

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO
Judge William J. Martínez**

Civil Action No. 15-cv-0518-WJM-NYW

DANIEL PERTILE, and
GINGER PERTILE,

Plaintiffs,

v.

GENERAL MOTORS, LLC, a Delaware limited liability company,
TRW VEHICLE SAFETY SYSTEMS, INC., a Delaware corporation,
KELSEY-HAYES COMPANY, a Delaware corporation,

Defendants.

**ORDER OVERRULING DEFENDANT GENERAL MOTORS LLC'S
RULE 72(A) OBJECTION**

This case arises out of a rollover accident in which Plaintiff Daniel Pertile was the front seat passenger in a Chevrolet Silverado pickup truck. (*See generally* ECF No. 31.) Mr. Pertile was badly injured, and in this action Plaintiffs bring suit against General Motors, LLC (“GM”), TRW Vehicle Safety Systems, Inc., and Kelsey-Hayes Company, advancing claims for strict liability, negligence, breach of warranties, violation of the Colorado Consumer Protection Act, and loss of consortium.

By Order entered May 8, 2017 (ECF No. 291 (the “Order”)), U.S. Magistrate Judge Nina Y. Wang granted in part Plaintiff’s Motion to Compel Production of Facts or Data Considered by General Motors, LLC’s Expert Huizhen Lu (ECF No. 177 (public filing) & ECF No. 178 (restricted filing) (“Plaintiffs’ Motion”).)¹ This matter is now before

¹ Certain materials submitted by the parties and relevant to the Court’s determination were filed under Restricted Access, Level 1. See D.C.COLO.LCivR 7.2. To the extent such a

the Court on Defendant General Motors LLC's Rule 72(a) Objection (ECF No. 303 (GM's "Objection")) to that Order, as well as to Judge Wang's subsequent and related Minute Order (ECF No. 302). For the reasons set forth below, GM's Objections are overruled.

I. LEGAL STANDARD

"Discovery is a nondispositive matter . . ." *Hutchinson v. Pfeil*, 105 F.3d 562, 566 (10th Cir. 1997). When reviewing an objection to a magistrate judge's non-dispositive ruling, the Court must adopt the ruling unless it finds that the ruling is "clearly erroneous or contrary to law." Fed. R. Civ. P. 72(a); 28 U.S.C. § 636(b)(1)(A); *Hutchinson*, 105 F.3d at 566; *Ariza v. U.S. West Commc'ns, Inc.*, 167 F.R.D. 131, 133 (D. Colo. 1996).

The clearly erroneous standard "requires that the reviewing court affirm unless it on the entire evidence is left with the definite and firm conviction that a mistake has been committed." *Ocelot Oil Corp. v. Sparrow Indus.*, 847 F.2d 1458, 1464 (10th Cir. 1988). The "contrary to law" standard permits "plenary review as to matters of law," 12 Charles Alan Wright *et al.*, *Federal Practice & Procedure* § 3069 (2d ed., Apr. 2015 update), but the Court will set aside a Magistrate Judge's order only if he or she applied the wrong legal standard or applied the appropriate legal standard incorrectly, see *Wyoming v. U.S. Dep't of Agric.*, 239 F. Supp. 2d 1219, 1236 (D. Wyo. 2002). In short, "[b]ecause a magistrate judge is afforded broad discretion in the resolution of non-dispositive discovery disputes, the court will overrule the magistrate judge's

filing is quoted or summarized below, the Court has determined that the portion quoted or summarized does meet the standard for restriction. See D.C.COLO.LCivR 7.2(c)(2)-(4).

determination only if his discretion is abused.” *Ariza*, 167 F.R.D. at 133.

II. BACKGROUND

A. FEA Data and the Parties’ Experts

Plaintiffs’ counsel has summarized that Plaintiffs’ “main claim” against GM in this vehicle rollover case is that “the truck had a roof that was too weak.” (ECF No. 87-2 at 3.) Plaintiffs therefore seek to prove both “that the roof was too weak,” and “that there is an alternative design available that would have strengthened the roof and helped prevent the [in]jury.” (*Id.* at 4; *see also* ECF No. 254 at 8 (“Plaintiffs contend the roof and its supporting structures was weak and failed during the rollover”).)² Accordingly, both sides have disclosed mechanical engineering experts to testify regarding the strength of the roof and potential alternate designs.

Plaintiff disclosed Dr. Andreas Vlahinos, Ph.D., whose opinions, among others, include: (1) that “[t]he production/baseline Chevrolet Silverado crew cab roof structure has a rear pillar strength that is lower than the strength to weight ratio defined in FMVSS 216”;³ (2) that “the “crew cab pillars buckle significantly during roof loading”; and, (3) that the “crew cab roof structure can be significantly improved utilizing simple design changes,” leading to a “modified roof structure [that] deforms significantly less.” (See ECF No. 202-3 at 16.)

GM disclosed Ms. Huizhen Lu, M.S.M.E., a senior engineering group manager

² All citations to docketed materials cite to the page number used in the CM/ECF header, which often differs from a document’s internal pagination, as in transcript excerpts.

³ Federal Motor Vehicle Safety Standard No. 216 (“FMVSS 216”), codified at 49 C.F.R. § 571.216, establishes strength requirements for the passenger compartment roof of certain vehicles.

for GM. (See generally ECF No.177-2; ECF No. 241-2.) Ms. Lu’s initial report states that “[t]he roof structure of the vehicle was evaluated in tests that subjected the design to various collision speeds, impact directions and loading directions” (ECF No. 177-2 at 4); and, that the design team for the GMT900 truck series “set a safety goal of testing and meeting the FMVSS 216 roof strength performance * * * even though the GMT900 pickup truck was not required to comply with FMVSS 216.” (ECF No. 177-2 at 5.)

