Gopalratnam et al v. Hewlett-Packard Company et al

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1 UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WISCONSIN _____ S.V. GOPALRATNAM and HEMALATHA GOPALRATNAM and THE ESTATE OF ARUN GOPALRATNAM and AMERICAN FAMILY MUTUAL Civil Action No. 13-cv-618-pp INSURANCE COMPANY, Plaintiffs, vs. HEWLETT-PACKARD COMPANY Defendant and Third-Party Plaintiff and ABC INSURANCE COMPANY Defendants, vs. SAMSUNG SDI CO., LTD. and DYNAPACK TECHNOLOGY CORP. Third-Party Defendants. _____ ORDER GRANTING SAMSUNG SDI'S MO TION TO EXCLUDE THE TESTIMONY OF DANIEL DOUGHTY, Ph.D., MICHAEL HILL AND JOSEPH BURTON (DKT. NO. 157); GRANTING DYNAPACK TECHNOLOGY'S MOTION TO EXCLUDE TESTIMONY OF DANIEL DOUGHTY (DKT. NO. 160); GRANTING HEWLETT PACKARD'S MOTION TO EXCLUDE TESTIMONY OF DANIEL DOUGHTY, Ph.D,

MICHAEL HILL AND BENJAMIN MILLS (DKT. NO 170); GRANTING DEFENDANTS' MOTIONS FOR SUMMA RY JUDGMENT (DKT. NOS. 155— SAMSUNG SDI; 163—DYNAPACK TECHNOLOGY; AND 165—HEWLETT-

PACKARD CO.); DENYING AS MOOT PLAINTIFFS' MOTION FOR A DECLARATORY JUDGMENT (DKT. NO. 125); GRANTING HEWLETT-PACKARD'S

2 MOTION TO FILE DOCUMENTS RESTRICTED TO CASE PARTICIPANTS (DKT.

NO. 175); AND DENYING DEFENDANTS' RULE 7(h) EXPEDITED NON- DISPOSITIVE JOINT MOTION TO STRIKE PLAINTIFFS' REPLY AND JOINT MOTION FOR LEAVE TO FILE SUR-REPLY TO PLAINTIFFS' MOTION FOR

DECLARATORY JUDGMENT (DKT. NO. 182); AND DISMISSING CASE

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Three defendants 1

have asked the court to exclude proposed plaintiffs' expert witnesses Daniel Doughty, Ph.D. and Benjamin Mills; one defendant also has asked the court to exclude as an expert Joseph Burton (Samsung SDI—dkt. no. 157). All three defendants have filed motions for summary judgment. The

plaintiffs have filed a motion for a declaratory judgment regarding the applicability of the 2011 amendments to Wisconsin's products liability and comparative fault statutes.

The court will grant the defendants' motions to exclude the testimony of Daniel Doughty, Ph.D. and Michael Hill (and deny as moot Samsung's motion to exclude the testimony of Joseph Burton, and Hewlett-Packard's motion to exclude the testimony of Benjamin Mills), and will grant the defendants' motions for summary judgment. The court will deny as moot the plaintiffs' motion for declaratory judgment (dkt. no. 125) and the defendants' motion to strike and seek leave to file a sur-reply (dkt. no. 182). The court will grant Hewlett-Packard's motion to file documents restricted to the case participants. Dkt. No. 175.

1 The original complaint names Hewlett-Packard Company and ABC Insurance Company as defendants. Dkt. No. 1. Hewlett-Packard then filed a third-party complaint against DynaPack International Technology Corporation and Samsung SDI Co., Ltd., making them third-party defendants. Dkt. No. 7. The court will refer to all three of these parties as "defendants."

3 A. Factual Background On June 17, 2009, Arun Gopalratnam, the plaintiffs' son, purchased an HP Mini 110 XP laptop computer. Dkt. No. 167 at ¶1. The laptop contained a battery pack manufactured by DynaPack. Id. at ¶2. The battery pack contained lithium ion battery cells manufactured by Samsung SDI. Id. at ¶3.

A year later, on June 4, 2010, Arun died in a fire at the plaintiffs' former home. Id., at ¶4. The fire began at approximately 3:30 P.M., and neighbors reported it to to the Menomonee Falls Fire Department when they observed flames coming out of a ground-level window of one of the home's bedrooms. Id. at ¶¶18, 54; Dkt. No. 80-3, at 5. After firefighters had put out the blaze, they found Arun dead on the floor in the basement bedroom of the home. Dkt. No. 167 at ¶¶6-7. Fire investigators found Arun's laptop and cell phone on a mattress in the basement bedroom. Id. at ¶9. The laptop and cell phone were retained as evidence. Id. at ¶10.

The plaintiffs alleged in their complaint that "an internal failure of the lithium ion battery" in Arun's laptop "caused a fire to start in the Gopalratnam" home; they alleged that the fire "originated" in the laptop. Dkt. No. 1 at ¶13. They alleged that Arun was "fatally injured" as a result of the fire. Id. at ¶14.

When the investigators found the laptop in the aftermath of the fire, the battery cell that the plaintiffs allege was defective was missing from the laptop. Id. at ¶10. After they retrieved the laptop and cell phone, the investigators dumped the debris from the mattress onto the floor, and shoveled it out of the

4 basement bedroom window "into two large, unmarked debris piles." Id. at ¶11. "During this process, fire personnel unknowingly shoveled the allegedly defective battery cell into one of the two piles," id. at ¶12, and other fire personnel later "discovered the allegedly defective battery cell buried

in one of these large piles," id. at ¶13. No one knows where the allegedly defective battery cell was located before it got shoveled with the other debris out the window. Id. at ¶14. The fire investigators could not determine the cause of the fire, listing its cause as "undetermined." Id. at ¶23. The investigators were unable to rule out the possibility that the fire had an electrical cause, nor could they rule out "human involvement." Id. at ¶24.

B. Procedural Background 1. The Complaints In the complaint, the plaintiffs brought claims of negligence, strict products liability, and breach of warranty against Hewlett-Packard and its insurer. Dkt. No. 1. As discussed above, Hewlett-Packard then filed a third- party complaint against DynaPack and Samsung SDI Samsung, alleging that if Hewlett-Packard were to be found liable, those two entities had contributory liability because they had manufactured the battery pack and the battery, respectively. Dkt. No. 7. On October 31, 2014, the plaintiffs filed an amended complaint adding DynaPack and Samsung SDI as defendants, and seeking damages based on claims of negligence and strict products liability. Dkt. No. 66. As in the original complaint, the plaintiffs alleged that the lithium ion battery in the laptop caused the fire. Id. at ¶16. Neither the laptop, the battery

5 pack or the battery cells in the battery pack ever were subject to a recall. Dkt. No. 167 at ¶¶34-37.

2. The Defendants' Motions to Exclude Experts During discovery, the plaintiffs identified four expert witnesses whom they planned to call to support their allegations. They identified Michael Hill, whom they identified as an "expert on the issue of the cause and origin of the subject fire," dkt. no. 158 at 3; Daniel Doughty, whom they identified as an "expert on the issue of battery safety," id.; and Joseph Burton, whom they identified as an "expert on the issue of conscious pain and suffering," id.. All three experts provided expert witness reports, and testified at depositions. Id.

