

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

EATON CORPORATION, :
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 Plaintiff, :
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 v. : C.A. No. 97-421-JJF
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 ROCKWELL INTERNATIONAL :
 CORPORATION and MERITOR, :
 AUTOMATIVE, INC., :
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 Defendants. :

Donald E. Reid, Esquire of MORRIS, NICHOLS, ARSHT & TUNNELL, Wilmington, Delaware.
Of Counsel: Michael H. King, Esquire, Keith P. Schoeneberger, Esquire, and Kurt H. Feuer, Esquire of ROSS & HARDIES, Chicago, Illinois; J. Frank Osha, Esquire, and William H. Mandir, Esquire of SUGHRUE, MION, ZINN, MACPEAK & SEAS, Washington D.C. Attorneys for Plaintiff.

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Of Counsel: Richard W. McLaren, Jr., Esquire, Jerold B. Schnayer, Esquire, and Walter J. Kawula, Jr., Esquire of WELSH & KATZ, LTD., Chicago, Illinois.
Attorneys for Defendants.

MEMORANDUM OPINION

February 9, 2001
Wilmington, Delaware

FARNAN, District Judge.

I. INTRODUCTION

This action was brought by Eaton Corporation (“Plaintiff”) against Rockwell International Corporation and Meritor Automotive, Inc. (collectively “Defendants”¹) for infringement of U.S. Patent Number 4,850,236 (“the ‘236 patent”). The ‘236 patent was issued to Plaintiff on July 25, 1989 and claims methods of eliminating some of the complexities of manual shifting in heavy-duty trucks by creating an automated driveline system that permits clutchless shifting. In its Complaint, Plaintiff asserts that Defendants infringed claims 14 through 19 of the ‘236 patent by selling the Electronic Synchro Shift transmission system (“the ESS System”).

A jury trial was held on the issues of infringement and invalidity concerning claims 14 through 19 of the ‘236 patent. The jury concluded that the claims of the ‘236 patent were valid and that Defendants’ ESS System infringed claims 14 through 19 of the ‘236 patent. The jury awarded Plaintiff damages in the amount of \$1,242,261 and found that Defendants’ infringement was willful. (D.I. 298).

The issues relating to inequitable conduct were tried separately to the Court. Defendants’ inequitable conduct claim is based on allegations that Eugene R. Braun, the inventor of the ‘236 patent, and Howard D. Gordon, the attorney who prosecuted the ‘236 patent application, misrepresented material facts and withheld material prior art with an intent to deceive the United States Patent and Trademark Office (“PTO”). Defendants contend that the conduct of Mr. Braun

¹ In 1997, Rockwell International Corporation sold its automotive division forming a new company called Meritor Automotive, Inc. In this Memorandum Opinion, the Court will refer to both companies collectively as “Defendants.”

and Mr. Gordon renders the '236 patent unenforceable. This Memorandum Opinion constitutes the Court's findings of fact and conclusions of law regarding Defendants' inequitable conduct claim.

II. JURISDICTION

Neither jurisdiction nor venue is contested by the parties.

III. BACKGROUND²

(A) The Parties

Plaintiff is a corporation duly organized and existing under the laws of the State of Ohio with its principal place of business in Cleveland, Ohio. Plaintiff manufactures transmissions of heavy-duty "eighteen wheeler" trucks. Since the 1950s, Plaintiff has operated a Research and Development Center for the design and development of new products for truck components. Plaintiff is the owner of the '236 patent, which was issued for an invention entitled "Vehicle Drive Line Shift Control System and Method."

Mr. Braun is the named inventor of the '236 patent. After thirty-three years of employment with Plaintiff, Mr. Braun retired on July 1, 1996.³ Between 1975 and his retirement, Mr. Braun supervised a group of Plaintiff's engineers involved in the design of new products for

² Because testimony in this matter was taken in two phases, reference to trial testimony from the jury phase will be prefaced by "Phase I." Trial testimony from the inequitable conduct phase will be prefaced by "Phase II." References to documentary evidence will be cited as follows: an exhibit offered by Plaintiff will be referenced as "PTX-"; and an exhibit offered by Defendants will be referenced as "DTX-".

³ Mr. Braun died in February 1999 after the jury trial on infringement but prior to the commencement of the bench trial on inequitable conduct.

truck components. Throughout the course of his career, Mr. Braun was issued approximately forty-seven patents. The ideas behind the '236 patent were first developed by Mr. Braun in 1977 and perfected when the patent application was submitted on November 20, 1987.

Mr. Gordon is a patent attorney who was admitted to practice before the PTO in 1969. At all relevant times, Mr. Gordon was a member of Plaintiff's legal department. In his career, Mr. Gordon has filed and prosecuted over 600 patent applications before the PTO, including the '236 patent application.

Defendants are or were corporations organized and existing under the laws of the State of Delaware. Their principal place of business is located in the State of California; however, they also maintain a regular place of business in New Castle, Delaware. Since 1989, Defendants have manufactured manual transmissions. Based on responses to surveys by drivers of eighteen wheelers compiled in 1993, Defendants decided to develop the ESS system in 1993 and 1994.⁴

(B) The '236 Patent and Its Development

The transmission in a heavy-duty truck often has ten or more gears which require considerable skill by the driver to manually shift. The '236 patent constitutes Plaintiff's invention to eliminate some of the complexities of manual shifting by creating an inexpensive automated driveline system that permits simple clutchless shifting.

In order to shift gears in a heavy-duty truck with a manual transmission, the transmission must first be shifted from the present gear into neutral, and then from neutral into the desired new

⁴ The ESS system was a collaborative effort between Defendants and Detroit Diesel Corporation, a manufacturer of engines for large trucks.

gear. To do this, the master clutch is manually disengaged by depressing the clutch pedal, which disconnects the engine from the transmission. The driver then manually moves the shift lever out of the present gear, and releases the clutch pedal to reconnect the master clutch. At the same time, the driver depresses the fuel pedal causing the engine to rotate at a speed that will allow the driver, using the shift lever, to smoothly shift into the target gear.

The '236 patent, issued on July 25, 1989, covers a "vehicle drive line shift control system and method." Essentially, the '236 patent teaches a method of clutchless shifting in which the supply of fuel to the engine is manipulated. This process is known as "dithering," and involves the increasing and decreasing of the fuel supplied to the engine. This manipulation of the fuel supply (dithering) is designed to cause repeated crossings from positive torque to negative torque through zero torque, thus alternating between positive and negative torque above and below the zero torque point. The result of manipulation of the fuel supply by this "dithering" method permits the driver of a heavy-duty truck to shift gears without the use of a clutch.

IV. DEFENDANTS' CONTENTIONS

Defendants argue that the '236 patent is unenforceable because Plaintiff, through the actions of Mr. Braun and Mr. Gordon, engaged in inequitable conduct before the PTO. Defendants contend that Plaintiff engaged in inequitable conduct by failing to disclose material prior art to the PTO and in making a false or misleading statement to the PTO during prosecution of the '236 patent application, with the intent to deceive. Defendants allege that the withheld material prior art and the false statement include: (1) information regarding the 1986 Gelco/Dana Top 4 Truck ("The Top 4 System"); (2) information regarding the 1987 Cummins/Dana Top 2

Truck and the 1987 Cummins/Eaton Top 2 Truck (“The Top 2 System”); (3) prior art trade journal articles discussing the Top 4 and Top 2 Systems; (4) information regarding U.S. Patent No. 4,493,228 (“the Vukovich patent”); and (5) an allegedly false statement contained in the Background section of the ‘236 patent application.

After a discussion of the applicable legal standards, the Court will address each of Defendants’ allegations.

