UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF KENTUCKY
NORTHERN DIVISION
AT ASHLAND

CIVIL ACTION NO. 11-16-DLB-EBA

ASHLAND HOSPITAL CORPORATION **PLAINTIFF**
d/b/a KING'S DAUGHTER'S MEDICAL CENTER

VS. **MEMORANDUM OPINION AND ORDER**

AFFILIATED FM INSURANCE COMPANY **DEFENDANT**

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This matter is before the Court on Plaintiff Ashland Hospital Corporation's Motion In Limine To Exclude The Opinions Of Frank R. Lombardo And Motion For A Hearing (Doc. # 69) and on the *Daubert* Hearing conducted by the Court on May 23, 2013. The instant motion is fully briefed and thus ripe for review. (See Docs. # 90 & 99). For the reasons set forth below, the Court will grant the instant motion.

I. FACTUAL BACKGROUND

A. The Hospital purchases a data storage network

In 2007, Plaintiff Ashland Hospital Corporation, d/b/a King's Daughter's Medical Center ("the Hospital"), contracted with technology company and manufacturer, EMC Corporation, to sell, install and support a computer data storage network known as the DMX4. The DMX4 is the Hospital's "primary computer data repository, which runs a number of essential hospital functions and is critical to patient health and safety." (Doc. # 70-1, at 6). The Hospital used the DMX4 to store all of its electronic records, including

medical records, schedules, and lab reports. EMC "markets the unit as having the highest degree of availability—99.999%," (Doc. # 69-1, at 5), and thus the unit's guarantee of information availability is its key feature. EMC installed the DMX4 within one of the Hospital's data centers and monitored it in real-time from a remote location.

B. The Hospital's data center overheats

On March 24, 2010, the air conditioning equipment in the data center failed, causing elevated temperatures (hereinafter "the Overheat Event"). Alarms within the DMX4 alerted EMC that various component parts of the unit had been exposed to increased temperatures. According to EMC, the high temperatures caused several disk drives in the unit to go offline, rendering them unavailable for a period of several hours. During this period, Hospital personnel could not access important information including physician orders, patient schedules, and historical medical records. Certain data was "completely corrupted and had to be restored from a backup." (Doc. # 70-2, at 25).

C. The Manufacturer assesses the potential damage to the data storage network

The Hospital contacted EMC to assess the DMX4's condition. EMC prepared an Event Report which concluded that the unit had been "severely compromised" from exposure to above normal temperatures. (Doc. # 70-3, at 5). Accordingly, EMC advised the Hospital that it could "no longer confirm the long term reliability" of the exposed equipment. (Id.). It further advised that the Overheat Event took the unit outside the scope of EMC's standard warranty and maintenance coverage. (Id. at 6). It recommended that the Hospital replace the unit "due to the long term reliability and data integrity issues" flowing from the Overheat Event. (Id.).

Following EMC's recommendation, in October of 2010 the Hospital replaced the DMX4 with a new system known as "VMAX" at a cost of $1,973,946.40.

D. The Insurer investigates the alleged loss

Promptly following the Overheat Event, the Hospital notified its insurer, Defendant Affiliated FM Insurance Company, of what had occurred. Affiliated FM hired Amir Rubin of LWG Consulting, an electrical engineer, to evaluate the potential damage suffered by the DMX4. Rubin conducted a two-year investigation, which included "(1) visiting the site and meeting with [the Hospital] on three occasions, (2) performing dozens of hours of technical research, (3) reviewing thousands of pages of technical documents and discovery, and (4) attending the deposition of [EMC's Frederick Sproule] . . . ." (Doc. # 69-1, at 7). Two years into his investigation, Rubin concluded that he could not form an expert opinion regarding the DMX4 without further information, including physical testing of the unit. Accordingly, he engaged a third-party firm, Emergent SX, to develop a protocol for testing the DMX4.

E. The Insurer denies coverage

For reasons unexplained, Affiliated FM did not permit Rubin to complete his investigation. Instead, it retained Frank Lombardo, another electrical engineer and a co-employee of Rubin's from LWG Consulting. In less than one month, Lombardo completed an expert report concluding that the DMX4 had not sustained any damage or loss of reliability. Based on Lombardo's report, Affiliated FM denied coverage for the DMX4's alleged loss, and the Hospital thereafter filed the instant declaratory judgment action.

The Hospital now moves to exclude Lombardo's opinions, which are as follows: (1) that the subject DMX4 did not sustain any direct physical loss or direct physical damage

as a result of the Overheat Event; (2) that the DMX4 was not exposed to extreme temperatures for an extended period of time; (3) the DMX4 was not compromised; (4) the DMX4 is no less reliable after the incident than it was before the incident; and (5) the replacement VMAX storage array system purchased by KDMC is not of like kind and quality as the DMX4.

