

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

C.A. NO. : 98 CV12276RWZ

ROBERT RICHARDS,
Plaintiff,

v.

GENERAL ELECTRIC COMPANY,
Defendant,

MEMORANDUM IN SUPPORT OF GENERAL ELECTRIC CO.'S
MOTION TO EXCLUDE OPINIONS OF RICHARD FAIN

General Electric Co. ("GE") moves to exclude the opinions of plaintiff's proffered liability expert, Richard Fain, an electrical engineer, on the grounds that they lack foundation, that they were not disclosed in his report, and that they are not reliable and therefore should be excluded under *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) and its progeny.

BACKGROUND

For the procedural history and background facts, GE incorporates its Consolidated Statement of Facts (With Exhibits) In Support Of Defendant General Electric Company's Six Pretrial Motions To Exclude Expert Testimony. To support his breach of warranty and negligence claims, Mr. Richards has designated Mr. Fain as an expert witness. Mr. Fain submitted a report, attached as Exhibit F, and gave a deposition (transcript filed with the clerk).

GE challenges the admissibility of four opinions offered in the report or deposition:

(1) *that the switchboard was unreasonably dangerous because GE used direct wire connections to a terminal block, rather than terminal lugs.* (Exhibit G-1 shows a photo of a wire prepared for a direct connection and wires with two types of terminal lugs.) However, Mr. Fain could advance no engineering reasons why GE's wiring connections were not reasonably safe (a design defect), nor could he offer any factual basis that the switchboard as constructed varied from GE's design (a manufacturing defect). He conducted no testing, offered no literature support, and failed to consider published accepted standards regarding the design of switchboards.

(2) *that Mr. Richards was injured because he pushed a loose wire (the B-phase¹), first causing it to separate from the terminal, then causing it to touch Mr. Richards, finally causing it to touch the bracket on which the terminal block was mounted, which set off the arc that burned Mr. Richards.* Again, Mr. Fain conducted no testing of this hypothesis. Moreover, his speculation that Mr. Richards pushed a wire out of the terminal block lacks any factual basis, is physically impossible, and indeed directly contradicts Mr. Richards' own testimony about his actions at the time of the accident. The First Circuit recently excluded proposed expert testimony in exactly the same circumstances. *See Cippolone v. Yale Industrial Products, Inc.*, 202 F.3d 376 (1st Cir. 2000).

(3) *that the use of ring terminals instead of direct wire connections would have prevented the accident.* However, if the hypothesis that a wire came loose and initiated the arc is unreliable, then this opinion, which depends upon that theory, is equally unreliable.

(4) *that Mr. Richards received a shock during the accident.* However, this opinion and supporting reasons were not in Mr. Fain's report. Secondly, his theory of how Mr. Richards was shocked is physically impossible and is contradicted by the testimony about the accident. Finally, Mr. Fain is not qualified to render the opinion, which was based on a medical assessment of a red spot on Mr. Richards' buttocks.

After setting out the legal standard and factors to apply to this case, GE will show the errors in the methodology used to reach each of Mr. Fain's unsupported opinions.

MR. FAIN'S INVESTIGATION AND FOUR OPINIONS

Mr. Fain reviewed documents and drawings produced by GE relating to the design and manufacture of the switchboard, read the depositions of Mr. Richards, Mr. Payne, and others, reviewed

¹/ Like most commercial electrical equipment, the switchboard, has three conductors, commonly called phases, plus a neutral conductor. The three phases are frequently denominated A, B, and C, from left to right or top to bottom when facing the front of a piece of equipment.

the photographs taken by Mr. Wiseman, and inspected the switchboard. He did not take any photographs of the switchboard (Fain dep. 11), conduct any tests, review the standards for switchboard design and construction, review any literature on switchboards, or interview anyone. (Fain dep. 12) He took no notes during his inspection. (Fain dep. 11) He took no physical or electrical measurements. (Fain dep. 12) He has spoken only to Mr. O'Connor, Mr. Richards' attorney, about this case. (Fain dep. 12) He does not know what components were mounted in the control compartment where Mr. Richards was working. (Fain dep. 25) He never inspected the meter that was in the switchboard on the day of the accident. (Fain dep. 53) He does not know why the meter was not working on the day of the accident. (Fain dep. 54-55) He does not know who worked on the switchboard between the time AET tested it (in February 1997) and the day of the accident (September 4, 1997). (Fain dep. 55) He did not inspect the meter that Mr. Richards was using. (Fain dep. 64-65) He has never examined the terminal block involved in the accident or a similar one. (Fain dep. 98)

