:10 p.m. Greene:	“You have the controls?”
8:08:11 p.m. Jones:	“You’re in a left hand turn and descending...turn, turn back and level, level us off.”
8:08:18 p.m. Jones:	“Right hand turn...right hand turn.”
8:08:24 p.m.	[Initial sound of impact; CVR ceased operation]

## **B. Procedural Background**

Donald Greene's wife, Judy Greene, brought this suit, claiming that Goodrich defectively designed or manufactured the vertical gyroscope portion of the helicopter's navigation system and that Goodrich was negligent in failing to warn of its defective product.

Goodrich filed a motion for summary judgment. The district court granted the motion in part and denied it in part. The district court summarily dismissed Greene's design defect claim because she produced no evidence of a flaw in the design. With respect to Greene's manufacturing defect claim, the district court held that Greene did not produce evidence of fault under a negligence theory, but it held that Greene's manufacturing defect claim sounding in strict liability could go to a jury because genuine issues of material fact remained with respect to causation. The district court also held that Greene could not maintain a state-law failure to warn claim because federal law regarding aviation standards preempted any duty imposed by state law.

At trial on the manufacturing defect claim, the jury found for Greene and awarded her substantial damages. The jury also awarded damages to Wausau Insurance Co., which had been paying Greene workers' compensation on her husband's death. Goodrich now appeals (1) the district court's denial of Goodrich's summary judgment motion on the manufacturing defect claim; (2) the district court's denial of its motion for judgment as a matter of law at the end of Greene's case and at the end of the entire case; and (3) the district court's denial of its renewed motion for judgment as a matter of law. Greene

cross-appeals, challenging the district court's grant of summary judgment on her failure to warn claim and the court's exclusion of evidence of gyroscope failures that occurred more than six months prior to the helicopter crash.

### **C. Background on the Product at Issue**

Before proceeding to our analysis, it is first prudent to have an overview of the product Greene claims Goodrich defectively manufactured: the vertical gyroscopes on board the helicopter. The helicopter was equipped with two Attitude Display Indicators (ADIs), one Standby Attitude Indicator, and two Horizontal Situation Indicators (HSIs). ADIs indicate an aircraft's position in relation to the earth's horizon and help a pilot control the position of the aircraft relative to the earth. Each ADI in the helicopter displayed pitch, roll, and turn-rate data. The vertical gyroscopes, model number VG-204 A/B, manufactured by Goodrich, provided data to the helicopter's ADIs (which were not manufactured by Goodrich). The vertical gyroscopes were housed inside the nose of the helicopter and were not visible to the pilots during flight. Each ADI received pitch and roll data independently from its own vertical gyroscope. Each ADI also received turn-rate data from two other gyroscopes not manufactured by Goodrich. The vertical gyroscopes in the helicopter did not provide data to any other instrument on the helicopter. Pilots use HSIs to determine course deviation and magnetic heading information. The HSIs in the helicopter received information from other gyroscopes. The Standby Attitude Indicator is a self-contained unit with its own gyroscope.

## **II. ANALYSIS**

Because this case went to trial and resulted in a jury verdict in favor of Greene, we find it unnecessary to address whether the district court erred in failing to grant summary judgment in its entirety to Goodrich. Rather, our analysis will begin by addressing Goodrich's motion for judgment as a matter of law at the end of Greene's case.

**A. Whether the District Court Erred in Denying Goodrich's Motions for Judgment as a Matter of Law and Renewed Motion for Judgment as a Matter of Law**

We review a district court's denial of judgment as a matter of law *de novo*. *Moore v. KUKA Welding Sys. & Robot Corp.*, 171 F.3d 1073, 1078 (6th Cir. 1999). In cases like this one invoking diversity of citizenship jurisdiction, the Court applies the state law's substantive standard for determining when judgment as a matter of law is appropriate. *Morales v. Am. Honda Motor Co.*, 151 F.3d 500, 506 (6th Cir. 1998); *Darwish v. Tempglass Group, Inc.*, 26 Fed. Appx. 477, 482 (6th Cir. 2002). Under Kentucky law, judgment as a matter of law should be granted only when "there is a complete absence of proof on a material issue in the action, or if no disputed issue of fact exists upon which reasonable minds could differ." *Washington v. Goodman*, 830 S.W.2d 398, 400 (Ky. App. 1992). "[E]very favorable inference which may reasonably be drawn from the evidence should be accorded the party against whom the motion is made." *Baylis v. Lourdes Hosp., Inc.*, 805 S.W.2d 122, 125 (Ky. 1991).

