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Paper 32
Date: March 12, 2014

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SCHRADER-BRIDGEPORT INTERNATIONAL, INC.
and SCHRADER ELECTRONICS, INC.
Petitioner

v.

CONTINENTAL AUTOMOTIVE SYSTEMS US, INC.
Patent Owner

Case IPR2013-00014
Patent 6,998,973

Before SALLY C. MEDLEY, JOSIAH C. COCKS, and
MITCHELL G. WEATHERLY, *Administrative Patent Judges.*

COCKS, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. Summary

Schrader-Bridgeport International, Inc. and Schrader Electronics, Inc. (collectively "Schrader") filed a Petition on October 8, 2012 (Paper 1, "Pet.") requesting *inter partes* review of claims 1-5 and 7-11 of U.S. Patent No. 6,998,973 ("the '973 patent") (Ex. 1001) pursuant to 35 U.S.C. §§ 311-319. On March 13, 2013, the Board instituted a trial for each of claims 1-5 and 7-11 on one ground of unpatentability.[1]

After institution of trial, the Patent Owner, Continental Automotive Systems US, Inc. ("Continental"), filed a Patent Owner Response ("PO Resp.") to the Petition. Paper 19. Schrader filed a Reply to Continental's Response on September 12, 2013. Paper 20.

Oral hearing was conducted on December 11, 2013.[2]

The Board has jurisdiction under 35 U.S.C. § 6(c). Pursuant to 35 U.S.C. § 318(a), this decision is "a final written decision with respect to the patentability of any patent claim challenged by the petitioner."

Schrader has shown that claims 1-5 and 7-11 are unpatentable.

B. The Invention of the '973 Patent

The '973 patent sets forth that its disclosed invention "relates to a data transmission method for a tire-pressure monitoring system of a vehicle. More particularly, it relates to a method for preventing collisions between the data transmitted by the wheel units of one and the same vehicle." Ex. 1001, col. 1, ll.

[1] *See* Paper 12 ("Institution Decision" or "Inst. Dec.").

[2] A transcript of the oral hearing has been entered into the record as Paper 31 ("Hr'g. Tr.").

6-11.

As explained in the ’973 patent, in the art of tire-pressure monitoring systems for vehicles, there is a known disadvantage in transmitting sensed data from each wheel unit of a vehicle “simultaneously” to a central computer for processing of the data. *Id*. at col. 1, ll. 15-48. As a result of such simultaneous transmissions, “scrambling” of the data may occur (*id*. at col. 1, ll. 43-47), also characterized as data “collision” (*id*. at col.1, ll. 56-58), which may render the data unusable. To alleviate the data collision problem, the invention of the ’973 patent incorporates in each wheel unit internal clocks of “relatively poor precision,” for instance, RC-type oscillating circuits. *Id*. at col. 2, ll. 17-26. The poor precision of the clocks introduces what is characterized as a “natural time lag” of the data transmission of each wheel unit, so as to impose time shifting of the transmissions. Such time shifting is not generally present in internal clocks recognized in the art as “extremely precise.” *Id*. at col. 2, ll. 27-34.

Claim 1 is the sole independent claim and is reproduced below.

> 1. A data transmission method for a tire-pressure monitoring system (10) of a vehicle, said data being transmitted by wheel units (12) to a central computer (13) located in the vehicle, said method comprising:
>
> a data transmission phase in parking mode, over a first period; and
>
> a data transmission phase in running mode, over a second period shorter than the first period; said method being characterized in that:
>
> a natural time lag between various internal clocks with which each wheel unit (12) is equipped is used to prevent collisions between transmissions from the various wheel units of one and the same vehicle.

Id. at col. 4, ll. 7-19.

C. Prior Art

The following items of prior art are involved in this *inter partes* review:

US 6,271,748 B1 ("Derbyshire")	August 7, 2001	Ex. 1003
US 5,883,582 ("Bowers")	March 16, 1999	Ex. 1005
US 6,486,773 B1 ("Bailie")	November 26, 2002	Ex. 1006

D. The Asserted Ground of Unpatentability

The Board instituted trial on the following ground of unpatentability:

Claims 1-5 and 7-11 are unpatentable under 35 U.S.C. § 103(a) as obvious over Derbyshire, Bailie, and Bowers.

