IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA

JULIA ROBERTSON-ARMSTRONG	:	CIVIL ACTION
	:	
v.	:	
	:	
ROBINSON HELICOPTER COMPANY, INC., et al.	:	NO. 13-2810

MEMORANDUM

Bartle, J. November 19, 2015

Plaintiff Julia Robertson-Armstrong ("Robertson-Armstrong") was severely injured on July 20, 2011 when a helicopter in which she was a passenger crashed in New Jersey. She has sued Robinson Helicopter Company, Inc. ("Robinson"), the manufacturer of the helicopter, as well as Nassau Helicopters, Inc. ("Nassau"), which owned and operated it at the time of the crash.[1] Her complaint includes claims for strict liability, negligence, negligent misrepresentation and omission, and fraud against Robinson and a negligence claim

1. Roberston-Armstrong also sued three related business entities: Textron, Inc. ("Textron"); AVCO Corporation ("AVCO"); and Lycoming, a/k/a Lycoming Engines, a/k/a Lycoming Engines Operating Division of AVCO Corporation, a/k/a Textron Lycoming Reciprocating Engine Division ("Lycoming"). She alleged that Lycoming had manufactured the engine of the subject helicopter and its "fuel related components," that Lycoming was a division of AVCO, and that Textron was liable for AVCO's acts under a participation theory. On April 23, 2014 the court dismissed Robertson-Armstrong's claims against Lycoming and Textron. The parties subsequently stipulated to the dismissal of Robertson-Armstrong's claims against AVCO and Nassau's crossclaims against AVCO and Textron.

against Nassau. Robinson and Nassau subsequently filed crossclaims against one another, each asserting that the other is liable for the harm alleged.

Robinson has filed a number of pretrial motions challenging Robertson-Armstrong's experts under Daubert v. Merrel Dow Pharmaceuticals, 509 U.S. 579 (1993), and Rule 702 of the Federal Rules of Evidence. We will now consider the motion of Robinson to preclude McSwain Engineering ("McSwain") and its members William Carden ("Carden") and Eric Van Iderstine ("Van Iderstine") from testifying at trial.

I.

The court has a "gatekeeping" function in connection with expert testimony. See Gen. Elec. Co., et al. v. Joiner, 522 U.S. 136, 142 (1997); see also Daubert, 509 U.S. at 589. Rule 702 of the Federal Rules of Evidence provides:

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

Fed. R. Evid. 702. As our Court of Appeals has repeatedly noted, Rule 702 embodies three requirements: qualification,

reliability, and fit. Pineda v. Ford Motor Co., 520 F.3d 237, 244 (3d Cir. 2008).

An expert is qualified if he "possess[es] specialized expertise." Schneider ex rel. Estate of Schneider v. Fried, 320 F.3d 396, 404 (3d Cir. 2003). This does not necessarily require formal credentials, as "a broad range of knowledge, skills, and training qualify an expert," and may include informal qualifications such as real-world experience. In re Paoli R.R. Yard PCB Litig., 35 F.3d 717, 741 (3d Cir. 1994). The qualification standard is a liberal one, and an expert may be sufficiently qualified under Rule 702 even if "the trial court does not deem the proposed expert to be the best qualified or because the proposed expert does not have the specialization that the court considers most appropriate." Holbrook v. Lykes Bros. S.S. Co., 80 F.3d 777, 782 (3d Cir. 1996).

To determine reliability, we focus not on the expert's conclusion but on whether that conclusion is "based on the methods and procedures of science rather than on subjective belief or unsupported speculation." Schneider, 320 F.3d at 404 (internal quotation marks omitted). Our analysis may include such factors as:

> (1) whether a method consists of a testable hypothesis; (2) whether the method has been subject to peer review; (3) the known or potential rate of error; (4) the existence and maintenance of standards controlling the

> technique's operation; (5) whether the method is generally accepted; (6) the relationship of the technique to methods which have been established to be reliable; (7) the qualifications of the expert witness testifying based on the methodology; and (8) the non-judicial uses to which the method has been put.

Pineda, 520 F.3d at 247-48.

"[T]he test of reliability is flexible" and this court possesses a broad latitude in determining reliability. Kumho Tire Co. v. Carmichael, 526 U.S. 137, 141-42 (1999). To be reliable under Daubert, a party need not prove that his or her expert's opinion is "correct." Paoli, 35 F.3d at 744. Instead:

> As long as an expert's scientific testimony rests upon good grounds, based on what is known, it should be tested by the adversary process –competing expert testimony and active cross-examination – rather than excluded from jurors' scrutiny for fear that they will not grasp its complexities or satisfactorily weigh its inadequacies.

United States v. Mitchell, 365 F.3d 215, 244 (3d Cir. 2004) (quoting Ruiz-Troche v. Pepsi Cola Bottling Co., 161 F.3d 77, 85 (1st Cir. 1998)).

