UNITED STATES DISTRICT COURT SOUTHERN DISTRICT OF INDIANA EVANSVILLE DIVISION

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ENTRY ON DEFENDANTS' MOTION TO EXCLUDE TESTIMONY OF PLAINTIFF'S EXPERT WITNESSES

This matter arises out of a fire at the home of Citizens Insurance Company of the Midwest's ("Citizens") subrogor, William Magee ("Magee"). Defendants, LG Electronics USA, Inc. ("LG Electronics") and Sears Roebuck & Company ("Sears") (collectively "Defendants"), move to exclude the testimony of Citizens' fire origin expert, Steven Cottingham ("Cottingham"), and Citizens' forensic engineer, William Mers Kelly ("Kelly"). For the reasons set forth below, Defendants' motion is **DENIED**.

I. Background

Magee lived in a one-and-a-half story, wood-framed, single-family dwelling that had a partial basement with an attached garage, located at 6968 North Hamburg Road, Oldenburg, Indiana. Magee's refrigerator, a 25 cubic foot Kenmore Elite Brand Trio, was

manufactured by LG Electronics and sold by Sears. The refrigerator had two side-by-side doors and a bottom refrigerator door, and was surrounded on three sides by fully enclosed drywall in what the parties refer to as an alcove. Magee's kitchen appliances were all electrically powered, except for the range.

In the early morning hours of May 18, 2010, before 5:00 a.m., Magee left his home to babysit his granddaughter at the home of his son and daughter-in-law. Before leaving, Magee turned on the dishwasher.

Sometime after Magee left the house, a neighbor, Dan Meyer ("Meyer"), noted smoke from the residence and called 911. The Eagle Fire Company of Oldenburg arrived at 5:50 a.m. Fire Chief Kevin Froehling described the structure as fully involved at the time the fire department arrived. The fire incident report indicates that it took 50 minutes to have the fire controlled. Ultimately, the home was burned to the ground.

Within twenty-four hours of the fire, Citizens employed Cottingham to determine what caused the fire. Cottingham and the other origin and cause investigators working for potential defendants, put on notice by Citizens, jointly inspected the fire scene, and conducted joint examinations of the evidence removed from the house.

Cottingham ultimately determined that the area of origin of the fire was the refrigerator based upon burn patterns, charred girders, and an analysis of the debris. He then requested the assistance of an engineer to eliminate all other appliances as the area of origin of the fire. For that reason, Cottingham engaged the services of Kelly, a forensic engineer. Kelly concluded that the other kitchen appliances, including the dishwasher,

had no role in the fire.

II. Standards Governing Expert Testimony

The admissibility of expert testimony is governed by Rule 702 of the Federal Rules of Evidence and the principles announced in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). Rule 702 provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

FED. R. EVID. 702. The Supreme Court in *Daubert* interpreted this rule as requiring expert testimony to be both relevant and reliable. *Smith v. Ford Motor Co.*, 215 F.3d 713, 718 (7th Cir. 2000). "In other words, as a threshold matter 'a district court is required to determine (1) whether the expert would testify to valid scientific knowledge, and (2) whether that testimony would assist the trier of fact with a fact at issue." *Id.* (quoting *Walker v. Soo Line R.R. Co.*, 208 F.3d 581, 590 (7th Cir. 2000)).

In ascertaining the reliability of proposed expert testimony, the court's role is to determine whether the expert is qualified in the relevant field and to examine the methodology the expert used in reaching his conclusions. *Smith*, 215 F.3d at 718. An expert may be qualified by "knowledge, skill, experience, training, or education." FED. R. EVID. 702. While extensive academic experience may qualify a potential witness as an expert, "Rule 702 specifically contemplates the admission of testimony by an expert

whose knowledge is based on experience." *Id.* (quoting *Walker*, 208 F.3d at 591).