II. ANALYSIS

Claim 1 of the '973 patent is the only independent claim and is directed to a data transmission method in connection with a tire-pressure monitoring system of a vehicle. It is the following feature associated with claim 1 that lies at the heart of this *inter partes* review: "a natural time lag between various internal clocks with which each wheel unit (12) is equipped is used to prevent collisions between transmissions from the various wheel units of one and the same vehicle." The limitation is required by all of claims 1-5 and 7-11 in the '973 patent.

A. Claim Construction

The Board construes a claim of an unexpired patent in an *inter partes* review using the "broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b); *see* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012). Claim terms usually are given their ordinary and customary meaning, as would be understood by one of

ordinary skill in the art in the context of the underlying patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An inventor, however, also may act as his or her own lexicographer and give a claim term a special meaning. Even where, as here, no such lexicographic definition is presented, it is appropriate, nevertheless, to rely on the written description for guidance in determining claim meaning. *See id.* Indeed, the construction that stays true to the claim language and most naturally aligns with the inventor's description is likely to be the correct construction. *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998).

All claim terms have been given their ordinary meaning as would be understood by a skilled artisan in light of the '973 patent. For clarity in this Decision, however, we explicitly set forth the ordinary meaning for the terms "natural time lag" and "used to prevent collisions."

1. "Natural time lag"

In instituting trial in this *inter partes* review, the Board determined that the specification of the '973 patent sheds light on the meaning of the term "natural time lag," as would be understood by one of ordinary skill in the art. Inst. Dec. 7. In that regard, we observed:

> [T]he '973 Patent sets forth that "natural time lag" of the transmission of data from the individual clock components of each wheel arises due to "substantial tolerance" possessed by each clock, and "minimize[s] the risk of simultaneously transmitting several information items" by "randomly time-shifting each frame transmission from a wheel unit relative to the other wheel units." ('973 Patent, col. 3, ll. 39-51.) The "substantial tolerance" is elsewhere characterized as "poor precision" of the internal clocks, which operates "to automatically time-shift (randomly) the transmissions from the wheel units." (*Id*. at col. 2, ll. 17-24.) While a suitable or preferred "degree of precision" of the invention is expressed as "± 15%" (*id*. at col. 3, ll. 26-27), the '973

> Patent also conveys that "the degree of precision may be different from ± 15%, provided that this automatically induces a time lag in the transmissions, thus avoiding any risk of a collision" (*id*. at col. 3, ll. 55-58). Furthermore, the '973 Patent also differentiates clocks having "poor precision" from those that are characterized as "extremely precise" and use such extreme precision to prevent data collision in a manner distinguished from that using "natural time lag." (*Id*. at col. 2, ll. 17-34.)

Inst. Dec. 7-8. Given the guidance provided by the '973 patent, we construed the term "natural time lag," in connection with internal clocks of a wheel unit, "as requiring that tolerance of the clocks is sufficiently substantial, or, stated alternatively, that the precision [is] sufficiently poor, so as to automatically and randomly induce time shifting of transmissions from the clocks." *Id*. at 8. Neither party has expressed any disagreement with the construction of the term "natural time lag" that was adopted by the Board. That construction is appropriate also with respect to this final written decision.

2. "Used to prevent collisions"

In conjunction with the claim term "used to prevent collisions," there is also no dispute by the parties as to the Board's construction of the term. In light of the specification of the '973 patent, the Board construed the term as meaning that, in connection with transmitted data, "the occurrence of collisions is reduced." Inst. Dec. 8. We also maintain that construction in connection with this final written decision.

B. Derbyshire, Bailie, and Bowers

As set forth in its Petition, Continental has represented that the combined teachings of Derbyshire, Bailie, and Bowers account for all the features of claims

1-5 and 7-11 of the ’973 patent, and that one of ordinary skill in the art would have had sufficient reason to combine those teachings.