Defendant Samsung SDI asked the court to exclude all three of these witnesses under Fed. R. Evid. 702 and Daubert v. Merrell Dowe Pharmaceutical, Inc., 509 U.S. 579 (1993). Dkt. Nos. 157, 158. DynaPack moved to exclude Doughty as an expert on battery safety. Dkt. Nos. 160, 161. Hewlett-Packard asked the court to exclude the testimony of Doughty and Hill, as well as the testimony of the fourth expert, Benjamin Mills, an electrical engineer who provided opinions on "whether the electrical system in the house or any electrical appliances in the room caused the fire." Dkt. Nos. 171 at 29; 172-7.

3. The Plaintiffs' Motion for Declaratory Judgment Before the defendants filed their Daubert motions, the plaintiffs filed a motion for declaratory judgment on a discreet issue. Dkt. No. 125. They pointed out that a finding of liability as to any of the defendants would require

6 a determination of damages, which would include consideration of any pain and suffering Arun endured, as well as his parents' grief and loss of his society. Id. at 2. They indicated that in February 2011, the Wisconsin legislature had, as part of a tort reform project, added two new statutes

regarding product liability claims—Wis. Stat. §§895.046 and 895.047. Id. The plaintiffs told the court that these statutes had changed the law—at the time of the fire, Wisconsin law did not require a fact finder to allocate fault among the plaintiff and the defendants in a strict liability case, and the common law allowed joint and several liability among the parties. Id. The new laws had changed that. The plaintiffs asked the court to issue a "declaratory ruling that the 2011 statutes . . . do not apply to this lawsuit . . . ." Id. at 3-4.

By separate motion, the plaintiffs asked the court to stay all briefing until it ruled on the declaratory judgment motion. Dkt. No. 129. The court held a hearing, at which it noted that an issue very similar to the one the plaintiffs had raised was pending before the Wisconsin Supreme Court (Clark ex rel. Gramling v. Am. Cyanamid Co., 2015 WL 5684280 (Wis. Ct. App. Sept. 29, 2015)). Dkt. No. 133. The court denied without prejudice the motion for declaratory judgment, and stayed briefing until the Wisconsin Supreme Court could issue a ruling. Dkt. No. 135 at 12-13. After the Wisconsin Supreme Court remanded the issue back to the Court of Appeals, see dkt. no. 141 at 1, the court set deadlines for fully briefing the motion for declaratory judgment, dkt. no. 142 at 3.

7 4. The Motions for Summary Judgment Samsung SDI filed its motion for summary judgment on June 24, 2016, dkt. no. 155, arguing in great part that the plaintiffs could not prove causation without their experts. They also argued that the plaintiffs' wrongful death claim was barred by the statute of limitations. Dkt. No. 156 at 10. DynaPack, too, filed a motion for summary judgment, dkt. no. 163, arguing that the only evidence the plaintiffs had as to problems with the battery pack came from Doughty, whose testimony was not reliable and did not implicate the battery pack, dkt. no. 164. DynaPack also brought a statute of limitations defense. Dkt. No. 164 at 11. 2

Finally, Hewlett-Packard filed for summary judgment, dkt. no. 165, again arguing the unreliability of the expert witness testimony, dkt. no. 166. I. DISCUSSION

A. Motions to Exclude Expert Witness Testimony 1. The Need for Expert Witness Testimony To support their theory that the battery pack in Arun's laptop caused a fire originating on the bed in the basement bedroom, the plaintiffs retained Daniel Doughty and Michael Hill. Doughty issued a report opining that the fire was caused by a defective cell within the battery pack. Dkt. No. 158 at 3. Hill issued a report opining that the cause of the fire was the laptop battery and

2 The plaintiffs conceded in their response brief that their personal injury and wrongful death claims against Dynapack and Samsung SDI "were not filed timely pursuant to statute and can be dismissed." Dkt. No. 178 at 13-14.

8 that the fire originated on the bed where the laptop was located at the time of the fire. Id.

In their motions to exclude Doughty's and Hill's opinions, the defendants contend that the court should not admit these reports—the plaintiffs' only evidence regarding the cause of the fire—because

the plaintiffs' experts are unqualified to render their opinions, and did not use reliable methodology in reaching their conclusions. 3

Id. As a preliminary matter, the court must determine if expert testimony is necessary for the plaintiff to establish a prima facie case. Wisconsin courts do not require expert testimony as long as the case involves issues within the general common knowledge of a lay jury. Peplinski v. Fobe's Roofing, Inc., 531 N.W.2d 597, 601 (Wis. 1995); City of Cedarburg Light & Water Comm'n v. Allis-Chalmers Mfg. Co., 149 N.W.2d 661, 662 (Wis. 1967); Steinberg v. Arcilla, 194 Wis. 2d at 759, 764, 535 N.W.2d at 445-46 (Ct. App. 1995); Clifford v. Crop Prod. Servs., 627 F.3d 268, 273 (7th Cir. 2010). Products liability cases are not treated differently. Smoot v. Mazda Motors of Am., 469 F.3d 675, 680 (7th Cir. 2006) (citing Mesman v. Crane Pro Servs., 409 F.3d 846, 849-50 (7th Cir. 2005)). In Smoot, the Seventh Circuit concluded "the district judge was correct . . . to reject the plaintiffs' attempt to invoke the doctrine . . . or, to state the point more practically, was correct to rule that the plaintiff could not prove a product defect without expert testimony." Id. at 681.

3 The court granted Dynapack's motion to join the Daubert motions filed by Samsung SDI and HP, dkt. no. 176, in a text-only order dated July 15, 2016.

9 The fire investigators at the scene were unable to determine what caused the fire. The court finds that the plaintiffs need expert testimony to prove their claim that a defective cell in the battery pack in Arun's laptop caused the fire. The inner workings of a laptop and its components, including the battery pack and its cells, are highly technical, beyond the understanding of lay persons, and, therefore, within the competence of experts. See Peplinski, 531 N.W.2d at 599; City of Cedarburg, 149 N.W.2d at 662. In cases like this one, the question of "causation, like the issue of negligence, involves technical, scientific or medical matters which are beyond the common knowledge or experience of jurors and without the aid of expert testimony the jury could only speculate as to what inferences to draw if it were left to determine the issue." City of Cedarburg, 149 N.W.2d at 662. The lack of expert testimony in such a case "results in an insufficiency of proof." Id.

The plaintiffs cannot prevail on any of their theories of recovery, whether they sound in strict products liability or negligence, because without competent expert testimony, the jury would be forced to speculate about the cause of the fire. Because expert testimony is necessary for the plaintiffs to prevail, the court must enter summary judgment in favor of the defendants if the plaintiffs do not present admissible expert evidence to establish their prima facie case, including the cause of the fire.

2. Applicable Law The admissibility of expert testimony is governed by Federal Rule of Evidence 702 and Daubert v. Merrell Dow Pharms., 509 U.S. 579 (1993). Rule

10 702 says that a witness "may" testify as an expert if the witness is "an expert by knowledge, skill, experience, training, or education;" the expert's knowledge "will help the trier of fact to understand

the evidence or to determine a fact in issue;" the expert's testimony is "based on sufficient facts or data" and is "the product of reliable principles and methods;" and the expert "has reliably applied the principles and methods to the facts of the case."