**1. Judgment as a Matter of Law**

Goodrich says that the district court erred by not granting its motion for judgment as a matter of law against Greene both at the close of Greene's case and again at the close

of trial. As discussed below, we find that the district court erred by not granting Goodrich's motion for judgment as a matter of law at the close of Greene's case.

#### **a. Manufacturing Defect Legal Standard**

Under Kentucky law, a manufacturing defect exists in a product when it leaves the hands of the manufacturer in a defective condition because it was not manufactured or assembled in accordance with its specifications. *See Ford Motor Co. v. McCamish*, 559 S.W.2d 507, 509-11 (Ky. App. 1977). A manufacturing defect claim requires the jury to determine whether the product failed because of an error in the process of manufacture or assembly. *Id.* With respect to Greene's strict liability theory, Kentucky has adopted RESTATEMENT (SECOND) OF TORTS § 402A. *See Dealers Transp. Co. v. Battery Distrib. Co.*, 402 S.W.2d 441, 446-47 (Ky. 1965). Under § 402A, the defendant is held strictly liable if the plaintiff proves the product was "in a defective condition unreasonably dangerous to the user or consumer." *Montgomery Elevator Co. v. McCullough by McCullough*, 676 S.W.2d 776, 780 (Ky. 1984). Proceeding under a strict liability theory does not require the plaintiff to prove fault on the part of defendant. The plaintiff must, however, establish causation under the "substantial factor" test. *King v. Ford Motor Co.*, 209 F.3d 886, 893 (6th Cir. 2000). "[P]laintiff must prove that the defendant's conduct was a substantial factor in bringing about plaintiff's harm." *Id.* Nothing precludes a plaintiff from using circumstantial evidence to prove a products liability case so long as the evidence is "sufficient to tilt the balance from possibility to probability." *Id.* The Restatement (Second) of Torts provides that "unreasonably dangerous" means a product

that is “dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases it, with the ordinary knowledge common to the community as to its characteristics.” RESTATEMENT (SECOND) OF TORTS § 402A cmt. i (1965).

“Defective” means “that the product does not meet the reasonable expectations of the ordinary consumer as to its safety.” *Worldwide Equip., Inc. v. Mullins*, 11 S.W.3d 50, 55 (Ky. App. 1999).

### **b. The Evidence at Trial**

The vertical gyroscopes were destroyed in the crash; accordingly, there was no direct evidence of vertical gyroscope failure. Greene instead relied on four major pieces of evidence in an attempt to circumstantially prove a manufacturing defect in the pilot’s vertical gyroscope:<sup>2</sup>

First, Greene relied on her husband’s statement seconds before the crash that he thought his “gyro just quit.”

Second, Greene proffered evidence that in the six-month period preceding the crash, there had been forty vertical gyroscope replacements on fifteen of the twenty-four Sikorsky 76-A helicopters owned and operated by PHI. There also had been eleven ADI replacements on seven PHI helicopters during that same time period. The helicopter that crashed had three vertical gyroscopes and two ADIs replaced during the six months

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<sup>2</sup> Although there is no distinction in the record between the vertical gyroscopes in the helicopter, it is clear that Greene’s manufacturing defect claim relates to pilot Greene’s vertical gyroscope.

preceding the crash.

Third, the National Transportation Safety Board (NTSB) retrieved from the crash site a faceplate of one of the helicopter's ADIs. The NTSB determined from the faceplate that, at the time of impact, the ADI indicated that the helicopter was "pointing to a position between level flight and a 2-degree right roll. . . ." <sup>3</sup> The NTSB's on-site investigation of the ground damage, including the pattern of treetop leveling and pilot-in-command Jones's last words, both indicated that, at impact, the helicopter was actually "in a left hand turn and descending." As the district court stated, "[t]o oversimplify, the Cockpit Voice Recorder tape and the crash kinematics did not match the reading of the recovered ADI."

Fourth, Greene's helicopter expert, Douglas Herlihy (Herlihy), testified that it was more likely that a vertical gyroscope failure, rather than a failure of other instruments, was the cause of the crash. Herlihy testified that a wiring failure between a vertical gyroscope and its ADI was not as typical as a gyroscope failure itself. <sup>4</sup> He also testified that it was his opinion that "the accident was a result of instrument confusion in the

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<sup>3</sup> It is unclear from examining the record exactly how the faceplate shows the ADI's reading on impact.