1. Derbyshire

Derbyshire discloses a tire condition monitoring system including a “wheel transmitter unit” associated with each wheel of a vehicle. Ex. 1003, col. 1, ll. 61-64. Derbyshire describes that each of the wheel transmitter units may incorporate an internal clock component termed a “clock oscillator,” and sets forth that examples of such oscillators include an “RC oscillator” and a “ceramic resonator.” *Id*. at col. 14, ll. 41-47. The “RC oscillator” is acknowledged as being “relatively inaccurate” (*id*. at col. 14, ll. 43-44) or having a “relatively large tolerance” (*id*. at col. 15, l. 4), as compared with the ceramic resonator, which is described as having a “relatively small tolerance” (*id*. at col. 15, l. 9) and providing “increases [in] the accuracy of data transmission,” as compared to the RC oscillator (*id*. at col. 14, ll. 44-47).

2. Bailie

Like Derbyshire, Bailie also is directed to communicating data in connection with a tire pressure monitoring system. Bailie recognizes that in its transmission units associated with the tires of a vehicle, which convey parameters of the tire such as a tire pressure, “overlap” or “clashing” of data from multiple transmission units may occur sometimes. Ex. 1006, col. 1, ll. 28-34. Bailie summarizes at least two embodiments that employ techniques for overcoming the clashing problem as follows:

> In one embodiment, each transmitter sends the data during a sequence of aperiodic time windows. Because the time windows are aperiodic, the likelihood of simultaneous or overlapping transmission by two or more transmitters is reduced. In another embodiment, each transmitter waits a variable time delay before beginning its

> transmission of data. Because the transmitters begin transmitting at differing times, the likelihood of overlapping transmission by two or more transmitters is reduced.

Id. at col. 1, ll. 63-2:4.

3. Bowers

Bowers is titled "Anticollision Protocol for Reading Multiple RFID Tags." Bowers's Abstract is reproduced below:

> A method of reading multiple RFID tags located in a field of an interrogating antenna is based on periodic transmissions from the tags with large, non-transmission intervals between transmissions. The non-transmission intervals are fixed for a given tag, but are random between tags due to manufacturing tolerances in electrical components from which the tag is constructed, such that no coordination of transmissions from the interrogating antenna is required.

Ex. 1005, Abstract.

Thus, Bowers's system operates to provide an "anticollision" benefit concerning the transmission of data that arises due to "manufacturing tolerances" of involved electrical components. In particular, in describing an embodiment that incorporates transmission devices, each with a "timing circuit," Bowers states:

> [I]t has been determined that by constructing the timing circuit 19 using electrical components of a predetermined tolerance level, such as a +/- 20% tolerance, that although the non-transmission interval 38 is a fixed length for a particular device, the length of the non-transmission interval varies among a plurality [of] devices due solely to the manufacturing tolerance, which decreases the probability that two or more devices will transmit their memory data 36 at the same instant in time. That is, varying the length of the non-transmission interval 38 among various devices 10 desynchronizes transmission between devices 10. In contrast, if the timing circuit 19 is constructed using electrical components with a tighter tolerance level, such as +/- 5%, then the timing circuits in different devices are more likely to have the same length non-transmission interval and

> consequently, it is more likely that two or more devices within an interrogation zone will simultaneously transmit their memory 36, thus causing a data collision.

Ex. 1005, col. 8, ll. 19-37. The teaching of the above-quoted portion is clear; the manufacturing tolerances for the timing circuits of associated transmission devices, when +/- 20%, are sufficient to "desynchronize[]" data transmissions from multiple devices with the purpose of avoiding data collision. Furthermore, Bowers also provides guidance as to a range of acceptable tolerance variations that will satisfy the desynchronization purpose. In particular, while +/- 20% is an acceptable tolerance level, in contrast, a "tighter tolerance level" of "+/- 5%" makes data collision more likely.

4. Reasons to Combine the References

Although Derbyshire does not recognize a data collision problem in connection with its disclosed tire pressure data transmissions, it is clear from the content of Bailie that it is a problem known in the art in need of solution. In that regard, Bailie conveys that: "[T]here is a need for an improved method and apparatus for transmitting data in a remote tire pressure monitoring system which reduces clashing of data." Ex. 1006, col. 1, ll. 49-52. Although embodiments of Bailie's system provide solutions to the problem that do not take advantage of imprecise clocks with appropriately large tolerances, Bailie does not offer those particular solutions to the preclusion of other known and viable ones that would have been appreciated by a skilled artisan. Bowers proposes another solution to such a data collision problem. As discussed above, Bowers's solution is the implementation of timing components associated with each transmission unit that are of suitable imprecision to mitigate data collision.