The Supreme Court has held that the Federal Rules of Evidence "assign to the trial judge the task of ensuring that an expert's testimony both rests on a reliable foundation and is relevant to the task at hand." Daubert, 509 U.S. at 597. The Daubert Court held that under Rule 702, a court must engage in a three-step inquiry before allowing a witness to testify as an expert. The court must "determine . . . whether the expert is proposing to testify to (1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact in issue." Daubert, 509 U.S. at *592. Next, the court must determine whether "the reasoning or methodology underlying the testimony is scientifically valid." Id. at 592-93. Third, the court must determine "whether that reasoning or methodology properly can be applied to the facts in issue." Id. at 593. "Daubert interpreted an earlier version of Rule 702, but it remains the gold standard for evaluating the reliability of expert testimony and is essentially codified in the current version of Rule 702." Manpower, Inc. v. Ins. Co. of Pa., 732 F.3d 796, 806 (7th Cir. 2013) (citing Lees v. Carthage College, 714 F.3d 516, 521 (7th Cir. 2013)).

11 Rule 702 indicates that an expert witness may be qualified as an expert "by knowledge, skill, experience, training or education." An expert need not have particular academic credentials to be qualified; "anyone with relevant expertise enabling him to offer responsible opinion testimony helpful to judge or jury may qualify as an expert witness." Tuf Racing Prods, Inc. v. American Suzuki Motor Corp., 223 F.3d 585, 591 (7th Cir. 2000)

To be relevant for purposes of Rule 702, the testimony must assist the trier of fact to understand the evidence or to determine a fact in issue. Relevant evidence is evidence "that has 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." Daubert, 509 U.S. at 587 (quoting Fed. R. Evid. 401). "Where an expert's hypothetical explanation of the possible or probable causes of an event would aid the jury in its deliberations, that testimony satisfies Daubert 's relevancy requirement." Smith v. Ford Motor Co., 215 F.3d 713, 718-19 (7th 2000). If an expert uses hypothetical explanations for causes of an event, those hypotheticals must have "analytically sound bases," rendering them "more than mere 'speculation' by the expert." Id. at 719 (quoting DePaepe v. General Motors Corp., 141 F.3d 715, 720 (7th Cir. 1998)). (The question of whether the expert's theory is correct given the circumstances of a particular case is a factual one left for the jury to determine. Id. at 719.)

The factors the trial court should consider when determining if an expert's opinion is reliable are:

12 (1) "whether [the expert's theory or technique] can

be (and has been) tested"; (2) "whether the theory or technique has been

subjected to peer review and publication"; (3) "the known or potential rate of error"; and (4) "general acceptance" in the "relevant scientific

community." Daubert, 509 U.S. at 593-94.

3. Analysis of the Experts a. Daniel Doughty, Ph.D.—Battery Expert The defendants argue that the court must exclude Doughty's opinions because he is not qualified to offer opinions under Rule 702, and because his opinions are unreliable. Dkt. No. 158 at 15. The court finds that Doughty has sufficient qualifications and experience to testify as to potential design and/or manufacturing defects in the battery pack, but concludes that his opinions are unreliable and must be excluded because they are based on speculation and unfounded inferences. i. Qualifications

Daniel H. Doughty, Ph.D. has a bachelor's degree in chemistry from the University of New Mexico at Albuquerque, an MS in inorganic chemistry from the same institution, and a Ph.D. in inorganic chemistry from the University of Minnesota. Dkt. No. 162-11 at 2. At the time he submitted his report, Doughty was the founder and president of a company called Battery Safety Consulting, Inc., where he'd been since 2008. Id. at 1. The company provided expert and

13 consulting services "for a wide range of battery safety issues, including failure analysis, test method development, [and] interpretation of test results . . . ." Id. He indicated that he had "extensive experience in all types of lithium batteries as well as other battery electrochemistries." Id. Prior to founding BSC, Doughty had spent over two years as vice president for product safety at another battery company, preceded by some twenty-six years in a number of positions at Sandia Power Sources Technology Group, working with development of battery technology. Id. Doughty reported that he was the author of more than ninety publications relating to batteries, and that he held five patents. Id. at 2. He was an expert witness for the Justice Department in the Deepwater Horizon case, and has been involved in various professional societies, spoken on panels and taught as an adjunct professor. Id.

Samsung looked to Doughty's deposition testimony in support of its conclusion that he was not qualified to give expert testimony. Dkt. No. 158 at 13-14. It pointed to the fact that Doughty has no background in manufacturing or engineering; that he last "worked on anything related to a lithium ion battery and its development was in 2006;" that this was the only case in which he ever has offered an opinion "regarding lithium ion batteries and battery cells in a laptop that failed and caused" a fire; that he didn't experiment to test his hypothesis; that he based his conclusions on a one-hour examination of the laptop remains (unrecorded, and not witnessed by any defense representative); that he had no background in computers; and that he had not opined as to any design defect. Id.

14 DynaPack objected that Doughty had no background in computer control or "safety circuitry," that he'd admitted that he wasn't qualified to "review and understand battery pack circuitry or computer circuitry," and that he didn't know how a computer and a battery pack "communicated"

with each other. Dkt. No. 161 at 12. Dynapack contends that Doughty does not have experience or education in the area of manufacturing lithium ion 18650 batteries or battery packs, and he has not analyzed or discussed the specifics of the manufacturing process of a lithium ion 18650 battery cell or a battery pack. Id. at 13-14. It argued that Doughty's knowledge and experience is mostly limited to battery cell design and quality control testing performed by Samsung SDI and DynaPack after the battery cells and packs were manufactured, and that his opinions do not call such testing into question. Id. at 14. DynaPack argues that Doughty lacks experience, specialized knowledge and training in what it characterizes as the critical stage of the development process: manufacturing. Id. Dynapack maintains that Doughty's manufacturing experience is limited to prototype manufacturing, and that experience is more than ten years old. Id. Doughty conceded at his deposition that he has not entered an industrial lithium ion manufacturing facility since 2003 or 2004 and has never observed DynaPack's or Samsung SDI's manufacturing processes. Dkt. No. 162-2, at 8-10, 36.

According to DynaPack, Doughty's opinions go well beyond the scope of his knowledge and experience because he knows nothing about how Samsung SDI manufactured battery cells or battery packs, either in the past or the

15 present. Dkt. No. 158 at 14. Dynapack argues that Doughty's CV does not reflect education or experience in the fields of computer or battery pack circuitry. Id. at 13. Dynapack further argues that Doughty's CV does not reflect education or experience in the fields of computer or battery pack circuitry. Id. Dynapack contends that Doughty cannot read computer or battery pack circuitry, does not know how the computer circuitry communicates with the battery pack circuitry, and does not know how the multiple redundant independent safety features in the computer circuitry could have independently and simultaneously failed. Id. Consequently, DynaPack argues that Doughty is not qualified to render an opinion that a defect occurred during Samsung SDI's cell manufacturing stage or during Dynapack's battery pack manufacturing stage. Id. DynaPack urges the court not to allow Doughty to assume that something must have gone wrong at the manufacturing stage without possessing any knowledge as to what actually occurs at that stage.

Hewlett-Packard contends that Doughty is not qualified to be an expert witness because he is not an engineer, and because he has no expertise in notebook computers, did not text an exemplar of Arun's computer, did not look at any schematics of the computer, and identified no design defect in the computer. Dkt. No. 171 at 9.

The plaintiffs respond that Doughty is an expert in the battery failure and analysis sciences. Dkt. No. 179-19. The fact that he does not have a degree in engineering or has not spent much time in commercial notebook computer battery manufacturing plants, they argue, does not render him

16 unqualified to offer his opinions in this case. Id. The plaintiffs note that Doughty's education and experience include a Ph.D in inorganic chemistry and work in the development of electrochemistry

concentrated on lithium ion chemistry and advanced battery materials and cell design. Id. Further, they highlight that Doughty served as the head of the Battery Abuse Testing Laboratory, authored the Battery Abuse Test Standard (along with ninety other published works), and has conducted research into battery technology and participated in battery failure investigations. Id.