<sup>4</sup> Goodrich says that the district court erred when it admitted Herlihy's expert testimony because the district court concluded that Herlihy was not qualified as a gyroscope expert. The record indicates, however, that during a *Daubert* hearing, the district court concluded that Herlihy was competent to testify as an accident investigator and to give his opinion regarding why the vertical gyroscope caused the crash. We find that the district court did not err in admitting Herlihy's testimony.

cockpit created by the loss of vertical gyro input to the flying pilot's A.D.I. or gyro horizon.”

### **c. Goodrich's Challenge to Greene's Statement**

As an initial matter, Goodrich maintained on brief and during oral argument that Greene's statement as recorded on the CVR, “Okay I think my gyro just quit,” was inadmissible hearsay. Goodrich says that the vertical gyroscopes feeding the helicopter's ADIs were located in the nose of the helicopter. Thus, Goodrich argues, it would be impossible for Greene to see a vertical gyroscope or to know that it quit; rather, he only would be able to see the ADIs inside the cockpit that reflected data supplied by the gyroscopes. Additionally, Goodrich argues that there were at least six gyroscopes on the helicopter and that it did not manufacture all of them, so admitting Greene's statement requires speculation as to which gyroscope Greene may have been referring.

At the time the district court admitted Greene's statement, it did not clearly articulate the hearsay exception on which it was relying. The district court did, however, address this issue with specificity when it denied Goodrich's motions for judgment as a matter of law. The district court at that time found that the statement was admissible under two exceptions to the hearsay rule: (1) present sense impression and (2) excited utterance.

We review whether the district court's determination was an abuse of discretion. *Mitroff v. Xomox Corp.*, 797 F.2d 271, 275 (6th Cir. 1986). Under the Federal Rules of Evidence, hearsay is defined as a “statement, other than one made by the declarant while

testifying at the trial or hearing, offered in evidence to prove the truth of the matter asserted.” FED. R. EVID. 801(c). Under FED. R. EVID. 803(1), the hearsay rule does not exclude “[a] statement describing or explaining an event or condition made while the declarant was perceiving the event or condition, or immediately thereafter.” The excited utterance exception to the hearsay rule under FED. R. EVID. 803(2) requires “[f]irst, there must be an event startling enough to cause nervous excitement. Second, the statement must be made before there is time to contrive or misrepresent. And, third, the statement must be made while the person is under the stress of the excitement caused by the event.” *Haggins v. Warden, Fort Pillow State Farm*, 715 F.2d 1050, 1057 (6th. Cir. 1983).

As an initial note, it is unclear from the record if Greene’s out-of-court statement was even offered at trial to prove the truth of the matter asserted – the definition of hearsay. Even if it was, however, the district court did not err in admitting Greene’s statement as either a present sense impression or as an excited utterance. With respect to a present sense impression, certainly Greene could not personally observe the vertical gyroscopes in the nose of the helicopter as Goodrich argues. However, it is undisputed that Greene could see the ADIs in the cockpit that reflected data supplied by the vertical gyroscopes in the nose of the helicopter. Although Goodrich argues that it is unclear if Greene was referring to *his* ADI in his statement or another ADI in the cockpit, the fact that he said “I think *my* gyro just quit” (emphasis added) appears to indicate that he was referring to his ADI. Indeed, Herlihy, Greene’s expert, testified that it would make no difference to an experienced pilot like Greene that the gyroscope is in the nose of the

helicopter. Herlihy testified that if a pilot like Greene said “my gyro just quit,” he knows that the information displayed on the ADI is coming from the nose of the helicopter. To suggest that a pilot who is experiencing problems with an ADI display must physically view the gyroscope to reliably detect a malfunction is untenable.

The district court also did not err in concluding that Greene’s statement was an excited utterance. Certainly Greene made the statement while under stress of the event that nineteen seconds later resulted in his death. To the extent that Goodrich argues again that Greene could not physically see the gyroscope that allegedly quit, the Advisory Committee Notes to FED. R. EVID. 803 provide that, with respect to a declarant’s perception of an event, “the statement need only ‘relate’ to the startling event or condition, thus affording a broader scope of subject matter coverage.” Overall, the district court did not abuse its discretion in admitting Greene’s statement.

**d. Whether Greene’s Evidence Was Sufficient to Prove a Manufacturing Defect**

At the heart of Goodrich’s argument is its position that Greene failed to meet her burden of proof because she failed to establish an issue of fact for the jury that there was a manufacturing defect in the pilot’s vertical gyroscope, *i.e.*, Goodrich says that Greene’s evidence failed to “tilt the balance from possibility to probability” and thus show that there was a manufacturing defect in the pilot’s vertical gyroscope. *See King*, 209 F.3d at 893. After a review of the record and an examination of Greene’s proofs at trial, we agree with Goodrich that the evidence Greene proffered failed to show that there was a manufacturing defect in a vertical gyroscope.