V. APPLICABLE LEGAL STANDARDS

Applicants for patents and their attorneys owe the PTO a duty of candor, good faith, and honesty. FMC Corp. v. Manitowoc Co., 835 F.2d 1411, 1415 n.8 (Fed. Cir. 1987). A breach of this duty constitutes inequitable conduct and results in the patent being unenforceable.

Inequitable conduct may consist of an affirmative misrepresentation, a misleading statement, or an omission of material information. Fox Indus., Inc. v. Structural Pres. Sys., Inc., 922 F.2d 801, 804 (Fed. Cir. 1990).

Rule 56(a) of Title 37, Chapter 1 of the Code of Federal Regulations provides that applicants and their attorneys must “disclose to the [PTO] information they are aware of which is material to the examination of the application.” 37 C.F.R. 1.56(a) (1989). One who asserts a defense of inequitable conduct based on a failure to disclose material prior art must show by clear and convincing evidence:

- (a) the materiality of the nondisclosed prior art (materiality);
- (b) knowledge chargeable to the applicant of the prior art and of its materiality (knowledge); and

(c) failure of the applicant to disclose the prior art resulting from an intent to mislead the PTO (intent to deceive).

FMC Corp., 835 F.2d at 1415. Thus, for the Court to conclude that inequitable conduct occurred, it must first find that certain thresholds of materiality and intent are present. Under Sea Indus., Inc. v. Dacor Corp., 833 F.2d 1551, 1559 (Fed. Cir. 1987); J.P. Stevens & Co. v. Lex Tex, Ltd., 747 F.2d 1553, 1562 (Fed. Cir. 1984), overruled on other grounds by Baxter Int'l, Inc. v. McGaw, Inc., 149 F.3d 1321 (Fed. Cir. 1998) and Molins PLC v. Textron, Inc., 48 F.3d 1172 (Fed. Cir. 1995).

Information is material if “there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent.” 37 C.F.R. §1.56(a); Speciality Composites v. Cabot Corp., 845 F.2d 981, 992 (Fed. Cir. 1988). Under this standard, an applicant need not disclose all relevant prior art. J.P. Stevens & Co., 747 F.2d at 1559. For instance, the applicant need not disclose prior art which is less material, or merely cumulative, to that considered by the examiner. Rolls-Royce Ltd. v. GTE Valeron Corp., 800 F.2d 1101, 1107 (Fed. Cir. 1986).

Whether or not the requisite intent to deceive is present must be determined in light of all of the evidence. Because direct evidence of an intent to deceive rarely exists, the Court may rely on circumstantial evidence to infer such intent. Hewlett-Packard Co. v. Bausch & Lomb Inc., 882 F.2d 1556, 1562 (Fed. Cir. 1989). However, acting to protect legitimate business interests is insufficient for a finding of such intent:

It should be made clear at the outset of the present discussion that there is nothing improper, illegal or inequitable in filing a patent application for the purpose of

obtaining a right to exclude a known competitor's product from the market; nor is it in any manner improper to amend or insert claims intended to cover a competitor's product the applicant's attorney has learned about during the prosecution of a patent application. Any such amendment or insertion must comply with all statutes and regulations, of course, but, if it does, its genesis in the marketplace is simply irrelevant and cannot of itself evidence deceitful intent.

Kingsdown Med. Consultants Ltd. v. Hollister, Inc., 863 F.2d 867, 874 (Fed. Cir. 1988)(en banc).

A finding of gross negligence also does not, by itself, justify an inference of intent to deceive. Baxter Int'l, 149 F.3d at 1329. Instead, the Court must view the conduct in light of the totality of the circumstances, “including the nature and level of culpability of the conduct and the absence or presence of affirmative evidence of good faith” to determine if an actual intent to deceive exists. Kingsdown Med., 863 F.2d at 876. See also Consolidated Aluminum Corp. v. Foseco Int'l Ltd., 910 F.2d 804, 809 (Fed. Cir. 1990); RCA Data Corp. v. Data Gen. Corp., 887 F.2d 1056, 1065 (Fed. Cir. 1989).

Once the thresholds of materiality and intent are established, the Court must then balance both the level of materiality and the evidence of intent to deceive to determine whether equity warrants a finding that inequitable conduct occurred. J.P. Stevens & Co., 747 F.2d at 1559-60. In this regard, materiality and intent are inversely related - if information is highly material, less evidence of intent will be required in order to find that inequitable conduct has occurred, and vice-versa. Baxter Int'l, 149 F.3d at 1327.

VI. DISCUSSION (FINDINGS AND CONCLUSIONS)

(A) Plaintiff's Failure to Disclose the Top 4 System

The Top 4 system is a tractor-trailer truck equipped with a partially automated

transmission from the Spicer Division of Dana Corporation, a Cummins diesel engine, and an automatic fueler. The Top 4 System performs clutchless shifting only in the top 4 gears. The method of achieving clutchless shifting by the Top 4 System is the subject of debate. Defendants contend that the Top 4 System is material prior art to the '236 patent. Plaintiff responds that the Top 4 System is not prior art because (1) Mr. Braun's invention predated the Top 4 System, and (2) the Top 4 System was either abandoned, suppressed, or concealed by Dana. In the alternative, assuming that the Top 4 System is prior art, Plaintiff maintains that the Top 4 System is not material to the '236 patent because (1) the Top 4 System does not dither, and (2) the PTO considered both U.S. Patent Number 4,722,248 ("the '248 patent") and U.S. Patent Number 4,593,580 ("the Schulze patent") when considering the '236 patent application, thus rendering the Top 4 System cumulative.

The Court will proceed based on the assumption that the Top 4 System is prior art to the '236 patent. The Court concludes that Defendants have failed to present clear and convincing evidence of inequitable conduct by Plaintiff in failing to disclose the Top 4 System while prosecuting the '236 patent.

1. Materiality of the Top 4 System

Plaintiff contends that the technological contribution of the '236 patent to the development of automatic transmissions in heavy-duty trucks is the concept of "dithering." (D.I. 466 at 13). In his testimony, Plaintiff's expert Dr. Edward M. Caulfield⁵ differentiated between

⁵ At the time this action was initiated, Dr. Caulfield was President of Mechanical Engineering at Packer Engineering, Inc. in Naperville, Illinois and had been qualified by both state and federal courts as a technical expert on numerous occasions. (D.I. 4, Exh. B at ¶ 1). He

dithering and the method of clutchless shifting performed by the Top 4 System. The '236 patent, he testified, was designed to repeatedly alternate between positive and negative torque “across an engaged clutch to assure disengagement thereof without disengagement of a master clutch.”⁶ (Phase II Tr. 519/6 - 521/18). Defendants argue that dithering is merely the automated “increasing and decreasing of the fuel to the engine, as recited in claims 1, 8, and 14 of the '236 patent,” and that it is not in dispute that the Top 4 System used such automatic fuel control. (D.I. 468 at 21). Defendants further contend that a chart prepared on March 12, 1986 recorded the “throttle blip” or “fuel blip”⁷ that the Top 4 System performs, thus indicating that it did indeed increase and decrease fuel to the engine in order to achieve a “torque reversal.” (D.I. 468 at 21). Thus, Defendants contend that the Top 4 System teaches the same method of getting out of gear as does the '236 patent, and is therefore material. (D.I. 468 at 21).

The Court finds that Defendants have failed to refute Dr. Caulfield’s testimony that the dithering method is not utilized by the Top 4 System. The Court finds credible Dr. Caulfield’s testimony that the Top 4 System aims for zero torque, rather than for oscillation about zero torque. (Phase II Tr. 533/18-19). Dr. Caulfield testified that the '236 patent was designed to

earned a PhD in Theoretical and Applied Mechanics from the University of Illinois in 1978. (D.I. 4, Exh. B at ¶ 2).

