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Case Number 13,2012

IN THE SUPREME COURT OF THE STATE OF DELAWARE

LISABETH MOORE, Individually and as Personal Representative of the Estate of Daniel Hart, Deceased	:	**No. 13, 2012**
and	:	
LISABETH MOORE, As Next Friend of ZOE HART-MOORE	:	Court Below - Superior Court of the State of Delaware in and for New Castle County C.A. No. N09C-12-010 MMJ
Plaintiffs Below, Appellants,	:	
v.	:	
HAWKER BEECHCRAFT, CORPORATION	:	
Defendant Below, Appellee	:	

APPELLANTS' AMENDED OPENING BRIEF

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TABLE OF CONTENTS

Page

TABLE OF AUTHORITIES

Cases **Page**

Unreported Cases

Statutes

Regulations

Rules

NATURE OF PROCEEDINGS

This product liability and negligence case arises from the December 4, 2007 crash of a Beech Duke Aircraft, which killed Plaintiffs' husband and father, pilot Daniel Hart. The Defendant, Hawker Beechcraft Corp. ("HBC"), does not dispute an aircraft malfunction called a "split flap" caused the accident. However, it moved for summary judgment under a conditional 18 year aviation statute of repose, The General Aviation Revitalization Act ("GARA")[1]. Plaintiffs moved for judgment on the pleadings because HBC did not plead GARA as an affirmative defense. In opposition to summary judgment, Plaintiffs presented evidence proving GARA's Misrepresentation Exception, Warranty Exception, and Rolling Provision applied. Oral argument was held on November 10, 2011.

On December 15, 2011, the trial court granted HBC summary judgment and denied Plaintiffs' Motion for Judgment on the Pleadings as moot. Plaintiffs filed a Notice of Appeal on January 11, 2012. This Court entered a briefing schedule on February 28, 2012 and granted Plaintiffs a three day extension to file their opening brief by April 3, 2012.

Plaintiffs submit this Opening Brief and respectfully request this Honorable Court to reverse the grant of summary

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[1] The General Aviation Revitalization Act, Pub. L. No. 103-298, 108 Stat. 155, 49 U.S.C. § 40101, note.

SUMMARY OF THE ARGUMENT

1. The trial court erred in granting summary judgment by making numerous factual findings in holding The General Aviation Revitalization Act bars Plaintiffs' claims, despite evidence the Misrepresentation Exception, Warranty Exception, and Rolling Provision defeat this defense.

2. There are factual disputes as to whether HBC knowingly misrepresented that the Duke's flap system was interconnected and the aircraft complied with Federal Aviation Regulations to the FAA at certification.

3. Disputed issues of fact exist as to whether HBC knowingly falsified and manipulated post-certification flight tests of a Duke aircraft.

4. Disputed issues of fact exist as to whether HBC knowingly misrepresented and concealed required information in its Aircraft Flight Manual and conduct for continuing airworthiness of the aircraft.

5. The trial court erred in disregarding evidence that the subject aircraft's flap system had been replaced within 18 years of the accident, and rejecting legal argument that GARA's Rolling Provision applied.

6. The Court erred in disregarding Plaintiffs' evidence and legal argument of a written warranty, which invoked the Warranty Exception.

STATEMENT OF FACTS

On December 4, 2007, Daniel Hart was taking off from the New Castle Airport in his Beechcraft Model 60A "Duke" aircraft when its wing flaps became unsynchronized, with the right flap fully extended (down) and the left flap retracted (up).(A154). This resulted in a loss of control because the extended right flap and engine/propeller torque rolled the aircraft over.(A643). The aircraft crashed and was consumed in a post-crash fire, which took Dan Hart's life.(A740–A741). Defendant, HBC, does not dispute the cause of the accident.(Op. at 2).

A. Summary of the Facts Concerning Points in Controversy

1. Background of the Duke Flap System

The Duke is equipped with two engines and two clockwise rotating propellers as viewed from the cockpit.(A154). Each wing has a flap that extends to increase the lift capability of the wing surface, when the single central motor transmits torque through flexible cables that extend to the 90 degree gear drives of the actuators.(A164, A171 ¶5). A limit switch on the left wing controls the flap position, which electrically stops the motor and flap travel when it reaches the selected position.(A966 at 81:6 -20). While the limit switch is only on the left wing, the position indicator sensor is on the right wing exposed to the elements, and is unreliable.(A142 at 142:2-18; A434 at 144:5-12).