Perhaps what is most problematic to us is Greene's heavy reliance on data indicating the number of vertical gyroscopes and ADIs that had been removed and/or repaired in PHI-owned helicopters in the six months preceding the helicopter accident. The parties presented us with differing interpretations of this data. The NTSB report states that

[a]ccording to company records, in the 6 months that preceded the accident, fleetwide, there had been a total of 40 vertical gyro replacements on 15 helicopters, and a total of 11 attitude indicator replacements on 7 helicopters. On N2743E[, the helicopter piloted by Greene and Jones], in the preceding 6 months, there were two attitude indicators, and three vertical gyros replaced. According to company records, fleetwide, in the preceding 6 months, the maximum number of attitude indicators replaced on a helicopter was three, and maximum number of vertical gyros replaced was six.

Greene introduced Exhibit No. 21 at trial, titled "S-76 Vertical Gyro Removals" and "S-76 Attitude Director Indicator Removals," which purports to summarize the vertical gyroscopes and ADIs from PHI's helicopter fleet that were removed, replaced, and/or sent to a repair facility between December 15, 1998 through June 14, 1999. Our review of the data contained in this exhibit does not seem to correlate with the figures recited above from the NTSB report. Our review of Exhibit No. 21 suggests that PHI removed 32 vertical gyroscopes and 12 ADIs from some of its helicopters in the relevant six-month period. Regardless of the sum total of vertical gyroscopes and ADIs that were removed, replaced, or repaired during the six months preceding the accident, however, it troubles us that Greene argues that the data from this exhibit suggest a "large number" of vertical gyroscope failures. The vertical gyroscopes and ADIs for which there were repair orders

were not sent solely to Goodrich; rather, PHI sent them to various facilities, including Goodrich; Masco; Helicopter Support, Inc.; Bell Helicopter Textron; and Honeywell, Inc.<sup>5</sup>

The evidence in Exhibit No. 21 does not suggest that there was a manufacturing defect in a vertical gyroscope. Indeed, including ADIs within the list of removals, replacements, and repairs does nothing to support Greene's claim that there was a manufacturing defect in a vertical gyroscope. The evidence in the exhibit could equally suggest that there was a problem with an ADI. Indeed, counsel for Goodrich at oral argument told us that nothing in Greene's proofs ruled out the possibility that an ADI malfunctioned. More significant, however, is the fact that Greene proffered no evidence that the reason for the removal or repairs of the vertical gyroscopes was unusual. Likewise, she proffered no evidence that the rate of replacement of vertical gyroscopes in the PHI fleet differed from the replacement rate of vertical gyroscopes made by other manufacturers.

Because of our uncertainty after studying the record, we expressed concern to counsel at oral argument about the use of Greene's data regarding vertical gyroscope and ADI removals, replacements, and repairs. We directly asked counsel for both Goodrich and Greene to direct us to the place in the record that would inform us as to the expected

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<sup>5</sup> It is unclear if Exhibit No. 21 shows that all vertical gyroscopes that PHI removed were manufactured by Goodrich because the gyroscopes were sent to various repair facilities.

useful life of a vertical gyroscope. Both counsel, however, informed us that the record is devoid of such information.<sup>6</sup> This strikes us as a conspicuous omission, given the fact that without such a benchmark it is impossible to determine whether the vertical gyroscopes removed, replaced, or repaired in the PHI fleet occurred at a statistically significant rate compared with the average life expectancy of a vertical gyroscope. As counsel for Goodrich correctly noted during oral argument, the failure to adduce such evidence is correctly attributable to Greene – the party with the burden to prove a manufacturing defect. Simply put, Greene’s statistics regarding the removal, replacement, and repairs of vertical gyroscopes and ADIs in the PHI fleet are meaningless and are not, without more, probative of a manufacturing defect.<sup>7</sup>

Greene’s evidence also consisted of Exhibit No. 6, comprising 211 pages of work orders and inspection reports from Goodrich’s repair station in Austin, Texas. This exhibit documented work orders Goodrich received from PHI for model VG-204 A/B vertical gyroscopes along with details of the work Goodrich actually performed on each

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<sup>6</sup> The parties had an opportunity post-argument to respond to our concerns about the lack of this information, but we received no response.