⁶ Although Defendants correctly note that the term “dithering” is not mentioned in the '236 patent, the patent does state that its purpose is to force a “torque break” or “torque reversal” by repeatedly increasing and decreasing the fuel supply. (D.I. 1, Exh. A at 3, 7). Furthermore, Dr. Caulfield testified that the technique described in the '236 patent clearly involves the technique of dithering about zero torque. (Phase II Tr. 519/19-22).

⁷ The phrases “throttle blip” or “fuel blip” refer to “the automatic increasing and decreasing of fuel.” (D.I. 470 at 39).

repeatedly cross zero torque. After having analyzed Defendants' engineer Dean Anderson's⁸ technical reports on the Top 4 System, Dr. Caulfield testified that the Top 4 System seeks to decrease torque, ultimately aiming for zero torque at which point gear disengagement can occur and automatic shifting can take place. (Phase II Tr. 533/1 - 536/19). The "fuel blip," which is triggered while the vehicle is coasting (i.e., during negative torque), only kicks in automatically when the Top 4 System fails to achieve gear disengagement at zero torque; thus, the fuel blip serves to bring the system above zero torque so that it can again descend to zero torque and attempt gear disengagement. (Phase II Tr. 535/24 - 536/19). Dr. Caulfield opined that, because of the different methods of achieving gear disengagement, the Top 4 System is not relevant to the '236 patent.⁹ (Phase II Tr. 536/20-24). Further, the contention that a torque reversal is not

⁸ Mr. Anderson was a Cummins Engineer, and in 1987 worked extensively on the Top 4 and Top 2 Systems. (D.I. 460 at ¶ 7).

⁹ Dr. Davis, expert witness for Defendants, testified that the Top 4 System is material to all of the claims of the '236 patent. (Phase II Tr. 309-10). In weighing the opinions of Dr. Caulfield and Dr. Davis, the Court finds the opinion of Dr. Caulfield more credible on the issue of dithering, for the reasons discussed. The Court concludes that the concept of dithering is central to the '236 patent and it can be found throughout the language of the patent.

Further evidence that the Top 4 System aims for zero torque is provided below in the discussion of the Top 2 System. Much of that cited testimony largely interpreted the Top 2 System, but the beginning of the testimony noted that the Top 4 and Top 2 Systems are similar in that they attempt to mimic "float shifting." (Phase II Tr, 209/21 - 210/9). Therefore, a thorough discussion of this testimony, although relevant to the Top 4 System's materiality, can be found in Part VI.B.1. below.

This testimony also implicates the argument raised by Defendants throughout this litigation that "float shifting" is material prior art, and that Mr. Braun's and Mr. Gordon's failure to disclose the method of float shifting to the PTO when prosecuting the '236 patent amounted to inequitable conduct. The Court agrees with Plaintiff that Defendants have seemingly abandoned this argument in their post-trial briefs. Nonetheless, the Court concludes that the above testimony, which establishes that the Top 2 and Top 4 Systems attempt to automate the teachings of the manually performed "float shifting," renders separate analysis of the materiality of "float

essential to achieving gear disengagement in the Top 4 System is bolstered by Mr. Anderson's own report, which stated: "[o]ne may note, however, that the same two step blip is used on every shift regardless of whether it was required for gear disengagement or not." (DTX 438, CUM 870).

The Court agrees with Plaintiff's contention regarding the differences that result from the method of dithering as opposed to the method utilized by the Top 4 System. That is, when aiming for zero torque as the Top 4 System does, a transmission only has a small "window" in which it can disengage gears. (Phase II Tr. 436/6-15). On the other hand, with the dithering method, the "error mode" does not exist because gear disengagement is not confined to the zero torque "window." (Phase II Tr. 436/15-22). The contention that the Top 4 System only has a small "window" surrounding zero torque in which it can achieve gear disengagement is supported by Mr. Anderson's report on the Top 4 System, which states that: "torque [must] be within the critical window during which disengagement takes place." (DTX 438, CUM 870). Thus, based on the expert testimony, the Court finds that in this regard the '236 patent and the Top 4 System are fundamentally different.

Defendants contend that Dr. Caulfield's testimony is unreliable because they argue he improperly based much of his opinion on deposition testimony of Mr. Anderson. (D.I. 468 at 29). According to Defendants, this reliance by Dr. Caulfield is misplaced because Mr. Anderson did not have his detailed technical reports on the Top 4 System during his deposition. (D.I. 468 at 29). The Court notes that Dr. Caulfield relied on a number of documents in reaching his opinions,

shifting" unnecessary.

including Mr. Anderson's technical reports, (PTX 170 at 4), and those technical reports do not suggest that the Top 4 System utilizes dithering as taught by the '236 patent. In fact, Mr. Anderson's technical reports, even where they indicate multiple "fuel blips" might occur, are unhelpful with regard to the purpose of the second fuel blip. (DTX 438, CUM 870)("this was most likely added to ensure a torque reversal would occur and result in gear disengagement") (emphasis added). Thus, the Court finds that, to the extent Dr. Caulfield relied on Mr. Anderson's deposition testimony, the reliance does not discredit Dr. Caulfield's opinion.

Defendants also argue that Dr. Caulfield's opinion regarding the Top 4 System's lack of relevancy to the '236 patent deserves no weight because his opinion was based solely on the absence of "one important claim element" - dithering. (D.I. 468 at 31). Defendants argue that the absence of one claim element only is legally insufficient to support a finding of immateriality. (D.I. 468 at 31)(citing Baxter Int'l, 149 F.3d at 1328). It is important to understand that the Court's analysis of materiality is focused on whether Defendants have proven materiality of any of the cited prior art by clear and convincing evidence. To the extent the Court relies on Dr. Caulfield's opinions in this analysis, it is in the content as evidence that refutes or discredits the evidence offered by Defendants. Certainly, the Court is not concluding that Dr. Caulfield's testimony proves immateriality of the Top 4 System because it is not Plaintiff's burden to prove lack of materiality. In any event, the Court agrees that Dr. Caulfield focused his analysis on dithering. Further, it is clear that Dr. Caulfield opined that dithering was the essential element of the '236 patent: "that's what it teaches in all its claims, one through the end of the patent." (Phase II Tr. 519/11-12). Dr. Caulfield reiterated this point later in his testimony when he stated

that dithering is “claimed as far as I could see in every claim [in the ‘236 patent]. That was the primary emphasis.” (Phase II Tr. 558/20-24). The Court has credited this “technical” opinion and found that it supports Plaintiff’s contention that Defendants have failed to demonstrate by clear and convincing evidence the materiality of the Top 4 System to the invention of the ‘236 patent. This is important in that the materiality of a prior art reference is evaluated by its “overall degree of similarity” with the patent at issue, in light of all the prior art that the PTO considered. Baxter Int’l, 149 F.3d at 1328. In sum, the Court is persuaded that the ‘236 patent embodies the concept of dithering as understood by Dr. Caulfield, and all other features that are discussed and/or contained in the ‘236 patent are means to implement the concept of dithering into an operable product. Therefore, the Court concludes that the Top 4 System - and any other system that does not involve dithering - is not highly material to the ‘236 patent.

2. Plaintiff’s Knowledge of the Top 4 System

Plaintiff does not dispute that Mr. Braun and/or Mr. Gordon were aware of the existence of the Top 4 System, but does dispute the extent of their knowledge regarding how the Top 4 System operated. However, even if Mr. Braun and Mr. Gordon knew all that Defendants claim they knew about the Top 4 System, that finding alone does not establish any improper conduct before the PTO. However, for purposes of the Court’s consideration of Defendants’ evidence, the Court again will assume what the record may not support, which is that Mr. Braun and Mr. Gordon were fully informed as to all aspects of the Top 4 System.¹⁰

¹⁰ The Court notes that this conclusion is highly unlikely, especially considering that some of Dana’s own engineers and witnesses indicated that not much information was revealed to Plaintiff about how the Top 4 System operated.