The court does not find persuasive the arguments of Samsung and Hewlett-Packard that Doughty does not have expertise in battery packs or notebook computers. Doughty conceded as much. Those are not the topics on which the plaintiffs seek to have him provide expert testimony. They seek to have Doughty testify regarding lithium ion batteries (and their failure).

The court concedes that DynaPack has identified a number of areas in which the plaintiffs might challenge Doughty's general experience and qualifications as to the discrete topic of computer battery manufacturing and functioning. But "in personal injury cases, courts usually permit witnesses with general engineering or science backgrounds to testify as to the safety of a product, even where the witness has no specific experience with the product or industry in question." Hasan v. Cottrell, Inc., No. 10 C 5534, 2014 WL 412454, *8 (N.D. Ill. Aug. 21, 2014) (listing cases). See also Spray-Rite Serv. Corp. v. Monsanto Co., 684 F.2d 1226, 1241 (7th Cir. 1982) ("The fact that [the witness] is not an expert in all fields of studies on which marketing

17 analysis regularly rely 'does not make him obviously unqualified in light of his other credentials and experience.'")

The court concludes that Doughty has knowledge and experience in battery technology and battery failure. That knowledge and experience are sufficient to show that he is qualified to assist a trier of fact in understanding lithium ion batteries and how they work (or fail). "Gaps in an expert witness's qualifications or knowledge will generally go to the weight of the testimony, not its admissibility." Spray–Rite Serv. Corp. v. Monsanto Co., 684 F.2d at 1241.

ii. Reliability In his report, Doughty indicates that he analyzed "the question of whether any of the battery cells could have been the source of the fire." Dkt. No. 162-1 at 3. He reported that the notebook contained a battery pack "with three cells." Id. at 1. He stated the following in his executive summary:

The laptop computer failed catastrophically because of a fault internal to the cell that entered thermal runaway and ejected its contents. The internal fault was caused by either a manufacturing defect in the cell that allowed for multiple seemingly normal cell charge/discharge cycles before causing an internal short circuit, or a failure of the computer's control/safety circuitry to function as designed and prevent overcharging or over-discharging, leading to plating of lithium or some other metal, which in turn caused an internal short circuit in the cell, or a combination of the two. Regardless of which scenario initiated the process leading to thermal runaway, such defects were unreasonably dangerous and existed within the laptop computer as of the time it left the control of

HP. Thermal runaway of a battery cell, if accompanied by flaming ejecta from the cell, creates a potent fire hazard.

18 Furthermore, the evidence of damage to battery cells is not consistent with an external fire being the trigger of thermal runaway cells. Id. at 1.

Doughty indicated that in reaching these conclusions, he looked at "the remains of the HP Mini 110 laptop (including cylindrical 18650-size cells that powered the laptop identified as 'A', 'B' and 'C')" and the cell phone battery. Id. at 3. While he concluded that all of the cells had been subjected to extremely high heat, only Cell A had "ejected its contents." From this fact, he concluded that "the temperature history of Cell A was unique." Id. He explained that if a battery releases its stored energy "in a rapid, uncontrolled manner, heat and gas are produced that can trigger thermal runaway." Id. He defined "thermal runaway´ as "the condition when the rate of heat generation inside the battery cell (due to chemical reactions involving cell materials) is greater than the rate of heat dissipation." Id.

Doughty explained that he'd considered various possible causes for his conclusion that there was thermal runaway in Cell A—"overcharge failure," "external short circuit," "electrical abuse," and "mechanical abuse." Id. at 4. Then, after an extended discussion, he concluded that because Cell A ejected its contents and was distorted, and the other batteries (including the cell phone battery) did not, there had to be something more than "simple fire exposure" that caused that ejection and extortion. Id. at 7. One such "something," he indicated, is "internal short circuit." Id. at 8. He asserted that

19 flaws inside a battery—debris, foreign objects, etc.—"are known to cause internal short circuit," and he also opined from his review of publications that "it is entirely possible to manufacture cells with internal flaws, which can lead to internal short circuit, but cannot be detected by the existing battery safety test standards." Id.

Doughty concluded:

It is my opinion that, since the rate of decomposition leading to production of heat and gas was so much faster in Cell A than the other cells, the trigger of thermal runaway had to be different than the other cells. The only trigger of thermal runaway that remains is an internal flaw in the cell that lead [sic] to rapid thermal runaway, followed by ejection of the burning contents of the cell. Id. at 9. He also concluded that "the hot ejecta from Cell A were sufficient to initiate the subject fire," id. at 11, and that the cell phone battery did not start the fire, because it did not eject its contents, id.

Samsung SDI pointed out that Doughty had admitted that he could not give an opinion "to a reasonable degree of certainty" what manufacturing flaw allegedly existed in Cell A, because the evidence burned up in the fire. Dkt. No. 158 at 14. He had no knowledge of the manufacturing

processes for either the batteries or the battery pack. Id. Samsung contended that Doughty's opinions were unreliable because he could not testify to a reasonable degree of engineering certainty (1) what the manufacturing defect was in the battery; (2) when any such defect occurred in the manufacturing process; or (3) whether any such defect was causal of the thermal runaway that allegedly caused the subject fire. Id. at 3.

20 Further, Samsung SDI argued that Doughty conducted no experiments to test his hypotheses; his testing was done "in his head based on his experience"; and he performed no independent testing and did not make any calculations to support his conclusions. Id. at 13. According to Samsung, Doughty's conclusions were based upon a one-hour examination of the laptop remains, which he did not videotape or perform in the presence of the defendants' representatives. Id. Finally, Samsung SDI argued that Doughty's opinion that the battery failed was unreliable because he advanced three separate theories to explain how and why the battery pack may have failed, but he could not state to a reasonable degree of engineering certainty which of his theories was more likely than another. Id. at 14.

According to DynaPack, "Doughty's testimony amounts to talking off the cuff, without data or analysis." Dkt. No. 161 at 17 (quotation marks omitted) (alteration omitted). DynaPack characterizes Doughty's opinion as the result of a string of conclusions unsupported by sources in the relevant scientific community. Id. Like Samsung, DynaPack criticized the fact that Doughty looked at the laptop remains for an hour with his naked eye; he performed no tests or calculations, and no one witnessed or recorded what he did do. Id.

DynaPack also argues that Doughty's conclusion does not survive the Seventh Circuit's reliability test, laid out in Fuesting v. Zimmer, Inc. ("Fuesting I"), 421 F.3d 528, 534-35 (7th Cir. 2005):

(1) whether the scientific theory can be and has been tested; (2) whether the theory has been subjected to peer review and publication; (3) the theory's known or potential

21 rate of error when applied; and (4) whether the theory has been "generally accepted" in the scientific community. [Daubert, 509 U.S.] at 593–94 . . .; see also Chapman v. Maytag Corp., 297 F.3d 682, 687 (7th Cir.2002). In addition to these factors, the 2000 Advisory Committee's Notes to Rule 702 suggest other benchmarks for gauging expert reliability, including: (5) whether "maintenance standards and controls" exist; (6) whether the testimony relates to "matters growing naturally and directly out of research they have conducted independent of the litigation," or developed "expressly for purposes of testifying"; (7) "[w]hether the expert has unjustifiably extrapolated from an accepted premise to an unfounded conclusion"; (8) "[w]hether the expert has adequately accounted for obvious alternative explanations"; (9) "[w]hether the expert is being as careful as he would be in his regular professional work outside his paid litigation consulting"; and (10) "[w]hether the field of expertise claimed by the expert is known to reach reliable results for the type of opinion the expert would give." Fed.R.Evid. 702 advisory committee's note (2000 amends.). DynaPack argues that while

Doughty's opinions missed several of the Fusting I reliability factors, the biggest flaws were that the opinions "unjustifiably extrapolated from an accepted premise" and their failure to "account for obvious alternative explanations." Dkt. No. 161 at 19-20.