<sup>7</sup> This case presents an important example of how the value of oral argument cannot be understated. Oral argument allowed us to further delve into issues of concern that were not adequately addressed by the parties in their briefs. “The intangible value of oral argument is, to my mind, considerable. . . . [O]ral argument offers an opportunity for a direct interchange of ideas between court and counsel. . . . Counsel can play a significant role in responding to the concerns of the judges, concerns that counsel won’t always be able to anticipate in preparing the briefs.” William H. Rehnquist, *Oral Advocacy: A Disappearing Art*, 35 MERCER L. REV. 1015, 1021 (1984).

vertical gyroscope submitted to the repair station for evaluation. The documents in Exhibit No. 6 detail work orders from PHI to Goodrich for the period November 1994 through April 1999. Two of the work orders and inspection reports within six months of the accident show that PHI sent two model VG-204 A/B vertical gyroscopes from the helicopter Greene was piloting, registration number N2743E, to Goodrich's Texas facility. The first work order, number FK956, was received by Goodrich on January 25, 1999. The reason listed on the work order for the vertical gyroscope being removed was "#2 pitch kicks in flight." The final inspection report by Goodrich on January 29, 1999, lists as the reason for failure "carbon build-up on slip rings and brushes due to electrical contact." The inspection report states that Goodrich repaired the vertical gyroscope and that it met manufacturer specifications when it was returned to PHI on January 29, 1999. The second work order, number FT858, was received by Goodrich on April 13, 1999. The reason listed on the work order for the vertical gyroscope being removed was, again, "#2 pitch kicks in flight." The final inspection report by Goodrich on April 16, 1999, states "couldn't verify customer complaint, unit performs normally." Before the vertical gyroscope was returned to PHI on April 16, 1999, the work performed on the unit was listed on the final inspection report as "open checked unit, cleaned all slip ring and brushes as a precaution, calibrated, tested and inspected to current mfg spec. . . ." This exhibit likewise is not probative of a manufacturing defect because it does nothing to suggest that any model VG-204 A/B vertical gyroscope listed in the series of work orders was defective at the time it left Goodrich's manufacturing plant.

Another piece of evidence further supports our conclusion that Greene failed to prove that there was a manufacturing defect in a vertical gyroscope. Herlihy testified at trial that it was his opinion that “the accident was a result of instrument confusion in the cockpit created by the loss of vertical gyro input to the flying pilot’s A.D.I. or gyro horizon.” PHI lead pilot Thomas Methvin, however, testified that even if one ADI failed or was receiving incorrect information, Greene and/or pilot-in-command Jones should have relied upon the other ADIs in the cockpit to safely fly or land the aircraft. Additional testimony by Herlihy provided that the accident “had a number of factors that caused it.” Herlihy testified that “the factors include two primary causes,” including the weather and Herlihy’s opinion that “the helicopter experienced an instrument failure.”

Given the evidence that it would be possible for a pilot to navigate the helicopter if an ADI failed; that multiple events could have caused the helicopter accident; and that replacements of vertical gyroscopes on PHI’s helicopters, including the one piloted by Greene and Jones, six months prior to the crash do not, standing alone, indicate a gyroscope defect, Greene’s proofs were simply insufficient to show that there was a manufacturing defect in a vertical gyroscope. Indeed, at no time did any witness identify a defect in manufacture of model VG-204 A/B vertical gyroscopes.

#### **e. Conclusion**

Viewing the totality of the evidence at the conclusion of Greene’s proofs leads us to conclude that the evidence amounted to “featureless generality.” *See* OLIVER WENDELL HOLMES, JR., *THE COMMON LAW* 89 (Mark DeWolfe Howe ed., Little, Brown 1963)

(1881). In the absence of evidence that one possible explanation was more probable than another, the jury was required to speculate as to whether there was a defect. It is well established that a jury verdict based on speculation, supposition, or surmise is impermissible:

Although the jury may draw reasonable inferences from the evidence of a defect in manufacturing, it is incumbent on the plaintiff to introduce evidence that will support a reasonable inference that the defect was the “probable” cause of the accident as distinguished from a “possible” cause among other possibilities; otherwise, the jury verdict is based upon speculation or surmise.

*Midwestern V.W. Corp. v. Ringley*, 503 S.W.2d 745, 747 (Ky. 1973). Our view of the evidence indicates that, at best, Greene only showed at trial that it was possible there was a manufacturing defect in a vertical gyroscope. She simply failed to satisfy her burden that there was such a defect.

Because we conclude that the district court erred in failing to grant Goodrich’s motion for judgment as a matter of law at the conclusion of Greene’s case, Goodrich’s challenge to the district court’s denial of Goodrich’s motion for judgment as a matter of law at the close of trial and the district court’s denial of Goodrich’s renewed motion for judgment as a matter of law is moot.