Mr. Fain opined in his report that GE should have used terminal lugs on the wires connected to the right-hand side of the terminal block because they would be safer. He also claims that GE knew that the connections could come loose. Fain Report at 4 (Exhibit F). He asserts that the accident would not have occurred had GE used terminal lugs on the terminal block to connect the wires. Fain Report at 4 (Exhibit F) He does not state in his report that Mr. Richards received a shock, although he did offer that opinion at his deposition. (Fain dep. 118)

One thing we know for sure about the B-phase wire: it was still making an electrical connection to the terminal block when Mr. Richards began working on the switchboard. We know this because he tested the voltages on the wires. Those voltages prove that an electrical connection was being made. Mr. Fain's hypothesis is that the B-phase screw was loose enough to allow the wire to be pulled out (he agrees that the wire will not come out of a properly tightened screw) yet, at the same time, tight enough to maintain an electrical connection. Is Mr. Fain a solitary voice who has discovered a hazard that has been endangering users of GE switchboards for the last fifty years, or is he just a hired gun who has formulated a far-fetched and unsubstantiated theory for a paying client?

LEGAL STANDARD FOR BREACH OF WARRANTY

To prevail on a breach of warranty claim against GE, the plaintiff must prove the product left GE with a condition that made it unreasonably dangerous to foreseeable users and that the unreasonably dangerous condition caused the injury. *Enrich v. Windmere Corp.*, 416 Mass. 83, 616 N.E.2d 1081, 1085 (1993).

Mr. Fain opines that the use of direct wire connections to a terminal block rather than the use of a terminal lug is unreasonably dangerous and caused Mr. Richards' accident. To apply the legal standard to the claimed defect, one must answer two key questions:

- (1) Are direct wire connections unreasonably dangerous?
- (2) Did the use of a direct wire connection cause the plaintiff's injury?

ADMISSIBILITY OF EXPERT TESTIMONY

The opinions offered by Mr. Fain have inadequate engineering basis and should be excluded under the standard of *Daubert v. Merrell Dow Pharmaceuticals, Inc.* 509 U.S. 579 (1993); *Kumho Tire Company, Ltd. v. Carmichael*, 526 U.S. 137, 150 (1999); *General Electric Co. v. Joiner*, 522 U.S. 136, 146 (1997); and *American & Foreign Ins. Co. v. General Electric Co.*, 45 F.3d 135, 139 (6th Cir. 1995) (testimony of electrical engineer properly excluded under Evidence Rule 702 for failure to adequately test theory that circuit breakers should have tripped faster). "[T]he proponent of the evidence [must] show that the expert's conclusion has been arrived at in a scientifically sound and methodologically reliable fashion." *Ruiz-Troche v. Pepsi Cola of Puerto Rico Bottling Co.*, 161 F.3d 77, 85 (1st Cir. 1998).

Rule 702 says:

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.

Daubert's general principles apply to the expert matters described in Rule 702. The Rule, in respect to all such matters, "establishes a standard of evidentiary reliability." 509 U. S. at 590. It

"requires a valid ... connection to the pertinent inquiry as a precondition to admissibility." *Id.* at 592. "[W]here such testimony's factual basis, data, principles, methods, or their application are called sufficiently into question, . . . the trial judge must determine whether the testimony has a reliable basis in the knowledge and experience of [the relevant] discipline." 509 U. S. at 592. "[T]he word "knowledge" connotes more than subjective belief or unsupported speculation." *Daubert* at 590. The opinions offered by an expert must have a analytical connection to the facts of the case and the accident. "[N]othing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence which is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered." *General Electric Co. v. Joiner*, at 146.

While the *Daubert* case dealt specifically with epidemiological-type proof, the Supreme Court has made it clear that the gatekeeping function of the district court extends to engineering experts as well. *Kumho* at 150. Several factors, among others, have been suggested for evaluation of expert engineering opinions: whether a theory can be tested; whether it has been subjected to peer review and publication; and whether the theory enjoys general acceptance within the relevant community. *Kumho* at 151. The specific factors of *Daubert* will not apply to every case. The factors must be evaluated in light of the particular opinions and discipline and the trial court should consider the factors used by the *Daubert* court when they are "reasonable measures of the reliability of expert testimony." *Kumho* at 152.