The Duke was developed as an upgrade from the Models 55 and 58 Baron, which were developed from the Model 95 Travel Air.(A472). The twin engine Duke, Baron, and Travel Air, and the single engine Model 35 Bonanza, have similar flap system designs.(A1128-A1129). However, the Duke uses a 90 degree drive gear box, while the Bonanza, Baron, and Travel Air attach to the actuator through a straight drive assembly.(A1129). The 90 degree drive is also used in the Queen Air and King Air models.(A1129-A1130). Unlike other models using the 90 degree drive, the Duke lacks an emergency shut-down switch to stop the flaps when it senses a slight degree of asymmetry.(A1136 at 52, 65).

2. Evidence of HBC's Misrepresentation Committed When it Falsified Information During Initial Certification

The Duke was certified by HBC employees (not the FAA) with FAA Delegated Option Authorization "DOA" authority, who performed certification tasks and gave certification approval.(A221-A222). Federal regulations require aircraft manufacturers to analyze and test their new aircraft designs to demonstrate their compliance with federal regulations before a Type Certificate is issued. See 14 C.F.R. §§ 21.21(b), 21.33(b), 21.35 (2000); 49 U.S.C. § 44704(a). HBC was required to establish the Duke was safely controllable and maneuverable during takeoff and climb without exerting "exceptional piloting skill, alertness, or strength" under all "probable operating conditions," which for multiengine airplanes

includes sudden engine failure. 14 C.F.R. § 23.143(a), (b). With respect to the "probable operating conditions" of the flap system, HBC was required to establish it was either "synchronized by a mechanical interconnection" or "has safe flight characteristics with the flaps retracted on one side and extended on the other." 14 C.F.R. § 21.701(a). Rather than flight test split flaps on the Duke, HBC misrepresented the flaps were synchronized by a mechanical interconnection, which it is not, as confirmed by the FAA, which believed flight testing had been performed.(A222, A234). The HBC DOA issued the Type Certificate for the Duke.(A148).

HBC made the same misrepresentation of interconnectedness in certifying the large fleet of Barons, Bonanzas, and Travel Airs, despite actual knowledge of split flap incidents.(A234). HBC admitted split flaps were possible and issued service bulletins to address reports that the flap actuator flex cable can disengage from the flap motor.(A1006-A1011). Despite disengagement failures, on December 26, 1967, HBC issued its Function and Reliability Test for the Model 60:

> The Model 60 cabin and tail surfaces are all new, but **incorporate no design or construction features whose reliability is not well established....Many of the airplane's systems are either common to, or draw heavily upon Beech experience on other models**... For those reasons, we feel the following programs to be entirely adequate to meet FAA (and Beech) requirements.... **Where data from 56TC flight testing is used to satisfy all, or part of the Model 60 requirements, the Model 60 test documentation will so state.**

(A1011-A1012). That representation was false and three years later came under scrutiny by the FAA who confirmed it was false. However, the HBC DOA officer approved the Type Inspection Authorization (TIA) and Report (TIR) for the Duke, which state HBC demonstrated compliance with all of the applicable regulations.(A221-A222).

On October 20, 1969, the FAA advised HBC of the P-94 incident in England involving a Duke which experienced split flap when the **right flap drive shaft assembly** failed after only 52 operating hours.(A230-A231). HBC's response to the FAA merely blamed this "isolated" incident on improper rigging or misalignment without any analysis or inspection. (A230-A231). Further, HBC claimed the flap system's flap limit switch and flap circuit breaker would deactivate the system, making a flap asymmetry emergency shut-down switch unnecessary.(A230-A231). However, the limit switch on the left wing can only trigger failure if the split flap failure is on the left side.(A658; A661; A868). Thus, like the P-94 incident, Dan Hart's right flap failure left the pilot unprotected. The trial court did not address this misrepresentation in her opinion below.

The FAA confirmed HBC had misled it into believing flight testing had been accomplished to establish compliance with 23.701 since 1960:

> At least since 1960, **we have believed that the investigations of flight characteristics with asymmetric flaps have been consistently accomplished**. Your letter 901-212 indicates that this believe is unfounded. Regardless of any misunderstanding, however; on the

basis of the number of failures that have occurred, it is our position that **the existing flexible shaft flap interconnection are unreliable** and split flap configurations must consequently be investigated.