**B. Whether the District Court Erred in Granting Summary Judgment to Goodrich on Greene’s Failure to Warn Claim**

Greene argues in her cross-appeal that the district court erred when it granted summary judgment to Goodrich on Greene’s failure to warn claims.

Greene argued that Goodrich breached its duty to warn users of aircraft that

contained a vertical gyroscope about the gyroscope's manufacturing defects. Greene relied on Herlihy's opinion that Goodrich "had no central database structure . . . to track malfunctions, to register employee concerns of gyro system weaknesses, or to communicate horizontally between Grand Rapids manufacturing, quality assurance and its field repair facilities." Greene did not allege any violations of federal law with respect to the failure to warn claim. She also did not cite any authority regarding standards that encourage or require a company like Goodrich to maintain such a database.

In granting Goodrich's motion for summary judgment with respect to the failure to warn claim, the district court held that federal law preempts any state-law imposed duties in the realm of aviation. The district court found it significant that Federal Aviation Administration (FAA) guidelines do not propose or mandate a database like Herlihy suggested Goodrich should maintain. In reaching its conclusion, the district court relied on *Abdullah v. Am. Airlines, Inc.*, 181 F.3d 363 (3d Cir. 1999). In *Abdullah*, the Court of Appeals for the Third Circuit joined other circuits in recognizing that Congress intended aviation safety to be exclusively federal in nature. *Id.* at 371. The Supreme Court has stated that preemption may be inferred where "the pervasiveness of the federal regulation precludes supplementation by the States, where the federal interest in the field is sufficiently dominant, or where the object sought to be obtained by the federal law and the character of obligations imposed by it reveal the same purpose." *Schneidewind v. ANR Pipeline Co.*, 485 U.S. 293, 300 (1988) (internal quotations omitted). The *Abdullah* court noted that "[t]he federal courts that adjudicated the first major cases involving the

[Federal Aviation Act] interpreted its legislative history as evincing Congress’s intent to exercise supremacy over the field of aviation safety.” *Abdullah*, 181 F.3d at 369. The legislative history of the Federal Aviation Act notes that:

[The purpose of the Federal Aviation Act was to give] [t]he Administrator of the new Federal Aviation Agency full responsibility and authority for the advancement and promulgation of civil aeronautics generally, including promulgation and enforcement of safety regulations.

H.R. Rep. No. 2360, reprinted in 1958 U.S.C.C.A.N. 3741. The House Report also noted that “[i]t is essential that one agency of government, and one agency alone, be responsible for issuing safety regulations if we are to have timely and effective guidelines for safety in aviation.” *Id.* at 3761. After analyzing this legislative history, the *Abdullah* court concluded:

It follows from the evident intent of Congress that there be federal supervision of air safety and from the decisions in which courts have found federal preemption of discrete, safety-related matters, that federal law preempts the general field of aviation safety.

*Abdullah*, 181 F.3d at 371. We agree with the Third Circuit’s reasoning in *Abdullah* that federal law establishes the standards of care in the field of aviation safety and thus preempts the field from state regulation. The district court did not err in concluding that federal law preempted Greene’s state-law failure to warn claim.

### **C. Whether the District Court Erred in Excluding Evidence of Gyroscope Repairs and Replacements Beyond a Six-Month Timeframe**

Greene also argues in her cross-appeal that the district court erred by excluding evidence of gyroscope repairs and replacements that occurred on PHI’s helicopters more

than six months prior to the crash. When examining a challenge to the exclusion of evidence, we will not reverse the district court's decision "unless necessary to do 'substantial justice.'" *Martin v. Heideman*, 106 F.3d 1308, 1311 (6th Cir. 1997).

Greene does not adequately explain how evidence of gyroscope repairs and replacements beyond a six-month time period before the crash would help her case. Indeed, it appears as though such evidence is cumulative of the evidence she proffered that indicated that there had been several replacements of vertical gyroscopes on PHI's helicopters. The district court correctly limited this type of evidence to a time period of six months prior to the crash so as to prevent the introduction of unnecessary and cumulative data for the jury's consideration. Greene has failed to demonstrate how reversing the district court's evidentiary decision is necessary to do substantial justice.

### III. CONCLUSION

An appellate court does not set aside a jury verdict with ease. Indeed, we previously have recognized that a reviewing court should not lightly overturn a jury verdict. *See, e.g., Pratt v. Nat'l Distillers & Chem. Corp.*, 853 F.2d 1329, 1337 (6th Cir. 1988). Not all questions, however, can be put to a jury, and after a review of the record in this case we conclude that we have an obligation to **REVERSE** the decision of the district court and **REMAND** this case with instructions to enter judgment in favor of Goodrich and to dismiss this case.