In addition, Ms. Lu opined, in part based upon her “review of the technical reports and engineering documents,” which are further addressed below, that “it is my opinion that the 2011 Chevrolet Silverado 2500HD crew cab pickup truck met and exceeded the applicable FMVSS requirements,” that “[t]he roof structure . . . exceeded the [strength-to-weight ratio] requirement,” and that “[t]he processes and evaluations that GM undertook in designing and assembly of the GMT900 pickup trucks were reasonable and appropriate.” (ECF No. 177-2 at 9.)

In reaching their respective opinions (including Ms. Lu’s rebuttal opinions) both Dr. Vlahinos and Ms. Lu made use, in different ways, of Finite Element Modeling or Finite Element Analysis (“FEM”/“FEA”) engineering techniques. The Court has previously summarized that “Finite element analysis (‘FEA’) refers to ‘a computer modeling technology used to create a mathematical simulation of three dimensional, virtual representation of a vehicle, component or system subjected to prescribed load conditions.” (ECF No. 121 at 3 (quoting *Cordis Corp. v. Medtronic Ave, Inc.*, 511 F.3d 1157, 1169–70 (Fed. Cir. 2008)).⁴ Ms. Lu has described GM’s use of FEA as follows:

⁴ The *Reference Manual on Scientific Evidence*, published by the National Academy of Sciences and the Federal Judicial Center, includes the following additional helpful summary:

“GM uses computer modeling technology to create a mathematical simulation of a three dimensional, virtual representation of a vehicle, system or component that is subjected to prescribed load conditions. These simulations attempt to predict aspects of the behavior of a system by creating and running an approximate, mathematical model of it.” (ECF No. 96-1 ¶ 6.)

Here, as disclosed in his written report and discussed in more detail below, Dr.

One of the most common techniques employed by [engineers’ computer modeling] programs is the finite element method (FEM), which can be used to solve problems in stress analysis

FEM . . . basically divides the system or component into small units, or elements, of uniform geometry. This mesh, as it is called, reflects the geometry of the actual system or component as closely as possible. Boundary conditions are established on the basis of known applied loads, and the fundamental equations of Newtonian mechanics are solved by iterative calculations for each individual cell. The resulting loads and displacements or stresses and strains in each cell are then summed at each increment of time to give an overall picture of the load/displacement (or stress/strain) history of the system or component. The literally millions of calculations required for each time step can only be handled by a computer. These data can then be used to determine the loads and displacements at the time of failure, information that otherwise could not be obtained from hand (or ‘back of the envelope’) calculations.

* * *

Today, commercial FEM programs are widely available, and are capable of generating eye-catching graphics that appeal to juries. * * * In addition, engineers involved in determining the cause of failure of mechanical systems have been using FEM since the 1980s to determine the loads and strains at critical points in complex geometries as part of root-cause analysis efforts. This is often a principal means to determine what actually caused something to break, and ultimately to determine whether a design or manufacturing defect or overload or abuse was ultimately at fault. FEM can, in certain circumstances, be a valuable tool to assess the cause of a design failure.

Channing R. Robertson, Ph.D., *et al. Reference Manual on Scientific Evidence: Reference Guide on Engineering* at 937 (3d ed. 2011) (“*Reference Manual*”).

Vlahinos considered re-creating an FEM of the subject vehicle from electronic files and data produced by GM (other than the FEA files at issue here), but he concluded that it would be too difficult to do so. (See ECF No. 202-3 at 3.) Instead, he made use of an FEM available through George Washington University's National Crash Analysis Center ("NCAC"), which he explains "was reverse engineered from a production 2007 Chevrolet Silverado 1500 2WD crew cab short bed pickup." (ECF No. 202-3 at 3.) Dr. Vlahinos explained that "[a]lthough there are some differences in year and configuration," "the cab portion of the model is identical," and he concluded the NCAC FEM was suitable for his analysis in this case. (*Id.* at 3, 4.) He therefore used the NCAC FEM to simulate different load-bearing situations and the effects of proposed design modifications. He then compared the simulated levels of roof deformation between the "baseline" model and his modified model. (See *id.* at 5–16.)

Ms. Lu's initial report did not engage in comparable FEA modeling of her own. However, she disclosed that "[i]n a FMVSS 216 evaluation conducted by GM CAE⁵ engineering group in July of 2005, a pre-production 2007 GMT900 crew cab pickup truck was tested according to the FMVSS 216 test protocol[.] It had achieved a peak load resistance of 11,897 lbs. * * * the GMT900 crew cab pickup has a strong roof." (*Id.* at 5.) Dr. Lu then reports, based on this simulation, that "[t]he roof strength performance of the GMT900 crew cab pickup truck exceeded the requirements of FMVSS 216 * * * Relating this test performance to our subject vehicle, the peak load resistance obtained on the roof structure is approximately 1.8 times the subject 2011

⁵CAE stands for computer-aided engineering, or computer-assisted engineering; these are apparently broader terms which encompass FEA modeling.