"Thus, a court should consider an expert's full range of practical experience as well as academic or technical training when determining whether that expert is qualified to render an opinion in a given area." *Id.*

Once the court determines that an expert is qualified in the relevant field, the court must next determine whether the expert's opinion is based upon a recognized scientific method. *Id.* Because "there are many different kinds of experts, and many kinds of expertise," the reliability analysis may also focus on whether the expert's opinion has a reliable basis in the knowledge and experience of the relevant discipline. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 150 (1999). The court's role is not to assess the correctness of the expert's opinion; rather, the court's scope is limited to whether the expert's proffered opinion meets the *Daubert* standard. "The soundness of the factual underpinnings of the expert's analysis and the correctness of the expert's conclusions based on that analysis are factual matters to be determined by the trier of fact." *Smith*, 215 F.3d at 718 (citing *Daubert*, 509 U.S. at 595 ("The focus, of course, must be solely on principles and methodology, not on the conclusions that they generate.")).

Lastly, the district court must consider the relevance of the proposed testimony – i.e., whether it will assist the trier of fact in its analysis of any issue relevant to the dispute. *Id.* While an expert must "testify to something more than what is obvious to the layperson in order to be of any particular assistance to the jury," *Dhillon v. Crown Controls Corp.*, 269 F.3d 865, 871 (7th Cir. 2001) (internal quotation marks and citation

omitted), the expert need not have an opinion on the ultimate issue. *Smith*, 215 F.3d at 718.

The present motion challenges the qualifications of Kelly, and the reliability of both Cottingham's and Kelly's opinions. The relevance of their opinions is not in dispute.

III. NFPA 921

In 1992, the National Fire Protection Association issued NFPA 921, *Guide for Fire & Explosion Investigations*. (*See* Defendants' Ex. I, NFPA 921 (2008 ed.)). Chapter 4 outlines a basic scientific methodology known as the "systematic approach" to investigating fires. (*Id.*, § 4.1). "With few exceptions, the proper methodology for a fire or explosion investigation is to first determine and establish the origin(s), then investigate the cause: circumstances, conditions, or agencies that brought the ignition source, fuel, and oxidant together." (*Id.*). Such investigation requires an examination of the scene, interviewing witnesses, and testing the results. (*Id.*, § 4.3.2). The empirical data collected, which is "based on observation or experience and is capable of being verified," is subject to an analysis premised upon inductive reasoning. (*Id.*, §§ 4.3.3, 4.3.5).

Courts throughout the country have recognized that NFPA 921 offers a comprehensive, peer-reviewed, and detailed guide for fire investigation, and have held that its methodology is reliable for purposes of Rule 702. *See Hoang v. Funai Corp., Inc.*, 652 F.Supp.2d 564, 567 (M.D. Pa. 2009) (citing cases); *see also United States v. Hebshie*, 754 F.Supp.2d 89, 110 n.39 (D. Mass. 2010) (noting that NFPA 921 "is widely accepted"

as the standard guide in the field of fire investigation"); *United States v. Aman*, 748

F.Supp.2d 531 (E.D. Va. 2010 ("NFPA 921 has been peer-reviewed and is generally accepted in the community of fire investigators"); *Thompson v. State Farm Fire and Cas.*Co., 548 F.Supp.2d 588, 592 (W.D. Tenn. 2008); *Indiana Ins. Co. v. Gen. Elec. Co.*, 326

F.Supp.2d 844, 849 (N.D. Ohio 2004); *McCoy v. Whirlpool Corp.*, 214 F.R.D. 646, 651-52 (D. Kan. 2003); *Perry Lumber Co., Inc. v. Durable Servs., Inc.*, 710 N.W.2d 854, 857 (Neb. 2006). Like those Courts, this court finds that the methodology set out by NFPA 921 is reliable.