**R. GUY COLE, JR., concurring in part and dissenting in part.**

Regarding all but one of the claims presented in this appeal, I concur in the judgment of the Court. However, I write separately to clarify my concerns with Greene's manufacturing defect claim and to respectfully dissent from the majority's opinion regarding Greene's failure to warn claim.

**I.**

A product failure cannot always be equated to a product defect, and this, as I see it, is the fatal flaw in Greene's argument. First, to prevail on a manufacturing defect claim under a strict liability theory, the plaintiff must show that a manufacturing error, resulting in an unreasonably dangerous condition, was the substantial cause of the plaintiff's injury. *Worldwide Equip., Inc. v. Mullins*, 11 S.W.3d 50, 55-58 (Ky. App. 1999). As the majority notes, Greene presented four items of evidence in support of her claim that a vertical gyroscope failure was the probable cause of the crash: (1) Mr. Greene's statement immediately prior to the crash that his "gyro just quit"; (2) evidence that in the six-month period before the crash, several gyroscopes in PHI's helicopters, including in the one piloted by Mr. Greene, were replaced; (3) evidence that the crash kinematics did not match what the helicopter's instruments were reading at the time of the crash; and (4) Herlihy's testimony that, in his opinion, the vertical gyroscope failed on the night of the accident because, based on the remains of the ADI face plate and light panels from the crash, a vertical gyroscope failure was more likely than a wiring failure between the gyroscope and its ADI, or a failure of the ADI. With the exception of the second item of evidence, I find that the sum of Greene's circumstantial evidence was sufficient to support the jury's conclusion that the vertical gyroscope failed.

However, Greene presented no evidence showing that this failure was the result of a manufacturing defect. Because the gyroscope was destroyed in the crash, Greene could not examine it for a manufacturing defect. Her argument has essentially been: the gyroscope failed and therefore there must have been a manufacturing defect. This type of *res ipsa loquitur* reasoning has been embraced by Kentucky courts in manufacturing defect cases. *See Embs v. Pepsi-Cola Bottling Co. of Lexington, Kentucky, Inc.*, 528 S.W.2d 703, 706 (Ky. App. 1975) (reversing a dismissal where the plaintiff was injured by an exploding beverage bottle, the debris of which was unrecoverable, because bottles do not ordinarily explode in the course of normal handling); *c.f. Perkins v. Trailco Mfg. and Sales Co.*, 613 S.W.2d 855, 858 (Ky. 1981) (reversing a dismissal and noting that circumstantial evidence was enough to prove a defect where a new tractor trailer collapsed while it was being properly used). Nevertheless, to be entitled to this *res ipsa loquitur*-type inference, the plaintiff has the burden of showing that the product malfunctioned in a way unlikely to occur if the product had been properly made, and that no outside forces caused the malfunction. *See Prosser, Wade & Schwartz, Torts*, 767 (9th ed. 1994); Dan B. Dobbs, *The Law of Torts*, 1003 (2001). Unfortunately for Greene, she did not show that it was out of the ordinary for a gyroscope to fail. Goodrich presented evidence that vertical gyroscopes are not replaced on any set time table. Rather, gyroscopes are replaced “on condition,” meaning that they are replaced once they show a discrepancy or failure. These discrepancies or failures occur during flight, and usually, pilots compensate by relying on the other gyroscopes in the helicopter. The uncontroverted evidence showed that failures occur and that pilots are trained never to rely solely on one gyroscope for this reason. Given this, Greene has not proven that a gyroscope failure is an unexpected event such that a *res ipsa loquitur*

inference would be warranted. Accordingly, there was no evidence that the gyroscope failure was a “manufacturing defect,” and the jury’s outcome to the contrary must be set aside.

Although the majority goes further to say that the gyroscope failure may not have caused the crash, I am not convinced that a gyroscope failure, while usually a manageable event, did not prove fatal in the unique circumstances of this crash. It may be that gyroscopes in certain circumstances are unavoidably unsafe products, *see* RESTATEMENT (SECOND) OF TORTS § 402A, Comment K, however, all the evidence presented indicates that users are aware of their unsafe attributes. Without showing a probability that Mr. Greene’s gyroscope was defective as compared to other gyroscopes produced by Goodrich, Greene’s claim must fail.<sup>8</sup> Therefore, I respectfully concur in the result reached by the majority as to Goodrich’s motion for judgment as a matter of law.