In its Petition, Schrader explained that it would have been obvious to one of ordinary skill in the art to implement Bowers's known data collision avoidance techniques in the data transmission systems of tire pressure monitoring devices, such as Derbyshire and Bailie, for the specific purpose of alleviating data collision for which such detrimental collision is a recognized problem. *E.g.*, Pet. 22-24.

C. Continental's Arguments

In its Preliminary Patent Owner Response, Continental made various arguments to the Board under the premise that there is insufficient reason to combine the teachings of Derbyshire, Bailie, and Bowers. In its Response submitted pursuant to 37 C.F.R. § 42.120, Continental does not rely on additional evidence, such as the declaration testimony of an expert, and offers similarly themed arguments as presented in the Preliminary Patent Owner Response challenging the rationale to combine the references. PO Resp. 7-36. Continental also contends that the limitations of claims 3 and 8 are absent from the teachings of Derbyshire, Bailie, and Bowers. *Id*. at 37-38. For the reasons that follow, we conclude that the teachings of Derbyshire, Bailie, and Bowers account adequately for all the features of the claims, and a skilled artisan would have had adequate reason to combine those teachings.

1. Adequate reason to combine

Continental represents to the Board that there is "no reason" to combine the teachings of Derbyshire and Bowers. PO Resp. 7. The basis for that representation stems from an alleged distinction, as expressed by Continental, between "critical data" and "non-critical data." *See*, *e.g.*, *id.* at 8-28. In that regard, Continental characterizes "critical data" as "data related to a change in the tire pressure and/or temperature indicating a problematic tire," and "non-critical

data" as "periodic and mundane transmissions of update or communication maintenance messages." *Id.* at 8. According to Continental, a combination of Derbyshire and Bowers "will have no effect in preventing collisions involving critical data and will potentially have negative effects for the reception of non-critical data." *Id.* at 7-8 (emphasis removed).

At the outset, we observe that the claims of the '973 patent do not distinguish, or otherwise limit, the content of the transmissions from the various wheel units. That is, there is no requirement in the claims that the transmissions of any one particular data category are intended to be prevented from collision to the exclusion of other data categories. In other words, the claims encompass within their scope the prevention of collisions of any data content for the transmissions from various wheel units.

Derbyshire describes that the wheel transmitter units for each wheel periodically transmit data to a microprocessor residing in a vehicle. *E.g.*, Ex. 1003, col. 3, l. 60 – col. 4, l. 15. By way of example, Derbyshire explains that the wheel units may transmit data "at least every ten minutes," but also may transmit data "more frequently if there has been a significant change in the data since the previous transmission." *Id.* at col. 7, ll. 50-54. Derbyshire also provides that less frequent transmission (e.g., every sixty minutes), at times, may be preferable to reduce power consumption of the wheel transmitter units. Thus, Derbyshire provides that the periodicity of transmission is variable, and there is a trade-off when selecting the transmission period, i.e., more frequent transmissions for more up-to-date information at the processor versus less frequent transmissions to reduce power consumption. Continental also recognizes that in Derbyshire there is a "choice" in establishing the desired frequency of transmission. PO Resp. 9.

Derbyshire is silent as to the prevalence of data collision between various wheel unit transmissions. However, there is no dispute that such collision is known to occur in certain circumstances in the system set forth in Derbyshire. Indeed, at oral hearing, counsel for Continental represented to the Board that data collision "would be a concern" in such a system, even if likely not to occur. Hr'g. Tr. 27. That data collision may occur in Derbyshire is consistent with other evidence of record, for instance, the teachings of Bailie and Bowers. Bailie, as discussed above, recognizes in the art that "overlap" or "clashing" of data from multiple transmission units sometimes may occur in tire pressure monitoring systems. Ex. 1006, col. 1, ll. 28-34. Similarly, Bowers conveys that periodic transmissions of data from multiple transmission units may give rise to "data collisions." *E.g.*, Ex. 1005, col. 1, l. 55- col. 2, l. 16. To overcome or reduce the data collision problem, Bowers provides particular timing circuits associated with each of its transmissions units. *Id.* at col. 8, ll. 19-37.

