

UNITED STATES COURT OF APPEALS
For the Fifth Circuit

No. 99-41036

PETER MCLENNAN,

Plaintiff - Appellee-Cross-Appellant,

VERSUS

AMERICAN EUROCOPTER CORPORATION, INC.,

Defendant - Appellant-Cross-Appellee.

Appeal from the United States District Court
for the Southern District of Texas

March 13, 2001

Before DUHÉ, EMILIO M. GARZA, and DeMOSS, Circuit Judges.

DeMOSS, Circuit Judge:

This personal injury case arises from an October 19, 1995, helicopter crash near the Haig Glacier in Western Alberta, Canada. Defendant American Eurocopter Corporation, Inc. (AEC) appeals the district court's final judgment in favor of Peter McLennan (McLennan), which was entered after a bench trial on the relevant issues. McLennan cross-appeals the district court's reducing his damages on the basis that he was 40 percent at fault for the accident that led to his injuries. Concluding that McLennan's proof at trial was plainly inadequate to establish one or more of

the essential elements of his substantive claims, we reverse and render judgment in favor of defendant AEC.

FACTUAL BACKGROUND

I.

On the day of the crash, McLennan flew his AEC Model AS-350-B helicopter for longer than the fuel loaded on board would allow, eventually crashing into the side of an embankment not far from his final destination. McLennan, a Canadian resident, suffered serious injuries from the crash, which also destroyed the helicopter. In this lawsuit, McLennan contends that AEC, the manufacturer of the helicopter, is responsible for his injuries and resulting damages under Texas law on theories of both strict products liability and negligence. Both of McLennan's theories focus upon alleged marketing defects in the helicopter. Specifically, McLennan claims that AEC affirmatively marketed the helicopter as suitable for McLennan's intended use, slinging operations,¹ when in fact the helicopter was unreasonably dangerous for that use. McLennan also claims that AEC failed to warn or adequately warn intended users that dirty or worn portions of the fuel measurement system might

¹Slinging involves the suspension of often heavy loads from the helicopter using equipment attached to the helicopter for this purpose. The helicopter then transports the load to a different location. Slinging often involves flying at low altitude. Given the limited weight carrying capacity of the helicopters used for such operations, helicopter pilots slinging loads are often required to fly with lower quantities of fuel than helicopters engaged in other operations.

not accurately reflect the amount of usable fuel in the helicopter when the helicopter is consistently flown at low fuel levels. AEC responds that the helicopter was not unreasonably dangerous for its intended use; that AEC owed no duty to warn users of any risk arising under the circumstances of McLennan's flight; that, assuming there was a duty owed, it was completely satisfied by the issuance of service letters and bulletins before the crash notifying consumers of the risk and recommending that the portion of the fuel measurement system at issue here be replaced; that the alleged marketing defects were neither the producing (strict liability) nor proximate (negligence) cause of the crash; and finally, that the crash was caused instead by improper maintenance or pilot error or both. AEC also raises two alternative arguments challenging the district court's pre-trial rulings denying AEC's motion to dismiss for forum non conveniens and AEC's separate motion seeking the application of Canadian, rather than Texas, law.

AEC seizes upon the fact that the district court adopted plaintiff McLennan's proposed findings of fact and conclusions of law almost verbatim to argue that we must apply a less deferential standard of review to the district court's findings of fact and conclusions of law than would be the case if the district court's order reflected an independent consideration of the relevant issues, citing *In re Luhr Brothers*, 157 F.3d 333 (5th Cir. 1998), cert. denied, 119 S. Ct. 1357 (1999). We disagree. *Luhr Bros.*,

and *Anderson v. City of Bessemer City*, 105 S. Ct. 1504 (1985), from which it is drawn, make clear that the district court's decision to adopt one party's proposed findings and conclusions without change may cause us to approach such findings with greater caution, and as a consequence to apply the standard of review more rigorously. See *Anderson*, 105 S. Ct. at 1511 (criticizing verbatim adoption of proposed findings and noting the potential for "overreaching and exaggeration" on the part of counsel for the prevailing party); *Luhr Bros.*, 157 F.3d at 338 (stating that "near-verbatim recitals of the prevailing party's proposed findings and conclusions, with minimal revision" should be approached with "caution" and that the district court's "lack of personal attention to factual findings" is a factor to be considered when applying the clearly erroneous rule) (internal quotations omitted). But *Luhr Bros.* and *Anderson* make equally clear that the basic clear error standard governing our review is set by Federal Rule of Civil Procedure 52(a) and remains constant. See *Luhr Bros.*, 157 F.3d at 338 (citing *Anderson*, 105 S. Ct. at 1510-11, for the proposition that "the trial court's adoption of the prevailing parties' proposed findings, however, does not alter the bedrock principle that the findings may not be overturned on appeal absent clear error"). While the clear error standard is purposefully deferential to the district court, we are not required to rubber stamp the district court's findings simply because they were entered. See *Luhr Bros.*,

157 F.3d at 338 n.14. This would be no review at all. "When, after an examination of the entire evidence, we are left with the definite and firm conviction that a mistake has been committed, clear error exists and it is our duty as the reviewing court to correct this mistake." *Id.* at 338-39 (internal quotations omitted). The district court's legal conclusions, on the other hand, are reviewed de novo. See *Ivy v. Jones*, 192 F.3d 514, 516 (5th Cir. 1999)

II.

On October 19, 1995, McLennan was employed as a commercial helicopter pilot by Canadian Helicopters, Ltd. (CHL), one of the largest commercial operators in the world.² On that day, McLennan was contracted to assist with the closing of an industrial base camp near the Haig Glacier. McLennan began his day at CHL's Canmore, Alberta hanger. When McLennan left Canmore hanger at 2:44 p.m., the helicopter's 530 liter fuel tank was 35 percent full. The fuel tank installed on McLennan's helicopter at the time of the crash retained 11 liters of unusable fuel. Therefore, McLennan began work with approximately 175 liters of usable fuel. Pursuant to his training, McLennan verified the amount of fuel on board by

²Canadian Helicopters also provides pilot training for its own pilots, as well as such entities as the Canadian and United States military.

visually checking the fuel gauge, the fuel tank level,³ and the meter on the fuel pump dispensing the fuel.

Shortly after the accident, McLennan gave a recorded statement to the Canadian Transportation Safety Board (CTSB). McLennan told the CTSB that CHL pilots use a fuel burn rate of 173 liters per hour for planning such flights, but that the actual burn rate "was quite a bit less than that, probably around 150 liters per hour."⁴ CHL pilot Paul Kendall likewise testified that CHL pilots use a burn rate of about 170 liters per hour for slinging operations, and that he personally trained McLennan to follow that rule when flying the AS-350-B. The CTSB used a mid-range estimate of 160 liters per hour in its report on the accident. Using CHL's planning rate of 173 liters per hour, McLennan left Canmore hanger with about 61 minutes flying time before complete fuel exhaustion. Using McLennan's more optimistic estimate of only 150 liters per hour, McLennan left Canmore hanger with about 70 minutes flying time before complete fuel exhaustion would cause the helicopter to fall from the air.

Canadian Air Regulation 544(b) requires helicopter pilots to

³The fuel tank is marked with gradations and can be visually checked from outside the helicopter by way of a cutaway in the luggage department.

⁴When asked what fuel burn rate he used to plan his flight on the day of the accident, McLennan testified that he did not recall using any particular fuel burn rate. McLennan did not, however, deny his earlier statements to the CTSB concerning the fuel burn rate used for planning or his estimation of the actual fuel burn rate on the high altitude glacier.

plan their flights such that they can land at their destination with a 20 minute reserve fuel supply.⁵ There is a similar regulatory requirement for pilots operating in the United States. CHL likewise had written policies requiring that company pilots comply with the Canadian Air regulation requiring a 20 minute reserve. McLennan was aware of this rule and his obligation to comply with it. Considering the requirement that flight planning allow for a 20 minute reserve upon landing at destination, McLennan actually left Canmore hanger, using the least conservative fuel calculations, with no more than 50 minutes of safe and lawful flying time.

McLennan first flew from Canmore hanger to the Haig Glacier base camp. McLennan was not slinging any external load during this flight. McLennan arrived at 2:59 p.m. This one-way flight should have reduced the least conservative estimate of 70 minutes flight time by 15 minutes, leaving approximately 55 minutes flight time before fuel exhaustion and 35 minutes safe flying time, which equates to slightly more than 28 percent fuel.

McLennan testified at trial that he actually arrived at the Haig Glacier base camp with about 30 percent fuel, which would have

⁵CAR 544(b) provides, in relevant part, that the "amount of fuel and oil carried on board any aircraft . . . at the commencement of any VFR [visual flight rules] flight shall be deemed sufficient, taking into account anticipated wind and other weather conditions, to fly to the place of intended landing and thereafter in the case of a helicopter for 20 minutes at normal cruising speed."

afforded him slightly more than 59 minutes total flight time to exhaustion, about four minutes longer than predicted by his fuel level at Canmore hanger. Adhering to our duty to construe the facts in McLennan's favor, we accept McLennan's testimony that he still had 30 percent fuel when he arrived at the Haig Glacier base camp, as well as his estimate of 150 liters per hour fuel burn rate, which would have left him with just over 59 minutes flight time to total exhaustion.⁶

III.