With regard to the unjustifiable extrapolation, DynaPack argued that Doughty jumped from the premise that "manufacturing defects can cause thermal runaway in lithium ion battery cells" to the conclusion that there was a manufacturing defect—or even thermal runaway—in the cell in this case. Id. With regard to Doughty's failure to account for alternative explanations, DynaPack argued that Cell A could've ejected its contents after it was exposed to external heat, that it could have been moved during cleanup (rather than

22 shot across the room), or that it could have been damaged while the firefighters were trying to put out the fire or remove the debris. Id. at 20.

DynaPack argues that, in his opinions and testimony, Doughty identified nothing in the battery science community that supported his conclusions and underlying theories that Cell A must have experienced thermal runaway, that the thermal runaway had to have been caused by an internal cell fault (a so- called "hard short circuit"), and that the hard short must have been caused by a manufacturing defect, defective computer circuitry, or both. Id. at 20. In DynaPack's estimation, Doughty used no particular methodology to conduct his analysis of the battery pack, performed only a "naked eye examination" of the laptop outside the presence of the defense, did not conduct any independent testing, and made no calculations. Id. at 17. For those reasons, DynaPack argues that Doughty's "methodology" cannot be subjected to peer review. DynaPack further contends that Doughty's failure to purchase an exemplar version of the laptop in this case to confirm the charge required to initiate thermal runaway demonstrates that he does not actually know what charge the battery cells needed to enter thermal runaway. Id. at 18.

HP argues that Doughty's articulated three bases for his conclusion that Cell A caused the fire: (1) that Cell A acted as a projectile; (2) Cell A was found to have a different shape post-fire than the remaining two cells; and (3) Cell A expelled its contents. Dkt. No. 171 at 12. HP argued that the facts of the case, and scientific principles, did not support these bases. Id. For example, HP explains that Doughty assumed that Cell A acted as a projectile because after

23 the fire, it was found in one of the piles of debris outside the bedroom. Id. This is a faulty assumption, HP argues—no one knows where Cell A was located before cleanup. Id. With regard to the shape of Cell A, HP argues that Doughty didn't identify any source for his theory that a misshapen battery shell must have been caused by an internal short circuit that caused thermal runaway. Id. at 13. Further, Doughty assumed that he knew how the battery casing had become misshapen. Id. As to the ejection of the battery's content, HP argues that while it is known that a lithium-ion battery can eject its contents when exposed to external heat, Doughty provided no support for his supposition that in this case, the ejection must have been the result of internal short

circuit and thermal runaway. Id. at 15. Finally, HP notes that Doughty's assumption that all lithium-ion cells exposed to extreme heat will react in the same way is not generally accepted in the battery industry. Id. at 16.

The court agrees with the defendants that there is no evidentiary support for the underlying bases for Doughty's opinion that a manufacturing defect in the battery caused the fire. With regard to the location where Cell A was found post-fire, Doughty testified that he understood that, after the fire, Cell A was "found distant from the computer in the room" and that it had acted as a "projectile." Dkt. No. 172-10, at 13, 23, 35. The record does not support this proposition. The plaintiffs' electrical engineer, Benjamin Mills, testified as follows:

24 Q. And I'm assuming you have no knowledge of where that cell [Cell A] was discovered . . . after the fire event and before it was taken outside? A. No, I don't. I mean, it would have been on the floor area or on the edge of the springs or mattress where they would have shoveled the debris and tossed it out the window or moved it out the window. Dkt. No. 172-7, at 23. Mills' testimony shows that he had no knowledge of Cell A's location after the fire. According to his testimony, Cell A would have been located in the same general place where remaining batter cells were: "on the floor area or on the edge of the springs or mattress." Id. On the other hand, the record does contain evidence that after retrieving the remains of the laptop and the cell phone, firefighters tipped up the mattress and dumped the remaining debris onto the floor, then shoveled it out of the window into piles. Dkt. No. 167 at ¶11. Doughty's whole "projectile" theory ignores the fact that Cell A could have gotten into the debris pile by being swept there, not by being thrust there by the force of its imploding contents. There is no evidence in the record to support the "projectile" assumption.

The other two bases for Doughty's conclusion share a similar fate. Doughty conceded in his deposition that there was no scientific literature supporting his assumption that differential damage observed in a cell post-fire indicates that an internal fault within the cell caused the fire:

Q. Okay. So the answer to my question then is you are not aware as you sit here today of any scientific literature that says differential damage in a cell post- fire can lead to the conclusion that that cell had an internal fault that caused the fire, correct?

25 A. Correct. Dkt. No. 172-10, at 14. The scientific literature identified by HP supports the opposite of Dr. Doughty's claim: that lithium-ion battery cells respond randomly to heat, and that differential damage cannot be used to determine that a particular cell was the cause of the fire. Dkt. No. 171, at 16-17. HP further cites Linden's Handbook of Batteries (4th Edition), which states:

. . . the electrode windings of an 18650 model lithium- ion cell that initiates a failure in a multi-cell pack often appear comparatively lightly damaged in x-ray images, while the windings of cells that reacted later show sites of greater damage, including resolidified globules throughout those cells. Little melt damage occurs in the initiating cell because this cell is at or near the ambient operating

temperature when it begins developing a short circuit. Much of the energy from this cell can be consumed by the shorting event itself and in self-heating to the critical temperature where the thermal runaway occurs. Once the separator melts, there is less energy left in the cell to cause additional pronounced shorting. Dkt. No. 171 at 16 (emphasis added). According to that passage, the cells that initiate a fire are "comparatively lightly damaged" as compared to the cells that later are attacked by the fire. Consequently, Linden's would hold that the cell with the greatest damage, Cell A, should be excluded as the cause of the fire. HP argues that its expert, Dr. Quinn Horn, observed this phenomenon during his tests on 18650 lithium ion battery cells. Dkt. No. 191, at 8. HP contends that the fact that Doughty's opinion "contradicts the generally-accepted peer reviewed literature, cannot be independently tested or verified" is a sufficient basis for the court to exclude it. Id.

26 Finally, Doughty based his opinion on the fact that Cell A ejected its contents. But, as discussed above, HP pointed to the Underwriters' Laboratory Standard 1642, which recommends a test for making sure that lithium-ion battery cells will not eject their contents when exposed to external heat. Dkt. No. 171 at 15; Dkt. No. 172-10. Doughty's assumption that Cell A must have expelled its contents as a result of internally-generated heat ignores the fact that exposure to external heat is known to cause ejection of a lithium-ion cell's contents.

Doughty concludes that an internal short circuit in Cell A caused thermal runaway which caused the cell to distort, eject its contents and shoot across the room, with no proof that there was an internal short-circuit, that there was thermal runaway, that internal forces caused the shell to distort or eject its contents, and that it got across the room by some means other than internal combustion. This conclusion is a series of unsubstantiated conclusory statements that are not supported by scientific methodology. Neither Doughty nor the plaintiffs provide support for his conclusions, apart from the fact that Doughy expressed them in his report. Doughty conceded that he could have tested his theory, but he did not. Dkt. No. 172-10, at 66. At his deposition, Doughty agreed with Horn that the fact that a cell may have expelled its contents during a fire does not indicate that the cell started the fire or was attacked by the fire. Id. at 18, 21. Doughty's opinion that an internal fault in Cell A caused the fire is unreliable because his conclusion that Cell A acted as a projectile is not supported by the record evidence. Dkt. No. 171 at 12.