Chevrolet Silverado 2500 HD crew cab pickup truck's shipping weight." (ECF No. 177-2 at 5–6.)⁶ In addition, Ms. Lu's rebuttal report criticized Dr. Vlahinos's modeling, including for having used the NCAC baseline model rather than building an FEM from GM's data. (ECF No. 241-2 at 2.) She went on to provide additional modified FEA modeling based off of Dr. Vlahinos's "baseline model." (*Id.* at 4–11.)

B. Prior Related Discovery Disputes

Earlier in this litigation, Plaintiffs sought to compel production by GM of files and data reflecting GM's FEA modeling of the 2011 model Chevrolet Silverado 2500 HD crew cab pickup (which is part of the GMT900 Series of vehicles and sometimes referred to as such in the record). (See ECF No. 87.)⁷ After briefing and a hearing, Judge Wang denied Plaintiffs' Motion to Compel in an Order dated March 17, 2016. (ECF No. 121 (the "March 17 Order").) She reasoned, in part, that "[e]ven accepting that the FEA Models are relevant," nevertheless "Plaintiffs [had] not established that they are necessary in this action." (*Id.* at 10.) Judge Wang reached this conclusion in part because of the other computer design materials that GM had produced to Plaintiffs (*see id.*), and in part because Judge Wang relied on GM's representations that the FEA

⁶ The report of GM's July 28, 2005 evaluation of roof crush resistance and compliance with the FMVSS 216 requirement has been produced and is docketed under restriction. (ECF No. 176-1.) It does, in fact, report that GM's evaluation showed a reported strength of 11,897-pounds and concluded that "the 2007 GMT900 crew cab without sunroof satisfy [*sic*] the GMT900 program goal." (*Id.* at 1, 2.)

⁷ Plaintiffs' original request for production evidently requested that GM "Produce in their original native format all finite element models depicting the roof and pillar structures of the subject vehicle design including but not limited to inputs, outputs, pre and post processing, and mesh files." (See ECF No. 87-1 at 1.) Plaintiffs' subsequent Motion to Compel sought GM's "finite element models for the GMT 900 Series vehicles, including but not limited to all inputs, outputs, and mesh files." (ECF No. 87 at 12.)

models in its possession did not reflect the final design of the vehicle at issue in this case (see ECF No. 291 at 3). Plaintiffs objected to the March 17 Order under Federal Rule of Civil Procedure 72(a), and this Court affirmed. (See ECF No. 153.)

In addition, as summarized by Judge Wang, subsequent to the March 17 Order, the parties raised numerous discovery disputes “including but not limited to whether the other electronic information produced by GM regarding the vehicle design was sufficient and whether the Parties had appropriately produced the electronic data upon which their respective experts had relied.” (ECF No. 291 at 4 (citing ECF Nos. 139, 142, 164, 285).) Most relevant here, Judge Wang compelled Dr. Vlahinos to provide Defendants with the electronic inputs and outputs associated with his FEA Model, and also authorized Plaintiffs to “file a formal motion related to the FEM model data if they can establish that Defendants’ experts relied upon GM’s FEM data that was [*sic*] withheld to render their expert opinions.” (ECF No. 164.)

C. Present Motion to Compel and Judge Wang’s Order

Plaintiffs then filed the Motion to Compel now under review. As summarized in Judge Wang’s Order, Plaintiffs argued that deposition testimony of Ms. Lu and another GM employee had revealed that GM was, in fact, in possession of three FEMs reflecting the final production level design of the truck in which Mr. Pertile was injured, and that Ms. Lu had considered GM’s FEM data in forming her opinions. Plaintiffs therefore sought an Order to “compel GM to produce all of its Finite Element Modeling data,” based on Federal Rule of Civil Procedure 26(b)(2)’s requirement that materials “considered” by Ms. Lu must be disclosed and produced. (See ECF No. 178 at 3, 12.)

GM objected, arguing, in part, that Ms. Lu “neither used nor relied on” GM’s FEM models, and that “to the extent she offered any testimony about the strength of the vehicle’s roof, it was based on the *report* of the analysis done in development of the vehicle (the model for which no longer exists), and on a physical test conducted that confirms the strength of the roof design,” but not on the FEA modeling underlying the 2005 report. (ECF No. 208 at 2 (emphasis in original); ECF No. 208-1 ¶¶ 6–7.)

In the Order now under review, Judge Wang granted Plaintiff’s Motion only in part, ordering that GM must “disclose to Plaintiffs’ expert, Dr. Vlahinos, and Plaintiffs’ counsel one of three existing FEA Models of Plaintiffs’ selection, for the limited purposes of allowing Plaintiffs to defend the validity of their own FEA Model and to properly cross-examine Ms. Lu regarding her opinions, but not to offer new theories of alternative design or in support of other issues.” (ECF No. 291 at 19–20.)

Judge Wang’s Order reasoned that although “perhaps Ms. Lu never ‘accessed’ or ‘looked at’ [these] particular FEA Models,” nevertheless, “she unequivocally relied on” GM’s 2005 CAE test modeling of a 2007 GMT900 crew cab pickup truck to evaluate compliance with the FMVSS 216 standard. (ECF No. 291 at 16; *see also* ECF No. 177-2 at 5–6.) Interpreting the meaning of what an expert has “considered” for purposes of Rule 26(a)(2)(B), the Order held this “means something broader than ‘relied upon,’ but something less than material simply in the background knowledge of the expert.” (ECF No. 291 at 18 (citing *Allstate Ins. Co. v. Electrolux Home Prods., Inc.*, 840 F. Supp. 2d 1072, 1080 (N.D. Ill. 2012).) And, “given the importance of FEA to the expert opinions,” the Order “declin[ed] to consider GM’s FEA Models as merely part of Ms. Lu’s background knowledge.” (*Id.*) Given those considerations and having reviewed the

substantial record surrounding the parties' related disputes, Judge Wang reasoned as follows:

Perhaps the FEA Models, which yielded the reports upon which Ms. Lu relied to state that the roof exceeds the FMVSS 216 standard, do not consider 'floor loading conditions, in terms of loading location, pitching angle, size of the platen and excessive platen travel allowed,' as recognized or utilized by the NHTSA or the automobile industry; or perhaps the difference between what Dr. Vlahinos used and GM used is negligible. Or perhaps GM's modeling is, in fact, superior to Dr. Vlahinos's in substance and execution. But it strikes this court that Plaintiffs will never know unless they receive input and output electronic files of at least one FEA Model.