The issues raised in this case (wiring techniques, short circuits, and shock) are neither new nor complicated. The same wiring technique has been used for scores of years. The specific terminal block used in this switchboard was tested in 1972 for compliance with the UL standard. The established issues raised in this case lead GE to propose the following factors for use in evaluating the reliability of Mr. Fain's opinions, which deal with design and manufacturing of wiring connections; with the reconstruction of the accident, i.e., how did it happen; and with whether Mr. Richards was shocked in the process.

1. Has the expert tested the hypothesis to see whether it is valid? Examination and testing of the product would help answer the question of whether the product performs in a reliable manner. In this case, how much force is required to pull wires out from their terminals? With a tight connection? With a loose connection? Are there obvious weaknesses and failure modes in the product's design? The hypothetical mechanism by which the failure occurred (pushing on the wiring harness, causing a wire to pull out) can be tested to learn whether it is possible or probable. How much force is required? Where must the force be applied? If the hypothesis is shown to be impossible or highly unlikely, this would provide strong evidence that it is incorrect.

2. Did the expert consider compliance with long established and widely used safety standards that apply to the product? In this case, the UL, NEMA, and NEC all provide safety standards for the product. Does the use of direct wire connections comply with these standards?

3. Did the expert consider the field history of the product? Have there been documented failures of the type the expert believes occurred? For a design like this one (use of direct wire connections to a UL-listed terminal block) that has been used millions of times over scores of years, the product history provides powerful evidence of whether the product is unreasonably dangerous.

4. Has the expert identified an alternative design that would demonstrably reduce the risk of an accident of the type hypothesized by the plaintiff's expert? If the expert has not identified other designs that can be shown to reduce the risk of foreseeable injuries, that would provide evidence that the current design is the best available.

5. Has the expert found any literature, publication, governmental agency, or watchdog group that criticizes the use of direct wire connections? If a widely used product that has been in production for many years is unreasonably dangerous, one would expect that someone would be critical of it. If this type of criticism has not been found, that offers support for the view that a product is reasonably safe.

6. Did the expert hold and express his opinion before being hired for litigation purposes? One indicia of reliability is whether the opinion was formed specifically for litigation or whether the

expert has held the opinion beforehand.

7. Has the expert confirmed that the reliable data supports the conclusions? Engineering, like science, is an endeavor based upon data. Engineers do not design products and make important engineering decisions based on guesses, when data can be obtained to validate or invalidate an idea. Where a theory is based upon hypothetical facts that are merely assumed, it remains an untested theory until the facts are proven satisfactorily.

Every one of these factors mitigates in favor of excluding Mr. Fain's four opinions.

Opinion 1 (That Direct Wire Connections Are Unsafe) Should Be Excluded Because It Is Unreliable

Mr. Fain offered no engineering reason why the use of direct wire connections was unreasonably dangerous, except that he thinks—without supporting data—that the use of a terminal lug would be safer. Other than the unsupported personal opinion expressed by Mr. Fain, all of the engineering evidence contradicts his opinion. He failed to consider the highest and best design and engineering standards in the field. He conducted no testing. He did not inspect the product at issue or an exemplar of it. He neither looked for nor found any literature supporting his view. He has no data on which to conclude that a direct wire connection has any significant chance of pulling out under any circumstances. He does not know how much force is required to pull a wire out. He concedes that shipping will not cause a direct wire connection to loosen. He formed his opinion specifically for this litigation (in fact, he himself has used direct wire connections earlier in his career). He offers no data to show that the use of terminal lugs is any safer. Given the analytical gap between his data and his conclusions, his opinion should be excluded as unreliable.

A. Failure to Test His Hypothesis

Mr. Fain has never examined an exemplar of the terminal block that he claims was used unsafely by GE.² GE, on the other hand, has tested the design in connection with evaluation of its UL-listed terminal block and has found that the connections were reliable. Mr. Fain has never tested one.

^{2/} “Q. At the risk of repeating myself, have you inspected the GE terminal block or an exemplar of it to see how the terminal is actually designed? A. No.” (Fain Dep. 156)

He has no test data with which to evaluate the risk of a wire pulling out. He has no test data to evaluate whether over time the terminal tends to loosen. He certainly has no test data of the specific wiring configuration for the switchboard at issue to see whether a wire can pull out even if the screw were loose. He does not know how much force is required to pull a wire out; he's never done it or tested it.³ He has no criticism of the geometry or materials of the terminals because he hasn't examined them.⁴ He has no criticism of the manufacturing process used in making terminal blocks and knows nothing about it.⁵

Mr. Fain says that one problem with terminal blocks is that the plate which presses the top of the wire can get twisted and not seat properly when the screw is tightened. However, he has never inspected or tested the GE terminal block to make any analysis of whether this terminal block plate design susceptible to that problem. (An examination would show that the GE design does not suffer that flaw.) To the extent any opinion is based on the possible misalignment of plates, Mr. Fain's opinion is nothing more than bare speculation.