27 Doughty's opinion that a defect in a lithium-ion battery cell caused the fire in this case is not supported by generally-accepted battery science or reliable, testable methodology.

The court will exclude Doughty's report as unreliable. b. Michael Hill—Cause and Origin Expert

Samsung SDI argues that the court must exclude the testimony of cause-and-origin expert Michael Hill because he has not been a fire investigator since 2011, has no education regarding lithium-ion batteries, and never had investigated a fire in which he'd concluded that a lithium-ion battery was the cause. Dkt. No. 158 at 8-9. HP argues that the court should exclude Hill's testimony because it does not comport with the National Fire Protection Association's Guide for Fire & Explosion

Investigations NFPA 921. Dkt. No. 171 at 17. As with Doughty, the court finds that Hill has knowledge and training that qualify him to provide expert opinions on the cause and origin of fires, but finds his opinions in this case unreliable. i. Qualifications

Michael Hill has an associate's degree in fire science from the College of DuPage in Illinois. Dkt. No. 172-21 at 9. He has had special training regarding arson detection and fire investigation from the National Fire Academy in Maryland. He has attended numerous seminars from law enforcement agencies, including the Bureau of Alcohol, Tobacco and Firearms and the Illinois Fire Marshal's Office. Id. He provided a list of all the seminars he'd attended over a thirty-one year career. Id. at 10-17. He is certified by the

28 International Association of Fire Investigators as a fire investigator. Id. at 18. In the four years prior to the date that he submitted his credentials in this case, he testified in court once in a trial in Columbia City, Indiana. Id. He began his career as a fire investigator in 1973 with the Wheaton, Illinois Fire Department. Id. at 9. He either investigated or supervised all fire investigations in Wheaton from 1973 to 1982. He also worked part-time as a cause-and-origin investigator with a private investigative firm in Chicago. After working in Wheaton, he spent some time as an agent with a national investigations agency, and then worked as an independent fire investigator. Id. By November 2000, Hill was working for Donan Engineering Company, investigating cause- and-origin studies "for northern Indiana." Id. Hill stated that he had "participated In numerous civil and criminal trials, as well as depositions, qualifying as an expert witness in the field of fire origin and cause . . . ." Id. He has been retired since May 2012. Id.

Samsung initially argues that Hill is not qualified to render any of the opinions he offered. Dkt. No. 158 at 8, 12. At his deposition in this case, Hill testified he had not been certified since that time and now is a "retired fire investigator." Dkt. No. 159-2 at 29. He testified that he had no formal education as to lithium ion batteries and he is not an expert in electronics or lithium ion batteries. Id. at 3-4. Hill also testified that he has no expertise or base of knowledge that would support "an opinion regarding the appearance of a lithium-ion battery cell and whether its appearance is consistent or inconsistent with an internal failure which would be a competent ignition

29 source." Id. at 5. Samsung points out that Hill had never before rendered an opinion in a case "that a notebook computer and specifically a lithium-ion battery caused a fire[.]" Id. at 6. Further, Hill acknowledged that National Fire Protection Association standard 921 indicates "that developing a timeline for a fire is an important part of the investigative process," but he did not develop a timeline regarding the fire because "[t]here were factors he could not assess." Id. at 25. HP, too, points to numerous instances where Hill admittedly did not follow the dictates of NFPA standard 921. Dkt. No. 171 at 18-21.

As with Doughty, the court concludes that the defendants' challenges to Hill's qualifications are really challenges to the weight a jury should afford Hill's opinions, rather than his qualifications to

determine the cause and origin of the fire. There is no question that Hill has extensive experience and training in investigating the cause and origin of fires. The facts that that experience is not recent, that Hill is retired, that he never determined that a fire was started by a lithium-ion battery—those might cause a jury to discount his testimony. But his qualifications demonstrate that he does have specialized knowledge that could assist a trier of fact in understanding a complicated issue outside a layperson's ken—determining how, and where, a fire started. The court finds that Hill possesses the qualifications necessary to testify as an expert on fire cause and origin.

30 ii. Reliability A. Hill's Opinion Hill concluded that the fire "originated on top of the bed, in the basement bedroom . . . ." Dkt. No. 172-21 at 4. He based this conclusion on several facts. He found the "heaviest charring and fire damage" directly above the bed. The damage in the bedroom led him to conclude that the fire extended upward and outward from the area of the top of the bed. He concluded that the fire did not originate at the "ceiling mounted light fixture" in the bedroom. Id. He stated that there was no evidence that the bedroom reached "flashover." Id. at 5. (NFPA 921 defines "flashover" as "[a] transition phase in the development of a compartment fire in which surfaces exposed to thermal radiation reach ignition temperature more or less simultaneously and fire spreads rapidly throughout the space, resulting in full room involvement or total involvement of the compartment or enclosed space." Id. at n.1.) He noted that a dresser near the window (away from the bed) was not consumed by the fire, and that the burn patterns on the ceiling indicated that "flameover" occurred. Id. (NFPA 921 defines "flameover" as "[t]he condition where unburned fuel . . . from the originating fire has accumulated in the ceiling layer to a sufficient concentration . . . that it ignites and burns; can occur without ignition of, or prior to, the ignition of other fuels separate from the origin." Id. at n.2.)

With regard to the cause of the fire, Hill opined that his study, and his consultation with engineers, "indicate[d] that the most probable competent ignition source [was] the laptop battery." Id. at 5. In support of this opinion, he

31 first pointed to electrical evidence—evidence of "arcing," lack of evidence that the fire had originated in any room outlets, and lack of evidence that the glass light bulb above the bed had fallen on the bed. Id. He then stated that "[l]iterature available at the time of this report indicates failures of lithium ion battery cells eject molten metals and flaming electrolyte, thereby posing fire hazards." Id. He asserted that when the investigators found the remains of the laptop on the bed, "two of the three lithium ion battery cells were present." Id. at 6. He refers to the fact that the third cell "was later found amid fire debris which was removed from the bedroom during the investigation conducted by the authorities." Id. He then proceeds to recite Doughty's conclusions as to internal failure and thermal runaway, as well as Doughty's conclusion that the cell phone didn't cause the fire. Id. at 6-7. Finally, he notes that Mr. Gopalratnam, Arun's father, stated that the printer in the bedroom was not plugged in or usable, and thus could be eliminated as a cause of the fire. Id. at 7. One of the things that Hill did as part of his study of the fire was to "[r]eview case information & battery evidence with" Doughty. Id. at 3.

In excluding possible causes of the fire, Hill indicated that there was no evidence from the cell phone remains that it had malfunctioned, and that Mr. Gopalratnam (Arun's father) had indicated that a printer in the room had not been plugged in or usable. Id. at 7. Hill also expressed the opinion that the fire was accidental. In support of this opinion, he stated that "[t]here [was] no evidence of preparation" for the fire. Specifically, he stated that Arun's "last reported state of mind was anticipatory of meeting other family members the

32 evening of June 4, 2010, prior to his traveling to Madison, WI." He stated that there was no evidence that Arun had been injured before the fire, and that there was no evidence of a break-in. Id. Hill also stated that there was "no evidence of incendiary devices." He specifically noted that there were no liquid pour patters or "other evidence indicative of an intentional human act." Id.