At the Haig Glacier base camp, McLennan shut down, removed and stowed the helicopter doors, tested the slinging equipment, and prepared for slinging operations. According to Michael Just, who helped McLennan secure loads at the Haig Glacier base camp, this shut down lasted from McLennan's 3:00 p.m. arrival time until 3:35 or 3:40 p.m., when McLennan began slinging operations. CHL's Canmore hanger radio log consistently reflects that McLennan began slinging operations at 3:40 p.m. and that McLennan was then in the air continuously until the accident occurred at approximately 5:00 p.m. The CTSB's Aviation Occurrence Report, without referring to any source, states that McLennan did not begin slinging until 4:00

⁶We note, however, that CHL pilot Paul Kendall, who trained McLennan, and Don Oksa, another experienced sling pilot, testified that commercial pilots engaged in slinging operations generally followed the rule that 30 percent fuel in this helicopter would actually permit only 30 minutes of safe flying time, with a 20 minute reserve. Kendall further testified that he had personally instructed McLennan that 30 percent fuel would permit only 30 minutes of safe flying the year before the accident.

p.m. and that the crash occurred 60 minutes later, at 5:00 p.m. Thus, the evidence demonstrates that McLennan was continuously engaged in slinging operations for somewhere between 60 and 80 minutes before the crash. For purposes of this review, we accept the CTSB's unsubstantiated estimate that McLennan was in the air for only 60 minutes before crashing (the estimate most favorable to McLennan) as fact. Tying this together with the 150 liter per hour fuel burn rate, which would have permitted only slightly more than 59 minutes total flight time, reveals that McLennan ran out of fuel almost exactly when he should have.

During the 60 minutes that McLennan was in the air, he moved a number of loads. McLennan first moved supplies from one location to another at the base camp. McLennan recalled two such movements, although another witness recalled only one. Just, who was working on the ground, then hooked up a platform to the long line used for slinging and McLennan flew to a location on the glacier about 1.5 kilometers from the base camp. On the glacier, McLennan picked up a load and then delivered it to the Ranger Creek staging area.⁷ McLennan then returned to the glacier and picked up a second load to be transported to Ranger Creek. There is no dispute about the fact that there was fuel available at Ranger Creek. McLennan did

⁷McLennan told CTSB investigators that Ranger Creek was 7 flight minutes away (one-way) *from the base camp* for a helicopter slinging a load. The glacier pick up site, where McLennan was picking up these loads, was further from Ranger Creek than the base camp. There is no time estimate in the record for the further distance from the glacier to Ranger Creek.

not pick up fuel on either trip to Ranger Creek. McLennan flew to the glacier a third time, this time picking up a load for delivery to the base camp helipad. McLennan then flew back to the glacier a fourth time, picking up a second load for the base camp helipad. Thereafter, McLennan was asked to move a load from a location at the base camp to another location some distance away. Each of these loads would have required air time to safely attach and detach the loads, in addition to the time required for the actual movement of the supplies. McLennan told investigators that he had a "gut feeling" that he should proceed immediately to Ranger Creek for fuel before repositioning the load at the base camp, but he felt under pressure from ground crew personnel to reposition the base camp load first. McLennan later regretted not following his gut instinct. As he told the CTSB investigator "[y]ou should never try to be a nice guy when flying."

IV.

Some time before McLennan repositioned the load he should have deferred, the low fuel warning light on the dash of the helicopter illuminated. The AEC flight manual classifies the illumination of the low fuel warning light as an emergency. Other witnesses testified consistently that illumination of the low fuel warning light is considered an emergency flight situation. The AEC flight manual, which McLennan had in his briefcase on the helicopter when he crashed, states that the light is designed to come on when there

are at least 60 liters (49 usable liters) or about 12 percent fuel remaining in the tank. At that point, AEC states in the flight manual, the pilot should avoid large altitude changes.⁸ The manual further states that under those conditions, the remaining fuel should be sufficient for only 25 additional minutes of flight before complete exhaustion. The CTSB Aviation Occurrence Report states that most pilots adhered to the rule that there were no more than 20 additional minutes of flight to exhaustion when the low fuel warning light on this model was illuminated, and that customary procedure was to land immediately when the light began flickering. Other pilots testified consistently that customary procedure was to land immediately when the low fuel warning light illuminated. CHL pilot Paul Kendall testified that he personally trained McLennan to land immediately when the light was solidly illuminated.⁹ McLennan acknowledged that he generally followed the more conservative 20 minute rule in his post-accident statement to the CTSB. Notwithstanding these circumstances, McLennan ignored the low fuel warning light and continued to fly for a considerable period of time with the light illuminated.

At trial, McLennan testified that he noticed the low fuel warning light, but that he had "no idea" how long he flew with the

⁸The record reflects that the difference in elevation between the Haig Glacier base camp and the Ranger Creek staging area was between two and three thousand feet.

⁹McLennan could not specifically recall this training at trial, but he did not deny that the instructions had been given.

light illuminated. Prior to trial, McLennan told CHL's Chief Pilot Mark Olson that he thought the warning light might have been on for 10 or 15 minutes *before* he repositioned the load at the base camp, and before he had hooked up to the final load for transport to Ranger Creek. McLennan's expert calculated that, including loading and unloading time, and including the final incomplete journey to Ranger Creek, McLennan flew for almost 33 minutes after the low fuel warning light came on before crashing. Thus, McLennan flew for far longer than permitted by AEC's estimate of 25 minutes to fuel exhaustion, and far longer than permitted by the more conservative 20-minute rule generally employed by McLennan and most pilots. In fact, McLennan continued flying with the light on until he crashed.

McLennan first told CTSB investigators that he "just lost track of how much time" he had "been flying with the [warning] light on." McLennan later testified that he felt safe continuing to fly with the light on because the warning light in this helicopter historically illuminated when the fuel gauge read 18 percent fuel, rather than nearer the 12 percent level as anticipated by the flight manual. McLennan had previously discussed the operation of the warning light on this helicopter with CHL engineering staff, which prompted CHL to test the fuel system in June 1995. The tests established that the fuel gauge was accurately reading 18 percent when the low fuel warning light

illuminated. McLennan testified that he had confidence in both the CHL staff member who performed the tests and the test results. McLennan also testified that he had no indications that the fuel gauge on the helicopter had been sticking at any time prior to the day of the accident.¹⁰

Using the 150 liter per hour burn rate, 18 percent fuel would have allowed slightly less than 34 minutes flight time to complete exhaustion, and slightly less than 14 minutes of safe flight. McLennan testified that he made a decision to continue flying until the gauge read about 11 percent. McLennan noted that the gauge read 11 percent, which would have provided about 19 minutes of additional flight, before he began setting up to reposition the extra load at the base camp, and before he began attaching a final load for transport to the Ranger Creek staging area. McLennan continued flying, repositioning the load at base camp and attaching his final load for Ranger Creek. Shortly after McLennan left the base camp for Ranger Creek, he called in to say that he would be shutting down at Ranger Creek to refuel. McLennan flew most of the

¹⁰Shortly after the accident, McLennan gave an inconsistent statement to CHL Chief Pilot Olson. McLennan claimed that he had been flying with an 18 percent fuel indication in this helicopter on a previous flight, and that when he landed two minutes later, the fuel gauge reading had dropped to 5 percent. CHL's engineering department did not recall and did not have any records that McLennan had reported any such dramatic failure in the fuel measurement system of this helicopter. We note that this incident would certainly have been sufficient to place McLennan on notice that there were major problems with the accuracy of the fuel measurement system in this helicopter.

way to the Ranger Creek staging area, and was descending into the landing area when he noticed the fuel pressure dropping. McLennan testified that he also observed the fuel gauge dropping rapidly, from 11 to 3 or 4 percent. McLennan jettisoned the load, decided upon a landing target, and then attempted an auto-rotational landing. McLennan was unable to successfully navigate the auto-rotational landing and, within seconds of the time that he had noticed the fuel gauge dropping, the helicopter fell the last 30 or 40 feet and crashed into a creek embankment. McLennan suffered severe injuries and the helicopter was destroyed. Post-accident investigation revealed that there were only 11 liters of fuel, all of which was by design unusable, in the fuel tank upon impact.¹¹ Thus, there is no question about the fact that the helicopter crashed because it ran out of fuel.

McLennan's theory is that the fuel gauge was stuck at some point (either around the 18 percent level, when the low fuel warning light came on, or at the 11 percent level, where the indicator remained while McLennan repositioned the load at base camp, attached the load for Ranger Creek, and flew almost all the way there),¹² and then became dislodged by turbulence.

¹¹Helicopter fuel tanks are designed with a sump in the bottom, which holds a varying amount of unusable fuel in the bottom. This particular tank was designed such that 11 liters of unusable fuel would remain in the tank at all times.

¹²McLennan does not explain why he thought it reasonable for the fuel gauge to continue to read 11 percent notwithstanding the fact that he was approaching the conclusion of the flight to Ranger

McLennan's assertion that the fuel gauge was sticking brings us to the heart of McLennan's marketing defect theories. McLennan claims that the resistor-type fuel measurement system on the AEC AS-350-B had a tendency to wear when consistently flown in the low fuel states required for slinging, which led to inaccurate fuel gauge readings. McLennan claims that any helicopter equipped with a resistor-type fuel measurement system is unreasonably dangerous and should not be used for slinging operations. McLennan further claims that AEC negligently failed to warn or inadequately warned intended users of the helicopter that a worn or dirty fuel measurement system might generate an inaccurate fuel gauge reading. We begin with an analysis of the fuel measurement system installed on the helicopter when marketed and when crashed.

v.

The helicopter flown by McLennan was manufactured by AEC's predecessor in interest in 1979.¹³ Parts of the airframe were manufactured in France and then shipped to Grand Prairie, Texas, where the helicopter was assembled and completed using parts from both inside and outside the United States.¹⁴ The helicopter was

Creek.

¹³Future references to AEC or its predecessor will be made simply to AEC.

¹⁴The parties litigated whether AEC should be considered the manufacturer of the helicopter at issue and where the helicopter was manufactured, in the district court. After considering arguments from both sides, the district court held that the Texas-based AEC manufactured the helicopter.

sold to Placer Development, a Canadian company, in 1980. There is no dispute about the fact that AEC never regained control of the helicopter after that point in time.