On May 23, 2013, the Court held a *Daubert* Hearing on the instant motion at which Lombardo testified and counsel for both parties offered argument.

II. ANALYSIS

Under Federal Rule of Evidence 702, a proposed expert's opinion is admissible if (1) the witness is qualified by knowledge, skill, experience, training or education; (2) the testimony of that expert witness is relevant, meaning that it will assist the trier of fact to understand the evidence or to determine a fact in issue; and (3) the testimony of that expert witness is reliable. *In re Scrap Metal Antitrust Litig.*, 527 F.3d 517, 529 (6th Cir. 2008). Since relevance is not disputed here, the Court will only examine Lombardo's qualifications and the reliability of his testimony.

A. Lombardo is qualified

The Hospital accuses Lombardo of being a "generalist" lacking specific experience evaluating the effect of heat on computer components such as the disk drives housed within the DMX4. However, to be qualified as an expert witness under Rule 702, an expert need not be a "blue-ribbon practitioner[ ] with optimal qualifications" or have "an intimate level of familiarity with every component of a [product] as a prerequisite to offering expert testimony." *Bartlett v. Mutual Pharmaceutical Company, Inc.*, 760 F. Supp. 2d 220, 222 (D.N.H. 2011). Experts need not even have direct experience with the precise subject

matter or product at issue. *Planned Parenthood Cincinnati Region v. Taft*, 444 F.3d 502 (6th Cir. 2006) (observing that doctor was qualified to testify on abortions without having performed one); *see also*, *Berry v. City of Detroit*, 25 F.3d 1342, 1350 (6th Cir. 1994) (noting that an aeronautical engineer would be qualified to testify about a bumblebee's flight path based on general flight principles even if he had never seen a bumblebee); *DaSilva v. American Brands, Inc.*, 845 F.2d 356, 361 (1st Cir. 1988) (affirming trial court's decision to permit mechanical engineer to opine on the safety of the design of an industrial mixing machine despite the witness's lack of design experience with that type of machine). For instance, in *Burke v. U-Haul International, Inc.*, the United States District Court for the Western District of Kentucky noted that "federal courts in a number of product liability cases involving engineering experts have permitted an expert witness with general knowledge to give expert testimony where the subject of that testimony related to such general knowledge but the expert had no specialized knowledge of the particular product." No. 3:03CV-32-H, 2006 WL 3043421, at *4 (W.D. KY. Oct. 20, 2006). Experts need only be "qualified as an expert by knowledge, skill, experience, training, or education." Fed. R. Evid. 702.

Lombardo certainly measures up to this standard. He has a bachelor of science degree in electrical engineering, has spent thirty-seven years analyzing losses in electrical equipment as a consultant for the insurance industry both nationally and internationally, and founded a successful engineering firm. He has extensive experience in electronic component reliability testing and failure analysis, including failure analysis of computer systems, and he has participated in over 500 losses involving computer equipment. Furthermore, he has some specific experience evaluating the effects of overheating on

storage arrays, including some with DMX4 components, such as Seagate disk drives. For instance, he recently evaluated EMC-manufactured storage arrays that were exposed to elevated temperatures for approximately 36 hours.

The Hospital correctly notes that this is the first DMX4 overheat event Lombardo has ever encountered; that Lombardo has never analyzed the impact of overheating on the annualized failure rate or relative reliability of disk drives; and that he lacks expereince designing heat specifications or designing data storage units like the DMX4. These points do not affect his qualifications, however, because as already noted, one does not need specialized knowledge of the particular product to be qualified as an expert. *See, e.g.*. *Burke*, 2006 WL 3043421, at *4. Still, these points are relevant to the reliability of Lombardo's opinion, as explained further below.

B. Lombardo's methodology is unreliable

Rule 702 sets forth three factors for determining the reliability of expert testimony. The district court must examine whether: (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. The district court must make a "preliminary assessment of whether the reasoning or methodology underlying [expert scientific] testimony is scientifically valid and of whether that reasoning or methodology can be applied to the facts in issue." *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 592-93 (1993).

To aide the district court in making its reliability determination, the Supreme Court established a four factor inquiry in *Daubert v. Merrell Dow Pharm., Inc.*: (1) whether a theory can be or 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 the existence and maintenance of standards controlling the technique's operation; and (4) whether the technique or theory has gained a general acceptance within a relevant scientific community. 509 U.S. at 594.