The above investigation should be by flight testing or by an equally reliable analysis.

(A234). The FAA attached 13 Malfunction or Defect Reports on split flaps in several Beechcraft models, which confirms HBC concealed the lack of investigation required under its DOA and as the Duke Type Certificate Holder, and that it illegally certified the Duke aircraft without flight tests.(A234-A242). Despite split flap failures that prompted redesigns of the Duke flap system, and service instructions on the other similar models, HBC continued to insist the system was interconnected.(A233). The FAA's conclusion that it was misled by HBC in connection with the design and functionality of the flap system makes the GARA defense entirely unavailable as a matter of law.

3. Evidence Establishing HBC's Manipulation of the Flight Test and Misrepresentation of the Results

With the design of the flap system of the Duke and similar models in jeopardy, HBC conducted improper flight tests, by bypassing portions of the test plan the aircraft could not pass, and misrepresented to the FAA the Duke was safe with asymmetric flaps, when HBC knew it was unsafe.(A483, A248-A259).

HBC's original test plan sought to demonstrate "Safe Flight Characteristics" with split flaps by testing the aircraft in the worst case

scenario: split flaps with right flap fully extended, at takeoff power, and with an engine failure demonstration.(A248-A259). There is no evidence the flight test plan was ever submitted to the FAA.(A261).

When the test was performed, the left flap was disabled, takeoff conditions were not tested, nor were engine out procedures, and the aircraft was loaded to nearly the maximum gross weight, 6,725 pounds.(A248-249, A252, A283). The heavy weight made the Duke more controllable.(A818 at 115; A1054 at 66-67). The left flap extended test HBC actually performed caused the aircraft to roll right in the direction of the retracted flap.(A248-A252). In the Duke, engine torque coupled with "P-factor" (the force from the propeller) cause the aircraft to roll to the left.(A1053 at 62). Therefore, P-factor and torque assisted the test aircraft to maintain control by counteracting the right roll forces caused by asymmetric flaps.(A761-A788). Further, the test was conducted at a steady state condition, where the pilot was in control when the asymmetric flap configuration occurred, and did not address how an unsuspecting pilot would react when the condition occurs at an unknown time for unknown reasons.(A1100). Under the most favorable conditions, the HBC test pilots reported the aircraft was controllable, but "**considerable more pilot technique is required.**" (A252, 1029).

HBC forwarded Beech Flight Test Report 60E100F to the FAA Record of Compliance File stating, "[t]his report provides the necessary flight test data to substantiate that the Model 60 complies with the Federal Air Regulations Part 23.701. Compliance was demonstrated by showing that the Model 60 has safe flight characteristics with the flaps fully retracted on one side and fully extended on the other side."(A247). The Report further states:

> It is felt that **the pilot who experiences an asymmetric flap condition would not extend the good flap to the full down position and most probably would retract the extended flap if possible**.…With one flap fully extended, and the other fully retracted, the aircraft is still controllable and maneuverable during **all normal flight regimes**. However, considerable more pilot technique is required.

(A252, 1029).

However, HBC did not test for all normal flight regimes, despite knowing that takeoff and climb, and single engine performance with asymmetric flaps should have been conducted to demonstrate compliance with the Regulations that require the Duke to maintain controllability without having to exert exceptional piloting skill, alertness, or strength" under all "probable operating conditions," including sudden engine failure and flap asymmetry. 14 C.F.R. § 23.143(a), (b).

When Plaintiffs' NASA test pilot and experienced Duke pilot tested a Duke with right flap extended asymmetry, they experienced extreme

roll forces that required two hands on the yoke, and full strength to counteract, which is outside the bounds of acceptable performance.(A613 at 189-190; A673-A675). With takeoff power, only slightly more than one degree of aileron was left, which is insufficient to overcome the roll rate, and was worse with the power pulled back on one engine.(A756 at 53; A813 at 110-12; A849).

Without analysis or testing, HBC's Report falsely states "no significant differences would have been noted from the results" had HBC tested with a fully extended right.(A252). However, HBC's corporate witness designated by HBC as most knowledgeable about the Flight Test Report admitted if the right wing is extended, "that will increase the lift on the right wing, which will roll the airplane to the left."(A1052 at 60–A1053 at 61). He also admitted that the aircraft has a tendency to roll left due to P-factor and engine torque.(A1053 at 62-64). Therefore, HBC knew split flaps are worse with the right flap extended, and there are significant differences in left flap extended verses right.