Articulated reasoning with rational underpinning is sufficient to support a conclusion of obviousness. *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Here, Schrader's reasoning to implement Bowers's timing circuits in the tire pressure monitoring system of Derbyshire so as to harness the benefit disclosed in Bowers of preventing data collision is rational and reasonable and is supported sufficiently by the record. Continental's argument that Derbyshire's system may deal implicitly, to some extent, with the data collision problem such that Derbyshire would "not benefit" from Bowers's timing circuits (PO Resp. 28) is unpersuasive. The argument is speculative and lacks adequate support in the record.

Furthermore, even if Continental is correct that Derbyshire's system does have some capacity to minimize data collision, the record establishes that there are a limited number of techniques for confronting such collision issues, and Bowers's

approach, using a particular variant of timing circuits having higher manufacturing tolerance levels, is a known, viable option. *See* Ex. 1005, col. 8, ll. 19-37. A person of ordinary skill in the art would have had good reason to incorporate a known approach for reducing or alleviating the problem of data collision. *See KSR Int'l Co. v. Teleflex Inc.,* 550 U.S. 398, 421 (2007) ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.").

We have considered the arguments offered by Continental in connection with its position that there is "no reason" to combine the teachings of Derbyshire and Bowers, but conclude that they are unavailing.

2. "Teaching against"

Continental also contends that Derbyshire "teaches against" combination with Bowers. PO Resp. 29-30. According to Continental, Derbyshire mandates that its tire pressure monitoring system use "close tolerance components" and that one skilled in the art would not substitute such components with the "high tolerance" components set forth in Bowers. *Id.* (citing Ex. 1003, col. 19, ll. 23-27). The argument is unpersuasive.

The referenced portion of Derbyshire is reproduced below:

> In some applications it is necessary that the data be acquired with high reliability. Reliability rates of just one or two transmission errors in 50,000 miles are of course possible using the above described wheel transmitter units and central receiver, but at the cost of using expensive, close tolerance components.

Ex. 1003, col. 19, ll. 21-26. Thus, Derbyshire sets forth that, in some applications, the "reliability" attributed to "close tolerance components" is desired. It does not, as Continental contends, require that Derbyshire's system must only incorporate close tolerance timing components to the exclusion of timing components of other tolerance values. That only "some applications" need to use close tolerance components suggests that, in other applications, close tolerance components are not necessary. The above-quoted portion of Derbyshire also recognizes that there is a detriment to close tolerance components because of their expense. Thus, Derbyshire sets forth that there is a trade-off to be considered when selecting transmitter components, i.e., reliability juxtaposed with cost.

Moreover, even if Derbyshire does express a general preference for close tolerance components, that itself does not operate to criticize, discredit, or otherwise discourage investigation into the use of other timing components that are less close or precise, such as the timing circuits of Bowers. *See DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009) ("A reference does not teach away, however, if it merely expresses a general preference for an alternative invention but does not 'criticize, discredit, or otherwise discourage' investigation into the invention claimed."). In other words, that Derbyshire may place a premium on higher reliability over reduced cost would not have limited a person of ordinary skill in the art to placing such a premium.

Accordingly, we are not persuaded that Derbyshire teaches away from the use of Bowers's timing circuits as a part of a tire pressure monitoring system.

3. "Non-analogous art"

Continental contends that Bowers is non-analogous art and, thus, not available as a reference for consideration in evaluating the patentability of the claims of the '973 patent. PO Resp. 30-31. A reference is analogous art if it is

either: (1) in the field of the inventor's endeavor; or (2) is "reasonably pertinent" to the particular problem with which the inventor was concerned. *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1238 (Fed.Cir. 2010).

In the Institution Decision, the Board determined that even if Bowers is not in the same field of endeavor as the '973 patent, Bowers is still analogous art. Inst. Dec. 17. In particular, the Board assessed the following in connection with the particular problem with which the inventors of the '973 patent were concerned:

> Here, the problem faced by the inventors of the '973 Patent was how to prevent collisions of data from multiple transmission sources associated with tire pressure monitoring systems in a manner that is "less expensive and less difficult to implement" than known techniques employing "extremely precise internal clocks." ('973 Patent, col. 2, ll. 27-34.) As discussed above, Bowers'[s] invention incorporates various transmission units with timing circuits having suitable manufacturing tolerances so as to avoid data collisions. That Bowers may not make particular reference to transmission units that are associated with tire pressure monitoring systems does not end the analogous art inquiry. In our view, one with ordinary skill in the art would have readily appreciated that because Bowers'[s] invention addresses the same problem it is reasonably pertinent to the problem addressed in the '973 Patent.