Significantly, the helicopter sold to Placer Development was designated a model AS-350-D. Seven years later, in 1987, the helicopter was converted from a model AS-350-D to a model AS-350-B. AEC was not notified of the model change and claims that, up until this lawsuit, it had no notice that the conversion had taken place. Uncontested record evidence establishes that there are material differences between the two models. The most significant differences for the purpose of this lawsuit center upon the fuel measurement system. The model sold to Placer Development, AEC model AS-350-D, was equipped with a 540 liter tank with only 1.25 liters of unusable fuel. The model which crashed fifteen years later, AEC model AS-350-B, was equipped with a 530 liter fuel tank, with 11 liters of unusable fuel. The conversion also required that the "power quadrant for the fuel float control level" be modified.¹⁵ In addition, the converted model AS-350-B required different flight documentation and manuals than the AS-350-D sold to Placer Development. Although CHL obtained a model AS-350-B flight manual

¹⁵There were other differences as well. For example, model AS-350-D was sold with a LTS 101600 Lycoming engine, while model AS-350-B was equipped with a "turbomecca aerial" engine. These engines were placed differently in the helicopter and required a different tailoring of the drive shaft and different instrumentation to account for differing horsepower and performance standards.

from somewhere, because it was with McLennan on the day of the crash, AEC has no records that it ever provided CHL with a flight manual for the converted aircraft.

The fuel gauge and the low fuel warning light in the AS-350-B helicopter were triggered by the Jaeger fuel transmitter installed on the aircraft when it crashed. AEC did not furnish the transmitter. AEC concedes, however, that it furnished a similar transmitter when it sold the helicopter in 1980.¹⁶ The transmitter is a mechanical device that operates by means of a float mechanism in the fuel tank. The float mechanism slides up and down in a tube with the help of an attached guide pin that rides in a slot on the mechanism. This type of transmitter is referred to in the record as a resistor-type system. The record establishes that resistor-type fuel transmitters may wear in a fashion that causes there to be friction in the slot, which in turn can cause some inaccuracy in the quantity of fuel indicated by the low fuel warning light and the fuel gauge. The problem typically occurs when the aircraft is routinely flown at either very high or very low fuel levels. As mentioned above, slinging operations require that pilots fly at very low fuel levels, so as to keep the weight of the helicopter, pilot, fuel, and load below the maximum weight limits imposed by

¹⁶The record reflects that the fuel transmitter was replaced at least twice. CHL replaced the transmitter for the last time in December 1992, almost three years before the accident, when it purchased a used and reconditioned part from a third-party supplier that, although certified by the FAA to provide the parts, was not an authorized AEC service facility.

the helicopter's design.

VI.

As of 1995, when McLennan crashed, the potential for inaccurate fuel gauge readings when worn resistor-type fuel transmitters were used for slinging operations was well known. The CTSB Aviation Occurrence Report concluded, on a matter within its realm of expertise, that it is "common knowledge among flight crews that resistor-type quantity indicator systems cannot be relied upon to indicate the exact amount of fuel in the tank when flying extensively in a low-fuel flying application." AEC was aware of this fact. In the late 1980s and early 1990s, the company issued several documents warning that certain reliability problems might develop when worn fuel transmitters were used in slinging operations. In March 1988, seven years before McLennan's crash, AEC issued Service Letter 867-28-88 relating to the resistor-type fuel gauge.¹⁷ The service letter reads, in relevant part:

The "ECUREUIL" helicopters are equipped in their basic version with a JAEGER or KUBLER resistive type fuel gauge.

This system provides the pilots with an accurate reading of fuel remaining in the fuel tank. However, in spite of its good reliability it is not a defect free measurement system.

The reason for this Service Letter is to stress the fact that the pilot remains the only person accountable for

¹⁷Service letters are considered informational, and may be issued by the manufacturer under the controlling air regulations without the necessity of any airworthiness directive from a regulating authority.

its good operation and that he, in accordance with flying rules, must keep an eye on fuel indication to make sure [the] reading is consistent and to detect any possible failure.

Concerning flights with low fuel level and in critical zones, Height/Velocities (Sling configuration for example) checking the fuel gauge is a primary condition to flight safety.

The district court read this letter, and then adopted McLennan's reading of the same, finding that the service letter misled pilots by informing them that the fuel gauge was accurate, and suggesting that the letter actually increased the risk to pilots by encouraging them "to rely on the fuel gauge as a 'primary condition to flight safety.'"

With all due deference to the district court's fact finding, we conclude that McLennan's construction of this letter, which appears in the district court's order, is clearly erroneous. While the service letter opens with the premise that the fuel gauge is generally reliable, the letter goes on to state that the system is not defect free. The letter then states that the purpose of the communication is to inform pilots that they must, in accordance with good airmanship rules, keep a watch on the fuel gauge to be sure that the reading is consistent with the pilot's own estimation of available fuel. The letter concludes by warning that "checking" the fuel gauge in this manner is of critical importance, and "a primary condition to flight safety" for those pilots engaged in slinging operations. When taken in context, the admonition to

"check" the fuel gauge clearly refers to a pilot's duty to verify its accuracy, rather than any invitation to "rely" upon the fuel gauge as found by the district court.

In May 1992, AEC issued Service Bulletin 28-12. This service bulletin announced that an electronic or capacitor-type fuel measurement system would be installed on future models of the AS-350 helicopter and suggested that the capacitor-type be used to replace the resistor-type on helicopters consistently flown in a low fuel state. The service bulletin further provided the part numbers and procedures for implementing such a replacement.

In December 1992, several months after Service Bulletin 28-12 was issued, and with notice that AEC was offering a capacitor-type system for increased reliability, CHL purchased another resistor-type fuel gauge for installation in the helicopter McLennan was piloting on the day of the accident.

In December 1993, AEC issued Service Letter 1190-28-93 relating to the "fuel gauge transmitters." That service letter reads, in relevant part:

We have received a number of reports from operators of incorrect operation of the fuel gauging system. We feel, therefore, that [it] is advisable to remind flight crews that they must comply with the aircraft handling rules which cover fuel management.

The piloting rules should lead the pilot to check the remaining flight time himself, taking into account factors such as the weight of fuel loaded and the duration of the current flight.

If there is a doubt, the pilot's analysis takes

precedence over the indications read on the instruments.

(emphasis in original). The district court, once again adopting McLennan's proposed findings verbatim, concluded that this letter constituted an independent marketing defect because it failed to provide pilots with any other means of gauging the amount of fuel on board.

This finding is also clearly erroneous. The December 1993 service letter quite clearly directs the pilot to determine remaining flight time by keeping track of the amount of fuel loaded and the duration of the flight. This is no novel or unduly burdensome expectation to place on pilots. Virtually every pilot that testified, including McLennan's own expert, stated that it is patently unreasonable to run a helicopter out of fuel. Similarly, the evidence conclusively establishes that basic airmanship rules require that a pilot have some estimate of remaining flight time based upon the quantity of fuel loaded and the duration of the current flight. See *In re Air Crash at Dallas/Fort Worth Airport*, 919 F.2d 1079, 1084 (5th Cir. 1991) (explaining that the "the pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of the aircraft"). McLennan's own statement to the CTSB acknowledges that he was trained to utilize this method, which is commonly referred to as "flying by the watch." The only evidence that even potentially excused McLennan from his duty to monitor his fuel on that day came from

McLennan's expert pilot Gardiner. Gardiner testified that flying by the watch is more difficult with slinging because of the variable burn rate for those operations. Gardiner further stated that relying on an accurate fuel gauge is the only certain way to determine fuel quantity while in the air. Gardiner did not, however, contradict the testimony of the pilot witnesses that the pilot should always have an independent working estimate of remaining flight time based upon the amount of fuel loaded and the duration of the flight.¹⁸ While McLennan tried to mimic Gardiner's testimony at trial, his earlier statements about the accident, together with the balance of the record, make abundantly clear that McLennan was well aware of his independent duty to keep track of his fuel. As the CTSB found, McLennan could have made "an in-flight check of fuel gauge indications against fuel consumption and flight time," which "may have alerted" McLennan to the fuel gauge discrepancy. We conclude that AEC's October 1993 service letter did set forth an alternative and effective procedure for monitoring the fuel on board. That method, flying by the watch, is a well-recognized rule of basic airmanship, and the district court's determination that the letter was inadequate for failure to set forth an alternative and adequate procedure for checking the fuel

¹⁸We emphasize that there is no dispute concerning the amount of fuel loaded on board when McLennan left Canmore hanger that day. McLennan verified the quantity by checking the 35 percent fuel gauge reading against the visual level of fuel in the fuel tank and the amount of fuel dispensed by the fuel pump (referred to as the bowser).

is clearly erroneous.

Similarly, the district court's finding that "[t]here is no practical way to determine the amount of fuel being burned during slinging operations other than relying on the fuel gauge" is implausible in light of this record. This premise finds its genesis in McLennan's trial argument that the only way to know for sure how much fuel is on board the aircraft is to either drain the tank completely and then add a measured amount, or to fill the tank completely and then drain off a measured amount. Given that performing such a procedure at every refueling is impractical, McLennan argues, it follows that a pilot has no way to keep track of how much fuel remains on board, aside from trusting absolutely in the accuracy of the fuel gauge. Given that the fuel gauge is so critical in slinging operations, McLennan argues, AEC should have required that the fuel measurement system be more frequently inspected.

This position has no merit. As an initial matter, the fuel gauge does not provide the only means of determining the amount of fuel on board, or more importantly, the remaining flight time. The quantity of fuel on board can be visually checked on the fuel tank itself. McLennan himself employed this procedure before leaving Canmore hanger. Moreover, without regard to how low the fuel tank level is when refueling begins, the pilot is able to measure, within fairly close limits, the amount of fuel added to the tank when refueling. By then applying the principles involved in flying

by the watch, the pilot can easily make a conservative estimate of the remaining flying time.