The district court may, in its discretion, apply the *Daubert* factors even where, as here, the witness at issue is a technical rather than a scientific expert. *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 150-152 (1999). "The trial court must have the same kind of latitude in deciding *how* to test an expert's reliability . . . as it enjoys when it decides *whether or not* that expert's relevant testimony is reliable." *Id.* at 152 (italics in original). Regardless of how much weight the district court accords the *Daubert* factors in a particular case, the court's main focus must always be the validity and reliability of the expert's methodology. *Id.* at 158

It is true, as Defendant notes, that with technical experts, the "relevant reliability concerns may focus upon personal knowledge or experience." *Id.* at 150. Nevertheless, "[a] district court is not required to admit expert testimony that is connected to the existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered." *Nelson v. Tenn. Gas Pipeline Co.*, 243 F.3d 244, 254 (6th Cir. 2001) (quoting *General Electric. Co. v. Joiner*, 522 U.S. 136, 146 (1997)). The Sixth Circuit has instructed district courts that "[expert] testimony must 'fit' the facts of the case, that is, there must be a connection between the scientific research or test result being offered and the disputed factual issues in the case in which the expert will testify." *Pride v. BIC Corp.*, 218 F.3d 566, 578 (6th Cir. 2000) (citing *Daubert*, 509 U.S. at 592).

In particular, where an expert draws an inference from his experience, the proponent must establish "appropriate validation" for the application of the expert's theory to the matter at hand. 1 McCormick on Evidence, § 13 (7th ed. 1999); *In re Scrap Metal*, 527 F.3d at 529. The judge's role is to ensure the theory or technique "works":

> The foundation must include a showing of the results when the technique was used on prior occasions . . . [n]either the expert's voucher nor general acceptance in the field nor even long term, repeated use of the theory suffices . . . It is also clear that it is not enough for the witness to assert in conclusory fashion that she is relying on her general 'expertise,' 'knowledge,' or 'education.' Those considerations can qualify the witness as an expert, but they do not speak to the validity of the expert's theory or technique. To provide a useful expert insight, the witness must identify a more specific technique or theory. The witness must articulate that technique or theory. Otherwise, the witness is venturing nothing more than a guess.

McCormick, *supra*.

Here, Lombardo's opinion that the DMX-4's disk drives were not damaged, compromised, or rendered less reliable is entirely based on two inferences from his experience: (1) the instant Overheat Event was not hot enough or long enough to cause damage or affect the drives' reliability; and (2) if the drives had been damaged, they would have manifested greater failure rates in the weeks and months after the Overheat Event.

As the Court will explain below, despite his qualifications, Lombardo fails to establish appropriate validation for his two techniques or inferences, and fails to reliably apply those inferences to the facts at hand. His first inference—that the drives were exposed to insufficient heat to cause damage—lacks a reliable methodology because it is entirely based on his experience, it is unsupported by studies or reports, it disregards the manufacturer's heat specifications, and it fails to adequately explain data showing that the data center reached potentially damaging temperatures. His second inference—that the

drives would have manifested greater failure rates if they had been damaged—lacks a reliable methodology because it too is entirely based on his experience, it fails to account for the disk drives' self-diagnostic error codes, it is unsupported by physical tests of the drives, and it ignores the prior investigation conducted by his business partner, Amir Rubin. In reaching this conclusion, the Court will consider the *Daubert* factors, but accord them less weight because Lombardo is a technical and not a scientific expert.

At the end of this Order, the Court will also examine Lombardo's opinion that the replacement storage unit was not "of like kind and quality" as the DMX4, and explain why that opinion lacks reliability as well.

The Court now turns to examine each of Lombardo's inferences in turn.

1. Lombardo's first inference: the disk drives were not exposed to sufficient heat to cause damage

a. Lombardo bases his first inference entirely on experience and fails to support it with studies or reports

Lombardo opines that the Overheat Event was of "too short a duration" to have caused "any physical loss or physical damage to any of the DMX4's components or which would have affected the long term reliability of the equipment." (Doc. # 71-20, at 8). When asked for clarification at his deposition, he stated that in his experience evaluating overheat events, it takes 10-12 hours to cause disk drive damage at the temperatures experienced by the DMX4. By contrast, he classified the instant three and a half hour overheat event as a "brief excursion." When asked how he defined a brief excursion, he estimated that a brief excursion would be something less than eight to ten hours. At the May 23, 2013 *Daubert* Hearing, the Court asked Lombardo whether he had personally evaluated any

overheat events of shorter duration. Lombardo replied that he had; however, he neglected to specify how short these overheat events were, whether these shorter events involved DMX4's (or any type of computer equipment, for that matter), or how these shorter events differed from longer events in terms of their effect on disk drive damage or reliability.

Lombardo's theory is thus connected to the existing data solely by his own say-so. He fails to offer any meaningful distinction between a shorter-term and a longer-term overheat event. Would five hours be long enough? What about seven and a half? Lombardo baldly asserts that eight to ten hours is the magic figure, but fails to offer the Court a reasoned analysis for why this figure is valid. Accordingly, his distinction appears to be highly arbitrary and blends into the realm of guesswork. *See, e.g.*, *Mike's Train House, Inc. v. Lionel, L.L.C.*, 472 F.3d 398, 408 (6th Cir. 2007) (expert opinion excluded in part because expert "arbitrarily determined" how much significance to assign to each of the criteria in his methodology). He has simply not demonstrated that his theory can be reliably applied to the much-shorter three and a half hour event at issue here. This lack of "fit" between the expert's theory and the relevant facts is grounds for exclusion.