B. Defendants' Arguments Samsung first points out that Hill failed to mention in his report that he found a gas can in the basement of the home, and that he did not retain the gas can in evidence, or try to figure out why or how the gas can had been moved (having concluded that it had been moved). Dkt. No. 158 at 9. See Dkt. No. 159-2 at 12-15 (Hill deposition). Samsung argues that Hill failed to notice the burn patterns on the outside of Arun's bedroom door, and the fact that the door appeared to have been physically forced from its hinges during the fire. Dkt. No. 158 at 10. See Dkt. No. 172-5 at 24-27 (Hill deposition). With regard to Hill's assertion that there was no evidence that the fire in the bedroom reached "flashover," Samsung points to Hill's admission that while there is an equation which allows an investigator to determine the heat release rate necessary to cause flashover, he did not know what inputs were needed to perform the equation, and did not try. Dkt. No. 158 at 10. See Dkt. No. 159-2 at 26-28. As to Hill's conclusion regarding Arun's state of mind at the time of the fire (relevant to the question of whether Arun might have had reason to set the fire himself), Samsung notes that Hill based his conclusions on statements family members made in their depositions—depositions he had not looked at

33 until a date after he had prepared his report. Id. See Dkt. No. 172-5 at 67 (Hill deposition). Samsung also noted that Hill may have relied on an exhibit indicating that Arun had made a phone call to his father's office before the fire—information that turned out to be faulty. Id. See Dkt. No. 172-5 at 16-18. Finally, Samsung points out that while Hill opined in the report that the laptop and its battery most likely caused the fire, he admitted in his deposition that given the damage the fire caused, he could not credibly rule out smoking materials as a possible cause. Id. at 11. See Dkt. No. 172-5 at 29 (Hill deposition).

HP raised other concerns. With regard to Hill's statement that the bedroom never reached flashover, HP first points out that the defense experts concluded that the room did reach flashover, as did the public investigators. Dkt. No. 171 at 18, citing Dkt. No. 172-12 at 3 (deposition of Lt. Maxwell Brunner, Menomonee Falls Fire Department). HP emphasizes that Hill conceded that there were "indicators" of flashover in the bedroom. Id. See Dkt. No. 172-5 at 41 (Hill deposition). Like Samsung, HP argues that Hill could have, but did not, perform the equation regarding the heat necessary to

generate flashover. Dkt. No. 171 at 19.

HP also takes issue with the fact that Hill ruled out the printer in Arun's bedroom as a possible fire source. Dkt. No. 171 at 20. Hill based that opinion on what he claimed was a statement from Mr. Gopalratnam. But HP points out that at his deposition, Mr. Gopalratnam stated that he was not sure whether the printer was plugged in or not, and that Mrs. Gopalratnam believed that the

34 printer was plugged in. Id. at 21. See Dkt. No. 115 at 11 (Mr. Gopalratnam deposition); Dkt. No. 172-22 at 4 (Mrs. Gopalratnam deposition).

Regarding Hill's conclusion that there was no evidence that a human could have started the fire, HP points out that the fact that no one collected any evidence of flammable liquid does not mean no flammable liquid was used (particularly in light of the fact that Hill found a gas can in the basement), and that no one took rug or floor samples to test for such liquids. Nor was an accelerant-sniffing dog used in the investigation. Dkt. No. 171 at 21-22. See Dkt. No. 172-5 at 24 (Hill deposition). Like Samsung, HP argues that Hill's failure to mention the gas can, or to try to figure out when and why it had been moved, calls the reliability of his opinion into question. Dkt. No. 171 at 22-23.

Like Samung, HP challenges Hill's assertion that he knew Arun's state of mind on the evening of the fire. HP argues that Hill had no expertise to make such a determination, dkt. no. 171 at 24-25, and that he based his opinion on unreliable data (the non-existent phone call to Mr. Gopalratnam, his failure to review any medical information for Arun), id. at 25-27.

Finally, HP joins Samsung in questioning Hill's failure to rule out smoking as a cause of the fire. Dkt. No. 171 at 28-29.

C. The Court's Conclusions The court agrees with Samsung and HP that Hill's opinion as to the cause of the fire is not reliable.

Hill's conclusion that the bedroom did not reach the point of flashover is fundamentally important to Hill's ultimate cause and origin opinion, because it

35 allowed him to conclude that the bedroom door was "open during a portion of the fire." This means that the fire was not compartmentalized, which allows Hill to point to a very specific location where the fire started: the area on Arun's bed where his laptop sat. Dkt. No. 172-5, at 37. Yet Hill testified at his deposition that he did not perform the heat release calculations that would indicate whether the room could have reached flashover, though he could have done so. Dkt. No. 172-5, at 152-54. Further, Hill testified that there were indicators that the room entered flashover, such as flames venting from the basement window and door. Id. at 155-56. Despite the fact that the record contains evidence of flashover, that Hill knew equations exist that could have assisted him to determine whether the fire could have entered flashover, and that at least one public investigator

(Brunner) had concluded that the fire did reach flashover, Hill concluded that the fire did not enter flashover.

Hill's conclusion that there was no evidence to indicate that the fire could have been accidentally or purposefully set is not supported by the record evidence. Hill did not investigate the gas can he found in the basement of the home, and his report does not account for evidence that the gas can was moved at some point after the fire began. Dkt. No. 172-5, at 83-88. Hill's deposition testimony that the gas can was empty at the time of the fire is not supported by the contemporaneous fire investigation records, id. at 86-87, which do not refer to the gas can, and the gas can was not retained in evidence, id. at 90. Fire investigators did not use an accelerant-sniffing dog to search for evidence of flammable liquids post-fire, and Hill conducted no investigation of his own into

36 whether such liquids could have been used to start the fire. Id. at 91-92. Nor could he credibly eliminate the possibility that the fire may have accidentally been started with smoking materials. And his conclusion as to Arun's state of mind—implying that Arun could not have set the fire himself—were wholly unsupported by the evidence.

Hill's exclusion of the printer in the bedroom as a potential cause of the fire is not supported by the record evidence. The plaintiffs' deposition testimony does not support Hill's conclusion that the printer was not plugged in—a conclusion which allowed him to rule out the printer as a possible cause of the fire. To the contrary, Mrs. Gopalratnam testified that the printer was plugged in, and Mr. Gopalratnam was unsure whether it was plugged in.

While the defendants did not raise the issue, the court notes another deficiency in Hill's opinion. Hill's ultimate opinion was that the fire started on the bed, and that it was most likely that it started with the battery in the laptop. He appears to have reached this conclusion, however, based in great part on Doughty's opinions, and the court has found that Doughty's opinion was not reliable. While experts may rely on hearsay, they may not base their opinions on the unreliable opinions of other experts.