3. Plaintiff's Intent to Deceive the PTO

Defendants primarily rely on what they refer to as the "Predatory Shark Memo" that was authored by Mr. Braun as evidence of Plaintiff's intent to deceive the PTO by withholding allegedly material prior art. (D.I. 461 at 1). The memo states: "the predatory shark is out there trying to devour our fish before we can hook him. . . . Some stormy waters or issues need to be considered since the shark is after our fish." (DTX 24 at 2). Defendants claim these statements indicate that Mr. Braun was feeling pressure to have his research and development in the automatic transmission field "pay off faster," and that he felt threatened by developments regarding the Top 4 and Top 2 Systems. (D.I. 461 at 1)(citing DTX 24; Braun Dep. at 477). Clearly, as a matter of law, there is nothing improper with regard to filing a patent application for business reasons, even in order to avoid a perceived threat from a competitor or to prevent a competitor's product from hitting the market as long as applicable laws and regulations are followed. Ricoh Co. v. Nashua Corp., 185 F.3d 884, 1999 WL 88969, at *3 (Fed. Cir. Feb. 18, 1999); Kingsdown Med., 863 F.2d at 874; Mycogen Plant Science, Inc. v. Monsanto Co., 61 F. Supp. 2d 199, 272 (D. Del. 1999).

Defendants note that further on in the "Predatory Shark Memo," Mr. Braun states: "[w]e have a patent application filed which claims (protects) automatic shifting in the highest gear group which is shifted into manually. [Mr.] Gordon feels the application claims will be allowed and give good protection for top gear automation." (DTX 24 at 3). According to Defendants, the referred to patent - the '248 patent - requires the use of a clutch actuator to ensure gear disengagement, and that Mr. Braun continually opined that a clutch actuator was absolutely necessary because the

methods of achieving gear disengagement without a clutch actuator were not 100% reliable. (DTX 450; Phase II Tr. 158-160). Defendants contend that when Mr. Braun and Mr. Gordon learned of a successful 3,000 mile test run of the Top 2 System,¹¹ they had an “Oh No Moment” and realized that the ‘248 patent did not provide protection for this “fuel blip” method of top gear automation, and that they instantly reversed course on the need to have a clutch actuator as a part of the ‘236 patent. (D.I. 461 at 3)(citing DTX 17; Phase II Tr. 455-56). Defendants point out that a memorandum written in September of 1987 indicates that Plaintiff still planned on removing the clutch actuator from Plaintiff’s Econoshift System¹² as late as October of 1987 - after the completion of the Top 2 System’s successful test run. (DTX 17). Defendants also cite Mr. Gordon’s notes from meetings on October 7 and 8 indicating that Plaintiff planned to remove the clutch actuator from the Econoshift System and to “[c]heck claims of application.” (DTX 253 at 3). Defendants contend that when Plaintiff learned the ‘248 patent did not provide protection from the “fuel blip” technology, the “Oh No Moment” occurred and demonstrates Plaintiff’s motive or intent to deceive the PTO. Plaintiff presents several arguments in response: (1) that Plaintiff’s knowledge of the Top 4 System was minimal until the current litigation commenced, (2) that Plaintiff always believed that the ‘248 patent provided protection for transmission systems involving top gear automation - regardless of whether a clutch actuator was incorporated into the

¹¹ Defendants contend that Plaintiff’s intent to deceive the PTO by withholding information regarding the Top 4 System is derived from Plaintiff’s knowledge of the similar Top 2 System.

¹² The Econoshift System was one of Plaintiff’s initial clutchless shifting systems that incorporated the use of a clutch actuator.

truck, and (3) that Plaintiff never believed that the Top 4 System threatened its plans for the '236 patent. (D.I. 466 at 2, 29).

The Court finds that, regardless of what Plaintiff's knowledge of the Top 4 System was during the relevant time period, there is very little, if any, credible evidence adduced by Defendants that Plaintiff intended to deceive the PTO by not disclosing the Top 4 System, particularly when considering the heavy burden of proof borne by Defendants. First, Plaintiff produced a memorandum written in March of 1987 by William Mack - an employee of Plaintiff - that was sent to Mr. Braun and Mr. Gordon recommending that Plaintiff build a transmission with automatic shifting in the top gears and without a clutch actuator. (PTX 142 at 11). Mr. Mack subsequently recommended that Plaintiff should specifically remove the clutch actuator from the Econoshift System. (PTX 108). Defendants contend that this evidence is irrelevant because it was not authored by Mr. Braun or Mr. Gordon, it has nothing to do with the '236 patent, and that Mr. Braun continued to insist that a clutch actuator was necessary. (D.I. 471 at 25). The Court finds that Mr. Mack's memorandum is relevant to the issue of intent. In the Court's view, it supports Plaintiff's argument that removing the clutch actuator was not a novel idea to Plaintiff and it lessens the likelihood that any "Oh No Moment" occurred. Regardless of whether Plaintiff immediately began work to remove the clutch actuator, and even if Plaintiff was "jump started" to remove the clutch actuator after the 3,000 mile road test, the Court finds that it is credible evidence to refute the existence of an "Oh No Moment" on the part of Plaintiff.

Plaintiff also presented evidence that, despite the Econoshift System's use of a clutch actuator, it was merely a "back-up" mechanism to ensure that gear disengagement would occur

on each occasion. Plaintiff contends that the Econoshift System allowed for automatic shifting in the top 2 gears, and “in limited circumstances when the control of fuel did not allow the engaged gears in the transmission to disengage, used a clutch actuator to disengage the master clutch so that the engaged gears could disengage.” (D.I. 465 at 53)(citing PTX 142). Defendants do not dispute this characterization of the Econoshift System and Dr. Kleine appeared to admit that the clutch actuator was only retained because of Mr. Braun’s concern that the ‘236 patent would not work properly 100 percent of the time without it. (D.I. 471 at 91; Phase II Tr. 167/1-11). The Court finds that this very evidence further refutes Defendants’ contention that an “Oh No Moment” occurred.

Further evidence exists that Plaintiff had been pondering the idea of eliminating the clutch actuator from its automatic transmissions several months before the 3,000 mile road test and the clutch actuator was merely a default mechanism for the Econoshift System. When Mr. Braun and Mr. Gordon learned of the successful road test and that Cummins was using the “throttle jiggle”¹³ to assure gear disengagement, as Defendants point out, Mr. Gordon indicated that “[w]e may want to use.” (DTX 254 at 3). However, Mr. Braun had completed an invention disclosure statement in 1977 regarding the “throttle jiggle” concept. (PTX 41). Unsure of whether it would effectively result in gear disengagement 100% of the time, he was hesitant to completely rid the Econoshift System of the clutch actuator. Learning about Cummins’ successful 3,000 mile road

¹³ The “throttle jiggle” idea was initially conceptualized by Mr. Braun in 1977, (PTX 41, Phase I Tr. 383), and was incorporated into the ‘236 patent. (Phase I Tr. 988). The phrase “throttle jiggle” refers to the idea of increasing and decreasing the fuel supply to force gear disengagement. (Phase I Tr. 987/23 - 988/20).

test perhaps provided assurance that the clutch actuator could be eliminated entirely, but the Court finds this is not evidence that can reasonably allow an inference of an “Oh No Moment” that spurred the filing of the ‘236 patent. As indicated earlier, the ‘236 patent involves dithering, and while clutchless shifting is a part of the ‘236 patent, it is not the primary focus. In any event, even if clutchless shifting, by itself, is deemed material, Plaintiff’s good faith is evidenced by its citing references that it reasonably believed disclosed top gear automation, such as the ‘248 patent.¹⁴