McLennan's argument that AEC negligently failed to require more frequent inspections is likewise without merit. The record conclusively establishes that industry-wide standards consistently classify helicopter fuel gauges as "on condition" items. This means that they are replaced as needed rather than on a regular schedule. On condition items are generally not considered critical to flight safety. In the case of the fuel gauge, this is because of the pilot's overriding duty to monitor his or her own fuel, which is considered sufficient to prevent an absolute failure of the aircraft. McLennan himself provides the best statement of the commonly understood rule that the pilot's own calculations, rather than the fuel gauge, provide the most accurate measurement of available fuel. As McLennan told the CTSB:

I remember my instructor pointing to the fuel gauge and saying "What does that tell you?" And I said, well it tells me how much fuel is in the tank, and he said "No it doesn't, that tells you whether or not there is a fuel gauge installed on the aircraft. If you want to know how much fuel you got you get up on the racks and you open the lid and you look inside."

For the foregoing reasons, we conclude that the district court's finding that slinging pilots must rely solely upon the fuel gauge for an accurate indication of available fuel is clearly erroneous.

In May 1994, AEC reissued Service Bulletin 28-12, formally classifying it as a "Recommended Service Bulletin." AEC had previously clarified to users that the regulations governing the

production of the aircraft precluded the issuance of a "Mandatory Service Bulletin" requiring replacement of a component or other action unless the action required in the Service Bulletin was the subject of a formal airworthiness directive from the regulating authorities. "Recommended Service Bulletins," on the other hand, could be issued by the manufacturer. Notwithstanding the rather permissive tone of the phrase "Recommended Service Bulletin," AEC clarified that such bulletins would address those issues that, although they were not the subject of a formal airworthiness directive, were considered "indispensable to prevent failures of all types with unacceptable consequences." AEC further stressed the seriousness of such bulletins, stating that "[s]hould operators not take into account the directives contained in Recommended Service Bulletins they must accept full responsibility for the consequences of their decision."

The May 1994 version of Service Bulletin 28-12 specifies that the resistor-type fuel measurement system should be replaced with the capacitor-type in order to "increase [the] reliability of FUEL QUANTITY measurement and to render the LOW LEVEL warning independent of this measurement." The Service Bulletin noted that the modification was of particular importance to "all operators required to work with low fuel levels (sling operators for example)."

With regard to the May 1992 Service Bulletin and the May 1994

Service Bulletin, the district court noted that AEC had offered a capacitor-type fuel transmitter "as an option" in the mid 1990s. While the district court did not address CHL's decision to ignore the May 1992 Service Bulletin by installing a used resistor-type fuel transmitter into the helicopter in December 1992, the district court did find that use of the capacitor-type fuel transmitter recommended by AEC would have "prevented or significantly reduced" McLennan's injuries.

In July 1994, AEC issued Service Letter 1215-28-94. This service letter reminded pilots of the "fuel gauging system functional checking procedures given in the Flight Manual" and stated that "these directives must be followed each time the aircraft is refueled." The procedure described in the letter essentially requires that the pilot check the function and accuracy of the fuel gauge by: (1) determining whether the amount of visible fuel in the fuel tank corresponds to the reading on the fuel gauge; (2) ascertaining the amount of fuel delivered by referring to the bowser, the fuel pump used to dispense the fuel; and (3) ensuring that the amount of fuel added, as measured by the bowser, is correctly reflected on the fuel gauge. The district court read this service letter and concluded that the procedure outlined, checking to be sure that the fuel gauge accurately registered the fuel added when refueling, was inadequate standing alone to prevent or diagnose sticky fuel transmitter operation at low fuel states. The district court's observation in this regard is certainly true.

Simply being aware of the available fuel would not prevent an excessively worn fuel transmitter from registering an inaccuracy at low fuel levels. But the observation does not tend to advance McLennan's case in any significant way. First of all, the refueling procedure described in the July 1994 service letter does not, as the district court suggested, stand alone. Rather that procedure is merely a summary of procedures laid out in the flight documentation. Moreover, the refueling procedure must be understood in light of a pilot's duty to keep track of the fuel loaded on board and flight duration. When viewed in the appropriate context, the July 1994 service letter is neither misleading nor inadequate with respect to the subject addressed, an alternative pre-flight method for checking the accuracy of the fuel gauge.

VII.

CHL and McLennan were also well aware of the potential that a worn or dirty resistor-type fuel transmitter might cause fluctuation or sticking in the fuel gauge measurement as well as the fact that even minimal fluctuations would create an environment of heightened risk for a pilot engaged in slinging operations. More specifically, both CHL and McLennan were aware that the particular helicopter flown by McLennan on the day of the crash had recently demonstrated anomalous fuel indications. Notwithstanding this knowledge and the suggested need for repairs to the fuel

measurement system, CHL made no repairs and McLennan took no precautions to ensure that he had an independent knowledge of the available fuel on that day.

There is no doubt about the fact that CHL received and understood the substance of AEC's various service letters and bulletins explaining the risk and setting forth alternative methods for ensuring sufficient fuel in slinging applications. Likewise, there is no doubt that CHL passed that information on to McLennan. In the AS-350-B training manual provided to McLennan, which was with McLennan in the helicopter on the day he crashed, the fuel system, components, and function of the fuel measurement system is illustrated and described in detail. Typed in a distinctive text in the upper left hand corner of the page illustrating the system is the following warning instruction:

Quantity and low fuel indications in the AStar are accomplished by a float type sensor. However, the pilot must watch his fuel very closely and get in the habit of checking his watch to monitor fuel because the float can (and has) stick in the tank. If this happens a false full indication will result and there will be no low fuel light.

CHL pilot Kendall testified that he specifically instructed McLennan on the potential that a worn fuel transmitter might stick and give an inaccurate gauge reading on the AS-350-B helicopter when routinely flown at low fuel states. This training occurred only one year before McLennan crashed. McLennan signed training documentation acknowledging training in these areas. At trial, McLennan testified that he did not specifically recall Kendall's

instructions, but he deferred to the training records and did not deny that they were given.

McLennan proposed and the district court adopted a finding that "pilots generally do not know that fuel gauges are not accurate or unreliable." In addition to the evidence already described, the record reflects that McLennan discussed discrepancies in the operation of the fuel gauge and low fuel warning light in this helicopter with CHL's engineering department as recently as a few months before crash. McLennan informed the engineering department that the low fuel warning light was illuminating when the gauge read 18 percent fuel, rather than closer to 12 percent fuel as contemplated by the flight manual. McLennan was included in discussions in which CHL considered replacing the fuel transmitter. McLennan stated that CHL decided not to order a replacement transmitter because CHL's experience with the supplier they used for the part had been bad, with a very large percentage of the transmitters provided giving false fuel indications when attached to calibration instruments before installation in an aircraft. In June 1995, four months before the October 1995 crash, CHL performed tests checking the accuracy of the fuel gauge. At that time, CHL determined that the 18 percent fuel reading on the fuel gauge was an accurate measure of the available fuel when the low fuel warning light illuminated. Thus, although the warning light was coming on sooner than expected, the gauge was giving an accurate reading of available fuel, and CHL

decided not to replace an accurate gauge. McLennan personally checked the testing logs and testified that he had confidence in the conclusion that the fuel gauge was accurate at that time. Finally, we note that the CTSB Aviation Occurrence Report expressly provides that "it is common knowledge among flight crews that resistor-type fuel quantity indicating systems cannot be relied upon to indicate the exact amount of fuel in the tank, especially at low fuel levels." In contrast, there is no record evidence that would support the district court's fact finding that pilots are without technical knowledge concerning the potential for inaccuracy in the fuel measurement system or that they necessarily rely exclusively upon the presumed accuracy of the fuel gauge, and we reject that finding as clearly erroneous. Both CHL and McLennan were actually aware, both of the technical function of the fuel measurement system, and of the potential for inaccurate fuel indications when a worn resistor-type fuel transmitter is routinely flown at low fuel levels.

Having established that McLennan knew that resistor-type fuel transmitters, and the transmitter installed on this helicopter in particular, might require the pilot to keep a closer tab on fuel consumption, we return to an evaluation of McLennan's causation argument that the gauge was sticking and an evaluation of the fuel gauge operation on the day of the accident.

VIII.

McLennan's expert estimated that McLennan may have flown as long as 33 minutes after the warning light came on. Consequently, when McLennan ran out of fuel he was within seconds of the slightly less than 34 minute flight time to exhaustion predicted by the 150 liter per hour fuel burn rate. Similarly, McLennan would have had slightly less than 19 minutes flight time to fuel exhaustion when he first noticed that the gauge read 11 percent, which was before he repositioned the load at base camp and before he attached the final load for Ranger Creek.¹⁹ McLennan would have spent several minutes attaching, moving, and detaching the final load to be repositioned at base camp. McLennan testified that this load required flying close to the buildings, and thus, additional flight time. It would then have taken several minutes to attach the final load for transport to Ranger Creek, and about 6 or 7 minutes flight time to reach the point where McLennan began setting up for a landing at Ranger Creek and crashed. By McLennan's own estimates, he would have used almost all of the available flight time, even if the gauge accurately measured 11 percent.

There is no need, however, to focus in this case upon what might have happened at 18 or 11 percent fuel. There is no dispute about the fact that McLennan left Canmore hanger with 35 percent

¹⁹McLennan proceeded with these two additional loads and the flight to Ranger Creek, notwithstanding the fact that he was already in violation of Canadian air regulations and company policy requiring that flights be planned to ensure sufficient fuel to land with a 20 minute reserve. The district court made no findings with regard to McLennan's patent violation of the 20 minute reserve rules.

fuel. Using McLennan's estimated fuel burn rate of 150 liters per hour, which is more conservative than the burn rate CHL teaches its pilots to use, and more conservative than the burn rate that the CTSB used to assess the accident, McLennan should have been able to fly about 70 minutes on that fuel. There is no dispute about the fact that McLennan flew for about 75 minutes (from the time he left Canmore hanger with 35 percent fuel) before running completely out of fuel. Similarly, there is no dispute about the fact that McLennan began slinging from the Haig Glacier base camp with 30 percent fuel. Using the 150 liter per hour fuel burn rate, McLennan should have been able to fly just slightly more than 59 minutes on that fuel. There is no dispute about the fact that, once McLennan began slinging, he flew at least 60 minutes on that fuel before he completely exhausted the fuel and crashed. Given these facts, it is obvious that, if the gauge stuck at all, the resulting inaccuracies must have been minimal. Indeed, McLennan appears to have run out of fuel almost exactly when predicted.