He also claims that if the insulation is not stripped back sufficiently, then the wire insulation might get caught under the terminal and cause a poor mechanical connection. He has not tested this hypothesis to determine if it is true for GE's terminal block. (He also conceded that he did not find any evidence that any insulation was in fact caught under the terminal.)

He could have tested any of these factors in order to evaluate the design used by GE in its switchboard, but did not do so. The Sixth Circuit upheld the exclusion of an electrical engineering

^{3/} "Q. If the screw is properly torqued to a bare wire connection, how much force will be required to pull the wire out? A. I don't know." (Fain dep. 154-55)

^{4/} "Q. Do you have any criticism of the geometry and shape of the plates that make up the terminals? A. I haven't physically had a chance to observe them at close hand. Q. Do you have any criticism of the materials used in the terminal block? A. Not at this point. No." (Fain dep. 156)

^{5/} "Q. Do you have any criticism in the manufacturing process used for the subject terminal block? A. No. I have no information on that procedure." (Fain dep. 157)

expert who offered an opinion that a GE circuit should have tripped more quickly in response to a fault in the load circuits. *American & Foreign Ins. Co. v. General Elec. Co.*, 45 F.3d 135, 139 (6th Cir. 1995). The engineer claimed that he had tested his hypothesis, but he had discarded the data, his notes, and there were no witnesses to the test. The court found his testing was unreliable and excluded his opinions. *Id.* at 139. In this case, we do not have to be concerned with Mr. Fain's test methods; he didn't even attempt to validate his conclusions. Many courts have excluded engineer's opinions when the engineer failed to test a hypothesis, preferring to rest on speculation. *See, e.g., Ducharme v. Hyundai Motor America*, 45 Mass. App. Ct. 401, 407, 698 N.E.2d 412, 416 (applying Massachusetts law, which follows the *Daubert* standard, to exclude an opinion that was not supported by testing.)

B. Failure to Consider the Applicable Safety Standards

The most comprehensive and widely-recognized standard for the design and testing of switchboards is published by Underwriters' Laboratories. UL Standard 891. This standard is followed throughout the United States by engineers specifying electrical equipment. The purpose of the standard is to ensure the safety of switchboards. UL, which is a not-for profit independent entity, tests and reviews switchboard designs before they may be sold as a "Listed" product. UL also conducts unannounced inspections of GE's switchboard manufacturing plants. The GE switchboard and the accused terminal block complied with the two relevant UL safety standards, and had been tested and proven to comply.

A switchboard has many different possible configurations and components. The designs are inherently flexible. One way the UL switchboard standards deals with this is to require that any components themselves comply with applicable UL standards. In the case of terminal blocks, GE complied with the UL standard specifically published for them. The UL standard permits the use of direct wire connections in switchboards where the terminal block is itself a UL-listed component.

The terminal block itself was tested under the UL standard for terminal blocks, UL 1059. This standard specifically tests terminal blocks to evaluate whether straight wire connections are safe and reliable. The GE terminal block was tested and met the UL standard.

The use of the direct wire connections also complies with the National Electrical Code (the “NEC”), which has been adopted and has the force of law in Massachusetts. The NEC contains an entire section on switchboards. It permits the use of direct wire connections. The National Electrical Manufacturer’s Association (NEMA) also publishes a switchboard standard, which Mr. Fain ignored.

Mr. Fain did not consult or consider the UL or standards or the NEC, even though his opinion flies directly in the face of those standards. How can an engineer claim to find a switchboard design unreasonably dangerous without even considering the best and most widely followed safety standard? This is obviously not proper engineering evaluation.

C. Lack of Support in Engineering Literature

Mr. Fain cannot cite a single publication that agrees with his hypothesis. There are no engineering books, no electrical books, no standards, no codes, no articles, not even a web site that supports his position. Mr. Fain himself has never published the opinion that the use of direct wire connections to UL listed terminal blocks is unsafe. The only time he has held such an opinion is for purposes of this specific litigation, in which he was hired to render an opinion. The lack of published support for a claimed defect in a common electric product was used as one reason to exclude an electrical engineer’s opinion in *American & Foreign Ins.* Just like in that case, the plaintiff’s expert has challenged a traditional, mature, long-standing technology in a common piece of electrical equipment without any support from any literature, technical or otherwise.