As for "fit," expert testimony must also "assist the trier of fact to understand the evidence or to determine a fact in issue." Fed. R. Evid. 702. Thus, to "fit," such evidence must bear some relation to the "particular disputed factual issues in the case." United States v. Downing, 753 F.2d 1224, 1237 (3d Cir. 1985). Accordingly, this factor has been

described as one of relevance. Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 591 (1993); Paoli, 35 F.3d at 745 & n.13.

II.

Robertson-Armstrong seeks to introduce the opinions of Carden and Van Iderstine on subjects which include alleged design defects, the availability and use of purportedly safer alternative designs, crashworthiness and airworthiness, Federal Aviation Administration ("FAA") standards, injury causation, and biomechanics. Both Carden and Van Iderstine are employees of McSwain, a Florida-based engineering consulting firm. According to the report provided by McSwain to Robertson-Armstrong's counsel, the company specializes in "materials engineering, mechanical engineering, and forensic chemistry" and has the capacity to conduct failure analyses and engineering investigations.

Carden, who has worked for McSwain since 2006, is trained in materials engineering and specializes in metallurgy. He is also a licensed professional engineer. His work focuses on failure analyses of various engineering materials, and he has been called upon to test and assess aircraft structures and components on numerous occasions. He states in an affidavit that he has also analyzed and tested "seats, restraint systems, the materials and components of these systems, and similar systems" in accident investigations, though it is not clear whether he is referring to aircraft seat systems specifically or to vehicle seats generally.

Like Carden, Van Iderstine is an experienced engineer, though his work focuses on mechanical engineering. A registered professional engineer, Van Iderstine has worked since 2005 for McSwain, where he contributes to mechanical testing, component and system modeling, element and failure analysis, and accident investigation. Prior to his employment with McSwain, Van Iderstine worked in various capacities for a company called HMC Technologies, where he contributed to the maintenance, design, and assembly of mechanical systems for aerospace, medical, automotive, and military applications. His role at HMC Technologies involved conceptual engineering design on numerous mechanical systems, and he states that during his time there he developed "extensive experience in the assembly and testing of seating and restraint systems." Van Iderstine has also taken continuing education courses concerning the testing and analysis of acceleration data and the use of seating systems in crash and impact absorption and occupant protection.

At the request of Robertson-Armstrong's counsel, Carden and Van Iderstine prepared an expert report dated July 6, 2015 and an undated rebuttal report. Their report contains conclusions about the ability of the landing gear and seat structures of the Robinson R22 helicopter to absorb energy during a crash like the one at issue here. It also contains conclusions about the availability of alternative seat materials or shoulder harnesses

and whether their use would have made the helicopter safer. Finally, it contains conclusions as to whether the injuries sustained by Robertson-Armstrong "would have been substantially reduced and/or avoided altogether" had Robinson incorporated these alternative features into the design of its R22 helicopter.

Carden and Van Iderstine have explained the methodology they used in reaching their conclusions. They state that they inspected an exemplar R22 helicopter seat cushion and then tested it by impacting it with a 20-pound weight dropped from 36 inches, 42 inches, and 60 inches while monitoring the peak acceleration of the weight at the time of impact. They performed the same tests on seat cushion material taken from an H-60 Blackhawk helicopter and on sections of rate-sensitive foam. According to their report, the Blackhawk seat sample displayed a peak acceleration which was approximately 30 percent of that observed in testing the R22 helicopter seat, while the peak acceleration for the rate-sensitive foam was approximately 21 percent of that observed with respect to the R22 seat. In addition, Carden and Van Iderstine inspected the subject helicopter's seat restraints and landing gear. They also based their conclusions on their review of "case documents," photographs of the subject helicopter, and the accident report.

III.

Robinson challenges whether Carden and Van Iderstine should be permitted to present their opinions at trial. According

to Robinson, neither is qualified to opine on the purported design defects of the R22 helicopter's seats and restraints, on the helicopter's compliance with federal airworthiness standards, or on injury causation and biomechanics. Robinson also contends that the testing methods relied upon by the two putative experts are not sufficiently reliable. Finally, Robinson argues that since Carden and Van Iderstine have not explained the relationship between their tests and the subject accident, their conclusions "will offer no assistance to the trier of fact."

Robertson-Armstrong asserts that Carden and Van Iderstine have ample qualifications to testify to their conclusions on the design of the subject helicopter, on the reaction of its design characteristics to the subject crash, and on the reaction of alternative design features to similar impacts. We agree. It is clear from the materials submitted by the two putative experts that both have significant background in materials testing and in materials failure analysis. Further, Carden and Van Iderstine have contributed to the design and analysis of seating systems and restraints.