Furthermore, Lombardo's theory also fails to satisfy the *Daubert* factors. Lombardo has not established that his theory has been tested on a DMX4 in circumstances similar to those here. He has also failed to cite a single study, report, or other authoritative source supporting his specific theory of the relationship between length and degree of heat exposure and a weakening of disk drive reliability. He has not provided the Court with a known or potential rate of error for his theory, or the existence and maintenance of standards controlling the theory's operation. In addition, although he claims that his theory enjoys general acceptance in his field, he has not provided the Court with instances of

other experts employing it. His failure to satisfy *Daubert* is another ground for exclusion.

b. Lombardo's first inference disregards the manufacturer's specifications

Lombardo candidly admits that the DMX-4's disk drives reached 66 degrees Celsius, six degrees above the manufacturers's "never exceed" temperature, for a period of three and a half hours. He also concedes that the manufacturer's heat specifications are based on scientific testing conducted during the research and development phase of production. Nevertheless, he asserts that exceeding the manufacturer's specifications in this manner is not necessarily indicative of damage or a lessening of reliability.[1] To support this assertion, he downplays a section in the Manual from the disk drive manufacturer, Seagate, which clearly states that in order to maintain the disk drives' Annualized Failure Rate ("AFR"), the drives should not be operated above 50 degrees Celsius. (Doc. # 70-9, at 40). For example, he notes that according to the Manual, the AFR "may" not be impacted by occasional excursions above 50 degrees Celsius, and that the "maximum allowable [Hard Drive Assembly] case temperature is 60 degrees Celsius." (Doc. # 70-9, at 40). He further notes that the maximum *non-operating* temperature allowed by the Manual is 70 degrees Celsius. (Doc. # 71-20, at 7). After cobbling together these select sections in the Manual, he reasons that even under the manufacturer's specifications, "heat alone is not considered a damaging condition." (Id.).

Yet, he offers no methodology to support his cavalier disregard of the strict parameters set by the manufacturer. In addition, he admitted in his deposition that he was

[1] These temperatures also violated the vendor specifications and EMC's own internal specifications. (Doc. # 104 at ¶19).

not aware of any data, studies, research, tests or journals stating that "Seagate drives can get as hot as they did for as long as they did without degrading the annualized failure rate." (Doc. # 69-8, at 53-54). This lack of methodology and lack of supporting literature are grounds to exclude an expert opinion. *See, e.g., Botnick v. Zimmer* 484 F. Supp. 2d 715, 720 (N.D. Ohio 2007) (courts "may exclude expert testimony in instances where the methodology employed is either unreliable or entirely absent."); *Nelson v. Tenn. Gas Pipeline Co.*, 243 F.3d 244, 251 (6th Cir. 2001) (holding that the lack of peer review and publication of the expert's methodology was "plainly relevant" to the reliability of his theory).

c. Lombardo's first inference fails to adequately account for information about the data center's temperature

Lombardo asserts that because the Hospital "has not provided any ambient temperature measurement in the [data center] for March 24, 2010 . . . no one knows what the temperature in the data center was." (Doc. # 71-20, at 7). However, he then proceeds to assume that the data center's temperature did not exceed 32 degrees Celsius (90 degrees Fahrenheit), the maximum temperature allowed by the manufacturer.

The Sixth Circuit has explained that "[a]n expert's opinion, where based on assumed facts, must find some support for those assumptions in the record. However, mere weaknesses in the factual basis of an expert witness' opinion ... bear on the weight of the evidence rather than on its admissibility." *McLean v. 988011 Ontario, Ltd.*, 224 F.3d 797, 801 (6th Cir. 2000) (internal citation and quotation omitted). Assumptions which amount to significant errors may go to admissibility because, as the Committee Notes to Rule 702 state, "any step that renders the analysis unreliable . . . renders the expert's testimony unreliable." *In re Scrap Metal*, 527 F.3d at 530 (quoting Fed. R. Evid. 702, Advisory

Committee's Notes, 2000 Amendments).

Here, Lombardo's assumption that the data center did not exceed 32 degrees Celsius is not adequately based on facts in the record. He begins by correctly observing that there are only internal temperature readings available (from inside the DMX-4), and no external temperature readings available from the data center itself. He then reasons that if the data center had exceeded 32 degrees, he would have expected all of the DMX4's modules to exceed their maximum operating temperatures. Since 22 modules did not exceed their maximum operating temperature, he concludes that the data center did not exceed 32 degrees. But this conclusion does not adequately explain the fact that 4 modules did exceed their maximum operating temperature. Based on these 4 modules, Plaintiff's expert, Frederick Sproule, estimates that the data center reached between 65 and 70 degrees Celsius (155 to 170 degrees Fahrenheit), *more than twice the maximum temperature permitted by the manufacturer*.