IV. The Expert Opinions

A. Cottingham

1. Qualifications

Cottingham is a Senior Investigator with Unified Investigations & Sciences, Inc. ("UIS"), and is stationed in Bloomington, Indiana. (Plaintiff's Ex. 1, CV of Steven Cottingham, IAAI-CFI, CFEI). He has held that position since August 2004. (*Id.*). Prior to that, he was employed as a Fire Inspection Officer for the Bloomington Fire Department for approximately seven and-a-half years. (*Id.*). Cottingham has investigated and/or supervised more than 600 fire and explosion incidents. (*Id.*). He is certified as a fire investigator in Indiana, and is certified as an investigator by both the International Association of Arson Investigators and the National Fire Investigators Association. (*Id.*). Cottingham and his origin and cause investigators follow the requirements of NFPA 921. (Defendants' Ex. H, Deposition of Steven Cottingham ("Cottingham Dep.") at 12-14).

Cottingham is qualified by his experience and training to give an opinion on the origin and cause of the fire that consumed Magee's home.

2. Cottingham's Opinion

Cottingham performed a scene investigation with Magee on May 20, 2012.

(Defendants' Ex. G1, Expert Report of Steven Cottingham ("Cottingham Report") at 2).

Cottingham's interior examination revealed that the entire first floor was consumed by fire.

The overall interior examination established total floor consumption with the kitchen, guest bedrooms and living room collapsed [sic] into the crawl space, and the dining room, master bedroom and stairs collapsed [sic] into the basement. Two girders running north and south remained on top and just aside the concrete pilings. Heavier char was concentrated on the east girder toward the north. This area corresponded with the wall separating the kitchen and living room.

(*Id.* at 3). Cottingham also conducted an examination of the girders and concrete support pillars over the kitchen and living room. (*Id.*). He noted concentrated fire damage in the kitchen, particularly in the area surrounding the refrigerator. (*Id.*). The refrigerator's metal housing evidenced extreme heat degradation. (*Id.*).

Cottingham and the investigators involved in the joint examination established four foot by four foot grids throughout the kitchen, entry hallway and living room. (*Id.* at 4). The investigators sifted through all grids – a process he referred to in his deposition as "delayering" – and found artifacts, including the refrigerator, dishwasher, and other kitchen appliances. (*Id.*; Cottingham Dep. at 53). This process revealed that the bottom door of the refrigerator was the first thing to collapse onto the kitchen floor. (Cottingham

Report at 5). The floor covering and the sub-floor remains under the door were the only recognizable sections of flooring identified throughout the excavation. (*Id.*). Cottingham concluded that this condition could have only occurred if the floor section collapsed onto the crawl space early in the fire. (*Id.*).

Cottingham also noted that the drywall alcove surrounding the refrigerator should have protected the structural components had fire exposure been outside the alcove. (*Id.*). Moreover, the degree of damage to the refrigerator should have been consistent with the other kitchen appliances, but it was not. (*Id.*). Although the dishwasher, ovens, range top and microwave were severely damaged, they did not have the same degree of destruction as the refrigerator. (*Id.* at 4). These circumstances indicated to Cottingham that the fire originated in the refrigerator alcove. (*Id.*).

His examination of the refrigerator reflected that all combustible components, including food items, both refrigerated and frozen, were thoroughly consumed by fire. (*Id.* at 6). The intensity of the heat was further reflected in the oxidation patterns and molten steel patterns inside the refrigerator, signifying to him that the heat of the fire in the area of the refrigerator was at least 2200 degrees. (*Id.*; Cottingham Dep. at 85) (testifying that he observed melted steel, which told him the heat of the fire was in excess of 2200 degrees).

At the conclusion of the evidence examination, Charles Fricke ("Fricke"), an electrical engineer from Fire & Failure Forensics who led the Magee fire investigation on behalf of Citizens, identified an internal electrical anomaly associated with energized

electrical activity, located near the center of the refrigerator remains. (Cottingham Report at 5-6). Cottingham opined that although the precise failure mode was not identified, "energized electrical activity could have only occurred within the refrigerator framework had the fire originated in the refrigerator. External flame impingement could not cause internal electrical activity." (*Id.* at 6). Accordingly, Cottingham concluded that the evidence established, by a preponderance of the evidence, that the fire originated inside the metal casing of the refrigerator. (*Id.* at 8).