D. Lack of Documented Problems

If the use of a direct wire connection is unreasonably dangerous, and GE has used millions of such connections in a wide variety of equipment, wouldn’t one expect there to be some accidents that were documented as caused by this problem? Wouldn’t one expect there to be some body of information that people had observed wires pulled out from their connections? Mr. Fain stated that the use of direct wire connections is unreasonably dangerous because the wire can pull out if the screw is not tightened, if the insulation gets trapped in the terminal, or if the plates under the screw that trap the wire become misaligned. Neither he nor any other witness has observed any of these conditions in a

GE terminal block or a UL-listed terminal block. Mr. Fain is not aware of even one such occurrence. GE is not aware of even one such occurrence.

Mr. Fain completely ignores the extraordinary product history: no reported instances of the event he claims is so likely to occur that it renders GE's design unreasonably dangerous. This is not good engineering practice.

E. Use By Mr. Fain

Mr. Fain himself, earlier in his career, before he became a full-time litigation consultant, used direct wire connection to terminal blocks. (Fain dep. 151-152) He was in charge of a project to install equipment on board a ship. As part of the project, he supervised workers making direct control wire connections to terminal blocks, the very practice he now says is unreasonably dangerous for GE to use. Confronted with his own use of direct wire connections, he admitted that they would be reasonably safe under some circumstances.⁶

F. No Showing That His Proposed Alternative Design is Safer

Mr. Fain's report gives three reasons why ring terminals should be used rather than direct wire connections:

1. they would not cost significantly more;
2. they would not take significantly more time to install; and
3. they would be a safer way to make these connections.

Of the three reasons given in his report, only reason number 3 is important in this case. GE agrees that, if the ring terminals were demonstrably safer, the cost and time to install would not justify not using them. Mr. Fain acknowledged in his deposition that a properly tightened connection is very

^{6/} "Q. So you consider under that circumstance, that a bare wire connection would be adequate? A. It is all we were able to employ in that particular application. And if judiciously applied, it can be done and used." (Fain dep. 152)

unlikely to come loose enough to allow a wire to pull out.⁷ While he claims in his report that GE knew connections could come loose during shipment (without any reliable basis), in his deposition he testified that he does NOT think direct wire connections will loosen during shipment.⁸ (GE's witness agreed that the wire connections would not come loose during shipment and disputes that GE "knew" the connections would do so.)

Without any data, he asserts that ring terminals or spade connectors would be more difficult to pull out. Even assuming this were so, it does not follow that a direct wire connection is unsafe. Mr. Fain does not consider, for example, whether there are cases of intended use or foreseeable misuse in which a ring terminal would supply a greater margin of resistance to pulling out. For example, suppose it would require more than 20 pounds of force to pull out a direct wire connection, but more than 50 pounds of force to pull out a ring terminal connection. If one anticipates that more than 20 pounds of force would never be applied, then the increased strength does not decrease the likelihood of a wire pull-out or increase safety. The mere existence of an alternative approach, such as terminal lugs, does not lead to the conclusion that direct wire connections are not reasonably safe and reliable.

Valid engineering opinions are based on data, not hunches and speculation.

Opinion 2 (That a Loose Wire Pulled Out and Caused The Accident) Should Be Excluded Because It is Unreliable

A. Lack of Testing of the Hypothetical Failure Mechanism

Mr. Fain has a hypothesis for how a loose wire caused Mr. Richards' injury. Mr. Fain wrote in his report that the arc in this case began when Mr. Richards "lightly disturbed the vertical harness as he moved from one terminal point to another" causing a ground fault with the B-phase wire. Fain

⁷/ "Q. What's the probability that the properly torqued bare wire connection made to a GE 'UL' listed terminal block will come loose so as to allow the wire to be pulled out? A. Probably not very significant. Q. Do you have any idea how probable it is? A. Based on what percentage? Q. Any kind of quantitative measure? A. I would classify it as being very unlikely." (Fain dep. 153-54)

⁸/ "Q. Do you know whether wires on terminal blocks of this type can become loose during shipping if they are properly torqued? A. If they were properly torqued and assembled, I would expect them not to come loose." (Fain dep. 159-60)

Report at 3 (Exhibit F). In his deposition, he elaborated on this. He concluded that Mr. Richards pushed on the wiring harness with his right hand, using the meat of his hand between his little finger knuckle and his wrist.⁹ This movement, he claims, caused the B-phase wire to separate completely from the terminal screw and move over to and touch the metal bracket. If that occurred, a flash would have happened. However, this theory is easily proven wrong by a simple demonstration and is contrary to the facts of the case.