Lombardo effectively ignores this inconvenient evidence in forming his opinion. Failing to consider such relevant facts violates Rule 702's requirement that an expert base his opinions on "sufficient facts or data." In *Lockridge v. Scripto-Tokai Corp.*, for instance, the district court excluded the expert because he "failed to collect all available data prior to making his opinion, and in some instances, selectively disregarded pieces of data to the extent they conflicted with his hypothesis." 2005 U.S. Dist. LEXIS 47962, at *60 (M.D. Tenn. 2005); *see also*, *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039, 1056 (8th Cir. 2000). So too here, Lombardo seems to selectively disregard evidence that the data center temperature was much hotter than 32 degrees Celsius.

2. Lombardo's second inference: the disk drives would have manifested greater failure rates if they had been damaged

a. Lombardo relies entirely on his experience, fails to understand the DMX-4's error codes, and fails to show that his methodology reliably measures a weakening in disk drive reliability

The DMX-4 is a very sophisticated system that can self-diagnose and report certain problems it experiences. (Doc. # 69-3, at 9). Specifically, it contains a Symmetrix platform with software that can "call home [to the manufacturer] with event logs and error codes" that indicate whether components have failed or otherwise suffered potential damage or weakening. (Id. at 12-13). The manufacturer, EMC, can monitor these event logs and error codes in real-time, and did so in the instant case. According to Frederick Sproule of EMC, during the Overheat Event at the Hospital, the event logs (called the "Full History Service Log") showed that hundreds of DMX-4 components failed from thermal over-temperature conditions. (Id. at 13-14). Some drives reported "media errors" meaning that they either could not read new data, or could not have new data written onto them. (Id. at 17). Other drives reported hardware errors, including "catastrophic disk drive fault, where it's bypassing – it's telling the link control card that, 'I'm going away, and I can't communicate anymore.'" (Id.).

Sproule not only monitored these error codes in real time during the Overheat Event, he worked with a group of 6 to 8 EMC engineers to analyze the codes. The codes require analysis because they are not written in plain English. It requires a cipher to translate the codes into understandable form. (Id.) This cipher is written into the Symmetrix software and is available to the EMC engineering staff. (Id.) As explained at the *Daubert* hearing, EMC engineers can simply click on the error codes on their computer screens, and a

written explanation of the error pops up. After analyzing the error codes generated during the instant Overheat Event, as well as the DMX-4's internal temperatures, Sproule concluded that the damage to the DMX-4 was "severe, extreme, excessive, very damaging . . . catastrophic." (Doc. # 69-3, at 52).

Lombardo claims that he too reviewed the DMX-4's Full Service History Log as part of his investigation. But he admitted during his deposition that he could not make sense of the error codes because he did not have the cipher. In his own words, he is "in the dark" about what they mean. (Doc. # 69-8, at 43). Moreover, he has not made a serious attempt to understand them. He did not acquire a copy of the cipher from EMC, and he did not speak to or interview anyone from the EMC about what the codes meant. He further admitted at the *Daubert* hearing that he did not know how hot a DMX4 disk drive had to get before the system reported an over-temperature error code. Thus, his opinion that the DMX4 components did not suffer damage or a loss of reliability is completely uninformed by an analysis of the error codes.

Lombardo argues, in essence, that he did not need to understand the error codes because he was able to understand and assess the meaning of the “dial home” events contained in the Full Service History Log. In fact, he claims that the dial home events represent the most reliable method of determining disk drive damage because they permit one to compare the pre-heat exposure failure rates with post-heat exposure failure rates. In the instant case, EMC reported that between March 24, 2010 and April 9, 2010, there were 20 dial home events, compared to just 13 in the six months prior to the March 24, 2010 overheat event. (Doc. # 70-3, at 5). There were also an additional 17 dial home events between April 9, 2010, and November 5, 2010. (Id. at 8). The EMC Event Report

cited these increased dial home events as evidence that the DMX4 had been "severely compromised." (Id. at 5).

Lombardo disagrees that the dial home events reflect damage to the DMX4. He claims that the vast majority of these dial home service requests were, in his words, "non-failure events," such as "health checks" and "upgrades." (Doc. # 71-20, at 9). He opines that if the drives had been damaged, they would have exhibited greater failure rates resulting in more dial home events and more failed disk drives in the weeks and months following the Overheat Event. He points out, for instance, that only 3 of the DMX4's 245 disk drives required replacement after the Overheat Event. As he explained at the *Daubert* hearing, in his opinion, the best test of whether disk drives have been damaged or rendered less liable is whether they still work after an overheat event.