Id. at 17-18. In its Response, Continental contends that the above represented a "narrowly-stated problem" that "fails to take into account an unstated but clearly more preeminent measure of success – that the resultant tire pressure monitor is safe and reliable." PO Resp. 31. In that regard, according to Continental:

> [W]e respectfully submit that a more appropriate statement of the problem faced by the inventors of the '973 Patent was how to prevent collisions of data from multiple transmission sources associated with tire pressure monitoring system in a manner that is less expensive and less difficult to implement without compromising safety.

Id. Thus, although Continental maintains that the Board's assessment of the problem is "narrowly-stated," Continental offers a statement of the problem that is narrower still. That is, in addition to expense and difficulty of implementation, the involved problem, according to Continental, also takes into account "safety." Notably absent from Continental's response is citation to the record establishing that "compromising safety" was a concern with known prior art tire-pressure monitoring devices. The '973 patent, itself, characterizes the alleged benefit of the invention as one that addresses expense and difficulty of implementation, as compared to the prior art, and does not describe that "safety" is an additional factor. *See* Ex. 1001, col. 2, ll. 27-34.

In any event, even assuming that Continental's characterization of the problem faced by the inventors of the '973 patent is correct, Continental seemingly neglects to consider fully the nature of the second prong of the test for analogous art. In that regard, a reference is analogous art if it is "reasonably pertinent" to the particular involved problem. Continental does not explain persuasively why Bowers, which is a reference directed to minimizing collision of transmissions from multiple transmitters, would not have been considered *reasonably* pertinent to preventing data collision in tire pressure monitoring systems, even if a general concern for "safety" is of lesser, or even minimal, import in Bowers's area of technology. Bowers is concerned with preventing data collision among multiple, substantially simultaneous transmissions in a manner that addresses "cost" issues in the prior art and strives to produce transmissions that may be "accurately read." Ex. 1005, col. 1, l. 55 – col. 2, l. 24. Those disclosures are sufficient to have conveyed to a skilled artisan that Bowers is "reasonably pertinent" to the problem faced by the inventors of the '973 patent.

4. "Vetted" versus "Unvetted"

Continental also contends that the combination of Derbyshire, Bailie, and Bowers is deficient under a theory that "Bailie demands a vetted approach while the Bowers approach must practically be unvetted." PO Resp. 33 (emphasis omitted). According to Continental, the purported dichotomy between Bailie's alleged "vetted approach" and Bowers's alleged "unvetted approach" would "completely discourage the person of ordinary skill in the art from adopting [Bowers's approach] in the context of Derbyshire's tire pressure monitors." *Id.* at 35.

At the outset, it is not apparent what Continental means in its characterization of a "vetted" approach versus one that is "unvetted." Those terms do not appear in either Bailie or Bowers, nor do we discern that they appear anywhere else in the record other than Continental's response and Schrader's ensuing reply. As support for its characterization of Bailie as requiring a "vetted approach," Continental relies on a portion of Bailie at column 4, lines 26-36. PO Resp. 33-34. That portion, which describes the version of Bailie's system illustrated in Figure 2, is reproduced below:

> The time delay for each respective data word is defined according to the repeating pattern. As noted above, the repeating pattern is preferably common to the plurality of tires by using the same code at the different tires. However, a different pattern may be used. The duration code or repeating pattern illustrated in the drawing has been determined by simulation to be beneficial at reducing clashing of data at a receiver in a remote tire pressure monitoring system. However, other patterns may be used for transmitting data words responsive to collective data during a plurality of aperiodic time windows.