Our conclusion in this regard is supported by post-accident testing on the actual fuel measurement system retrieved from the crashed helicopter. When the system was tested in a level and inclined position, the investigators were able to obtain a maximum 3.5 percent inaccuracy in the crashed fuel measurement system.²⁰ This record amply establishes that a commercial helicopter pilot,

²⁰Post-accident testing also revealed that the fuel transmitter was worn and dirty.

even one involved in slinging operations, should not be depending upon such a narrow margin of error to keep him in the sky. This is particularly so where the pilot is performing only the routine work-day tasks that make up most of his days. This is the obvious purpose of the various regulations, company rules, and flight manual comments concerning fuel management when slinging. The CTSB agreed, finding in its final report on the incident, under the heading "Causes and Contributing Factors," that:

The engine flamed out because of fuel exhaustion. Contributing to the occurrence were the pilot's decision to rely on the fuel quantity indication at a low fuel state, and to continue to operate the helicopter with the low-level warning light illuminated.

IX.

McLennan maintains that, notwithstanding any evidence of his actual subjective appreciation of the risk of relying exclusively upon the fuel gauge, the severity and pervasiveness of the problems associated with resistor-type fuel transmitters in helicopters used for slinging operations renders the use of those transmitters unreasonably dangerous. McLennan relies primarily upon a large number of maintenance reports that AEC produced in discovery. These maintenance reports track all reported malfunctions of fuel transmitters installed on the fleet of 550 AEC 350 series helicopters being flown in the 15-year period between 1980 and 1995 that McLennan's helicopter was in service. There are about 200 such reports in the record, although only 138 of those reports are

operational reports relating to a malfunction while a helicopter was engaged in flight operations.²¹ Thus, the accumulated reports reflect less than one operational fuel transmitter malfunction for every 20,000 flight hours. The district court found that in "virtually every case, the fuel quantity indicator system indicated a higher quantity of fuel than actually remained in the aircraft." Having reviewed the record, we conclude that this is an incorrect statement of the evidence. There are a number of different problems reported in the documents that have nothing to do with erroneous gauge readings caused by sticking. In fact, only about half of the reports are tied to sticking of any form in the float assembly, and less than 20 percent of those are tied expressly to an artificially high fuel indication. McLennan did not offer any evidence and the reports do not otherwise suggest that any of these malfunctions resulted in a crash or other accident involving the affected aircraft. We conclude that these reports standing alone do not support a reasonable inference that resistor-type fuel transmitters are inherently dangerous when installed in helicopters used for slinging operations.

McLennan also offers marginally probative evidence that AEC could have installed a capacitor-type transmitter, and that a capacitor-type transmitter may be more reliable for slinging

²¹The balance refer to malfunctions found prior to the time the fuel transmitter was installed or while the helicopter was on the ground and not engaged in flight operations.

operations. But this is not a design defect case, and McLennan's evidence does not support a reasonable inference that the decision to market the model AS-350 helicopter with a resistor-type transmitter rendered the helicopter unreasonably dangerous in 1980, or even with the benefit of hindsight. An FAA designated engineering representative, Leon Jacobson, testified that resistor-type fuel transmitters are still widely used in helicopters marketed for slinging operations. Jacobson provided evidence that at least nine helicopter manufacturers continue to market twenty-five different families of helicopters equipped for slinging operations with resistor-type fuel transmitters. Jacobson further testified that he had never seen a fuel indicator system classified as anything other than a "on-condition" part, meaning that neither the FAA nor the aviation industry considered the fuel indicator system to be a safety item that would cause a structural failure or crash if it failed. Consistently, Jacobson testified that he had never, in his 42 years experience designing and approving aircraft, seen a mandatory service bulletin requiring replacement or frequent inspection of a fuel indicator system. In sum, the record evidence does not support a reasonable inference that the AS-350-D model aircraft marketed by AEC with a resistor-type fuel transmitter was unreasonably dangerous for slinging operations when sold in 1980 or at any other subsequent time. To the extent that the district court finds differently, that finding is clearly erroneous on the basis of this record.

Having set forth the record evidence and the factual basis for our decision, we proceed to an analysis of the legal issues AEC raises on appeal.

LEGAL ANALYSIS

I.

AEC challenges the district court's denial of its motion to dismiss for forum non conveniens and its motion to apply the law of Alberta, Canada. AEC raises these points as alternative arguments, which the Court need not address unless a decision adverse to AEC's interests is reached on the merits. Notwithstanding AEC's position, the district court's rulings on these pre-trial motions potentially affect our analysis of the merits. For that reason, we will briefly consider the district court's disposition of AEC's pre-trial motions before considering the district court's disposition on the merits of McLennan's strict liability and negligence claims.

The simple premise underlying the doctrine of forum non conveniens is "that a court may resist imposition upon its jurisdiction even when jurisdiction is authorized." ***Dickson Marine Inc. v. Panalpina, Inc.***, 179 F.3d 331, 341 (5th Cir. 1999) (internal quotations omitted). We review the district court's denial of a motion to dismiss for forum non conveniens for a clear abuse of discretion. See ***In re Air Crash Disaster New Orleans***, 821 F.2d 1147, 1166 (5th Cir. 1987), *vacated on other grounds and remanded*,

109 S. Ct. 1928, *reinstated in relevant part*, 883 F.2d 17 (5th Cir. 1989). When, as here, the district court tries the case to a conclusion, that fact tends to bolster the district court's original decision denying the motion to dismiss. *Id.* at 1168. In such a case, the district court's decision should not be held an abuse of discretion unless the moving party can demonstrate great prejudice arising from trial in the plaintiff's chosen forum. *Id.*

"The doctrine of forum non conveniens presupposes at least two forums where the defendant is amenable to process and simply furnishes criteria for choice between them." *Dickson Marine*, 179 F.3d at 341. Thus, a defendant seeking dismissal on the basis of forum non conveniens must first establish that there is an alternate forum that is both available and adequate. *See, e.g., Alpine View Co., Ltd. v. Atlas Copco AB*, 205 F.2d 208, 221 (5th Cir. 2000). "A foreign forum is available when the entire case and all parties can come within the jurisdiction of that forum." *Id.* (internal quotes omitted). "A foreign forum is adequate when the parties will not be deprived of all remedies or treated unfairly, even though they may not enjoy the same benefits as they might receive in an American court." *Id.* (internal quotes omitted).

If the moving party carries its burden of establishing an alternate forum that is both adequate and available, then the defendant is charged with showing that dismissal is warranted because certain private and public interest factors weigh in favor

of dismissal. *Id.* at 221-22. The relevant private interest factors include: the "relative ease of access to sources of proof; [the] availability of compulsory process for attendance of unwilling, and the cost of obtaining attendance of willing, witness[es]; [the] possibility of view of premises, if view would be appropriate to the action; and all other practical problems that make trial of a case easy, expeditious and inexpensive." **Dickson Marine**, 179 F.3d at 342 (internal quotes omitted). The relevant public interest factors include: the "administrative difficulties flowing from court congestion; the local interest in having localized controversies decided at home; the interest in having the trial of a diversity case in a forum that is at home with the law that must govern the action; the avoidance of unnecessary problems in conflict of laws, or in the application of foreign law; and the unfairness of burdening citizens in an unrelated forum with jury duty." *Id.* (internal quotes omitted).

District courts are constrained to follow this procedural framework. A summary disposition or failure to address the relevant principles or balance the relevant factors may constitute an abuse of discretion. Our task on appeal is merely to "'review the lower court's decisionmaking process'" to ensure compliance with this framework; we do not "'perform a de novo analysis and make the initial determination for the district court.'" *Id.* at 336 (quoting *In re Aircrash Disaster Near New Orleans*, 821 F.2d at

1167).

In this case, AEC argued that Canada was an available and adequate forum for this case that, upon consideration of the various private and public interests, would be more convenient for the parties. McLennan opposed the motion. The district court initially held that AEC had failed to prove that Alberta, Canada was an available forum, because there were questions concerning AEC's susceptibility to personal jurisdiction in that forum. The district court further held that AEC had likewise failed to establish that the alternate forum was either adequate or more convenient. The court cited several factors, including impediments to essential discovery, before refusing AEC's invitation to decline jurisdiction in this matter.

AEC moved for reconsideration, and the parties submitted competing affidavits from Canadian attorneys addressing the adequacy and availability of the Canadian forum. The district court addressed this evidence, eventually concluding that AEC had not carried its burden of demonstrating that Alberta, Canada constituted an adequate and available forum under the relevant principles. In this second order, the district court further noted that AEC had completely neglected its burden of persuading the court that private and public interest factors weighed in favor of dismissal, by failing to even raise any specific argument directed to the application of those factors. Notwithstanding AEC's dereliction of its burden, the district court went on to consider

the application of those factors in this case. The district court concluded that the private interest factors did not weigh in favor of dismissal because a larger number of witnesses and a larger body of evidence was more easily accessible in Texas. The district court further concluded that the public interest factors did not weigh in favor of dismissal because Texas had a strong interest in enforcing its laws against and monitoring the activities of AEC, a Texas-based manufacturer. The district court's analysis in both orders is consistent with the procedural framework the district court is obligated to use. Moreover, there is nothing unreasonable about the conclusions reached therein. Thus, there is no abuse of discretion and no reversible error arising from the district court's denial of AEC's motion to dismiss for forum non conveniens.²²

II.