As an initial matter, the Court questions whether this theory represents a reliable methodology. It may well be that Lombardo's method reliably detects *total disk drive failure*, but it less than clear whether it reliably measures weakening in disk drive *reliability*. For example, Lombardo highlights his experience evaluating disk drive failure that is, in his words, "manifest" (Doc. # 69-8, at 49), such as a 36-hour overheat event that caused "catastrophic failure of disk drives" where there was "a considerable amount of erratic performance by the drives, lost data, dropping in and out of connectivity with the system" and where it became "absolutely clear that the system had become unreliable . . . . " (Id. at 47).

The instant case, by contrast, does not involve a 36-hour overheat event with obvious post-event failure rates. As Plaintiff notes, "this is not a case where portions of the DMX4 were melted or disfigured." (Doc. # 99, at 14). Rather, this case involves a much

shorter exposure than Lombardo typically evaluates, and the question is whether this shorter exposure negatively effected the annualized failure rate (i.e., the reliability) of the DMX4's disk drives.

By his own admission, Lombardo has never calculated the effect of heat exposure on the annualized failure rate of disk drives in general, and did not do so in this case. It thus appears that he has not tested his theory in a way that can reliably be applied to this case. This lack of testing is yet another ground in favor of excluding his testimony. *See, e.g.*, *Hayes v. MTD Products, Inc.*, 518 F.Supp.2d 898, 900 (W.D. Ky. 2007) (excluding expert's testimony in part because he failed to conduct any testing at all). In addition, Lombardo lacks much specific expertise with DMX4's. This is the first DMX4 overheat event Lombardo has ever encountered. He also lacks experience designing heat specifications for units like the DMX-4 (Doc. # 69-8, at 4), understanding the DMX4's designed failure rate (Id. at 5), and understanding the DMX4's error-code system and other self-diagnostic capabilities (Id. at 5-6). Were he able to show a more extensive expertise with these aspects of the DMX4, it would bolster the reliability of his testimony. *See, e.g.*, *Johnson*, 484 F.3d at 435 (holding that an expert's familiarity with the particular machine at issue can support the reliability of his testimony). His lack of familiarity in this regard calls his methodology into question.

b. Lombardo's methodology is not reliably applied to the facts of this case

Nevertheless, even assuming *arguendo* that Lombardo's methodology is reliable in general, he has not reliably applied it to the particular facts at issue here for four reasons. First, his method entirely fails to account for the manufacturer's error codes which showed

that hundreds of DMX-4 components failed from thermal over-temperature conditions. As described above, these codes contain highly specific diagnostic information about what went wrong with the DMX4's disk drives during the Overheat Event. Lombardo could have sought to understand the codes by obtaining the cipher, but did not do so. He also could have interviewed someone from the manufacturer or the Hospital about the codes, or about how the DMX4 functions more generally, but he neglected to interview anyone.

Second, Lombardo could have conducted testing on the drives to confirm his theory. One test he could have performed involves extracting data stored on the disk drives that indicates whether there has been heat damage to the drives. The technology which stores this data, known as "Self-Monitoring Analysis and Reporting Technology" (S.M.A.R.T.), was available in the DMX4. At his deposition, Lombardo admitted he could have done this test but simply did not do it. He conceded that if he had more time and a more generous budget, he would have preferred to test the DMX-4.

Third, Lombardo could have conducted testing on a sampling of the DMX4's disk drives. He admitted at his deposition that it is standard practice to conduct such testing after a heat exposure incident; yet, he did not perform this test here. He claims that he was never granted access to the drives, but he fails to substantiate this claim with any objective evidence. Indeed, Plaintiff asserts that it granted all Defendant's requests for access to the drives.

Lombardo's failure to test a sampling of drives is particularly peculiar in light of the fact that two disk drives—which reported "TEMP_HIGH" error codes—failed and required replacement following the Overheat Event. Lombardo plainly admits that these two drives likely failed because of heat exposure. In his words, "I would associate those two failed

drives with the incident . . . because it got too hot or whatever." Despite this concession, he downplays these two drives as the "weak sisters within that [disk drive] population," without any evidence to support his claim. This type of speculation and guesswork does not substitute for reasoned analysis. Furthermore, as Plaintiff's counsel pointed out at the *Daubert* hearing, Lombardo essentially posits that although these two drives suffered catastrophic heat failure, the other 242 drives were completely unaffected by the Overheat Event.

Defendant counters that Plaintiff's expert, Frederick Sproule, did not conduct physical testing either. However, Defendant has not moved to exclude Sproule's opinion. Moreover, Sproule did not need to conduct physical testing because he had monitored the error codes in real time, evaluated them with his team of engineers, confirmed that the DMX4's components had been run far outside EMC's heat specifications, and concluded that they had been severely compromised.