Ex. 1006, col. 4, ll. 26-36. The description above simply sets forth that in one embodiment of Bailie's system, data transmission may occur in any of a variety of

"patterns" from wheel units. It does not limit the possible transmission schemes in Bailie to any one particular pattern. In its Response, Continental emphasizes that the pattern "*has been determined by simulation to be beneficial at reducing clashing of data*." PO Resp. 33. Continental then concludes the following:

> Accordingly, one of ordinary skill in the art who reads Bailie in its entirety will understand that not just any pattern might necessarily suffice to reduce data clashing. In fact, while acknowledging that other patterns might also work, Bailie vouches in particular for only the efficacy of the specific patterns he describes in detail in his specification.
>
> One of ordinary skill in the art will further understand from the above-quoted portion of Bailie that not just any pattern will assuredly work to avoid data clashing in the context of a tire pressure monitor application setting. Instead, Bailie clearly suggests by example that any given pattern should be tested to determine and confirm the efficacy of that given pattern for this purpose.

Id. at 34. Continental, however, does not explain adequately why a person of ordinary skill in the art, reading Bailie "in its entirety," would understand the reference as vouching only for the efficacy of a particular pattern. Neither does Continental explain adequately how it arrives at the conclusion that Bailie "suggests by example" that a given pattern also must be "tested to determine and confirm the efficacy" in preventing data collision.

We have considered Continental's arguments but conclude that they are not supported adequately in the record. In that regard, we are unpersuaded from the record that the teachings of Bailie would somehow "quickly disinterest" or "completely discourage" a skilled artisan from implementing Bowers's data anti-collision techniques in Derbyshire's tire pressure monitoring system. *See* PO Resp. 35.

5. Claims 3 and 8

Each of claims 3 and 8 ultimately depends from claim 1. Each claim specifies the level or precision that is afforded the internal clocks of the wheel units. In that regard, the claims require that the precision is "about ±15%." Ex. 1001, col. 4, ll. 24-26 and 42-44. In alleging that claims 3 and 8 would not have been obvious in light of the combination of Derbyshire, Bailie, and Bowers, Continental discounts the teachings of Derbyshire and Bowers and contends that "none of the references teach the 'about +/- 15%' elements" in claims 3 and 8. PO Resp. 37. In particular, with respect to Bowers, Continental characterizes its teachings as "demand[ing] wider tolerance values than 20%, not less," and that selection of tolerance of about +/- 15% would have been "non-obvious" because the references "discourage" such selection. PO Resp. 37-38 (emphasis in original).

As discussed above, Bowers sets forth simply that an exemplary manufacturing tolerance for the timing circuits of its transmission devices "such as +/- 20%" is sufficient to "desynchronize[]" data transmissions from multiple devices to avoid data collision. Ex. 1005, col. 8, ll. 19-26. Bowers contrasts that example tolerance with a tighter tolerance level of +/- 5% that makes data collision more likely. *Id.* at col. 8, ll. 30-37. Thus, Bowers reasonably establishes a range of possible tolerances with those closer to +/- 20% as more suitable to avoid data collisions and those closer to +/- 5% as less suitable.

At the outset, it is not apparent that the claimed tolerance value of "about ±15%" would not encompass reasonably the +/- 20% values in Bowers. Even if that were not the case, however, Continental does not explain adequately how it concludes that Bowers "demands" tolerance values that are greater than +/- 20%. In that regard, we do not discern why Bowers describing +/- 20% as an exemplary acceptable tolerance equates to Bowers demanding a tolerance wider than +/- 20%.

Moreover, in an obviousness analysis, it is not necessary to find precise teachings in the prior art directed to the specific subject matter claimed because inferences and creative steps that a person of ordinary skill in the art would employ can be taken into account. *See KSR*, 550 U.S. at 418. Clearly, a tolerance value of +/- 15% is closer to 20% than 5%. Continental does not explain cogently why a person of ordinary skill in the art, guided by Bailie's teachings, would not have inferred readily that a tolerance value of +/- 15%, in that context, would be a value available for selection.

Accordingly, we are persuaded that the combined teachings of Derbyshire, Bailie, and Bowers render obvious claims 3 and 8.

III. CONCLUSION

We have considered the record before us in this *inter partes* review proceeding. For the foregoing reasons, we conclude that claims 1-5 and 7-11 of the '973 patent are not patentable over the combined teachings of Derbyshire, Bailie, and Bowers.

IV. ORDER

In consideration of the foregoing, it is:

ORDERED that claims 1-5 and 7-11 of the '973 patent are CANCELLED.

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