AEC also challenges the district court's denial of its motion for application of the law of Alberta, Canada. We review a district court's choice of law determination de novo. ***Spence v. Glock, Ges. m.b.H.***, 227 F.3d 308, 311 (5th Cir. 2000).

AEC first filed its motion for application of Canadian law on November 25, 1998. At that point in time, the case had been

²²AEC later moved for leave to file newly discovered evidence on the forum non conveniens issue. The district court denied this motion, finding that the newly discovered evidence did not in any way call its earlier decisions into question. There is likewise no error in this determination.

pending for more than one year, the discovery deadline had passed, and there were less than two weeks remaining before trial. The district court concluded that AEC's motion was untimely because it failed to provide "reasonable written notice" that the application of foreign law was relevant to the lawsuit. See FED. R. CIV. P. 44.1. AEC maintains that it provided adequate notice because it raised the necessity of applying Canadian law as an argument in support of its earlier filed motions for dismissal on forum non conveniens grounds. It is easy to sympathize with the district court on this point. AEC's voluminous motion, with its large number of exhibits, could easily have been filed earlier. Nonetheless, we need not decide the adequacy of AEC's notice, because the district court entered an alternative holding, with which we agree, that the motion was without merit in any event.

In this diversity case, we are obliged to apply Texas choice of law principles to determine the applicable law. See *In re Air Disaster at Ramstein Air Base*, 81 F.3d 570, 576 (5th Cir. 1996), *partially amended on other grounds on reh'g*, *Perez v. Lockheed Corp.*, 88 F.3d 340 (5th Cir. 1996). Absent some statutory rule or contractual agreement to the contrary, Texas courts require that the law of the forum with the "most significant relationship" to the litigation be applied. *Id.* The factors relevant to an application of this test are drawn from §§ 6 and 145 of the Restatement (Second) of Conflicts of Laws. *Id.* Some of the

factors considered important under § 6 include: the relevant policies of the forum and other interested states; the relative interests of the states with an interest in the litigation; the basic policies underlying the particular field of law; and the certainty, predictability, and uniformity of the result to be obtained by application of a particular state's law. See RESTATEMENT (SECOND) OF CONFLICTS OF LAWS § 6. Some of the factors considered important under § 145 include: the place where the injury occurred; the place where the conduct causing the injury occurred; the domicile, nationality, place of incorporation and place of business of the parties; and the place where the relationship, if any, between the parties is centered. See RESTATEMENT (SECOND) OF CONFLICTS OF LAWS § 145.

The district court held that AEC had not carried its burden of proving that the relevant factors predominated in favor of applying Canadian law. While McLennan was injured in Canada, the relevant conduct that McLennan claims gave rise to his injuries, the marketing and manufacturing of the helicopter, took place in Texas, where AEC maintained its principal place of business. AEC forwarded the various service letters and bulletins, and maintained records concerning the operation of the aircraft in its Texas office. Thus, the relationship between the parties, to the extent there was one, was centered in Texas. While it is true that McLennan is a Canadian citizen and resident, McLennan chose a Texas

venue for his lawsuit. AEC, on the other hand, does business in Texas, and there is no evidence that the application of Texas law poses any great burden on AEC's ability to defend the suit.²³ Finally, as the district court found, Texas has a strong interest in enforcing its products liability laws against the manufacturers operating in the State. Having reviewed the district court's application of the relevant principles de novo, we find no error in its determination that Texas law should apply to this diversity action.

III.

Texas recognizes the theory of strict tort liability premised upon the Restatement (Second) of Torts § 402A, which provides, in relevant part:

- (1) One who sells any product in a defective condition unreasonably dangerous to the user or consumer or to his property 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
 - (b) it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold.

RESTATEMENT OF TORTS § 402A; see also *Smith v. Aqua-Flo, Inc.*, 23

²³The district court determined that the only material difference between the applicable Texas and Canadian law is that Canadian law does not recognize the theory of strict products liability, while Texas does. In Canada, McLennan would be compelled to prove his negligence theories in order to prevail. Given our determination in this opinion that McLennan is not entitled to prevail on either theory, there is no policy to be vindicated by requiring that Canadian law be applied.

S.W.3d 473, 477 (Tex. App.-Houston [1st Dist.] 2000, writ denied). A product may be unreasonably dangerous due to a defect in the manufacturing process (manufacturing defect) or in its design (design defect), or because of the manufacturer's failure to provide adequate warnings or instructions on the product's use (marketing defect). See **Aqua-Flo, Inc.**, 23 S.W.3d at 473; **Keene Corp. v. Gardner**, 837 S.W.2d 224, 228 (Tex. App.-Dallas 1992, writ denied). In this case, McLennan is pursuing only the theory that AEC is strictly liable for marketing defects in the AS-350-B helicopter.

McLennan alleges that AEC is strictly liable for its decision to market a helicopter equipped with a resistor-type gauge for slinging operations because the product was unreasonably dangerous for that application. At first blush, this allegation seems more akin to a design defect theory, but McLennan has expressly disclaimed any such theory and frames this claim strictly in terms of a marketing defect.²⁴ To prove this allegation, McLennan was required to prove: (1) that the helicopter was defective; (2) that the defect rendered the helicopter unreasonably dangerous; (3) that

²⁴We note that any design defect theory would be burdened by the need to prove that there was a defect in the product when it left the manufacturer's hands. See, e.g., **Kroger Co. v. Bettancourt**, 996 S.W.2d 353, 358 (Tex. App.-Houston [14th Dist.] 1999, writ denied). That showing might be difficult given that there is no dispute about the fact that the problem at issue here, sticking in the fuel transmitter float, only became a problem when the transmitter was worn or dirty.

the helicopter reached CHL and McLennan, as ultimate consumers, without substantial change in its condition from the time of the original sale; and (4) that the helicopter was the producing cause of McLennan's injuries. See **Syrie v. Knoll Int'l**, 748 F.2d 304, 306 (5th Cir. 1984). McLennan also claims that AEC is strictly liable for failing to warn or adequately warn of the risks associated with the use of a resistor-type fuel transmitter in a helicopter marketed for slinging operations. "A product may be unreasonably dangerous if a manufacturer fails to warn of a foreseeable risk arising from the use of the product, and the 'lack of adequate warnings or instructions renders an otherwise adequate product unreasonably dangerous.'" **Coleman v. Cintas Sales Corp.**, No. 04-00-00176-CV, 2001 WL 20447 at 3 (Tex. App.—San Antonio 2001, no writ) (quoting **Aqua-Flo, Inc.**, 23 S.W.3d at 480). To prove this allegation, McLennan was required to prove: (1) that there was either an inherent risk associated with use of the helicopter or a risk that might arise from a use that was intended or reasonably anticipated at the time of sale; (2) that AEC either knew or should have foreseen the risk of harm; (3) that AEC failed to provide any warning or failed to provide an adequate warning of the danger when the helicopter was sold; (4) that AEC's failure to warn rendered the helicopter unreasonably dangerous; and (5) that AEC's failure to warn was the producing cause of McLennan's injuries. See **Reese v. Mercury Marine Div. of Brunswick Corp.**, 793 F.2d 1416, 1420 n.1

(5th Cir. 1986).

There is an obvious overlap between the elements of McLennan's two strict liability theories. The primary difference between the two is that McLennan's first theory alleges that resistor-type fuel gauges are inherently and unreasonably dangerous when installed in helicopters used for slinging, while his second theory alleges that such transmitters are unreasonably dangerous in the absence of an adequate warning or instructions addressing the potential for inaccurate fuel gauge readings when the helicopter is used for slinging operations. See *Coleman*, 2001 WL 20447 at *3. McLennan's first theory may be summarily addressed. Stated simply, McLennan failed to prove that resistor-type fuel transmitters are per se unreasonably dangerous when installed on helicopters used for slinging. As detailed above, the overwhelming record evidence is to the contrary. Resistor-type fuel transmitters meet all applicable regulatory and industry standards and are still widely used in helicopters marketed for slinging operations by a number of well-respected helicopter manufacturing companies. See *Hagans v. Oliver Machinery Co.*, 576 F.2d 97, 100 (5th Cir. 1978) (relying in part upon product's compliance with industry safety and manufacturing standards to reject plaintiff's strict liability claim). Notwithstanding the extensive use of resistor-type fuel transmitters for many years, which continues today, McLennan failed to produce evidence of even one other accident or other injury

attributable to the use of such transmitters in helicopters used for slinging operations.²⁵ We conclude that the evidence in this record simply does not support any rational inference that the resistor-type fuel transmitter is inherently and unreasonably dangerous when installed in helicopters engaged in slinging operations.

McLennan's second theory, his allegation that AEC either failed to warn him of the risk or failed to provide adequate instructions on the use of the product, requires slightly more analysis but is likewise unavailing. "The existence of the duty to warn of danger or to instruct as to the proper usage of a product is a question of law." *Coleman*, 2001 WL 20447 at *3; see also *General Motors Corp. v. Saenz*, 873 S.W.2d 353, 356 (Tex. 1993); *Seagram & Sons v. McGuire*, 814 S.W.2d 385, 387 (Tex. 1991).²⁶ "There is no duty to warn when the risk associated with a product is within the ordinary knowledge common to the community."

²⁵We do not intimate that such evidence is required in a strict liability case. We merely note that, in this particular case, such evidence would have permitted McLennan to overcome the otherwise overwhelming evidence that the minimal risk presented by these transmitters is outweighed by their utility to the intended users. Absent that evidence, McLennan has simply failed to meet his burden of establishing the essential element of an unreasonable risk of harm or danger.