It is impossible to pull out a wire in the manner Mr. Fain opines. He has never done it. We will demonstrate at the hearing why Mr. Fain's hypothesis is impossible. Since the plaintiff has the burden of proof to demonstrate the feasibility of his theory, Mr. Fain should be required, at a minimum, to show how the event—as he says it happened—can occur.

B. Lack of Factual Data To Support The Hypothesis; Inconsistent Data Ignored

Mr. Richards' testimony contradicts Mr. Fain's hypothesis. Even if it could occur that way, his hypothesis is directly contrary to the testimony of Mr. Richards. Mr. Fain acknowledges that the B-phase wires would not come out and disconnect from the terminal completely (a necessary step in his hypothesis) without the active intervention of Mr. Richards. In other words, the wire would come out only if Mr. Richards pushed or pulled it away from the terminal.

Mr. Fain said that he accepted Mr. Richards' description of the events leading up to the

^{9/} “Q. So what you think happened is that Mr. Richards reached in here, pulled this wire out and pushed down against the enclosure? A. Not intentionally. Q. Well, whether he intentionally did or not, that's what you think happened? A. You say he reached in and did it. I think in the process of him taking measurements, he inadvertently did. Q. Do you think he did it with his fingers or with the meter probe? A. I think he did it with the side of the palm of his hand. Q. You think the palm of his hand pushed against this B-Phase wire? Pulled it out and pushed it downward and made contact with the switchboard enclosure? A. I'm talking about the meat of his hand. The end of it. The top of it. There's no evidence if he's holding the probe that his hand -- his fingers evidence of the probe or the tip being involved. So it was probably up. This part of his hand might have somehow hit that particular wire. Q. What you're indicating in your gesture is what I call the back of the hand near your knuckles or near that vicinity? A. Actually, the meat of the hand. The back and on the side here somewhere like this. Q. On the side over by your little finger and up toward your wrist from there? A. Yes.” (Fain dep. 102-103)

incident at face value.¹⁰ Mr. Richards gave detailed and explicit descriptions of what he was doing in the moments before the flash occurred. (Richards dep. 29 to 37) He explicitly denied touching any of the wires while he was working in the switchboard.¹¹ He stated that his hands were holding the probes of the meter.¹² This testimony from Mr. Richards directly contradicts Mr. Fain's hypothesis, even though Mr. Fain said he accepts Mr. Richards' description of the events leading up to the flash.

The First Circuit has upheld the exclusion of an engineer's testimony as irrelevant where the hazard that was described did not correspond to what had occurred according to the plaintiff's testimony. *Cipollone v. Yale Industrial Products, Inc.*, 202 F.3d 376 (1st Cir. 2000). Brad Schofield, a seasoned testifying expert in the courts of Massachusetts, opined that a material handling system was unreasonably dangerous because a person's hand holding an object could get caught between two moving parts. However, the plaintiff specifically denied holding anything. In affirming the exclusion of that opinion, the First Circuit said:

Schofield testified that the 3.50 inch pinch point created a shearing hazard because if a man were holding something 2.10 inches in diameter, his hand might measure 4.50 inches from the metacarpal-phalangeal joint of the middle finger to the proximal interphalangeal joint of the thumb. But Cipollone never contended he was holding anything during the accident; indeed, he testified he was holding nothing when the accident occurred. Because Schofield described a shearing hazard that did not cause

¹⁰/ "Q. Do you accept Mr. Richards' statements as reliable in his recounting of the events leading up to the accident? A. They are the events as he remembers them. Q. My question is: Do you accept his recollection and his version that he stated in his deposition as reliable in recounting the events? A. I have no reason to dispute what he says. (Fain dep. 67-68)

¹¹/ "Q. Did you touch any of these wires with your hand? A. No. Q. What about with your meter? A. No. The meter was out of the way." (Fain dep. 36)