(ECF No. 291 at 18.)

D. Disputed Method of Production

Judge Wang's Order further directed the parties to confer regarding the method of GM's disclosure, and to "present any and all disputes" regarding the manner of disclosure to the Court no later than May 22, 2017, with disclosure of the FEA Model to occur no later than May 29, 2017. (*Id.* at 20.)⁸ Likely to no one's great surprise, the parties were unable to agree on a method of production. GM proposed a protocol under which GM's eDiscovery team would perform a forensic collection of the FEA Model selected by Plaintiffs for production (the "Police" Model, which GM also refers to as "Model 3"), and would provide a partially-encrypted copy of its model for on-site inspection by Dr. Vlahinos and Plaintiffs' counsel, to be conducted in a monitored room

⁸ The Order also directed that the parties further confer and raise any disputes regarding any required supplementation of Dr. Vlahinos's reports," which will be "limited to critiques of GM's modelling, or rebuttal to GM's critiques of his modelling." (ECF No. 291 at 20.) This Court subsequently extended the deadline for the parties to meet and confer regarding any supplementation by Dr. Vlahinos, given the pendency of GM's Objection. (See ECF No. 314.)

at a secure location at GM's headquarters in Detroit, with only limited ability to generate images, animation, and/or text output files (in JPEG, AVI, and/or PDF formats) of the model's graphical display of inputs, graphical display of "the pre-generated output file," and/or of the ASCII text input file for later production. (See ECF No. 303-3 ¶¶ A., F.–H.) GM's protocol also provided that "[a]n electronic copy of the output files in .D3Plot format" would be provided but that "[n]o electronic copy of the input file will be provided," and that because "a printout of the entire input file may run to tens of thousands of pages," the parties would need to confer to limit Plaintiffs' requests to a "reasonable number of pages and/or file sizes." (*Id.* ¶¶ G.–H.)

Plaintiffs proposed a protocol under which GM's eDiscovery team would perform a forensic examination of the FEA Model and produce the files to Plaintiffs on a hard drive, with all materials designated as "highly confidential" under the existing protective order in this case. (See ECF No. 303-4; see *also* ECF No. 81.)

Judge Wang held a telephonic discovery conference to address this dispute. (ECF Nos. 302 & 304.) GM argued that its protocol was "similar to that used throughout the country in intellectual property and patent cases, where highly confidential and proprietary software and coding is involved," and would keep "the most proprietary pieces of [GM's] model" encrypted, to "protec[t] those highly confidential source code type of aspects," but without "affect[ing] the way the model is run or affect[ing] the output." (ECF No. 304 at 8.) Judge Wang then ruled as follows:

[W]hen I issued the order [ECF No. 291], I contemplated that there might be some . . . mechanism to which you all could agree to that would protect GM's trade secrets, but allow plaintiff[s] . . . access to the model. . . to validate their model . . . or to criticize Ms. Lu's analysis, so that it would be

essentially an even playing field.

. . . I ordered Dr. Vlahinos to turn over both his input and output data on the basis that GM argued that it couldn't analyze properly Dr. Vlahinos's model without that information. * * * I think GM needs to turn over exactly what Dr. Vlahinos turned over, which is input and output files for him to use.

* * * I am not adverse [*sic*] to the issue of inspection. . . . [B]ut I was certainly also not anticipating that there would be these additional limitations, which, quite frankly, based on simply argument in front of me, I don't have the ability to analyze whether or not the inspection will or will not be appropriate. And I'm taking at face value [Plaintiffs'] argument that . . . [Dr. Vlahinos] can't do what he needs to do with inspection. And a one-day inspection, frankly, does not seem to be sufficient to me.

* * * Even in the inspection model . . . I was thinking that the plaintiffs would have free reign of the model when they were inspecting it, if they were going to inspect it, not with these additional limitations. That there would be some sort of stand-alone computer . . . that they would have multiple access to. Perhaps it would even be set up in Denver, so that the—the expert would have access when he needed to, if they didn't want to simply hand it over.

* * * [I]t was not my intention, in issuing this order, to put any more roadblocks up, in terms of what the plaintiffs need to be able to actually understand the modeling . . . they need some opportunity to understand how GM models so that they can address the criticisms that Ms. Lu has leveled against Dr. Vlahinos, and Dr. Vlahinos can either criticize Ms. Lu's model or have something other than paper simply and Ms. Lu's testimony that the model is superior and yields better results.

So that's how I'm going to rule. * * * And to the extent that you're going to move the Court to stay this order pending objection, you need to do that by Monday [May 22, 2017].

(ECF No. 304 at 13–15.) A Minute Order entered the same day summarized that “GM shall provide the same materials that Plaintiff's counsel provided from Dr. Vlahinos,

including input and output electronic files of the ‘Police’ FEA Model.” (ECF No. 302.)