Additionally, the Court finds that other evidence submitted by Plaintiff refutes Defendants’ contention. In 1994 Plaintiff sued Dana for infringement of the ‘248 and ‘236 patents “on products that shifted the top two gears of a manual transmission automatically and without a clutch.” (D.I. 464 at 8; Phase I Tr. 1007). Mr. Gordon’s undisputed testimony establishes that Dana settled this lawsuit with Plaintiff for \$1 million. (Phase I Tr. 1007/22 - 1008/4). The Court agrees, as Defendants contend, that this does not necessarily mean that Dana “acknowledged [Plaintiff’s] ownership of the technology of the ‘236 patent and ‘248 patent,” nor does it indicate

¹⁴ Defendants dispute that the ‘248 patent involves clutchless shifting. But, as discussed above regarding the Econoshift System, Plaintiff included a clutch actuator merely as a default mechanism. Plaintiff believed the ‘248 patent provided protection for top gear automation with or without the use of a clutch actuator. This belief is evidenced by the fact that Plaintiff brought a lawsuit for infringement of the ‘248 and ‘236 patents against a Dana transmission without a clutch actuator. (D.I. 464 at 8; Phase I Tr. 1007/7 - 1008/4). This assertion is further bolstered by Mr. Braun’s expressed fear that Dana was going to “steal” Plaintiff’s Econoshift System. (Braun Dep. at 483/12-19).

Defendants also argue that the ‘248 patent could not be considered as material prior art because it is Plaintiff’s own prior invention. (D.I. 314). However, the fact that the ‘248 patent was disclosed, and that it can arguably be deemed material to the teachings of the ‘236 patent, rebuts the inference of an intent to deceive.

why Dana settled. (D.I. 470 at 24). Nonetheless, the Court doubts that Dana would have settled the 1994 lawsuit if it believed that Plaintiff stole the '236 patent from Dana's own Top 4 System, and Defendants have not provided any explanation for why Dana chose to settle the lawsuit. Furthermore, if Plaintiff had intentionally withheld the Top 4 System from the PTO when prosecuting the '236 patent, it would have been imprudent for it to bring a lawsuit claiming infringement of that same patent against an entity that was largely responsible for the development of the Top 4 System. Dana would have certainly been in a better position than anyone else to reveal Mr. Braun's and Mr. Gordon's improper conduct and would have been the first to suspect that the '236 patent contained technology appropriated from the Top 4 System. In the Court's view, the fact that Dana settled with Plaintiff supports the Court's conclusions concerning the Top 4 System.

The lack of any impropriety by Mr. Braun and Mr. Gordon is further demonstrated by the fact that Mr. Braun provided Mr. Gordon with several trade journal articles that were stored in Mr. Braun's files "for [Mr. Gordon's] use against Dana" in the infringement lawsuit. (D.I. 460 at 40). The Court does not believe that, if Mr. Braun had intentionally withheld information about the Top 4 System, he would have revealed articles - a "smoking gun" according to Defendants - demonstrating his knowledge of the Top 4 System. The Court finds that it is highly unlikely that Mr. Braun would have made the cited disclosures unless he believed he had nothing to hide. In sum, the Court finds that the 1994 settlement discredits Defendants' evidence offered to prove Plaintiff's intent to deceive.

Lastly, the Court finds that evidence that Cummins and Plaintiff entered into a

developmental agreement in November of 1997, in which Cummins acknowledged that Plaintiff had developed the technology of the '236 and '248 patents, further discredits Defendants' assertions of improper conduct. (PTX 273 at 1). The Court finds it is highly unlikely that Cummins would have made the acknowledgment that it did, especially in view of Cummins's involvement in the work leading to the development of the Top 2 and Top 4 Systems.

In sum, the Court concludes that Defendants have failed to establish by clear and convincing evidence that Plaintiff intended to deceive the PTO by its failure to disclose the Top 4 System.

4. Balancing the Materiality of the Top 4 System with Plaintiff's Intent to Deceive

Even when assuming that Plaintiff had significant knowledge regarding the operation of the Top 4 System, the Court concludes that Defendants have failed to establish by clear and convincing evidence any improper conduct by Plaintiff. The Court finds the materiality of the Top 4 System is relatively low when considering the method of dithering as embodied by the '236 patent. When combined with the lack of credible evidence regarding Plaintiff's intent to deceive as mitigated by the evidence of its good faith, the Court concludes that Defendants have failed to prove by clear and convincing evidence that Plaintiff's failure to disclose the Top 4 System to the PTO was improper.

(B) Plaintiff's Failure to Disclose the Top 2 System

The Top 2 System was developed immediately after the Top 4 System's successful 3,000 mile road test in April of 1986. The test truck had a partially automated transmission from the Spicer Division of Dana Corporation, a Cummins diesel engine, and automatic fuel controls

programmed by Mr. Anderson of Cummins. This truck did not have a clutch actuator.

Defendants claim that the Top 2 System is material prior art to the '236 patent and that Plaintiff engaged in inequitable conduct before the PTO in not disclosing the Top 2 System. Again, for purposes of this Memorandum Opinion, the Court will assume that the Top 2 System is prior art.¹⁵ Nevertheless, the Court concludes that Defendants have not produced clear and convincing evidence to establish inequitable conduct on the part of Plaintiff.

1. Materiality of the Top 2 System

The Top 2 System is quite similar to the Top 4 System in its purpose and operation. Defendants argue that the Top 2 System - like the Top 4 System - uses fuel blips to ensure torque reversals in order to achieve gear disengagement. (D.I. 460 at ¶ 11)(citing DTX 437; DTX 444; DTX 443; DTX 445; DTX 446). The Court finds that more evidence arguably exists of the Top 2 System's materiality than of the Top 4 System's materiality. For instance, several handwritten graphs prepared by Mr. Anderson regarding the Top 2 System demonstrate repeated torque reversals in order to achieve gear disengagement. (DTX 443; DTX 445; DTX 446). Furthermore, Mr. Anderson's detailed handwritten notes, dated June 1, 1987, indicate that the Top 2 System intentionally crosses zero torque in order to achieve gear disengagement:

In the case of an upshift with the splitter as is done for this project, the driver pneumatically preselects the high split, and in case of a full throttle situation, would release the throttle and allow torque to decay. In this case, torque is traversing from a full load to a negative load or frictional torque case because of closed throttle fueling present. During this excursion, torque must cross the zero line. If the splitter had been pre-selected, the splitter would most likely disengage

¹⁵ As discussed regarding the Top 4 System, the Court is not concluding that the Top 2 System is prior art, but is merely assuming that it is for purposes of this Memorandum Opinion.

at this time. If the driver would happen to not pre-select before he released the throttle or the shift were initiated at no or negative load conditions, then the splitter gears would most likely not disengage due to the problem as mentioned before. The driver would recognize the problem and only has to apply slight fueling with the throttle and the gears will disengage since zero torque level would be crossed.

(DTX 444, CUM 1565)(emphasis added). Further, Defendants argue that this report specifically states that the Top 2 System does not possess the technological capability to aim for zero torque:

the PACE hydro-electrical fuel pump utilizing the electronic fuel control valve cannot be utilized to command zero torque fueling since there is no feedback mechanism for torque and the unpredictable nature of the valve does not lend well to accurately control this fuel amount. With torque or possibly rail pressure feedback to a control system, the EFC valve could be controlled to provide zero load fueling at different speeds but system complexity would become unreasonable. ECI engines could be used to command zero load fueling much better than what PACE could do but would not still be able to reach a torque level accurately enough to allow gear disengagement.

(DTX 444, CUM 1564). Defendants contend that these portions of Mr. Anderson's report conclusively establish that the Top 2 System is material to the '236 patent.