²⁶While the ultimate determination of whether there is a duty to warn is a legal issue, the factual predicate required to support the duty to warn is probably a question of fact. See *Torrington Corp. v. Stutzman*, No. 99-0261, 44 Tex. Sup. Ct. J. 225, 2000 WL 1862923 at *8 (Tex. 2000); see also *Smith v. Louisville Ladder Co.*, No. 99-41038, 2001 WL 862 at *5 (5th Cir. Jan. 11, 2001).

Coleman, 2001 WL 20447 at *3, *4 (internal quotations omitted); see also **Louisville Ladder Co.**, 2001 WL 862 at *5 ("under Texas law, there is no duty to warn when the risks associated with a particular product are matters within the ordinary knowledge common to the community and a supplier may rely on the professional expertise of the user in tailoring a warning") (internal footnotes and quotations omitted); **Argubright v. Beech Aircraft Corp.**, 868 F.2d 764, 766 (5th Cir. 1989) ("there is no duty to warn of dangers obvious to the user of the product"); **Hagans**, 576 F.2d at 103 ("In sum, it is clear that defendant's failure to warn of an obvious danger, admittedly known to and appreciated by plaintiff, did not render the saw unreasonably dangerous for its intended use."); **Sauder Custom Fabrication v. Boyd**, 967 S.W.2d 349, 351 (Tex. 1998) (relying upon common knowledge defense to reject both products liability and negligence claim); **Caterpillar, Inc. v. Shears**, 911 S.W.2d 379, 382 (Tex. 1995) ("Warnings about obvious hazards are not likely to reduce the chances of injury."); **Id.** at 383 ("The determination whether a manufacturer has a duty to warn is made at the time the product leaves the manufacturer."). Whether information about a risk is common knowledge is an objective inquiry and the user's knowledge is not dispositive on the issue. See **Shears**, 911 S.W.2d at 383. But see **Hagans**, 576 F.2d at 102 ("[P]laintiff admitted that he was aware of the dangers involved in cutting knotted wood on the saw. Clearly a warning of the dangers

involved in using the saw would not have informed him of anything he did not already know."). Further, the "consumer's perspective is that of an ordinary user of the product; not necessarily that of an ordinary person unfamiliar with a product." **Sauder Custom Fabrication**, 967 S.W.2d at 351 (determining whether the risk associated with use was common knowledge by reference to the knowledge common to experienced boiler workers); see also **Argubright**, 868 F.2d at 766 ("Whether there is a duty to warn and the adequacy of warnings given must be evaluated in connection with the knowledge and expertise of those who may reasonably be expected to use or otherwise come in contact with the product as it proceeds along its intended marketing chain."). Thus, when determining whether AEC had a duty to warn McLennan of the risk identified in this case, we view that issue objectively, but from the perspective of an experienced sling pilot, rather than from the perspective of an ordinary consumer without the knowledge necessary to perform that job.

The CTSB's final report on McLennan's accident states that the potential for inaccurate fuel gauge readings caused by sticking in a worn or dirty fuel transmitter was "common knowledge" among flight crews at the time of the accident. The testimony from experienced sling pilots at trial was consistent. Moreover, the record establishes that McLennan himself was actually aware of the risk that a helicopter equipped with a resistor-type fuel

transmitter might give inaccurate fuel gauge readings when the transmitter is worn and the helicopter is routinely flown in a low fuel application like slinging. Indeed, McLennan was actually aware that this helicopter had that propensity before he flew that day. More importantly, given that our inquiry is an objective one, the record conclusively establishes that regulatory agencies like the FAA and the CTSB, helicopter manufacturers, aircraft service personnel, experienced sling pilots, and the employers of those pilots were all aware of this risk, and yet the regulatory agencies had not required the replacement of the component with any alternative. See *Bell Helicopter Co. v. Bradshaw*, 594 S.W.2d 519, 527 (Tex. App.-Corpus Christi 1979, writ ref'd n.r.e.) (explaining the regulatory process involved in obtaining an airworthiness directive from the regulatory agency and noting that "Bell did not have the legal power to force owners of Bell helicopters to replace their 102 [tail rotor] systems with 117 [tail rotor] systems"). Further, there is no evidence that the purchasers and intended users of the helicopters had demanded any shift in the market standard. See *id.* (noting that third-party opposition to a manufacturer requested airworthiness directive may cause regulatory authorities to rescind the directive). Even CHL, which had actual notice of the problem, failed to comply with AEC's Recommended Service Bulletin, which informed users that the fuel transmitter should be replaced with a capacitor-type and set out the procedure

for making the change. Further, although AEC had previously specified that a Recommended Service Bulletin was the strongest correspondence it could send without regulatory authority, and although AEC warned consumers who failed to comply with Recommended Service Bulletins that they "must accept full responsibility for the consequences of their decision," CHL chose to replace the transmitter with another resistor-type transmitter after the date of the Recommended Service Bulletin laying out the procedure for replacing the transmitter with a capacitor-type transmitter. See *Scallan v. Durion Co.*, 11 F.3d 1249, 1254 (5th Cir. 1994) (concluding that the manufacturer is not liable when a purchaser, with knowledge of the particular danger which led to the injuries, declines to incorporate a safety item that would have eliminated or reduced that risk).²⁷ On the record before us, there is no other reasonable inference but that the particular risk was both objectively and subjectively known and a matter of common knowledge within the relevant community of sling pilots.

McLennan also contends that AEC had a duty to warn based upon AEC's post-sale decision to issue service letters and bulletins relating to the safety of the helicopter. Texas courts generally do not recognize any post-sale duty to warn of product hazards

²⁷While *Scallan* was controlled by Louisiana law, the Court's discussion of this principle was not based in Louisiana law, and the Court cited authority from other jurisdictions in support of this general principle of products liability

arising after the sale. That general rule is modified, however, by the availability of a negligent undertaking theory on the one hand, and the holding of the Texas Court of Appeals in **Bell Helicopter Co. v. Bradshaw**, 594 S.W.2d 519 (Tex. App.-Corpus Christi 1979, writ ref'd n.r.e.), on the other. To the extent that McLennan's argument is premised upon the theory that AEC voluntarily assumed a post-sale duty to warn and then discharged that duty without exercising reasonable care, that theory is clearly negligence-based and unavailable in the context of a strict liability claim. See **Torrington Co.**, 2000 WL 1862923 at *4-5; **Arkwright-Boston Mfrs. Mut. Ins. Co.**, 844 F.2d at 1177, 1185; **Syrie**, 748 F.2d at 311-12; **Alter**, 944 F. Supp. at 537 & n.3. To the extent that McLennan's argument is premised upon the control-based duty recognized by the Texas Court of Appeals in **Bradshaw**, that duty is inapplicable to the particular facts of this case.

In **Bradshaw**, defendant Bell Helicopter sold the helicopter at issue in 1961 to a third party not involved in the litigation. Several years later, in 1969, Bell Helicopter regained a significant degree of control over the helicopter when it was purchased by a Bell Helicopter service station. Bell Helicopter then retained that control until the helicopter was sold to the plaintiffs in 1973. **Id.** at 530-31. The Texas court relied upon that fact to hold that the defendant was in control of the product on the day it was sold to the plaintiffs and that the product was

unreasonably dangerous at that time. *Id.* at 531. The court went on to clarify that it was not adopting any rule that would place manufacturers under a continuing duty to improve the product or to remedy dangerous defects in a product that are discovered after the product is sold. *Id.* at 531-32. The court recognized, however, that a manufacturer may assume a negligence based post-sale duty to ensure the continued safety of its product and that Bell Helicopter had assumed such a duty in the context of that case. *Id.* at 532 (concluding that such a duty would be satisfied by the issuance of a service bulletin recommending that the defective tail rotor system be removed).

A few cases have suggested that the *Bradshaw* duty may be applicable in a strict liability action. See *Torres v. Caterpillar, Inc.*, 928 S.W.2d 233, 240-41 (Tex. App.-San Antonio 1996, writ denied); *Dion v. Ford Motor Co.*, 804 S.W.2d 302, 311 (Tex. App.-Eastland 1991, writ denied). Most cases, however, have recognized that the *Bradshaw* control-based duty is probably no broader than the well-recognized negligence-based duty to exercise reasonable care when undertaking to provide a post-sale warning. See *Torrington Co.*, 2000 WL 1862923 at *4-5; *Arkwright-Boston Mfrs. Mut.*, 844 F.2d at 1177; *Syrie*, 748 F.2d at 311-12; *Alter v. Bell Helicopter Textron, Inc.*, 944 F. Supp. 531, 537 & n.3 (S.D. Texas 1996). Assuming arguendo that *Bradshaw* and subsequent Texas authority does recognize a post-sale duty to warn in the context of

a strict liability claim, we reject the application of that duty in this case. The facts in **Bradshaw** supported a conclusion that the defendant manufacturer was in constructive possession of the helicopter and had the authority to require repairs and modifications to the product on the day it was sold in a defective condition to the plaintiff. See **Bradshaw**, 594 S.W.2d at 530-31. In this case, AEC sold the helicopter in 1980 as a AS-350-D model helicopter. The helicopter crashed 15 years later as a model AS-350-B. AEC was not even aware of the modification and there is no evidence that AEC had any control whatsoever with respect to required repairs or other modifications. Thus, assuming that the **Bradshaw** duty remains viable as an independent post-sale duty divorced from the context of a negligent undertaking, that duty is simply inapplicable to the facts of this case. For the foregoing reasons, we conclude that AEC owed McLennan no duty to warn of risks already appreciated and understood by the consumer. This conclusion, standing alone, is sufficient to require judgment in AEC's favor with respect to McLennan's strict liability claim.

IV.