¹²/ "Q. Can you tell me what happened next? A. He started reading off out of the book. Q. He, meaning Mr. Payne? A. Payne. He started reading the book. He was telling me what terminals to touch. I don't recall the terminals, offhand. He proceeded to tell me, "All right, touch this terminal to this terminal." I go, "All right, fine." He said, "Do you have anything?" I said, "No, no voltage." He said, "Okay, wait a minute." He looked at the book again and he goes, "All right, touch another terminal to another terminal." So I did that. And I said, "No, there's no voltage here." So he goes, "Okay." The last time he told me to touch another two terminals and I touched -- put one probe and I went to touch the other terminal, and I remember not even touching it. And that's when the explosion happened, the electricity, the flash." (Richards dep. 31-32)

Cipollone's injury, and Cipollone described an injury that did not result from the shearing hazard Schofield described, Schofield's testimony is irrelevant and properly was excluded under Daubert.

Id. at 380. Like Mr. Schofield, the plaintiff's expert has described a premise for the accident that the plaintiff specifically denied happened. Just like in *Cipollone*, his opinion is irrelevant and ought to be excluded.

Opinion 3 (That the Use Of Ring Terminals Would Have Prevented the Accident) Should Be Excluded Because It is Unreliable

Mr. Fain wrote in his report that if GE had used ring terminals, then the accident would not have occurred. Mr. Fain does not know or even have a working hypothesis of when and how the B-phase wire allegedly came loose. Responding to the question "Why do you think that the screw was loose?" he answered "There are a number of scenarios. I have no way of knowing." (Fain dep. 104)

If Mr. Fain is not permitted to testify to opinion number 2, which is his hypothesis of how the arc was initiated, then his conclusion that a ring terminal would have prevented the accident has no basis. If the B-phase screw were loose, it is true that a properly applied ring terminal would prevent it from becoming completely disconnected from the terminal when someone tugged on it or pushed it. Mr. Fain's only basis for thinking the screw was loose, when Mr. Richards started working in the switchboard on the day of the accident, is that (he concluded) the wire came out and it can come only out if it is loose. His testimony was: "Q. Why do you think the condition of the screw when he went in there to start working was loose? A. If the screw were tight and the plates were making good contact with the wire, you couldn't pull the wire out." (Fain dep. 104) His theory can be true only if the screw were loose. Mr. Fain has engaged in classic backwards reasoning: he starts with the conclusion that a wire pulled out and initiated the arc. This can occur only if the wire were loose; therefore, it must have been loose. As engineering, this type of reasoning is invalid.

In addition to his logical errors, if his theory as stated in opinion 2 is not allowed in as an opinion, then he has no basis for his subsequent conclusion, namely, that the wire must have been loose before Mr. Richards started working on the switchboard. Therefore, the exclusion of opinion

2 would logically require the exclusion of opinion 3, since his only basis for opinion 3 would have been excluded as unreliable.

Opinion 4 (That Mr. Richards Was Shocked) Should Be Excluded Because It Was Not In His report and Is Not Reliable

Mr. Fain did not state in his report that Mr. Richards was shocked. Pursuant to Rule 37(c)(1), he should not be allowed to give that opinion at trial. Fed. R. Civ. P. 37(c)(1). He didn't think about whether Mr. Richards was shocked until the day before his deposition, when Mr. O'Connor, Mr. Richards' attorney, showed him a photograph. That photo led him to conclude that Mr. Richards received a shock.

A. Mr. Fain's Shock Theory is Demonstrably Impossible

If the opinion is not excluded because it was not part of his report, it should be excluded because it is unreliable: it is nothing more than an untested and impossible hypothesis, one that is contradicted by common sense and the evidence in the case.

At his deposition, Mr. Fain offered an opinion about how Mr. Richards was shocked that is obviously impossible. To be shocked, a person's body must touch conductors at different voltages at two places. Current must flow in at one place and out at another.

According to Mr. Fain, Mr. Richards touched an energized wire at the terminal block (immediately after it pulled out) with his right hand, while at the same time touching his right buttock to the switchboard cabinet—all while standing on a step ladder. Mr. Richards would have to be extraordinarily flexible and contort his body into a very strange position. At the hearing we will demonstrate the absurdity of Mr. Fain's shock theory.

B. Mr. Fain's Shock Theory Lacks Foundation

His opinion in part is based upon a belief that Mr. Richards has an entrance wound on his right hand. His sole basis for this information was statements made by Mr. O'Connor, Mr.