The Court finds that, when compared with other sections of the report, the report as a whole does not convincingly demonstrate the purpose of the torque reversals or the method of gear disengagement. For instance, the preceding paragraph of Mr. Anderson's report states: "the approach taken to achieve zero torque and gear disengagement for the project described in this report is slightly different . . . [in that it] attempt[s] to mimic what an experienced driver might do when manually shifting a transmission of this type." (DTX 444, CUM 1564-65)(emphasis added). Another section of this report states: "the piston area and system air pressure is not designed to provide enough force to cause splitter disengagement unless the torque being transmitted through the splitter is close to zero." (DTX 444, CUM 1561)(emphasis added). These statements suggest

that the Top 2 System aims for zero torque and they are consistent with the proposition that the torque reversals are used as a default mechanism that functions only when gear disengagement is not achieved at zero torque. This conclusion is bolstered by R.C. Holmes's internal memorandum regarding a meeting with Cummins in which Cummins admitted that, during the September 1987 3,000 mile road test, the fuel blip routine - meaning the second torque reversal where the system crossed from negative torque to positive torque - activated only 2% of the time. (DTX 256). In sum, the Court finds this documentary evidence indicates that, although the Top 2 System may reverse torque occasionally, this method is not the preferred or primary method of achieving gear disengagement.

The expert testimony regarding the materiality of the Top 2 System is similarly inconclusive. Both parties dispute whether or not Defendants' own experts knew at the relevant time that the alleged fuel blip routine caused torque reversals in the Top 2 System.¹⁶ (D.I. 471 at 103-05). Regardless which version is credited, the Court finds that the Top 2 System does not intend to repeatedly oscillate above and below zero torque in order to achieve gear disengagement. Rather, even assuming that the torque reversals are not "hypothetical," the Court

¹⁶ For instance, Plaintiff contends that any discussed torque reversals are merely "hypothetical," as admitted by Mr. Anderson during his deposition. (D.I. 465 at ¶ 179)(citing Anderson Dep. 229/24 - 230/5; 287/24 - 288/9). Defendants reply that this statement of Mr. Anderson is not worthy of consideration because he did not have his detailed technical reports at the time of the deposition. (D.I. 471 at 104). Defendants' characterization of Mr. Anderson's deposition statement implies that Mr. Anderson meant that he was unsure whether torque reversals are ever achieved because he did not have his technical reports. The Court, however, finds Plaintiff's characterization - that it was unknown by anybody whether torque reversals are ever achieved - is more plausible when considering Mr. Anderson's use of the word "hypothetical." If Defendants believed that Mr. Anderson's deposition testimony was inaccurate due to his not having any notes or reports, they could have called him as a witness at trial.

finds that the Top 2 System only aims for zero torque and the fuel blips are used only to bring the System above zero torque when gear disengagement is not achieved in the “window” around zero torque. The Court finds that Dr. Kleine’s testimony is consistent with this finding, although the Court is aware that he was unable to admit to this finding. In this regard, Dr. Kleine testified that float shifting is a technique in which a driver can shift gears with a manual transmission without engaging the clutch while at or very near zero torque. (Phase II Tr. 215/16 - 216/5). The Court understands Dr. Kleine’s testimony to mean that float shifting aims for zero torque in order to achieve a clutchless shift. On the record, immediately following this discussion of float shifting, the following exchange took place:

Q: And that’s what we’re talking about? Apart from nomenclature, that’s what we’re talking about?

A: Correct.

Q: And that’s what you are mimicking; isn’t that right?

A: That’s correct.

(Phase II Tr. 216/7-11)(emphasis added). This last reference by Plaintiff’s counsel was to tie-in an earlier portion of the testimony where Dr. Kleine agreed that the Top 2 System and the Top 4 System try to mimic float shifting.¹⁷ (Phase II Tr. 209/21 - 210/7). Thus, on the evidence presented, the Court finds that Dr. Kleine’s testimony is consistent with the proposition that the Top 2 System aims for zero torque rather than for repeated oscillation above and below zero torque.

The Court finds that Dr. Davis’s report, which concludes that the Top 2 System

¹⁷ In particular, Dr. Kleine agreed that the Top 2 System and the Top 4 System: “tried to . . . emulate or duplicate what a driver does . . . I think the word you used was ‘mimic?’” (Phase II Tr. 209/21 - 210/3).

incorporates every claim element of the '236 patent, is not persuasive. First, Dr. Davis's opinions are based largely on portions of exhibits that are seemingly contradicted by other portions of the same exhibits. For instance, Dr. Davis's report states that "fuel control was clearly used to initiate torque reversals to enable the shift to neutral." (PTX 166 at 16). In support, Dr. Davis cites pages 1564-65 of Defendants' Trial Exhibit #444. (PTX 166 at 16). However, the first sentence of the cited exhibit states that "[t]he approach taken to achieve zero torque and gear disengagement . . . was . . . [to] attempt[] to mimic what an experienced driver might do." (PTX 166 at 16)(citing DTX 444, CUM 1564-65). With this evidence in mind, the Court finds that all of Dr. Davis's statements, when considered collectively, are consistent with the proposition that the Top 2 System's torque reversal method is a default mechanism in order to provide another opportunity to achieve gear disengagement at or near zero torque. Plaintiff's expert, Dr. Caulfield, reiterated this interpretation during his testimony. (Phase II Tr. 543/11 - 544/11). Thus, considering all the evidence, the Court finds that the Top 2 System's method is quite different from the method of the '236 patent, which seeks repeated oscillations above and below zero torque to achieve gear disengagement. Therefore, the Court finds that the materiality of the Top 2 System to the '236 patent is low.

2. Plaintiff's Knowledge of the Top 2 System

As discussed above regarding the Top 4 System, and without making a specific factual finding, the Court will proceed based on the assumption that Plaintiff knew during the relevant time period that the Top 2 System aims for zero torque, but that torque reversals would occasionally be necessary when gear disengagement is not achieved at zero torque.

3. Plaintiff's Intent to Deceive the PTO

The analysis regarding Plaintiff's intent to deceive the PTO by withholding the Top 2 System is essentially identical to the analysis for the Top 4 System. The Top 2 System is a continuation of the Top 4 project and Defendants' proffered evidence of such intent is identical to the evidence discussed regarding the Top 4 System. Thus, the Court concludes that, for the same reasons as noted above, (1) the so-called "Predatory Shark Memo" is insignificant and is not credible evidence of an intent to deceive, and (2) there is no evidence of any "Oh No Moment" other than conduct that can readily be explained by legitimate business reasons. Furthermore, the Court finds that substantial evidence exists that Plaintiff acted in good faith, for example: (1) Dana had earlier settled a lawsuit brought by Plaintiff for infringement of the '236 and '248 patents, and (2) Cummins had signed a developmental agreement with Plaintiff that admitted Plaintiff's development of the '236 patent's technology. Therefore, the Court concludes that Defendants have failed to establish by clear and convincing evidence any intent to deceive on the part of Plaintiff in prosecuting the '236 patent application.

4. Balancing the Materiality of the Top 2 System Against Plaintiff's Intent to Deceive

Even assuming that Plaintiff possessed substantial knowledge regarding the operation of the Top 2 System, the Court concludes that Defendants have failed to present clear and convincing evidence of inequitable conduct. The Court finds that the materiality of the Top 2 System is low when considering that the '236 patent primarily teaches dithering. When weighed together with the lack of credible evidence regarding Plaintiff's intent to deceive - as mitigated by evidence of Plaintiff's good faith - the Court concludes that Defendants have failed to prove by

clear and convincing evidence that Plaintiff committed inequitable conduct in not disclosing the Top 2 System to the PTO.

