

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

Michelle Stecyk et al.,	:	
Plaintiffs,	:	
	:	
v.	:	CIVIL ACTION
	:	NO. 94-CV-1818
Bell Helicopter	:	
Textron., Inc. et al.	:	
Defendants.	:	
	:	
	:	

MEMORANDUM OF DECISION

McGlynn, J. **January** , 1998

Before the court is the motion in limine of defendant Macrotech Fluid Sealing, Inc. ("Macrotech") to exclude certain opinions of plaintiffs experts. Plaintiffs have submitted a joint reply. For the following reasons, the court will grant the motion in part and withhold final judgment on the rest until after the Daubert hearing discussed in the court's order of January 5, 1998.

I. Discussion

This litigation arises out of the crash of an experimental V-22 Osprey aircraft on July 22, 1992. Plaintiffs' four decedents, employees of Boeing, were killed in the accident. The general contractor for the Osprey project was codefendant Bell Helicopter Textron, Inc. ("Bell"). Macrotech was the subcontractor which designed and manufactured the two torquemeter shaft seals, the 617 and 619 seals, used in the Osprey's engine-aircraft interface. The seals at issue here were installed in

the right engine of the crash aircraft and recovered after the accident.

In their reports, plaintiffs' experts, Robert L. Dega and Warren Lieberman, give their opinions on various alleged defects in the seals' design, manufacture and installation which may have caused them to leak at the time of the crash. Mr. Lieberman also opines that Bell's selection of Macrotech to produce the seals was negligent because Macrotech had no previous experience designing seals for aircraft. Macrotech contends that six of the alleged defects discussed by plaintiffs' experts are irrelevant because they were not present in the right-engine seals of the crash aircraft. It also claims that Mr. Lieberman's opinion regarding Macrotech's inexperience with aircraft seals is irrelevant because of Macrotech's general experience in the fluid sealing industry. As a result, argues Macrotech, the testimony of plaintiffs' experts on those seven issues should be excluded under Federal Rules of Evidence 402 and 702.

A. Legal Standard

Relevant evidence is defined in Rule 401 as "evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence." Fed. R. Evid. 401. Rule 402 provides that "[e]vidence which is not relevant is not admissible." Fed. R. Evid. 402. Determinations of relevance lie within the sound discretion of the trial court. See Pfeiffer v. School Bd. for Marion Center Area, 917 F.2d 779, 781 (3d Cir. 1990).

The admission of expert testimony is further governed by Rule 702,¹ which has a liberal policy of admissibility. Kannankeril v. Terminix Int'l, Inc., No. 96-5818, 1997 WL 638795, at *2 (3d Cir. Oct. 17, 1997). Rule 702 requires that all scientific, technical, or specialized evidence be relevant. See Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579 (1993); In re Paoli R.R. Yard PCB Litig. (Paoli II), 35 F.3d 717, 742-43 (3d Cir. 1994). "Expert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful." Id. at 591 (quoting 3 Wienstein & Berger ¶ 702[02], p. 702-18. Plainly stated, there must be a certain 'fit' between the expert evidence and the facts of the case at bar -- a valid connection between the proffered evidence and a fact in issue. See id. at 591-92; see also United States v. Downing, 753 F.2d 1224, 1242 (3d Cir. 1985)("An additional consideration under Rule 702 -- and another aspect of relevancy -- is whether expert testimony proffered in the case is sufficiently tied to the facts of the case that it will aid the jury in resolving a factual dispute."). The proponent of expert evidence must demonstrate its reliability and relevance by a preponderance of evidence. Daubert, 509 U.S. at 592 n. 10.