## II.

I now turn to Greene’s cross-appeal regarding her failure to warn claim. The majority opinion affirms the district court’s grant of summary judgment to Goodrich, stating that Greene’s state law failure to warn claim is preempted by federal law. A federal law may preempt a state law either expressly or implicitly. *Garcia v. Wyeth-Ayerst Labs.*, 385 F.3d 961, 965 (6th Cir. 2004). When Congress enacted the Federal Aviation Act (“FAA”), it chose several specific

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<sup>8</sup> I recognize the difficulty of proving a manufacturing defect in a situation where the product is destroyed. This is why the *res ipsa loquitur* inference could prove important in many cases. Here, however, there is an additional complication, because the product, by all accounts, is sometimes expected to fail. If Greene had presented evidence on the expected rate of failure in gyroscopes, she perhaps might have been able to show that a user would not have had any expectation that a relatively new gyroscope would fail, and therefore that a manufacturing defect was the likeliest possibility. Greene may have an argument that Goodrich has the burden to collect and provide consumers with information regarding the gyroscope’s failure rate. *See infra*.

areas in which to explicitly prohibit the States from enacting regulations relating to aviation safety. *See* 49 U.S.C. § 41713(b)(1) (preempting the States from enacting regulations regarding the “price, route, or service of an air carrier that may provide air transportation”); 49 U.S.C. § 44703(i)(2) (preempting the States from enacting regulations imposing liability on any person for “furnishing or using records” of employment); 49 U.S.C. § 44921(f)(2) (preempting the States from regulating when a flight deck officer may carry a firearm). I can find no congressional language in the FAA which would expressly preempt Greene’s state law-based failure to warn claim in this case.

When Congress fails to use express preemption language, a federal law may still preempt state law if the federal law thoroughly occupies the legislative field in question. This Court has previously held that:

Implied preemption occurs if a scheme of federal regulation is so pervasive as to make reasonable the inference that Congress left no room for the States to supplement it, if the Act of Congress touches a field in which the federal interest is so dominant that the federal system will be assumed to preclude enforcement of state laws on the same subject, or if the goals sought to be obtained and the obligation imposed reveal a purpose to preclude state authority . . . a court must begin with the assumption that a state law is valid and should be reluctant to resort to the Supremacy Clause.

*Garcia*, 385 F.3d at 965.

Under this implied preemption reasoning, the district court determined that federal law

preempted state law on the issue of aviation safety duties. The district court cited *Abdullah v. American Airlines, Inc.*, 181 F.3d 363 (3d Cir. 1999) in support of this proposition. As the majority notes, the Third Circuit in *Abdullah* did a close study of the legislative history of the FAA. In *Abdullah*, passengers who were injured during a flight sued the airline for operating the aircraft in a manner that resulted in severe turbulence. 181 F.3d at 365. The court stated that:

To effectuate this broad authority to regulate air safety, the Administrator of the FAA has implemented a comprehensive system of rules and regulations, which promotes flight safety by regulating pilot certification, pilot pre-flight duties, pilot flight responsibilities, and flight rules.

*Id.* at 369. The court, noting that federal regulations already exist which lay out the appropriate standard of care that was owed to passengers by pilots and flight crews, concluded that the FAA preempted any standards of care that the State may impose on flight operators. *Id.* at 371. To the extent that we choose to rely on *Abdullah* as persuasive authority, I believe that the facts of the instant case are readily distinguishable. *Abdullah* can truly only be relied on for the limited proposition that a State's standard of care for aviation personnel is preempted by the FAA. The situation before us is not like that in *Abdullah*, because in this case, there are no federal regulations which lay out the exact standard of care. Therefore, I would not expand the proposition in *Abdullah* to apply to commercial enterprises that manufacture aviation equipment.

Furthermore, this Court has previously chosen to apply preemption narrowly with regards to the FAA. In *Gustafson v. City of Lake Angelus*, 76 F.3d 778, 786 (6th Cir. 1996), we stated that Congress had preempted local law regarding navigable airspace, noise control, and aircraft

safety, but went on to hold that the FAA did not preempt local regulations/ordinances regarding ground space to be used for aircraft landing sites. *Id.* at 789. Thus, our circuit has traditionally shown a proper amount of restraint and caution before finding State and local laws preempted by federal law. Under this regime, I cannot assume that the FAA implicitly preempts any State or common law-imposed duties here. Admittedly, the FAA is involved in overseeing the quality control of certain aviation equipment; however, neither the appellant nor the majority have proffered any reason why a State's more stringent duty of care in the failure to warn context could not supplement rather than frustrate the FAA. Consequently, I respectfully dissent from the majority's conclusion that Greene's failure to warn claim was properly dismissed.