GM then filed its Objection (ECF No. 303), both to Judge Wang’s written Order compelling production (ECF No. 291) and as to her oral ruling and Minute Order (ECF Nos. 302 & 304). Notably, GM never filed any motion to stay the effect of Judge Wang’s Orders compelling production. However, so far as the present record reveals, GM has never yet complied with those Orders, which required production of FM’s FEA Model data by May 15, 2017. (See ECF No. 291 at 20; ECF No. 309 at 12–13.) Thus, GM is presently in contempt of Judge Wang’s Order.

III. ANALYSIS

A. Production of FEA Model

1. Whether Ms. Lu “Considered” the FEA Models

GM’s primary argument is that Ms. Lu did not “consider” any of the three FEA Models in GM’s possession and potentially subject to production, and that these models “were not provided to her,” so they cannot be subject to disclosure under Rule 26(a)(2). (See ECF No. 303 at 5–8.) GM elaborates that “there is no dispute . . . that Ms. Lu never looked at, accessed or used in any way the three models,” citing to a declaration filed by Ms. Lu. (ECF No. 303 at 5–6; ECF No. 208-1.) GM therefore objects that “it is obvious” that to be “considered,” by Ms. Lu, the FEMs must have been “provided to, read or used by the witness in some way in the formation of expert opinions,” and that Judge Wang’s Order therefore had “no factual basis.” (ECF No. 303 at 5–6.)

In support of its factual arguments, GM relies almost exclusively on the Declarations Ms. Lu has submitted in support of its briefing. (*Id.*; ECF Nos. 208-1 &

303-1.) Ms. Lu states that “[i]n the course of my work as an expert in this case, I have never accessed, examined, reviewed or considered the contents of any existing or prior GM’s CAE models for the GMT900 crew cab vehicle,” and “never accessed or used” the model which generated the July 2005 Report. (ECF No. 208-1 ¶¶ 5–6.)

Initially, the Court is not convinced that Ms. Lu’s affidavit should be taken as conclusive by itself on the question of what she “considered.” The Court sees little reason to credit Plaintiffs’ argumentative attack on Ms. Lu’s honesty, especially given Judge Wang’s denial of Plaintiffs’ related Motion for Sanctions (to which Plaintiffs do not object). (See ECF No. 291 at 13.) Still, and quite significantly for our purposes here, the parties have inherently asymmetrical access to information regarding what materials Ms. Lu has reviewed or considered that might relate in some way to her opinions, especially considering her long tenure working at GM. *Cf. United States v. Am. Elec. Power Serv. Corp.*, 2006 WL 3827509, at *3 (S.D. Ohio Dec. 28, 2006) (“the party disclosing the expert may not simply rely upon a self-serving declaration of the expert himself that in formulating that opinion he neither considered nor relied upon certain information which he reviewed and which is relevant to the subject matter of his opinion”).

More importantly, however, GM cites no contrary authority showing Judge Wang erred in holding that the word “‘considered, ‘as various courts . . . have interpreted the word [in Rule 26(a)(2)(B)], means something broader than ‘relied upon,’ but something less than material simply in the background knowledge of the expert,” and that a proper application of Rule 26(a)(2) must “provide an adversary with sufficient information to

engage in meaningful cross-examination” of an opposing expert. (ECF No. 291 at 18.)⁹

Moreover, as Judge Wang’s Order recognized, it is clear from Ms. Lu’s reports that Ms. Lu *did* rely on GM’s July 2005 FEA modeling of the roof strength of a pre-production 2007 GMT 900 crew cab pickup; specifically, she relied on the reported result of that FEA modeling. Her discussion of this test result includes her opinion that “the GMT900 crew cab pickup has a strong roof,” which “exceeded the requirements of FMVSS 216.” (See ECF No. 177-2.) Her report also concludes by stating that she relied on “the technical reports and engineering documents,” (including July 2005 FEA Model simulation result) in forming the opinion that the vehicle “exceeded the applicable FMVSS requirements,” and that “[t]he roof structure . . . was properly designed.” (ECF No. 177-2.)

These statements, as well as Ms. Lu’s criticisms of Dr. Vlahinos’s FEA Model, compel the Court to agree with Judge Wang’s conclusion that “[i]mplicit in Ms. Lu’s opinions is the assumption that GM’s FEA testing that yielded the reports upon which she relied is accurate and based on reliable inputs, and [that] Dr. Vlahinos has relied on inaccurate inputs for his modeling.” (ECF No. 291 at 17.) GM’s arguments also do not refute Judge Wang’s finding that Ms. Lu’s knowledge of the inputs, outputs, and

⁹ See also *Allstate*, 840 F. Supp. 2d at 1080 (“An expert must disclose the materials given to him to review in preparation for testifying, ‘even if in the end he does not rely on them in formulating his expert opinion, because such materials often contain effective ammunition for cross-examination.’ The term ‘considered’ invokes a ‘broader spectrum of thought than the phrase ‘relied upon’ which requires dependence on the information.” (quoting *Fid. Nat’l Title Ins. Co. of N.Y. v. Intercounty Nat’l Title Ins. Co.*, 412 F.3d 745, 751 (7th Cir.2005))); *Synthes Spine Co., L.P. v. Walden*, 232 F.R.D. 460, 464 (E.D. Pa. 2005) (“This Court interprets Rule 26(a)(2)(B) as requiring disclosure of all information, whether privileged or not, that a testifying expert generates, reviews, reflects upon, reads, and/or uses in connection with the formulation of his opinions, even if the testifying expert ultimately rejects the information.”); accord 6-26 *Moore’s Federal Practice* § 26.23 (2017) (“The term ‘considered’ is given a broad meaning[.]”).