Fourth, Lombardo only reviewed a fraction of the information gathered by Defendant's "consultant," Amir Rubin. According to Plaintiff's counsel, Rubin gathered a "deskload" of information during his investigation into the DMX-4, but Defendant only allowed Lombardo to see about one "notebook's worth." As noted above, Rubin's investigation included "(1) visiting the site and meeting with [the Hospital] on three occasions, (2) performing dozens of hours of technical research, (3) reviewing thousands of pages of technical documents and discovery, and (4) attending the deposition of [EMC's Frederick Sproule] . . . ." (Doc. # 69-1, at 7). Following this two-year investigation, Rubin could not form an opinion on whether the DMX-4 had been damaged, and thus he engaged a third-party firm, Emergent SX, to develop a protocol for testing the DMX4. For whatever

reason, however, Defendant did not permit Rubin to carry through with this protocol. What's more, Lombardo did not speak with Emergent SX, and did not speak "substantively" with Rubin, opting instead to discuss the case history only. He also failed to review the deposition of Chad Phipps, the Hospital's head of Information Technology.

These four failures—failing to understand the error codes or interview relevant witnesses about the codes, failing to extract the S.M.A.R.T. data, failing to test a sampling of disk drives, and failing to review Rubin's information—show that Lombardo did not approach this case with the intellectual rigor required by Rule 702 and *Daubert*. Instead, he settled for a "convenient form of validation," much like the expert in *Lockridge v. Scripto-Tokai Corp.*, 2005 U.S. Dist. LEXIS 47962, at *61. In that case, the plaintiff had been injured by a defective utility lighter that ignited while in the off position. *Id.* at *1-2. The court found that the expert's methodology, while perhaps generally reliable, was not reliably applied to the facts of that case. *Id.* at 58-63. The expert had not conducted any tests to validate or refute his theory. *Id.* at 58. In addition, the court found particular fault with the expert's failure to "consult, examine, or otherwise analyze all available evidentiary materials . . . ." *Id.* at 59. The expert had failed to examine physical evidence from the scene of the burning, failed to consult the fire inspector's report, failed to review the plaintiff's medical records, and failed to interview witnesses. *Id.* at 58-60. The court found these failures "fatal to the admission of his testimony." *Id.* at 61. As the court explained, the expert "did not undertake an appropriate validation of his hypothesis, and while he may very well be an expert in the abstract . . . in this case he apparently settled for a convenient form of validation. However, *Daubert* and Rule 702 . . . require a more demanding approach to scientific evidence." *Id.* at 61 (internal quotation omitted).

Like the expert in *Lockridge*, it appears that Lombardo has settled for a "convenient form of validation." Boiled down to its essence, he centered his entire opinion on whether the DMX4 was still working in the six months following the Overheat Event. Since there were no obvious failures, he concluded there was no damage or even a lack of reliability. However, he did not validate this conclusion through a rigorous investigation. Instead, he selectively disregarded inconvenient information, and formed an opinion in less than four weeks based on inferences from his own experience.

Lombardo's experience cannot substitute for a tested, and testable methodology. Lombardo has provided the Court with no means of gauging the "known or potential rate of error" or the "existence and maintenance of standards controlling [his] technique's operation," as required by *Daubert*. He has also failed to demonstrate that his theory has been successfully tested under similar circumstances in the past. He thus leaves the Court to rely on his subjective judgments—something the Court cannot and will not do. *See, e.g.*, *Meridia Products Liability Litigation v. Abbott Laboratories,* 447 F.3d 861, 868 (6th Cir. 2006) (holding that the expert's opinions were excludable because they forced the court to "rely solely on [the expert's] subjective judgments."); *Calhoun v. Honda Motor Co., Ltd.*, 738 F.2d 126, 132 (6th Cir. 1984) ("There must . . . be sufficient facts already in evidence or disclosed by the witness as a result of his investigation to take the testimony out of the realm of guesswork and speculation."). His failure to reliably apply his methodology to the particular facts of this case means that his opinion should be excluded. *Adams v. Cooper Industries, Inc.*, No. 03-476-JBC, 2007 U.S. Dist. LEXIS 55131, at * 37 (E.D. Ky. July 30, 2007).

C. Lombardo's opinion as to replacement value is unreliable

The instant insurance policy provides that if the DMX-4 is damaged and cannot be repaired, Plaintiff could replace it with another data storage unit "of like kind and quality." (Doc. # 70-4, at 40). The phrase "of like kind and quality" is undefined in the policy. However, the policy does specify that for "[u]nrepairable . . . electronic data processing equipment" the basis of valuation is "the cost to replace with equipment that is the most functionally equivalent to that damaged, even if such equipment has technological advantages and/or represents an improvement in function and/or forms part of a program enhancement." (Id.). Following the March 24, 2010 Overheat Event, the Hospital ultimately decided to replace the DMX4 with a new data storage unit known as a VMAX, at a cost $1,973,946.40.