2. Reliability

Defendants challenge to Cottingham's opinion centers around the fact that he did not perform an adequate "depth of char" analysis of the fire spread.

As noted above, Cottingham's expert report reflects that he observed heavier char concentrated on the east girder toward the north, which corresponded with the wall separating the kitchen and living room. The heavier char was a piece of evidence that he relied upon in forming his opinion that the fire originated in the refrigerator. Given the complete destruction of the contents of the kitchen (and the house in general), his testimony that the girder exhibited a greater depth of char is an important observation that informed his opinion and one, according to Defendants, that should have been measured accurately. Cottingham testified that he did not do so. (Cottingham Dep. at 79-80) (testifying that he did not specifically measure the depth of char).

NFPA 921, Section 17.4.3, entitled Depth of Char Analysis, provides that "[a]n analysis of the depth of charring is the most reliable for evaluating fire spread." (NFPA,

§ 17.4.3). According to NFPA 921, this measure may allow the investigator to determine those portions of a structure that were exposed the longest to a heat source. (*Id.*). From this measurement, the investigator "may then deduce the direction of fire spread" (*Id.*). A consistent method for measuring the depth of char "is the key to generating reliable data." (*Id.*, § 4.3.2). Defendants contend that, in contravention of NFPA 921, Cottingham "did nothing more than make visual observations at the scene." (Defendants' Motion at 22).

Cottingham testified that he followed the systematic approach to his fire investigation pursuant to the NFPA 921. (Cottingham Dep. at 12-14). Consistent with that approach, Cottingham interviewed Magee and Meyer, collected and analyzed artifacts from the fire – a process that lasted three days – and developed a hypothesis to explain the source of the fire. (*Id.* at 154-55; Cottingham Report at 5). Cottingham began a process of eliminating other potential causes of the fire based upon his investigation of the scene and the evidence he jointly examined with other investigators. (Cottingham Dep. at 155). His expert report reflects this process. (Cottingham Report at 3-4). He then tested the hypothesis by exchanging ideas with other investigators on a more theoretical level – i.e., "how can we explain these facts to either support or to not support a [] given theory?" (Cottingham Dep. at 155-56).

Although Cottingham may not have strictly followed NFPA 921's depth of char analysis, this shortcoming does not require the absolute exclusion of his proffered opinion. At most, his failure to accurately measure the depth of char suggests that the

credibility of his decision may be subject to attack on cross-examination. *Daubert* specifically contemplates this type of challenge. 509 U.S. at 509 ("Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.").

Defendants also attack Cottingham's opinion because, they argue, his opinion contradicts the eyewitness testimony of Meyer. On June 25, 2010, Meyer gave a recorded statement in which he stated that he observed the fire venting from the back of the Magee house in the early morning hours of May 18, 2010. (Defendants' Ex. J, Recorded Statement of Dan Meyer). Cottingham testified that he never heard Meyer's statement, admitted that Meyer's observation was inconsistent with his opinion and that, based upon his investigation, Meyer must have been confused. (Cottingham Dep. at 143, 151, 156-57). According to Cottingham, "[t]here were too much of these windows left for that statement to be totally accurate, you know, as far as the bedroom walls and the remains that were still at the scene." (*Id.* at 151). This inconsistency may affect Cottingham's credibility with the jury, but the appropriate remedy does not lie in the wholesale exclusion of his testimony; instead, Defendants' remedy is through effective trial advocacy, including a vigorous cross-examination of his testimony at trial.

In light of Cottingham's experience, knowledge, and training in fire investigation, as well as his extensive investigation and examination of the contents of the fire scene, the court finds that Cottingham's proffered opinion meets the requirements of Rule 702

and *Daubert*. Accordingly, Defendants' motion to exclude Cottingham's testimony is **DENIED**.