Robinson maintains that Carden and Van Iderstine are not qualified in the areas of biomechanics or injury causation and should not be permitted to offer their opinions on these topics. It is true that Robertson-Armstrong has provided no materials or other information which would show that Carden and Van Iderstine

hold specialized expertise in biomechanics and injury causation. However, as professionals with expertise in the testing of vehicle seating and restraint systems, Carden and Van Iderstine necessarily have familiarity with how those systems exacerbate or mitigate injuries. Therefore, while we will not permit Carden or Van Iderstine to testify about biomechanics or injury causation independent of the relationship between these topics and the use of particular materials and restraints in the subject helicopter, we will allow them to offer and discuss their opinion that Robertson-Armstrong's injuries "would have been substantially reduced and/or avoided altogether" through the use of "reasonable, safer alternative designs."

We are persuaded by Robinson's argument that Carden and Van Iderstine lack the qualifications to testify about regulatory compliance. Robertson-Armstrong has submitted no materials to show that Carden and Van Iderstine's work has exposed them to federal aviation regulations or required them to analyze industry compliance with these rules. Nor has Robertson-Armstrong stated in her brief that either Carden or Van Iderstine has any background in this area. Accordingly, Carden and Van Iderstine are not qualified to offer testimony about Robinson's compliance with federal aviation regulations.

Robinson next argues that Carden and Van Iderstine's conclusions are "inherently unreliable." Their testing of the

subject helicopter's seat, according to Robinson, amounted to nothing more than a "haphazard, intuitive inquiry." See Ford Motor Co. v. Oddi, 234 F.3d 136, 156 (3d Cir. 2000). Robinson urges that Carden and Van Iderstine have failed to explain the basis for their comparison between the Robinson R22 helicopter and the H-60 Blackhawk or their weight-testing methodology. It also maintains that there is no support provided for Carden and Van Iderstine's conclusions about the relative safety of alternative designs.

Robertson-Armstrong counters that Carden has stated in his affidavit that the technology used to facilitate the testing is widely "used by the US military, governmental agencies, and aviation companies." Carden's affidavit also makes clear that the gravity drop test relied upon in producing the report is also used by "other helicopter manufacturers," including Robinson. Carden explains that the tests he conducted with Van Iderstine can reliably demonstrate the relationship between various seat materials and the impact sustained by the individual in the seat by showing "that if an occupant's mass stays the same, decreasing the level of acceleration decreases the level of forces on the occupant." In other words, by decreasing the occupant's downward acceleration by varying amounts, the tested seat materials can reduce the "level of forces on the occupant" by corresponding amounts. Carden and Van Iderstine have formulated their conclusions about the efficacy of seat materials by relying on

"methods and procedures of science," specifically those which are generally accepted and governed by controlling standards. See Pineda, 520 F.3d at 247-48; Schneider, 320 F.3d at 404. The methods used by these putative experts in drawing conclusions about the availability and efficacy of alternative design features are therefore reliable.

Finally, Robinson appears to challenge the "fit" of Carden and Van Iderstine's proposed testimony to the disupted factual issues in this matter. Robinson notes that the tests conducted by Carden and Van Iderstine "bear no resemblance" to Robertson-Armstrong's weight or to the subject crash. It is true that Carden and Van Iderstine have not explained specifically why they elected to perform testing on the Blackhawk helicopter or why they chose the particular weights and testing heights that were used in the gravity drop test. Carden has explained, however, why the tests conducted by him and Van Iderstine illustrate that certain alternative seating materials subject a seat's occupant to a lesser amount of force than that experienced by the occupant of a Robinson R22 helicopter seat. This adequately-supported conclusion – that alternative materials have the effect of mitigating force – will clearly "assist the trier of fact to understand the evidence or to determine a fact in issue." See Fed. R. Evid. 702. It is therefore clear that there is a sufficient "fit" between the

proffered testimony and the disputes which will be addressed by the jury.

In sum, Carden and Van Iderstine are not qualified to offer their opinions about regulatory compliance or about biomechanics and injury causation independent of the design of the seats in the subject helicopter. They will not be permitted to testify about those topics. However, they will be allowed to testify about the design of the subject helicopter and its seats and restraints and about the availability of allegedly safer alternative seat and restraint designs. They will also be permitted to testify about issues of biomechanics and injury causation insofar as these issues relate directly to the subject helicopter's seats and restraints and to alternative designs for these seats and restraints. Carden and Van Iderstine are qualified to offer their opinions on those subjects, their methodology in reaching those opinions was reliable, and the opinions have a sufficient "fit" to the factual disputes in this matter.

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ORDER

AND NOW, this 19th day of November, 2015, for the reasons set forth in the accompanying Memorandum, it is hereby ORDERED that:

(1) the motion of defendant Robinson Helicopter Company, Inc. "to Preclude Plaintiff's Expert McSwain Engineering from Offering Any Opinions or Testimony at Trial" (Doc. # 91) is GRANTED in part and DENIED in part;

(2) the motion is GRANTED insofar as it seeks to preclude William Carden and Eric Van Iderstine from testifying about (a) regulatory compliance and (b) injury causation and biomechanics independent of the seat materials and restraints used in the subject helicopter; and

(3) the motion is otherwise DENIED.

BY THE COURT:

/s/ Harvey Bartle III
J.