¹ Federal Rule of Evidence 702 provides:

If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

B. Hypothetical Manufacturing/Installation Defects

Macrotech seeks to exclude Mr. Dega's and Mr. Lieberman's opinions that certain manufacturing and installation procedures could have resulted in defects which caused the 617 and 619 seals to leak. Macrotech argues that "Mr. Dega and Mr. Lieberman had the opportunity to study the actual mishap seals, and neither report identifies any defects [in] the actual mishap seals which were caused by manufacturing or installation procedures." Macrotech Br. at 4. Plaintiffs do not directly respond to this argument.²

i. Manufacturing Defect

In his report, Mr. Dega discussed the fact that the seals were manufactured using a two-piece mold which may allow excess rubber to flow between the mold halves, creating a thin disk of rubber, known as "flash," at the seal lips. Dega Rep. at 3, ¶ 9. According to Mr. Dega, removing the "flash" by sanding "is a hand operation and part of the seal lip is almost always ground away. One set of seals examined showed a 0.028 inch variation in seal lip width. This hand made defect will cause a seal leak." Id. He concluded that Macrotech's "mold manufacture and method of flash removal on the seals assured application failures." Id. at

² Plaintiffs do not substantively address any of Macrotech's arguments. Instead, they retort that Macrotech's relevancy and causation objections are "argument . . . and [that Macrotech] simply ignores the underlying conclusions that [Macrotech], inexperienced in aircraft sealing, was negligent in designing and making seals for this aircraft from beginning to end." Pls. Br. at 14.

4, conclusion # 8.

Similar to Mr. Dega's approach, Mr. Lieberman examined "the seal used in a bench test after the accident" -- not the actual crash seals -- to determine that "the dimension across the lips is the most critical relative to sealing reliability and was not 100% inspected." Lieberman Rep. at 5, ¶ 5. He concluded that Macrotech employed "[u]ncontrolled seal manufacturing processes" and "inadequate seal inspection." Id. at 10, conclusions 5 & 6.

In a negligence case, the plaintiff must prove: (1) that the product was defective; (2) that the defect caused the injury; and (3) that in manufacturing or supplying the product the defendant failed to exercise due care. Dambacher v. Mallis, 485 A.2d 408, 424 (Pa. Super. Ct. 1984). The "fact in issue" here can be summed up as follows: did defects in Macrotech's seals cause the aircraft to crash? If the seals present in the Osprey during the crash did not exhibit seal lip defects like those described in plaintiffs' experts' reports, Mr. Dega's and Mr. Lieberman's opinions as to the flaws in this manufacturing method are not relevant to what caused the Osprey to crash. Fed. R. Evid. 402 & 702. Plaintiffs' experts have examined the crash seals, but have not discussed in their reports whether the crash seals exhibited excessive seal lip width variation. Without evidence that this type of seal lip defect was actually present in the crash seals, testimony as to the cause of such a defect will not assist the trier of fact to determine whether Macrotech's seals caused the aircraft to crash, and is irrelevant

and inadmissible under Rules 402 and 702. See Harduvel v. General Dynamics Corp., 878 F.2d 1311, 1319 (11th Cir. 1989) (finding that existence of defect in seven aircraft out of production block of 300 was insufficient to establish existence of defect in crashed airplane); Nichols Const. Corp. v. Cessna Aircraft Co., 808 F.2d 340, 347-52 (5th Cir. 1985) (evidence showing that 27 out of 15,000 "retention rings" manufactured were cracked was insufficient to support finding that retention ring in crashed airplane was defective).

Merely on the basis of Mr. Dega's and Mr. Lieberman's reports, however, it is not certain that plaintiffs entirely lack evidence of this kind of manufacturing defect in the crash seals. Because the court must have a proper factual foundation before ruling on issues of admissibility, Hines v. Consolidated Rail Corp., 926 F.2d 262, 269 (3d Cir. 1991), plaintiffs may offer proof of the existence of the defects in the crash seals at the Daubert hearing. See Fed. R. Evid. 104(b) ("When the relevance of evidence depends upon the fulfillment of a condition of fact, the court shall admit it upon, or subject to, the introduction of evidence sufficient to support a finding of the fulfillment of the condition.").

ii. Installation Defect

Mr. Dega also addressed the manner in which the seals were installed. The seals had to be stretched approximately "23% by pushing them over two spline diameters" (similar to gears), which Mr. Dega reported can damage the seal lip. Dega Rep. at 3, ¶ 11.