B. Kelly

1. Qualifications

Kelly has held the position of Senior Forensic Engineer with UIS since 2007, and is stationed in Louisville, Kentucky. (Defendants' Ex. C, CV of William Mers Kelly, PE ("Kelly CV")). Kelly testified that in performing forensic analysis to determine a particular failure, as in this case, he relies upon the methodology espoused in NFPA 921. (Deposition of William Mers Kelly ("Kelly Dep.") at 67-68).

Kelly received a degree in mechanical engineering from the University of Cincinnati in 1982, and is a licensed engineer in Indiana, Ohio, Kentucky, Tennessee, and Illinois. (Kelly CV; Kelly Dep. at 46, 69-70). He has been employed as an engineer in varying capacities since 1983. (Kelly CV).

Defendants argue that Kelly is not qualified to render an opinion because he has no experience as a forensic engineer with respect to consumer refrigerators. Kelly testified that he took college courses in product liability and failure analysis. (Kelly Dep. at 64-65). Although he did not take courses with respect to the design of a consumer refrigerator, Kelly designed Slush Puppie machines as Chief Engineer for the Slush Puppie Corporation from 1991-1993. (*Id.* at 49-52). Kelly testified that the design of a Slush Puppie machine would be "very similar" to a refrigeration system like the one involved in this case. (*Id.* at 50). Kelly believes that his experience in the design and

manufacturing arenas and his understanding of "how things are put together and how they're designed, . . . how things work," and "[h]ow things fail" renders him qualified in the field of forensic engineering. (*Id.* at 66). Having reviewed Kelly's CV and his deposition testimony, the court agrees.

Defendants also contend that Kelly is not qualified to give an opinion on the origin and cause of the fire. Defendants misconstrue the purpose of Kelly's involvement in the fire investigation. Kelly was not enlisted as the primary origin and cause expert. Cottingham enlisted Kelly's assistance after Cottingham determined that the fire originated in the kitchen, and it was Kelly's job, with his expertise in forensic engineering, to narrow down the origin and cause to a specific appliance. (*Id.* at 16-18). Kelly explained that an origin and cause expert typically employs a forensic engineer to help him or her determine the exact origin and cause of the fire and thus, Cottingham's request for his assistance was not out of the ordinary. (*Id.* at 18). *See also Walker*, 208 F.3d at 588) (noting that an expert may rely upon the expertise of others in formulating his or her opinion). Defendants' challenge to Kelly's qualifications is overruled.

2. Kelly's Opinion

Kelly performed a joint scene investigation with Cottingham and other interested parties on June 2, 2010. (Defendants' Ex. D1, Expert Report of William Mers Kelly ("Kelly Report") at 2). Kelly learned from Magee that only two kitchen appliances were in operation at the time the fire started – the refrigerator and the dishwasher. (Kelly Dep. at 19-20). Kelly's examination of the structure revealed "extreme localized damage in the

area of the kitchen refrigerator." (Kelly Report at 3). He determined that some of the electrical and component fragments consistent with those in this type of refrigerator were found in and around the refrigerator, and that "[a] few exhibited damage consistent with electrical activity." (*Id.*).

Following his examination of the structure, Kelly determined that the fire started within the refrigerator for four primary reasons. First, the damage to the refrigerator was far more extensive than the damage to the other appliances. (*Id.* at 4). The damage was so extreme that "the steel enclosure and other remains had collapsed to a height of about 16 inches and less." (*Id.* at 3; see also Kelly Dep. at 106) (testifying that the damage was "the most [he'd] ever seen. It was amazing.")). Second, Kelly explained that the vast majority of the combustibles within the refrigerator burned away, leaving it to collapse from within. (Kelly Report at 4; Kelly Dep. at 135). Third, the position of the refrigerator doors was consistent with fire emanating from inside the refrigerator and not from an external fire attack. (Kelly Report at 4). Lastly, Kelly, like Cottingham, noted that the drywall surrounding the refrigerator should have insulated the refrigerator from external attack, unless the fire emanated from the front. Kelly ruled that possibility out, however, because the bottom refrigerator door and the flooring that it fell upon lacked significant external damage. (*Id.*).