The Report attributes HBC's decision to test with the left flap extended to avoid the problem of rewiring the limit switch on the left wing.(A1029). However, HBC's representation that rewiring the limit switch was problematic is false, as Plaintiffs modified an exemplar Duke with a second flap motor to extend the right flap with two men in a

couple of hours, which pales in comparison to the resources HBC would have had available.(A873).

Had HBC performed the test as required under federal regulations, it would have revealed the Duke is not controllable with fully asymmetric flaps; however, HBC elected not to follow its protocol and falsely represented the Duke was safe and that it made no difference had the right flap been tested instead of the left.(A658-A661). The Report lacks details, such as the methodologies used by the test pilot.(A248-A252;A788-A789 at 66). Based on HBC's misrepresentations that the aircraft had safe flight characteristics, the FAA accepted the Test from the experts at HBC who were behind the yoke, flew the Duke with split flaps, and falsely vouched for its safety.(A245-A246).

4. Plaintiffs Presented Evidence that HBC's Misrepresentations at Certification and Post-Certification Continue in the AFM

Through the 1970 test, HBC knew "considerable more pilot technique is required" was necessary to operate the Duke with asymmetric flaps in the most favorable scenario (left flap down), and pilots would tend to retract the flap instead of extending the operational flap, but yet provided absolutely no guidance on split flaps in the FAA Approved (through HBC's DOA) Airplane Flight Manual ("AFM") and HBC's Pilot's Operating Handbook ("POH").(A951-A952).

Federal regulations require for certification and continued airworthiness that HBC provide "necessary information for its safe operation". 14 C.F.R. § 23.1581(a). Section 23.1585 provides:

> (a) For all airplanes, information concerning normal, abnormal (if applicable), and emergency procedures and other pertinent information necessary for safe operation and the achievement of the scheduled performance must be furnished including –
>
> (1) An explanation of significant or unusual flight or ground handling characteristics;
>
> …
>
> (j) Procedures for the safe operation of the airplane's systems and equipment, both in normal use and it the event of malfunction, must be furnished.

14 C.F.R. § 23.1585.

The same HBC DOA who misrepresented the interconnectedness of the flap system approved the AFM, without information on split flaps and HBC has never amended it.(A248-A259) Further, HBC's Flight Test Report states "[i]t is felt that that pilot would not extend the good flap to the full down position," (A250) which is counter-intuitive corrective action that must be addressed in the AFM, or the system should be modified so that condition cannot occur.

Worse, the only emergency procedure available to Dan Hart in the AFM/POH that addressed asymmetric thrust is the single engine out procedure.(A455 at 227; A466 at 272; A467 at 273; A935-A956). The AFM instructs the pilot that "the rudder pressure required to maintain directional control will be on the side of the good engine."(A952). HBC's

corporate representative testified that if a pilot experiences left engine failure on takeoff, the airplane's nose "would want to go left".(A1056 at 74-75). Once the pilot suspects the left engine would be at fault, he should partially pull back on the throttle of the suspected failed engine to confirm "no change in control pressures or in the sound of the engine if the correct throttle has been selected."(A1056 at 74-75; A952). The AFM advises the pilot not to "determine the inoperative engine by means of the tachometer or manifold pressure."(A952).

As HBC's corporate witness confirmed, if the Duke had a right flap fully extended and a left flap fully retracted, the Duke on takeoff "would want to roll left."(A1056 at 75). When a pilot follows the procedure when the aircraft is in a split flap condition and not an engine out, the aircraft becomes completely uncontrollable.(A469 at 280; A470 at 273).

The AFM/POH never mentions the possibility of split flaps, nor does it instruct pilots to monitor the flap indicator before taking off.(A938-A958). Therefore, Duke pilots have no reason to know the position of the left flap seen through the window did not necessarily indicate the position of the right flap.(A661-A662). Further, HBC representatives confirmed in their depositions the flap actuator is unreliable.(A636 at 283-A637 at 281). In fact, during Plaintiffs' flight demonstrations, it failed.(A648 at 318-319).