He states that "[t]his usually results in oil leaks." Id.

As with the aforementioned manufacturing method, supra part I.B.i., Mr. Dega's opinion did not refer to the seals actually installed in the crash aircraft. For the same reasons, his opinion on this installation defect is inadmissible unless he can offer evidence at the Daubert hearing which shows that the crash seals were in fact damaged by this installation procedure.

C. Seal Compound

Macrotech also takes issue with several opinions by plaintiffs' experts regarding the rubber compound, known as "CDI Compound #804-75," used to produce the seals. Dega Rep. at 2, ¶ 6. First, Macrotech asks the court to exclude Mr. Dega's and Mr. Lieberman's testimony regarding Macrotech's failure to perform compatibility testing between the seal compound and the three different military lubricants specified by Bell. Macrotech argues that plaintiffs have no factual basis for asserting that the seals and lubricant were incompatible because: (1) plaintiffs themselves have not performed any compatibility testing, and therefore cannot claim that there is a compatibility defect; (2) plaintiffs have not claimed that any incompatibility caused the seals to leak; and (3) even if the seals and lubricant were incompatible, plaintiffs have not stated that the crash seals were actually damaged by the lubricant. Macrotech Br. at 6.

It is plaintiffs' burden to prove that an incompatibility defect existed in the compound and that this defect caused injury to plaintiffs' decedents. See Dambacher v. Mallis, 485 A.2d 408,

424 (Pa. Super. Ct. 1984). Without evidence that the seals and lubricant exhibited a compatibility defect which contributed to a fluid leak, plaintiffs' experts' opinions on this issue are not relevant to whether defects in the seals caused the crash.

Second, Macrotech seeks to exclude Mr. Dega's testimony that the seal compound did not meet the general contractor's temperature requirements of -65°F to +280°F. In his report, Mr. Dega opined that the seal compound did not meet the temperature requirement of -65°F, becoming brittle at -40°F and causing the seals "to fail at low temperatures." Dega Rep. at 2. He does not, however, state that the seals were ever exposed to temperatures approaching -40°F, nor does he note any damage to the crash seals resulting from extreme temperatures. Macrotech argues that whether the seals met the low temperature requirement is irrelevant because, without proof of low temperature exposure and damage therefrom, this defect could not have caused the accident. The court agrees. If plaintiffs wish Mr. Dega to testify that the seals were defective at low temperatures, they must show that the crash seals were exposed to those temperatures and that they sustained damage as a result. See id. Otherwise, the seal compound's failure to meet Bell's temperature specifications is not relevant to whether the defects in the seals caused the aircraft to crash.

Third, Macrotech wishes to exclude Mr. Dega's opinion that there is no seal elastomer compound made that will meet the general contractor's specified service life of 5000 hours and

cover the required temperature range of -65°F to +280°F. Dega Rep. at 4, ¶ 13. Macrotech claims that this observation is irrelevant because the seals had been replaced after climatic testing was performed shortly before the crash. As a result, "the aircraft had only flown 5.6 hours with the new seals prior to the mishap flight . . . [and] the right engine only operated for a total of 12.9 hours prior to the mishap flight," including the hours the engine was operated on the ground. Macrotech Br. at 7. As with the alleged temperature specifications defect, this opinion is relevant only if plaintiffs can show that the crash seals leaked as a result of not meeting the 5000 hour service life and temperature specifications. See Dambacher, 485 A.2d at 424.

Fourth, Macrotech argues for exclusion of Mr. Dega's opinion that the compound used in the seals' "O'rings"³ would decompose prematurely and that the O'rings 65% compression set was "excessive and would cause an early failure." Macrotech Br. at 8. Again, plaintiffs' experts offer no evidence that the O'rings used in the crash aircraft deteriorated prematurely or were damaged by the 65% compression set so as to cause seal failure. Without proving those factors, Mr. Dega's opinion regarding these alleged defects in the O'rings is not relevant to whether flaws

³ "An O'ring is installed in the groove located between the seal lips. An O'ring is a sealing device that has a shape similar to a doughnut, and is made of a rubber compound. This O'ring transfers force to the seal lips when oil pressure is applied." Dega Rep. at 3, ¶ 8.

in Macrotech's seals contributed to the crash. Id.