Given the number and types of deficiencies contained in Hill's report, the court finds that his opinions amount to speculation that the laptop caused the fire. Process of elimination is a valid methodology, but Hill eliminated a number of potential causes for the fire at the plaintiffs' home without a reliable basis. And he relied on another expert's opinion which the court has found to be

37 unreliable. For these reasons, the court concludes that Hill's testimony is inadmissible under Daubert and Rule 702.

c. Joseph Burton—forensic pathology expert The plaintiffs asked Joseph Burton, a medical doctor, to evaluate how Arun died, and to address whether he had conscious pain and suffering before his death. Dkt. No. 159-5 at 38. Samsung argues that Burton is not qualified to testify on these issues,

dkt. no. 158 at 15, and that his opinions as to whether Arun consciously suffered pain are speculative, id. at 16. The question of what, specifically, caused Arun's death (smoke inhalation, system failure, burns) and whether he consciously suffered relate to the question of damages. Damages become relevant only if the plaintiffs can demonstrate that one of the defendants' products caused the fire in which Arun died. Because the court has excluded the testimony of the plaintiffs' battery expert and the testimony of their cause-and-origin expert, the plaintiffs cannot prove that one of the defendants' products caused the fire. The court need not, therefore, determine whether Burton was qualified, and whether the opinions he gave were reliable.

d. Benjamin Mills—electrical systems expert Benjamin H. Mills, a senior project engineer with a company called S.E.A., provided a report of his electrical evaluation regarding whether an electrical malfunction caused the fire. Dkt. No. 179-13. Mills eliminated electrical malfunction as the cause of the fire, at the conclusion of a detailed and exhaustive report. Id. at 14. HP argues that Mills' opinion is unreliable because it was not founded on empirical data. Dkt. No. 171 at 29.

38 Again, given its exclusion of the plaintiffs' battery and cause-and-origin experts, the court need not reach the question of whether Mills' opinion that the fire was not caused by an electrical malfunction is reliable. Mills' opinion— even if reliable—would eliminate one possible cause for the fire. It does not address the question of whether any of the defendants' products caused the fire.

B. Motions for Summary Judgment 1. Standard A court must grant summary judgment when "there is no genuine dispute as to any material fact and the moving party is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a); Celotex Corp. v. Catrett , 477 U.S. 317, 322 (1986). A court appropriately grants summary judgment "against a party who fails to make a showing sufficient to establish the existence of an element essential to that party's case, and on which that party will bear the burden of proof at trial." Id. The "purpose of summary judgment is to pierce the pleadings and to assess the proof in order to see whether there is a genuine need for trial." Matsushita Elec. Indus. Co. v. Zenith Radio Corp. , 475 U.S. 574, 587 (1986) (internal quotation marks omitted) (citation omitted). "A party will be successful in opposing summary judgment only when that party presents definite, competent evidence to rebut the motion." EEOC v. Sears, Roebuck & Co., 233 F.3d 432, 437 (7th Cir. 2000).

Material facts are those "facts that might affect the outcome of the suit under the governing law," and a dispute about a material fact is genuine if a

39 reasonable jury could find in favor of the nonmoving party. Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248 (1986). The party opposing summary judgment cannot simply rest on allegations or denials in its pleadings; it must also "introduce affidavits or other evidence setting forth specific facts showing a genuine issue for trial." Anders v. Waste Mgm't of Wis. , 463 F.3d 670, 675 (7th Cir. 2006). The court views all facts and draws all reasonable inferences in favor of the nonmoving party, but "inferences that are supported by only speculation or conjecture will not defeat a summary judgment motion." Herzog v. Graphic Packaging Int'l, Inc., 742 F.3d 802, 806 (7th Cir. 2014) (quoting

Tubergen v. St. Vincent Hosp. & Health Care Ctr., Inc., 517 F.3d 470, 473 (7th Cir. 2008)).

2. Analysis Because the court has excluded the expert testimony of Doughty and Hill testimony, the plaintiffs have no expert testimony to support their claim that a lithium-ion battery cell manufactured by Samsung SDI (contained in a battery pack manufactured by DynaPack, in an HP laptop computer owned by Arun Gopalratnam) malfunctioned and caused the fire that resulted in Arun's death. There are many genuine disputes of material fact as to what caused the fire that resulted in Arun's death. But the plaintiffs have no evidence to support their version of the facts. Without that support, the court must grant summary judgment in favor of the defendants.

At several points in this case, the court has acknowledged that the case involves real human beings—Arun and his parents. What happened to Arun

40 was unimaginable; the suffering his parents have endured is also beyond imagining. The plaintiffs have continued to live through their pain, grief and loss over and over throughout the long course of this case. The court knows that this ruling will also cause the plaintiffs pain. The court's finding does not trivialize or minimize the tremendous loss the plaintiffs have suffered. It means only that there is insufficient evidence in the record to support the conclusion that the defendants were the cause of that loss.

C. Other Motions 1. Plaintiffs' Motion for Declaratory Judgment (Dkt. No. 125) Because the court is granting the defendants' motions for summary judgment, the court will deny as moot the plaintiffs' motion for a declaratory judgment as to the applicability of the 2011 amendments to Wisconsin's products liability and comparative fault statutes. Dkt. No. 125. That motion relates to the apportionment of damages in the event of a liability finding. Because the court is granting summary judgment, there will be no finding of liability against any of the defendants.

2. Hewlett-Packard's Motion to File Documents Restricted to Case Participants (Dkt. No. 175)

HP asked the court to restrict from public view, but allow the parties to access, its motion to preclude experts, the supporting memorandum of law, the affidavit of Lauren Chanatry, the exhibits attached to her affidavit, and Exhibit J to her affidavit. Dkt. No. 175. HP made this request because the documents make reference to Arun Gopalratnam's medical records, which the court had

41 earlier ordered sealed. Id. The court will grant this motion, for the reasons stated in it.

3. Defendants' Rule 7(h) Motion to Strike Reply Brief Regarding Motion for Declaratory Judgment (Dkt. No. 182)

All three defendants asked the court to strike the plaintiff's reply brief in support of the motion for declaratory judgment (dkt. no. 178), or in the alternative, to allow them to file a sur-reply. Dkt. No.

182. Because the court will deny as moot the motion for declaratory judgment, the court denies this motion as moot, as well. II. CONCLUSION

The court GRANTS Samsung SDI's motion to exclude the expert testimony of Michael Hill and Daniel Doughty. Dkt. Nos. 157. The court DENIES AS MOOT Samsung's motion to exclude the testimony of Joseph Burton. Dkt. No. 157.

The court GRANTS DynaPack's motion to exclude the expert testimony of Daniel Doughty. Dkt. No. 160.

The court GRANTS Hewlett-Packard's motion to exclude the expert testimony of Michael Hill and Daniel Doughty. Dkt. No. 170. The court DENIES AS MOOT Hewlett-Packard's motion to exclude the expert testimony of Benjamin Mills. Dkt. No. 170.

The court GRANTS the defendants' motions for summary judgment. Dkt. Nos. 155, 163 and 165. The court GRANTS judgment in the defendants' favor as to all counts of the complaint.

42 The court DENIES AS MOOT the plaintiffs' motion for a declaratory judgment as to the applicability of the 2011 amendments to Wisconsin's products liability and comparative fault statute. Dkt. No. 125.

The court GRANTS defendant Hewlett-Packard's Motion to File Documents Restricted to Case Participants. Dkt. No. 175. The court ORDERS that the documents at Dkt. Nos. 170, 171, 172, 172-1 through 172-24, and 168-10 are RESTRICTED FROM PUBLIC VIEW until further order of the court, but available to the parties to the case.

The court DENIES AS MOOT the defendants' Rule 7(h) Expedited Non- Dispositive Joint Motion to Strike Plaintiffs' and Joint Motion for Leave to File Sur-Reply to Plaintiffs' Motion for Declaratory Judgment Regarding Application of New Comparative Fault and Product Liability Act. Dkt. No. 182.

The court ORDERS that this case is DISMISSED. Dated in Milwaukee, Wisconsin this 21st day of March, 2017.