reliability of GM's FEA Models—including the July 2005 Model on which she explicitly relied—cannot fairly be considered merely part of her “background knowledge.” (See ECF No. 291 at 18; *accord Reference Manual* at 938 (“[O]nce the [FEM] model is used in litigation, engineers should be prepared to provide a fully executable copy of the model if requested during discovery.”))¹⁰

GM also argues that Ms. Lu's criticisms of Dr. Vlahinos's modeling are not based on GM's FEA Models, and therefore, implicitly, her rebuttal opinions do not provide a basis for compelling production of those models. However, Ms. Lu's first criticism of Dr. Vlahinos's work is that he “did not build his baseline model using the extensive design information provided by GM.” (ECF No. 241-1 at 2.) For his part, Dr. Vlahinos's report explains that while GM provided certain electronic files and design data, the nature of the data provided made it prohibitively difficult (in his opinion) to build an FEA Model from that data. (See ECF No. 202-3 at 3.) He also explains why he believes the NCAC model that he used instead was suitable. (*Id.*) While Dr. Vlahinos's choices are disputed by Ms. Lu, the Court finds no error in Judge Wang's conclusion that “[e]ssentially, GM criticizes Dr. Vlahinos's FEA Model without providing the necessary information for [him] to determine how his model compares to the ones GM relied on.” (ECF No. 291 at 17.) Put another way, GM has objected to producing its own FEA files, then criticizes Dr. Vlahinos for building a model based on allegedly inferior data sources—to wit, sources other than its FEA files. The Court therefore rejects GM's

¹⁰ Indeed, if it were true that Ms. Lu merely relied on the *report* of the July 2005 FEA modeling as a standalone document, and without any reason of her own to trust the reliability of the testing which produced that report, her opinion might well be subject to exclusion as insufficiently reliable under Federal Rule of Evidence 702.

argument that Ms. Lu's rebuttal criticisms have nothing to do with the non-disclosed FEA Models. In any event, because the Court agrees with Judge Wang that Ms. Lu's initial report reflects that she "considered" GM's FEA Models, a different view of her rebuttal opinions would not change the result here.

Finally, GM's arguments reveal no clear error in Judge Wang's reasoning that Rule 26(a)(2)(B) disclosures in part must provide a fair opportunity for cross-examination, and conclusion that as things now stand, Plaintiffs will not be able to fairly cross-examine Ms. Lu. (See ECF No. 291 at 18 (citing *Republic of Ecuador v. Mackay*, 742 F.3d 860, 871 (9th Cir. 2014)); accord *MVB Mortg. Corp. v. F.D.I.C.*, 2010 WL 582641, at *4 (S.D. Ohio Feb. 11, 2010) ("[T]he drafters of Rule 26(a)(2) wanted to give the parties in litigation the ability to see everything the expert saw when he or she was in the process of formulating an opinion. Only then can the parties be confident that they have everything they need to cross-examine the expert effectively").¹¹

In sum, having considered GM's arguments, the Court sees no clear error in Judge Wang's conclusion that Ms. Lu "considered" GM's FEA Models (or at least certain aspects of them) and that as a result, one of the available models must be

¹¹ Part of the difficulty here arises from the fact that Ms. Lu is an employee-expert of GM, rather than a retained expert. Even if she was not specifically provided with the three available FEA Models for her work in this case, and recognizing that those models are considered extremely confidential by GM, the fact that she has longstanding knowledge of GM's FEA modeling still presents a problem of asymmetrical disclosure in the context of this case. *Cf. Euclid Chem. Co. v. Vector Corrosion Techs., Inc.*, 2007 WL 1560277, at *4 (N.D. Ohio May 29, 2007) (noting that "[t]he parameters [of what an in-house expert has "considered" within the meaning of Rule 26(a)(2)(B)] are not so clear where the testifying expert is also an employee of the litigant But for the person's designation as a testifying expert, privileges might apply. The courts have made clear, however, that a testifying expert cannot fall back upon his status as an employee or consultant to defeat appropriate Rule 26(a)(2)(B) discovery."). Had GM disclosed an outside expert—or at a minimum was not endorsing Ms. Lu's expert testimony on these issues—then the same need for disclosure of GM's FEA models would likely not arise.

produced to Plaintiffs counsel and Dr. Vlahinos. The question before the Court is not whether the undersigned would have reached the same decision as Judge Wang in the first instance. Rather, the Court will affirm “unless . . . on the entire evidence [it] is left with the definite and firm conviction that a mistake has been committed.” *Ocelot Oil*, 847 F.2d at 1464. GM has not met that standard. If the original input and output data from GM’s July 2005 FEA modeling of roof strength were available, then it would likely make the most sense to limit the production to that model. But those data are no longer available, and the Court sees no clear error in Judge Wang’s Order requiring disclosure of one of the related FEA Models that *is* still available, for the limited purposes stated in Judge Wang’s Order. (ECF No. 291 at 19–20.)

2. Relevance of the Three Available FEA Models

GM also advances three related arguments suggesting that the FEA Models subject to Plaintiff’s Motion are irrelevant and therefore should not be produced.