As with the aforementioned manufacturing and installation defects, plaintiffs may offer evidence at the Daubert hearing that the four alleged defects in the seal compound actually contributed to a leak which caused the crash.

D. Macrotech's Inexperience

Finally, Macrotech seeks to exclude Mr. Lieberman's opinion that Bell's selection of Macrotech to design and manufacture the torquemeter seals was negligent because Macrotech had no previous experience producing seals for aircraft. Macrotech argues that this fact is irrelevant because: (1) "Mr. Lieberman's report fails to state any claim of error or negligence associated with the fact that these seals were produced for use in an aircraft;" (2) "Mr. Lieberman does not cite any factor unique to aviation that Macrotech failed to consider in the design of the seals;" and (3) "[t]he fact that Macrotech generally makes seals for other types of machinery does not make it more or less probable that the torquemeter shaft seals caused this accident."

The relevance of Macrotech's inexperience in producing aircraft seals depends on the purpose for which that opinion is proffered. Evidence which is inadmissible as to one party for one purpose may be admitted against another party for another purpose so long as the court gives an appropriate limiting instruction upon request. Fed. R. Evid. 105. With that principle in mind, the relevance of Mr. Lieberman's opinion regarding Macrotech's lack of experience will be evaluated in

light of the respective negligence claims lodged against Macrotech and Bell.

"In Pennsylvania, the general rules of negligence apply to negligence actions involving airplane crashes." Remo v. United States, 852 F. Supp. 357, 365 (E.D. Pa. 1994); see also Himmler v. United States, 474 F. Supp. 914, 929 (E.D. Pa. 1979); Griffith v. United Airlines, Inc., 203 A.2d 796, 799 (Pa. 1964). In negligence actions involving dangerous instrumentalities,⁴ a party's conduct is evaluated according to "the standard of reasonable care under the circumstances," i.e., "care in proportion to the danger involved in [the] act." Stewart v. Motts, 654 A.2d 535, 539 (Pa. 1995). "Thus, when a reasonable man is presented with circumstances involving the use of dangerous instrumentalities, he must necessarily exercise a 'higher' degree of care proportionate to the danger." Id. at 539-40. This is an objective standard. W. Page Keeton, Prosser and Keeton on Torts, § 31 at 173-74 (5th ed. 1984) ("[T]he standard of conduct which the community demands must be an external and objective one, rather than the individual judgment, good or bad, of the particular actor.").

⁴ A "dangerous instrumentality" is defined as "[a]nything which has the inherent capacity to place people in peril, either in itself (e.g. dynamite), or by a careless use of it (e.g. boat)." Black's Law Dictionary 394 (6th ed. 1990). While an aircraft does not automatically fall within this category, see Johnson v. Richards, 205 A.2d 880, 883 (Pa. Super. Ct. 1964), the experimental nature of the crash aircraft in this case makes it perilous enough to bring it within the definition of dangerous instrumentality.

At the same time, Pennsylvania courts follow the view contained in § 299A of the Restatement (Second) of Torts that "one who undertakes to render services in the practice of a profession or trade is required to exercise the skill and knowledge normally possessed by members of the profession or trade in good standing in similar communities."⁵ Robert Wooler Co. v. Fidelity Bank, 479 A.2d 1027, 1031 (Pa. Super. Ct. 1984) (quoting Restatement (Second) of Torts § 299A (1965)); see also Fort Washington Resources, Inc. v. Tannen, 901 F. Supp. 932, 941 (E.D. Pa. 1995) (applying § 299A to Ph.D. drug researcher); Bloomsburg Mills, Inc. v. Sordoni Constr. Co., 164 A.2d 201, 203 (Pa. 1960) (architect); Incollingo v. Ewing, 282 A.2d 206, 231 (Pa. 1971) (physician). That standard of care requires Macrotech to use the skill and knowledge commonly possessed and employed by those in the seal production industry. See Restatement (Second) of Torts § 299A cmt. e (1965). For purposes of § 299A, "skill" is defined as "that special form of competence which is not part of the ordinary equipment of the reasonable man, but which is the result of acquired learning, and aptitude developed by special training and experience." Id. cmt. a (emphasis added). In view of that objective standard of care, the appropriate inquiry here is whether Macrotech's inexperience in producing aircraft seals is relevant to whether it fulfilled its duty to exercise due