Richards' attorney.¹³ Mr. Fain has no information that an engineer might reasonably rely upon that there was a physical injury to Mr. Richards' right hand caused by electric shock.¹⁴

Mr. Fain's theory is also directly contradicted by the only testimony on the subject. Neither hand nor buttock was touching conductive objects, both of which are necessary conditions for a shock to occur as Mr. Fain has theorized. Mr. Richards testified: "Q. Did you touch any of these wires with your hand? A. No." (Richards dep. 36) This directly contradicts the assumption that Mr. Richards' right hand was touching an energized wire.

Mr. Richards was not touching the switchboard with any other part of his body:

- Q. When you were actually testing on the day of the accident and you were using the multimeter, maybe this one or one similar to it, where on the probe were you holding?
- A. I was holding the handles. I was holding the handle on the probe, the solid plastic part.
- Q. And you said you'd go and touch one part of the probe to the terminal block. Was any other part of your body touching the cabinet?
- A. No. I try to keep my hand free from anything. I try to keep them all free from any part of the cabinet.
- Q. Why?
- A. Just practice, safety practice from knowledge. I'm not going to jump in there as far as -- it's a habit. I keep my whole body away from anything, even motors. It's just something that comes naturally to me now.
- Q. Was it something you received training to do?
- A. Maybe, maybe years ago.

(Fain dep. 73-74) Thus, Mr. Fain's hypothesis that current passed through Mr. Richards' buttocks to the switchboard cabinet is directly contradicted by the testimony.

C. Lack of Qualifications to Reach a Medical Diagnosis of an "Exit Wound"

¹³/ "Q. Was there an entrance wound reported by the medical personnel? A. I was told there was an entrance wound. I have seen no photographs or medical documents to support that. Q. You were told by whom? A. I believe Mr. O'Connor and I have discussed it. Q. Well, is your opinion in part based upon then the statement of Mr. O'Connor that there was an entrance wound on Mr. Richards' hand? A. I believe the inference was that the medical documents support the conclusion there was some kind of an entrance somewhere on his right hand. But I haven't seen the documentation. Q. What you have by way of information are the statements made by Mr. O'Connor? Is that right? A. Yes." (Fain dep. 119-120)

¹⁴/ Mr. Richards did receive a thermal burn on his right hand. In accidents involving arcing faults, the injuries are usually thermal burns only, not shock-related injuries. Thus, the fact that Mr. Richards, who clearly had thermal burns caused by a flash, had a burned hand does not by itself show he was shocked.

Mr. Fain claimed at his deposition that he could recognize a red mark in a color copy of an out-of-focus photograph of Mr. Richards' buttock as an "exit wound." (Exhibit H). He circled the mark, which he claimed he could diagnose as having been caused by electric current. The photo had been supplied to Mr. Fain by Mr. Richards' attorney the day before his deposition.

Mr. Fain has no qualifications to identify an exit wound caused by electric current.¹⁵ Mr. Fain acknowledged that he has no training in diagnosing wounds caused by electrical injury and admits that he has no qualifications in the medical field of electrical injuries. (Fain dep. 120) He does not know if a doctor ever diagnosed Mr. Richards as having an exit wound. (Fain dep. 123) He did not give Mr. Richards a medical exam. (Fain dep. 124) He agrees that Mr. Richards' pants might serve as an insulator depending on what kind of pants he had on, but he doesn't know what Mr. Richards was wearing. (Fain dep. 125-26) He acknowledged that his entire hypothesis was speculation: "And I don't know exactly—again, this is all supposition, that he somehow twisted so that his right rear quarter would be leaning or even touching the switchboard." (Fain dep. 127) Finally, he admitted that if the red mark were in the center of Mr. Richards's buttock, rather than off to his right side, that his suggestion was impossible. "Q. Would you agree that he really couldn't touch the center of his buttocks to the switchboard and turn around touching the terminal block with probes? A. That's true." (Fain dep. 128-29)

Since Mr. Fain has no qualifications to assess exit wounds, has offered an opinion not based on the facts, and suggests the anatomically impossible, his opinion should be excluded.

¹⁵/ GE provided timely notice as required by Local Rule 26.4 that it intends to challenge Mr. Fain's qualifications in a letter to Mr. Richards' counsel.

CONCLUSION

GE therefore requests the Court to exclude the four opinions of Mr. Fain because they are unreliable under Fed. R. Evid. 702 and the cases interpreting it.

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Date: June 16, 2000

CERTIFICATE OF SERVICE

I certify that I have served a copy of the foregoing on counsel for the plaintiff by hand on June 16, 2000.