First, GM argues that none of the three models represent the final production design of the vehicle at issue in this case. GM argues that the first FEM reflects “an early pre-prototype developmental simulation,” the second, “a model created in 2005 that studied a proposed rulemaking change to Federal Motor Vehicle Safety Standard 216,” and the third [the “Police” model] was “created . . . in 2009 as part of a study of possible modifications to the 2011 *light-duty* pickup to respond to a newly published rating system by the Insurance Institute for Highway Safety (“IIHS”),” and, therefore, GM argues that none of these models reflect the design, materials, and construction of the truck involved in Plaintiff’s accident. However, it is evident from the record as a whole that there is at least some common basis to the way in which GM structured and

implemented its FEA Models. At least certain aspects of that common approach can be expected to be reflected in the FEA Model Plaintiffs have selected for production.

Thus, as analyzed above, given the unavailability of the July 2005 roof strength FEA Model, Ms. Lu is fairly viewed as having “considered” at least the shared elements of the FEA Model now subject to production.

Second, GM argues that Ms. Lu did not rely on the underlying FEA modeling as to the July 2005 roof strength simulation in concluding that its result was reliable. Rather, GM argues the primary or exclusive “basis and reason” for her reliance on the July 2005 report was because its reported result was “confirmed by a physical test” performed by GM at some later time (evidently in response to Plaintiffs’ lawsuit), which resulted in a very similar determination of the vehicle’s roof strength. (See ECF No. 303 at 7.) However, on its face, Ms. Lu’s report relies on the July 2005 FEA report as a stand alone basis for her opinions on this point, without discussion of having verified its result through a physical test. (See ECF No. 177-2 at 5–6.) Even if GM were correct that Ms. Lu did not ultimately *rely on* the underlying modeling, the relevant analysis here is whether she *considered* the FEA model, and the Court finds no clear error in Judge Wang’s conclusion that she did. As noted in Judge Wang’s Order, and above, the correct interpretation of what Ms. Lu “considered” reaches more broadly than simply what she ultimately “relied upon.” (See ECF No. 291 at 18; *accord In re Mirena IUD Prod. Liab. Litig.*, 169 F. Supp. 3d 396, 470 (S.D.N.Y. 2016) (“The courts have embraced an objective test that defines ‘considered’ in Rule 26(a)(2)(B)(ii) as anything received, reviewed, read, or authored by the expert, before or in connection with the

forming of [her] opinion, if the subject matter relates to the facts or opinions expressed.”); *Synthes Spine Co.*, 232 F.R.D. at 464. Therefore, the fact that Ms. Lu ultimately chose to validate the July 2005 FEA Model result via a physical test does not defeat the finding that she “considered” the underlying modeling.

Third, GM argues that “[t]he strength of the roof is known and not in dispute,” because GM’s July 2005 FEA Model, Dr. Vlahinos’s FEA Model, and GM’s physical test all reported similar overall roof strength. (ECF No. 303 at 7.) GM therefore argues that “[t]here is no dispute about how strong the roof is; the dispute is about whether given that strength level it is strong enough.” (See ECF No. 303 at 7 n.2.) As with GM’s argument that Dr. Lu ultimately relied on the physical test but not the FEA Modeling, again, the relevant inquiry is whether she “considered” GM’s FEA models, not whether she ultimately *relied on* their results, or whether or not the different models ultimately reveal a dispute between Ms. Lu and Dr. Vlahinos. See *Synhtes Spine Co.*, 232 F.R.D. at 464 (Rule 26(a)(2)B) requires disclosure, “whether privileged or not” of materials considered, “even if the testifying expert ultimately rejects the information”).

B. Method of Disclosure

The Court also finds no clear error in Judge Wang’s ruling rejecting GM’s proposed protocol for an onerously restrictive on-site inspection of the FEA Model. As Judge Wang’s bench ruling made clear, the purposes intended in requiring production under Rule 26(a)(2)(B) would not be appropriately served by the extensive restrictions proposed by GM. (ECF No. 304 at 13–18.) So long as Ms. Lu will testify in opposition to Dr. Vlahinos, Plaintiffs need a fair opportunity to review the materials she considered

and to prepare to cross-examine her, and GM shows no clear error in Judge Wang's order that GM must produce "exactly what Dr. Vlahinos turned over," subject to the existing protective order. (See ECF Nos. 304 at 13; ECF No. 302; ECF No. 81.)

GM's counter-arguments establish that GM is highly protective of these data, that it treats them as highly confidential, and that it would strongly prefer to proceed under its own restricted inspection protocol. But GM's arguments do not show how Judge Wang committed clear error in requiring a less restrictive form of access. GM argues that Judge Wang erred by failing to consider its written protocol before ruling. Setting aside the procedural rule that failure to provide the written protocol to Judge Wang would ordinarily prevent this Court from considering it on an objection under Rule 72(a), the fact remains that Judge Wang held a hearing at which GM had the opportunity to explain and justify the salient points of its proposed protocol, but GM points to no way in which Judge Wang committed clear error or applied an incorrect legal standard in her decision to adopt Plaintiffs' method of disclosure.

GM also pursues its argument that it should be permitted to encrypt the "Material cards" and "Control Parameter cards" of its model, arguing that these highly confidential portions of the FEA Model "relate to the question of the 'How' a particular type of material is modeled," rather than "'What' is being modeled." (See ECF No. 303 at 13–14.) Given this description, the Court rejects GM's argument that these aspects of its FEA Model are not relevant to the purposes of production under Rule 26(a)(2)(B). (See *id.*) To the contrary, understanding "How," GM's modeling works, in addition to "What" it models is highly relevant to the main purposes of this production, including allowing Dr. Vlahinos to determine "how" GM's Models either are or are not superior to

his own.