Kelly ultimately opined that the fire loss was caused by a failure within the refrigerator, and the failure resulted in the ignition and consumption of the combustible internal components of the refrigerator. (*Id.*). Due to the extreme nature of the fire and

the limited amount of time he had to inspect the refrigerator during June 2, 2010, joint scene examination, Kelly could not identify the specific failure mode. (*Id.*).

3. Reliability

Defendants argue that Kelly's opinion that the fire originated in the refrigerator as opposed to another kitchen appliance, such as the dishwasher, is based upon unsupported belief or speculation. In support of their position, Defendants first cite to Kelly's deposition testimony, in which he states that other than his visual observation, he did not do any physical or destructive testing of the dishwasher. (Kelly Dep. at 156). According to Defendants, this failure is significant because the dishwasher was in operation on the morning of the fire. Next, Defendants attack Kelly's observation that a few of the electrical components in and around the refrigerator exhibited damage consistent with electrical activity for two related reasons. First, Kelly admitted in his deposition that during a fire of the sort that consumed Magee's home, it is not unusual for artifacts to be found inside the refrigerator that did not belong to it. (*Id.* at 108, 113, 119). Second, Kelly testified that most of the electrical activity he observed "could have been" caused by the fire itself, because the fire impairs the insulation of the electrical components and thus allows them to come into contact with one another and with other conducting surfaces. (*Id.* at 113). Finally, Defendants attack Kelly's expert opinion that due to the extreme extent of the fire, he could not identify what inside the refrigerator failed and caused the fire.

Kelly's failure to test the dishwasher, his admission that the electrical activity he

observed in fragments found in and around the refrigerator could have been the result of the fire, and his inability to determine the exact origin and cause of the fire, do not render his opinion unreliable. The *Daubert* analysis does not require that the expert's testimony be flawless and/or correct; it requires only that the court analyze a proffered expert's opinion to ensure that it is relevant and the product of reliable principles and methods. *Daubert*, 509 U.S. at 596. The court is satisfied that his opinion meets this standard. Any challenges to the apparent weaknesses in his testimony are best elicited by Defendants' counsel on cross-examination.

Finally, Defendants argue that the night before his deposition, Kelly spoke to Fricke, and learned that the Kenmore Elite Brand Trio, with same model number and same series as Magee's, had an issue with the light staying on continuously. (Kelly Dep. at 159-60). Kelly testified that if what Fricke told him was true, that defect was likely present in Magee's refrigerator. (*Id.* at 161). Kelly was quick to point out, however, that he did not find any evidence of a specific failure in the refrigerator, and that his opinion was limited to "whether the refrigerator's a victim of the fire or the cause of the fire." (*Id.* at 163, 168). Kelly's opinion does not go so far as to conclude that the fire was caused by the defect described by Fricke.

Defendants also fault Kelly for not doing an engineering analysis to determine whether or not the light staying on existed in the Magee refrigerator, and for not performing an engineering analysis to determine, as a general proposition, if a light staying on could cause a fire within a refrigerator. (*Id.* at 164-65). Again, Kelly did not

find out about this alleged issue with the subject model refrigerator until the day before

his deposition. Therefore, he could not have performed an engineering analysis – to the

extent he could perform one on a refrigerator burnt as severely as Magee's – as of the

date of his deposition.

V. Conclusion

The court finds that both Steven Cottingham and William Mers Kelly are qualified

to give an opinion in this case as to the cause and origin of the fire that consumed the

home of William Magee. The court further finds that the opinions of Steven Cottingham

and William Mers Kelly are relevant and are based on reliable principles and methods.

Accordingly, Defendants' Motion to Exclude Testimony of Plaintiff's Expert Witnesses

(Docket # 77) is **DENIED**.

SO ORDERED this <u>10th</u> day of August 2012.

RICHARD L. YOUNG, CHIEF JUDGE

United States District Court Southern District of Indiana

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