⁵ Comment b of § 299A specifically suggests that this standard is applicable to engineers and precision machinists -- occupations encompassed in Macrotech's design and production of the seals.

care. The answer is no. Either Macrotech exercised due care according to the standards of the seal production industry or it did not. The objective negligence standard negates the relevance of Macrotech's lack of experience, at least with regard to Macrotech's own liability in this matter.

The same, however, cannot be said of Bell's potential liability for choosing Macrotech, a subcontractor with no aircraft seal experience, to produce the torquemeter seals for the V-22 Osprey. While a party is generally not liable for the negligent torts of its independent contractors, Mahon v. City of Bethlehem, 898 F. Supp. 310, 313 (E.D. Pa. 1995)(citing Hader v. Coplay Cement Mfg. Co., 189 A.2d 271, 277 (Pa. 1963)), the Restatement (Second) of Torts § 411 provides an exception to that rule where the employer is negligent in selecting the contractor. See Lutz v. Cybularz, 607 A.2d 1089, 1092 (Pa. Super. Ct. 1992) (implicitly adopting § 411).⁶ The contractor's experience in performing the particular task is relevant to whether the employer was negligent in selecting the contractor. See, e.g.,

⁶ Section 411 provides:

An employer is subject to liability for physical harm to third persons caused by his failure to exercise reasonable care to employ a competent and careful contractor
(a) to do work which will involve a risk of physical harm unless it is skillfully and carefully done, or
(b) to perform any duty which the employer owes to third persons.

Restatement (Second) of Torts § 411 (1965).

Watsontown Brick Co. v. Hercules Powder Co., 265 F. Supp. 268, 270-73 (E.D. Pa. 1967) (powder company negligent in not furnishing competent and experienced blaster to supervise, prepare, and set off blast), aff'd, 387 F.2d 99 (3d Cir.); see also Restatement (Second) of Torts § 411 cmts. a & b (1965). So while Macrotech's inexperience is not relevant to its own liability, its lack of experience may be relevant to Bell's selection of Macrotech to produce the seals if Macrotech's inexperience caused the harm in this case. See Restatement (Second) of Torts § 411 cmt. b (1965).

As a result, excluding Mr. Lieberman's opinion regarding Bell's alleged negligence in choosing Macrotech to produce the aircraft seals would be premature at this stage. If plaintiffs can prove that Macrotech's lack of experience with aircraft seals was a cause of the accident, then that inexperience is relevant to Bell's alleged negligence in this matter.

II. Conclusion

In order to be relevant, the alleged manufacturing, installation, and design defects discussed by plaintiffs' experts must be shown to exist in the crash seals and to have contributed to the seals' alleged failure at the time of the crash. Otherwise there is no valid connection between plaintiffs' experts' testimony on these defects and the issue of whether Macrotech's seals contributed to the failure of the crash aircraft's right engine. The court will therefore withhold final judgment on the relevancy of those opinions until after the

Daubert hearing.

Macrotech's lack of experience with aircraft seals is irrelevant to Macrotech's own alleged negligence, but not to Bell's alleged negligence in selecting Macrotech to produce the seals for the V-22 Osprey. Consequently, Mr. Lieberman's opinion that Bell was negligent in selecting a subcontractor with no experience in aircraft seal production is not admissible as to Macrotech's negligence. At the present time, however, the court will not exclude this opinion with regard to codefendant Bell.

An appropriate order follows.