GM makes few arguments as why the additional restrictions it proposes are needed, other than to point to intellectual property cases involving the source code of software in which a similar protocol has been used. (ECF No. 303 at 12–15.) For example, GM does not point to any past violation of the existing protective order, or any record of breaches of confidentiality by Dr. Vlahinos, who Plaintiffs point out has a track record of handling confidential information and has in the past “been awarded secret security clearance from the Defense Industrial Security Clearance Office (DISCO), an agency within the Department of Defense.” (ECF No. 309 at 10; ECF No. 309-2 ¶ 16.) GM also does not show how Judge Wang clearly erred in declining to treat its FEA Model as equivalent to software source code at issue in an intellectual property dispute, in which it might be made available to a competitor. Here, while it is true that opposing counsel and an opposing expert will receive the files, the material distinction is that Plaintiffs are not competitors to GM.

Finally, the Court also finds no clear error in Judge Wang’s findings that the highly restrictive protocol proposed by GM was unnecessary, even assuming that inspection were preferred over production. This includes the time-restriction imposed by GM’s proposed protocol, as well as additional restrictions as to the place, manner, and degree of access and output files to be provided . (See ECF No. 304 at 13--14 (“I was certainly also not anticipating that there would be these additional limitations * * * And a one-day inspection, frankly, does not seem to be sufficient”).¹²

¹² In recognition of the sensitivity of GM’s data, the Court affirms Judge Wang’s holding, consistent with Plaintiffs’ counsel’s own representations on the record, that the production of

C. GM's Failure to Comply With Judge Wang's Order

The Court is displeased that despite Judge Wang's specific direction, GM simply declined to comply with Judge Wang's Order, rather than seeking to stay its effect during the pendency of its objection. (See ECF No. 309 at 12–13.) This constitutes direct violation of multiple Court Orders, and the Court might very well *sua sponte* rule to preclude GM from calling Ms. Lu a witness at trial, as a sanction pursuant to Federal Rule of Civil Procedure 37(b)(2) and 37(c)(1) for GM being in contempt of Judge Wang's Order.

However, given the lengthy history of the parties' disputes regarding the FEA Models, and in light of the parties' previously-filed *Joint* Motion to extend the timeframe to consider supplementation of Dr. Vlahinos's report (ECF No. 313), the Court finds that such a sanction would not serve the interests of justice and is not warranted at this time. However additional delays or gamesmanship regarding compliance with the Court's discovery orders will not be tolerated, and given the imminent trial setting in this case, the Court will impose a very tight disclosure and supplementation schedule going forward, as set forth below.

GM's FEA Model is "limited to two attorneys within the [same] law firm" and "it won't get out side [Mr. Gilbert's] law firm, the Gilbert Law Group." (ECF No. 304 at 17.)

In addition, since Plaintiffs have agreed to designating this production as "highly confidential" under the terms of existing protective order (see ECF No. 303-4 ¶ 2), but those terms do not seem to contemplate production of these or similar materials, or designating them as "highly confidential" (see ECF No. 81 ¶ 3 (specifying that GM will *only* designate as "highly confidential" specifically identified documents)), the Court will entertain a *joint* motion to adopt an appropriate addendum to the protective order to apply to these materials. Such an addendum may require that Dr. Vlahinos and Plaintiffs' counsel return the FEA files to GM after use, and/or file a certification to the Court that the materials have been returned or destroyed and no copies have been made or retained. However, negotiation and filing of such an addendum or modification will NOT be permitted to delay the production of GM's FEA Model.

IV. CONCLUSION

For the reasons set forth above, the Court ORDERS as follows:

1. Plaintiffs' Objection (ECF No. 303) is OVERRULED;
2. Judge Wang's Order (ECF No. 291) granting in part Plaintiff's Motion to Compel Production of Facts or Data Considered by General Motors, LLC's Expert Huizhen Lu (ECF No. 177) is AFFIRMED in its entirety;
3. Judge Wang's Minute Order requiring that "GM shall provide the same materials that Plaintiff's counsel provided from Dr. Vlahinos, including input and output electronic files of the 'Police' FEA Model" (ECF No. 302) is AFFIRMED in its entirety;
3. GM SHALL COMPLETE the required disclosure and production to Plaintiffs' counsel required by this Order by no later than **12:00 noon, Tuesday, September 5, 2017;**
4. The parties SHALL meet and confer regarding any supplementation of Dr. Vlahinos's reports, limited to critiques of GM's modeling, or rebuttal to GM's critiques of his modeling, and timing of such supplementation, **no later than Friday, September 15, 2017;**
5. The parties SHALL file a joint statement or status report regarding the anticipated need for any such limited supplementation of Dr. Vlahinos's reports, **no later than 12:00 noon, Monday, September 18, 2017;**
6. GM's request in its Objection for oral argument is DENIED; and
7. The Court fully adopts and re-emphasizes Judge Wang's ruling that this

Order shall not be treated as “an invitation to the Parties to ask the court to reconsider any other already-decided discovery issue, re-open expert discovery, permit supplementation of their expert reports, revise their *Daubert* motions, compel additional information from Ms. Lu regarding the basis for other materials she considered as identified in her two expert reports, or for additional depositions.”

Dated this 31st day of August, 2016.

BY THE COURT:



William J. Martínez
United States District Judge