McLennan's negligence claim is factually identical to his second strict liability theory. That is, he maintains that AEC negligently failed to warn of the risk associated with the use of a resistor-type fuel transmitter in a helicopter engaged in slinging operations. The legal principles governing McLennan's

negligence theory, however, are distinct. See **Syrie**, 748 F.2d at 309 ("under Texas law, strict liability and negligence, although sharing similar and common elements, are two entirely separate theories of recovery in a products liability action"). Strict products liability necessarily focuses upon the product itself, and requires a showing that the manufacturer placed a product into the stream of commerce that was unreasonably dangerous for a foreseeable use. See **Syrie**, 748 F.2d at 307. Products liability premised upon a showing of negligence, however, focuses upon the conduct of the manufacturer in placing that product into the stream of commerce, and requires a determination of whether that conduct complies with the applicable standard of care. **Id.** at 307. To prove a products liability claim premised upon a theory of negligence, a plaintiff must demonstrate: (1) that the manufacturer owed a duty to the plaintiff; (2) that the manufacturer breached that duty; (3) that the plaintiff was injured; and (4) that the manufacturer's breach of the duty was the proximate cause of the plaintiff's injury or damages. **Id.**

McLennan centers his negligence claim upon perceived inadequacies in AEC's service letters and bulletins. The district court agreed, and made several findings concerning the adequacy of AEC's post-sale warnings about the potential for problems with the fuel transmitter. Specifically, the district court held that AEC's March 1988 service letter, October 1993 service letter, and July

1994 service letter constituted post-sale marketing defects. All of this correspondence was issued after the sale. Thus, as set forth above, AEC's duty to warn must be derived from either the **Bradshaw** control-based duty to warn of risks arising after the sale or AEC's negligent performance of the warnings actually provided. We have already held that AEC did not possess the requisite degree of control over the helicopter at issue to impose the control-based duty announced in **Bradshaw**. The remaining possibility is that AEC is liable for negligent discharge of a duty which AEC voluntarily assumed or undertook to perform.

"Texas law generally imposes no duty to take action to prevent harm to others absent certain special relationships or circumstances." **Torrington**, 2000 WL 1862923 at *5. Texas law does recognize, however, "that a duty to use reasonable care may arise when a person undertakes to provide services to another, either gratuitously or for compensation." **Id.** The required elements of a negligent undertaking claim in this case are: (1) that AEC undertook to provide a warning, and either knew or should have known that such warning was necessary for McLennan's protection; (2) that AEC failed to exercise reasonable care when providing those warnings; and either (3)(a) that McLennan relied upon those warnings, or (3)(b) that AEC's attempts to warn actually increased the risk of harm to users like McLennan. See **Torrington**, 2000 WL 1862923 at *6.

McLennan's claim fails under the negligent undertaking theory as well. As an initial matter, there is no evidence supporting a reasonable inference that AEC failed to exercise the required degree of care when issuing the various service letters and bulletins at issue in this case. The district court's findings that the service letters and bulletins were inadequate, as set forth above, were taken verbatim from McLennan's proposed findings of fact and conclusions of law, which in turn present a clearly erroneous interpretation of the documents themselves. Of equal importance, McLennan did not produce any evidence that CHL or McLennan relied upon AEC's service letters or bulletins or that those letters and bulletins increased the risk to McLennan in any way. To the contrary, both CHL and McLennan ignored those warnings, and the record does not support any reasonable inference that AEC's service letters and bulletins were misleading or that they masked the potential for danger in any way. We conclude that AEC did not owe McLennan any negligence-based, post-sale duty to warn.

Even if McLennan were able to establish the applicability of either the **Bradshaw** duty or the negligent undertaking theory, any such duty would still be subject to the principle that there is no need to warn of dangers that are generally known. See **In re Air Crash at Dallas/Fort Worth Airport**, 919 F.2d at 1085 (holding in a negligence action that the air traffic controllers failure to warn

of an impending danger cannot be the proximate cause of an injury "after the pilot himself discovered its presence, appreciated the danger, and decided to fly ahead into it."); see also **Argubright**, 868 F.2d at 766; **Hagans**, 576 F.2d at 104 (collecting authorities for the proposition that the "universally recognized duty of a manufacturer to warn of dangers associated with the use of his product does not attach . . . when the danger is 'open and obvious' or the party to be warned is already aware of the danger."); **Shears**, 911 S.W.2d at 382. We have already held that the potential for inaccurate fuel gauge readings from a worn resistor-type transmitter was an obvious and open risk within the common knowledge of the relevant community, and this constitutes an independent ground for rejecting McLennan's argument that AEC owed any post-sale duty to warn in this case.

There is an argument, however, that the actual risk in this case is not the risk of an inaccurate fuel gauge reading, but is instead the risk of relying upon such a minute amount of fuel to stay in the air. The maximum discrepancy in the fuel gauge at issue registered 3.5 percent. The applicable air regulations, CHL policy, the mandates of McLennan's training, the customary practices of experienced slinging pilots, basic airmanship rules, and the manufacturer's instructions about both the low fuel warning light and fuel management generally, all required that McLennan be on the ground long before he approached anything near 3.5 percent

remaining fuel, which would have permitted only about 3 minutes flight time to exhaustion. These facts raise serious concerns about whether McLennan carried his burden of proving that the inaccurate fuel gauge reading was the producing cause of his injury or damages.

A negligence action requires proof of proximate, rather than producing, cause. See **Stewart v. Transit Mix Concrete & Materials Co.**, 988 S.W.2d 252, 255 (Tex. App.-Texarkana, writ denied). McLennan contends that the record is sufficient to support the district court's conclusion that McLennan satisfied his burden of proving causation.²⁸ McLennan relies heavily upon the presumption under Texas law that additional warnings would have been heeded. This rebuttable presumption developed in cases where the manufacturer failed to give any warning at all about a foreseeable risk. See **Magro v. Ragsdale Bros., Inc.**, 721 S.W.2d 832, 834 (Tex. 1986); **Technical Chemical Co. v. Jacobs**, 480 S.W.2d 602, 606 (Tex. 1972); see also **General Motors Corp. v. Saenz**, 873 S.W.2d 353, 357-58 (Tex. 1993) (explaining the policy leading to adoption of the presumption). The presumption is inapplicable, however, when the issue is the adequacy of a warning actually given which, if heeded, would have prevented the injury. See **Saenz**, 873 S.W.2d at 359 ("There is no presumption that a plaintiff who ignored instructions

²⁸We note that the district court did not actually enter any finding of proximate cause. Such finding is implicit, however, in the district court's decision.

that would have kept him from injury would have followed better instructions."); **Stewart**, 988 S.W.2d at 255.²⁹ Thus, McLennan was required to prove that AEC's failure to warn actually caused the accident, without the benefit of any presumption that he would have heeded additional warning, and AEC was entitled to introduce evidence that McLennan failed to heed the warnings given in order to establish that he would not have been dissuaded by additional warnings.

McLennan plainly failed to meet his burden of establishing proximate cause. McLennan ignored the documentary warnings provided by AEC in the flight documentation and in service letters and bulletins. McLennan further ignored the warnings given by the pilot training him on the aircraft. McLennan then ignored

²⁹**Stewart** provides a good explanation of how the presumption operates:

To prove causation in a failure-to-warn case, a plaintiff is aided by a presumption that proper warnings would have made a difference (i.e. the warnings would have been followed had they been provided). However, the presumption operates one way when no warning is provided, and a different way when a warning was provided but it is arguably inadequate. In the instance of no warning, it is presumed that proper warnings would have been heeded. However, no presumption arises that a plaintiff would have heeded a better warning when, in fact, he did not read the warning given, which if followed would have prevented his injuries. If following the warning and instructions actually provided would have prevented the injury despite the warning's inadequacy, the deficiency could not be the cause of any injury. In such a case, the plaintiff does not have a cause of action for failure-to-warn because there is no causation-in-fact.

988 S.W.2d at 255 (internal footnotes omitted).

warnings provided by the aircraft itself, including prior discrepant performance, and more significantly, the low fuel warning light. McLennan continued flying with the low fuel warning light on, in violation of the flight manual and company policy, until he was well within the 20 minute reserve fuel level required by law. In fact, McLennan commenced at least two additional sling loads with knowledge that he was within that 20 minute reserve. We emphasize that there was no special exigency requiring that different flight rules be applied on that day; McLennan was performing what appear to be fairly routine slinging operations. We further emphasize that, unlike the fuel gauge reading on our automobiles, which most of us would heed before running out of gas in any event, the consequences of fuel exhaustion in an aircraft are much greater for the pilot and his passengers, as well as for people and property on the ground. This is why there are regulatory, employer-based, and basic airmanship rules which bind a pilot in the command of his aircraft. See ***In re Air Crash at Dallas/Fort Worth Airport***, 919 F.2d at 1087 n.6 ("There are old pilots, and there are bold pilots; but there are no old, bold pilots.") (internal quotations omitted). While we in no way want to minimize the seriousness of McLennan's injuries, neither can we accept McLennan's premise, which is not proven in this record, that the pilot of an aircraft may blindly trust in the accuracy of a worn out fuel gauge, notwithstanding fuel indications contrary to

that reading, and notwithstanding the fact that continued flight is in violation of regulatory authority. The consequences of such a holding, as both a practical and precedential matter, are simply unacceptable, and the causal connection, at least in this case, too remote. We therefore conclude that there were no additional warnings that AEC could have given that would have dissuaded McLennan from continuing his flight on that ill-fated day. For that reason, McLennan failed to establish that AEC's failure to provide additional warnings was the proximate cause of his accident or injuries, an essential element of his negligence claim.

Based upon this record as a whole, we are convinced that the district court committed clear error, and that the record does not support the conclusion that AEC's conduct was either a producing or proximate cause of this crash. To the contrary, this crash was caused solely by McLennan's own pilot error. Having determined that McLennan failed to prove liability on either a strict products liability or a negligence theory, his cross-appeal on the basis that the district court erred by finding McLennan 40 percent liable for the accident that led to his injuries is moot.

CONCLUSION

For the foregoing reasons, the district court's judgment in favor of plaintiff Peter McLennan is REVERSED and JUDGMENT IS RENDERED in favor of defendant AEC.