(C) Plaintiff's Failure to Disclose the Trade Journal Articles

Various trade journal articles were released to the public regarding the Top 2 and Top 4 Systems during the months preceding the filing of the '236 patent application. Defendants claim that Plaintiff's failure to cite these articles to the PTO amounts to inequitable conduct. (D.I. 461 at 5)(citing DTX 4; DTX 13; DTX 135); (D.I. 471 at ¶ 113)(citing DTX 164). Plaintiff responds that, while Mr. Braun and/or Mr. Gordon admittedly knew about these articles, the articles are not material because they are mere promotional items that do not suggest how the Top 4 System or the Top 2 System breaks torque to achieve gear disengagement.¹⁸ (D.I. 466 at 25). For the reasons discussed below, the Court concludes that this omission does not amount to inequitable conduct.

1. Materiality of the Trade Journal Articles

The Court concludes that the articles are not material to the '236 patent. First, the Court notes that due to its conclusion above that the materiality of the Top 4 System is low, it is clear that trade journal articles describing this system cannot be highly material either. Furthermore,

¹⁸ The Court notes that Plaintiff contends that various trade journal articles discussing the Top 2 System are not material to the '236 patent. (D.I. 466 at 25-26). In its post-trial briefs, Defendants do not assert any inequitable conduct due to the withholding of articles regarding the Top 2 System. Rather, Defendants confine their inequitable conduct claims to articles regarding the Top 4 System. (D.I. 461 at 5; D.I. 460 at ¶ 94)(citing DTX 4; DTX 13; DTX 135). The Court finds that it is unimportant what articles are considered for purposes of the inequitable conduct issue because all the articles are similar in what they reveal about the method of clutchless shifting.

the Court agrees that these articles do little more than to promote a clutchless shifting transmission. How such clutchless shifting is achieved is never discussed in detail. In fact, these articles do little more than generally discuss that the Top 4 System performs clutchless shifting of some sort, and that on the 3,000 mile road test, the system performed adequately for purposes of fuel economy. (DTX 164). Defendants do not cite anything contained in these articles that discusses the method utilized for breaking torque; but rather, contend that these articles are material because they note that the Top 4 System performs clutchless shifting through automatic fuel control in the “higher gear ratios.” (D.I. 460 at ¶¶ 123-125)(discussing how DTX 4; DTX 13; and DTX 135 are material to the ‘236 patent). Even Dr. Davis - Defendants’ expert witness - testified that the articles did not get into much detail as to how the Top 4 System performed clutchless shifting “because [the publishers of the articles] want more of the readership . . . [b]ecause that’s more of a detail, and most people are more interested in a bigger picture.” (Phase II Tr. 392/13-15; 393/6-7). As discussed above, however, clutchless shifting was not a novel concept at this time, nor was automatic fuel control, and references containing these qualities were considered by the PTO.¹⁹ Since the specifics of how clutchless shifting is performed is never revealed, the Court concludes that the articles are not material to the ‘236 patent.

2. Plaintiff’s Knowledge of the Trade Journal Articles

¹⁹ Most telling is Dr. Davis’s trial testimony in which he conceded that during his deposition, he opined that one of the more prominent trade journal articles was “no more relevant than the [Schulze] patent,” which the PTO did consider when deciding whether or not to issue the ‘236 patent. (Phase II Tr. 400/5-10).

Plaintiff does not dispute that it knew of these trade journal articles. In fact, Plaintiff concedes that many of these articles were kept in Mr. Braun's own files. (D.I. 465 at ¶ 111). Thus, the Court concludes that Plaintiff knew about these trade journal articles during the relevant time period.

3. Plaintiff's Intent to Deceive the PTO

Defendants advance the same arguments in support of Plaintiff's intent to deceive the PTO in withholding these trade journal articles as they advanced for Plaintiff's withholding of the Top 4 and Top 2 Systems. For the same reasons as discussed above regarding those systems, the Court finds that this evidence provides very little, if any, indication of an intent to deceive the PTO. Defendants urge the Court to conclude the fact that Mr. Braun had these articles in his files on the Econoshift System reveals his (1) knowledge that they are material, and (2) intent to deceive. The Court first notes that merely having articles in the Econoshift System's files does not make them material. Further, the Court observes that Mr. Braun voluntarily provided Mr. Gordon with some of these articles in 1993, for Mr. Gordon's use in Plaintiff's infringement lawsuit against Dana. (DTX 13, EC 19339). Thus, to conclude as Defendants suggest, the Court would have to infer that Mr. Braun injected evidence of his misconduct regarding the prosecution of the '236 patent into a lawsuit asserting infringement of the '236 patent. The Court concludes that this is a highly unlikely scenario, and it further refutes any suggestion by Defendants that Plaintiff had an intent to deceive the PTO when it withheld these trade journal articles.

4. Balancing the Materiality of the Trade Journal Articles Against Plaintiff's Intent to Deceive

In balancing the materiality of the trade journal articles with Plaintiff's intent to deceive,

the Court concludes that Defendants have failed to provide clear and convincing evidence of Plaintiff's inequitable conduct. The materiality of the articles to the '236 patent is low and the evidence of Plaintiff's intent to deceive the PTO is scant. Therefore, the Court finds that the failure to disclose these articles to the PTO does not amount to inequitable conduct.

(D) Plaintiff's Failure to Disclose the Vukovich Patent

The Vukovich patent was issued to William J. Vukovich and Michael R. Grimes on January 15, 1985, and it patents a vehicular control system for automatically shifting a countershaft transmission in which the clutch remains engaged throughout the entire shift. (DTX 3; PTX 16 at ¶ 16-17). Defendants contend that Plaintiff's failure to cite the Vukovich patent to the PTO amounts to inequitable conduct. For the reasons provided below, the Court does not agree.

1. Materiality of the Vukovich Patent

Defendants contend that the Vukovich patent is clearly material to the '236 patent. (D.I. 461 at 5-6). Specifically, they claim that the Vukovich patent's materiality is demonstrated by (1) the Vukovich patent's title, which indicates that it concerns "automatic shifting," (2) the Vukovich patent's use of a "countershaft transmission," which is the preferred embodiment of the '236 patent, (3) the Vukovich patent's showing of a device for controlling the throttle of an engine, (4) the Vukovich patent's cover page showing an "MPU Controller" that sends signals to the engine to control the flow of fuel, and (5) the Vukovich patent's cover page, which shows "shift control arms that shift the transmission." (D.I. 460 at ¶ 244). The Court finds that Defendants' contentions focus on relatively unimportant aspects of the '236 patent, the "preferred

embodiments,” in the context of an inequitable conduct analysis. As previously discussed, the ‘236 patent is about dithering, and the other features are means to implement this method. All of the details, while potentially “important” or “relevant” in some sense of these terms, do not rise to the level of materiality that would support a claim of inequitable conduct, especially when considering that some references disclosing the above mentioned features of the Vukovich patent were considered by the PTO.

For instance, Defendants’ expert - Dr. Davis - opines in his report that the Vukovich patent contains the same number, or less, of the ‘236 patent’s features as does the Schulze patent. In Dr. Davis’s comparison chart, he reduces the ‘236 patent to 10 essential features. He then compares various references - some disclosed to the PTO and some not disclosed to the PTO - to these 10 features. Dr. Davis’s chart concludes that the Vukovich patent has four of these ten features in common with the ‘236 patent: (1) a vehicular drive train, (2) a master clutch that is engaged throughout the shift, (3) automatic increasing and decreasing of engine fueling to get one torque reversal, and (9) automatic increasing and decreasing of engine fueling to cause synchronous gear rotation after the engine senses disengagement. (PTX 166, Attach. G). In analyzing the Schulze patent, Dr. Davis’s chart indicates that all four of the features that the Vukovich patent has in common with the ‘236 patent, the Schulze patent also has in common with the ‘236 patent. (PTX 166, Attach. G). However, the Schulze patent has an additional feature in common with the ‘236 patent, feature number 10 - repeated automatic increasing and decreasing of engine fueling to get a second torque reversal if disengagement is not sensed. (PTX 166, Attach. G). Since the Schulze patent was considered by the PTO when deciding if the ‘236

patent should issue, the Court finds that the Vukovich patent is cumulative as a matter of law and is not material.