As part of his expert report, Lombardo opines that the VMAX is not "of like kind and quality" as the DMX4. He points out that the VMAX has more than double the storage capacity and total memory capacity as the DMX4. (Doc. # 71-20, at 5). He also notes that the VMAX invoicing includes $92,105 in additional software which did not exist in the DMX4. (Id.). He estimates that by reducing the quantity of storage and memory capacity, substituting certain hardware and software components "where advances in technology dictate," and removing the cost of associated service contracts, a replacement VMAX "of like kind and quality" would cost $807,031.87, and a replacement DMX4 "of like kind and quality" would cost $818,076.42 (Id. at 5-6). To describe which components the Hospital could have substituted to custom-build a cheaper storage unit, Lombardo attaches an 11-page spreadsheet listing each component and its cost.

The Hospital argues that Lombardo's comparison of the DMX4 and the VMAX is not an expert opinion at all because it involves factual comparisons that are within the purview of a jury. The Hospital thus suggests that Lombardo's opinion is properly characterized as lay testimony. Federal Rule of Evidence 701 provides that lay testimony must not be "based on scientific, technical, or other specialized knowledge within the scope of Rule 702." The Advisory Committee's Notes for the 2000 Amendments to Rule 701 describe lay testimony as that which "results from a process of reasoning familiar in everyday life," and describe expert testimony as that which "results from a process of reasoning which can be mastered only by specialists in the field." Fed. R. Evid. 701, advisory committee's notes for the 2000 Amendments. For instance, a lay witness may testify that a substance appears to be a narcotic, but only an expert witness may testify about how a narcotic is manufactured or distributed within a complex distribution network. *Id.*

The Advisory Committee's Notes on the 1972 Proposed Rules to Rule 702 explain that the common sense test for whether an expert may be used is "whether the untrained layman would be qualified to determine intelligently and to the best possible degree the particular issue without enlightenment from those have a specialized understanding of the subject involved in the dispute." Fed. R. Evid. 702, advisory committee's notes on the 1972 proposed rules.

If Lombardo only proposed to testify about the difference in memory and storage capacity between the DMX4 and the VMAX, the $92,105 software package, and the service contracts, this would not be the subject of expert testimony. The average juror could compare such items without the help of a specialist. However, Lombardo proposes to testify on more complex matters, such as whether very particular hardware and software

components could be substituted and still permit the replacement unit to function in substantially the same way as the DMX4. A simple review of Lombardo's 11-page spreadsheet quickly yields the conclusion that the average layman would not be able to "determine intelligently and to the best possible degree" the subject of Lombardo's testimony. The average person simply does not have the specialized knowledge that Lombardo possesses about the inner workings of storage arrays like the DMX4 and the VMAX, including which software packages would and would not function with these systems, and which hardware component upgrades are dictated by "advances in technology." (Doc. # 71-20, at 5-6). These topics fall within the bailiwick of the expert witness.

However, the Hospital correctly notes that Lombardo conceded at his deposition that did not know whether the replacement units he was recommending "were available for sale without delay at the time of [the Hospital's] loss." (Doc. # 69-1, at 36; Doc. # 69-8, at 62). Accordingly, the Hospital convincingly argues that Lombardo's opinion is entirely speculative, and thus violates Rule 702's requirement that expert opinions be relevant and grounded on reliable facts and data. Neither party presents case law to support its argument, and the Court's independent research reveals that case law on this topic is admittedly sparse. One court, however, has held that when determining whether a proposed replacement item is of "like kind and quality" under an insurance policy, courts look to testimony about whether the replacement item is "available in the marketplace." *Seamon v. Acuity*, No. A11-429, 2011 WL 6015355 at *4 (Minn. Ct. App. Dec. 5, 2011). Here, it is simply irrelevant and speculative for Lombardo to say that the Hospital could have ordered a cheaper custom-built storage unit when he has no idea whether such a unit

was available in the marketplace. Such testimony would not be helpful to the jury.

Therefore, the Court will exclude his expert opinion regarding the custom-built storage unit. With that said, the Court will allow Lombardo to testify as a lay witness as to the about the difference in memory and storage capacity between the DMX4 and the VMAX, and about whether the $92,105 software package and the new service contracts represent an upgrade that is not of "like kind and quality" as the DMX4.

III. CONCLUSION

Accordingly, for the reasons stated herein,

IT IS ORDERED that Plaintiff Ashland Hospital Corporation's Motion In Limine To Exclude The Opinions Of Frank R. Lombardo And Motion For A Hearing (Doc. # 69) is hereby **GRANTED** consistent with the terms and conditions of this Order.

This 24th day of June, 2013.

Signed By:
David L. Bunning DB
United States District Judge

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