Defendants contend that at trial, Dr. Davis changed his analysis regarding the Schulze patent, and that after reading Dr. Caulfield's report, Dr. Davis testified that the Schulze patent actually did not have the third feature of the '236 patent - automatic increasing and decreasing of engine fueling to get one torque reversal. (Phase II Tr. 303/11 - 304/3). Having made that clarification, Dr. Davis then testified that in his opinion, the Vukovich patent is more relevant to the '236 patent than the Schulze patent. (Phase II Tr. 305/8-12). Even accounting for this advantageous new interpretation of the Schulze patent, the evidence still reflects the high degree of similarity between the Schulze patent and the Vukovich patent. Furthermore, since the Court has found that the '236 patent's primary feature is dithering, and that on Dr. Davis's chart the concept of dithering is best epitomized by feature number 10, the Court finds the Schulze patent is more relevant than the Vukovich patent. In the Court's view, this finding is supported by Dr. Davis's trial testimony during cross examination that, during his deposition, he opined that it is "a close call" as to whether the Vukovich patent is more relevant than the Schulze patent. (Phase II Tr. 387/22 - 388/4). This finding is further supported by Dr. Caulfield's testimony that the Vukovich patent is not material to the '236 patent because the Vukovich patent is not concerned with dithering, but rather, like the Top 2 and Top 4 Systems, it aims for zero torque.²⁰ (Phase II

²⁰ Defendants apparently concede that the Vukovich patent does not utilize dithering. (D.I. 470 at ¶ 68(d)). Rather, as discussed in detail above regarding the Top 4 System, they dispute Dr. Caulfield's definition of materiality because he focused only on dithering. (D.I. 470 at ¶ 68(d)). Since the Court has found that the '236 patent's primary contribution to the development of automatic transmissions is the concept of dithering, and that the idea of dithering

Tr. 525/13-15).

In sum, the Court concludes that the Vukovich patent is cumulative to the Schulze patent, and that any differences between the two are insignificant to the teachings of the '236 patent. Therefore, the Court concludes that the materiality of the Vukovich patent to the '236 patent is low.

2. Plaintiff's Knowledge of the Vukovich Patent

Plaintiff does not dispute that Mr. Gordon had substantial knowledge of the Vukovich patent and that he cited the Vukovich patent to the PTO on a number of different occasions while prosecuting other patents. (D.I. 471 at ¶ 243).

3. Plaintiff's Intent to Deceive the PTO

Defendants proffer the same evidence in support of Plaintiff's intent to deceive the PTO in withholding the Vukovich patent as they proffer for the other alleged material prior art, including: (1) the perceived competitive threat posed by Cummins, (2) the "Predatory Shark Memo," and (3) the alleged "Oh No Moment." For the same reasons as discussed above, the Court finds this evidence to be insufficient. Furthermore, Defendants do not dispute that during the pendency of the '236 application, Mr. Gordon "communicated with the [PTO] about the Vukovich patent several times before and during the pendency of the '236 application," while prosecuting other patents. (D.I. 470 at ¶ 71)(citing DTX 34; DTX 38; DTX 39; DTX 40; DTX 43). The Court finds these disclosures as indications of Mr. Gordon's good faith. It would be imprudent for Mr.

is detectable in every claim of the '236 patent, it disagrees that Dr. Caulfield's opinion warrants little or no weight.

Gordon to leave a contemporaneous paper trail of his knowledge of the Vukovich patent if he believed the Vukovich patent to be material to the '236 patent. The Court finds that Defendants have not established evidence sufficient to convince the Court that Mr. Gordon's failure to disclose the Vukovich patent was a result of an intent to deceive the PTO. In sum, the Court concludes the evidence offered by Defendants of Plaintiff's intent to deceive the PTO by withholding the Vukovich patent is insufficient to establish any improper conduct by Plaintiff.

4. Balancing the Materiality of the Top 4 System Against Plaintiff's Intent to Deceive

As noted above, the Court finds that the materiality of the Vukovich patent is low and that Defendants have failed to present clear and convincing evidence of Plaintiff's intent to deceive the PTO. With the benefit of 20/20 hindsight, it is at least arguable that Plaintiff should have disclosed the Vukovich patent. However, the Court concludes that Defendants have failed to prove by clear and convincing evidence that Plaintiff engaged in inequitable conduct by not disclosing the Vukovich patent while prosecuting the '236 patent.

(E) Plaintiff's Allegedly False or Misleading Statement to the PTO

Defendants also contend that Plaintiff engaged in inequitable conduct by stating in the '236 patent application that:

no one prior to the present invention had thought to provide a compound type vehicle driveline, such as a compound type mechanical transmission with a relatively simple and inexpensive shift control system that enabled manual shifting of lower gear ratios whilst enabling automatic shifting between particularly sequentially related high gear ratios to relieve the operator of shifting burden under higher speed highway driving conditions and allow an automatic shift schedule for fuel economy.

(D.I. 461 at 5)(quoting PTX 1, col. 2, lines 45-55). Defendants contend that the Top 2 and Top 4

Systems refute this representation. (D.I. 461 at 5). Plaintiff responds that the terms “simple” and “inexpensive” distinguish the ‘236 patent from any of these other systems. (D.I. 466 at 39).

1. Materiality of the Statement

The Court concludes that Plaintiff’s statement is immaterial to the ‘236 patent. The Court notes that, while some of the previously discussed trade journal articles do extol the simplicity and inexpensiveness of the Top 4 System, the Court is not persuaded that such a statement is material. First, the terms “simple” and “inexpensive” are highly subjective and their accuracy depends on the simplicity and cost of other similar systems. Such a subjective statement - especially when contained only in the “Background of the Invention” section - is usually not considered to be highly material. Second, Plaintiff produced sufficient evidence, as discussed at length above, for the Court to find that the ‘236 patent’s use of dithering made automatic shifting simpler and more reliable than other clutchless shifting systems that aim for gear disengagement in the zero torque “window.” Additionally, Defendants fail to cite any evidence supporting the contention that the ‘236 patent’s method is more expensive to implement than are the Top 4 or Top 2 Systems’ methods. Therefore, on the evidence presented, the Court concludes that the above statement is immaterial.

2. Plaintiff’s Knowledge of the Statement’s Materiality

Plaintiff’s knowledge that it made the statement is undisputed. Its knowledge of the statement’s materiality is moot due to the previous conclusion that the statement is not material. However, assuming that the statement is material and that Plaintiff knew of its materiality at the time it was made, such knowledge is irrelevant for the reasons discussed below.

3. Plaintiff's Intent to Deceive the PTO

Defendants do not advance any evidence in support of Plaintiff's alleged intent to deceive the PTO in making the above statement in addition to the evidence of Plaintiff's intent to deceive previously discussed above. Therefore, the Court concludes that Defendants have failed to establish by clear and convincing evidence Plaintiff's intent to deceive the PTO by making the above statement.

4. Balancing the Materiality of the Statement Against Plaintiff's Intent to Deceive

Due to the immateriality of the statement and the lack of evidence regarding Plaintiff's intent to deceive the PTO, the Court concludes that Defendants have failed to prove by clear and convincing evidence that Plaintiff engaged in inequitable conduct.

VII. CONCLUSION

For the reasons discussed above, the Court concludes that Plaintiff did not engage in inequitable conduct when prosecuting the '236 patent.

An appropriate Order will be entered.

