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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* DAVID T. PROEFKE, RON Y. ASMAR,  
THOMAS E. UTTER, and AARON P. CREGUER

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Appeal 2019-001659  
Application 14/622,145  
Technology Center 2600

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Before JAMES B. ARPIN, ADAM J. PYONIN, and  
IFTIKHAR AHMED, *Administrative Patent Judges*.

ARPIN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant<sup>1</sup> appeals under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1–20, all of the pending claims. Final Act. 2.<sup>2</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> “Appellant” here refers to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party-in-interest as GM Global Technology Operations, LLC. Appeal Br. 3.

<sup>2</sup> In this Decision, we refer to Appellant's Appeal Brief (“Appeal Br.,” filed August 28, 2018) and Reply Brief (“Reply Br.,” filed December 18, 2018); the Final Office Action (“Final Act.,” mailed February 27, 2018); the Examiner's Answer (“Ans.,” mailed October 18, 2018); and the originally-filed Specification (“Spec.,” filed February 13, 2015). Rather than repeat the Examiner's findings and determinations and Appellant's contentions in their entirety, we refer to these documents.

## STATEMENT OF THE CASE

Appellant's claimed methods and systems relate "to vehicles having passive entry, passive start functionality, and more particularly relate[] to a method for configuring a passive entry, passive start key to operate one of a plurality of designated vehicles." Spec. ¶ 2.

As noted above, claims 1–20 are pending. Claims 1, 11, and 17 are independent. Appeal Br. 16 (claim 1), 18 (claim 11), 20 (claim 17) (Claims App.). Claims 2–10 depend directly or indirectly from claim 1, claims 12–16 depend directly or indirectly from claim 11, and claims 18–20 depend directly or indirectly from claim 17. *Id.* at 16–20.

Claim 1, with disputed limitations emphasized, is representative.

1. A method for authenticating a remote fob selected from a plurality of fleet fobs with at least one of a plurality of vehicles *to exclusively pair the remote fob with a first vehicle selected from the plurality of vehicles*, the method comprising:

initiating a passive challenge function in the first vehicle;

*issuing a vehicle identifier from the body control module of the first vehicle to the remote fob in response to the passive challenge function;*

*generating a functional transmitter identifier in the remote fob using the vehicle identifier received from the body control module and a stored transmitter identifier;*

*issuing the functional transmitter identifier from the remote fob to the body control module of the first vehicle in response to the remote fob receiving the vehicle identifier;*

*comparing the functional transmitter identifier with at least one authenticated identifier stored in the body control module of the first vehicle; and*

authenticating the remote fob and the body control module of the first vehicle to enable exclusive radio frequency communication between the body control module of the first

vehicle and the remote fob when the functional transmitter identifier matches the at least one authenticated identifier, *wherein the body control module cannot be authenticated with the plurality of fleet fobs other than the remote fob such that radio frequency communication therebetween is disabled until another passive challenge function is initiated in the first vehicle.*

*Id.* at 16 (emphases added).

### REFERENCES AND REJECTIONS

The Examiner relies upon the following references in rejecting the pending claims:

<b>Name<sup>3</sup></b>	<b>Number</b>	<b>Pub'd</b>	<b>Filed</b>
Forest	US 2005/0041813 A1	Feb. 24, 2005	Aug. 19, 2003
Utter	US 2007/0001805 A1	Jan. 4, 2007	July 1, 2005
Brecht	US 2008/0122594 A1	May 29, 2008	July 5, 2007
Mitchell	US 2013/0214900 A1	Aug. 22, 2013	Feb. 21, 2012
Van Wiemeersch	US 2014/0288784 A1	Sept. 25, 2014	Mar. 19, 2013

The Examiner also rejects claims 1, 5, 7, 8, 10, 11, 13, 14, and 16–20 under 35 U.S.C. § 103 as obvious over the combined teachings of Utter and Van Wiemeersch (Final Act. 3–9); claim 2 under 35 U.S.C. § 103 as obvious over the combined teachings of Utter, Van Wiemeersch, and Mitchell (*id.* at 9–10); claims 3 and 4 under 35 U.S.C. § 103 as obvious over the combined teachings of Utter, Van Wiemeersch, Mitchell, and Brecht (*id.* at 10–12); claims 9, 12, and 15 under 35 U.S.C. § 103 as obvious over the combined teachings of Utter, Van Wiemeersch, and Brecht (*id.* at 12–14); and claim 6 under 35 U.S.C. § 103 as obvious over the combined teachings of Utter, Van Wiemeersch, and Forest (*id.* at 15).

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<sup>3</sup> All reference citations are to the first named inventor only.

We review the appealed rejections for error based upon the issues identified by Appellant, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential). Arguments not made are waived. *See* 37 C.F.R. § 41.37(c)(1)(iv). Unless otherwise indicated, we adopt the Examiner’s findings in the Final Action and the Answer as our own and add any additional findings of fact for emphasis. For the reasons given below, we sustain the rejections of the pending claims.

#### ANALYSIS

##### *Obviousness Over Utter and Van Wiemeersch, Alone or in Combination with Other References*

###### *A. Independent Claims 1, 11, and 17*

As noted above, the Examiner rejects independent claim 1 under 35 U.S.C. § 103 as obvious over the combined teachings of Utter and Van Wiemeersch. Final Act. 3–4. The Examiner relies on substantially similar findings and conclusions in rejecting independent claims 11 and 17. *Id.* at 6–7 (rejecting claim 11), 8 (“**Regarding claim 17: Claim[] 17 is rejected for the same reason of claim 11.**”). Therefore, we focus our analysis on the rejection of claim 1.

With respect to claim 1, the Examiner determines that Utter teaches or suggests most of the claim limitations (Final Act. 3–4), but the Examiner acknowledges “Utter does not explicitly disclose initiating a passive challenge function in the first vehicle and communicate with the fob in response to the challenge” (*id.* at 4). Nevertheless, the Examiner finds that Van Wiemeersch teaches these claim limitations. *Id.*

In particular, Van Wiemeersch discloses

In a [passive keyless entry/passive start (PEPS)] system, an owner may carry an electronic transmission device, such as a PEPS key fob 104, to allow for “keyless” entry to the vehicle 102. To initiate a door unlock sequence, the owner may touch or move in close proximity to a PEPS handle capacitive sensor 106 of a vehicle 102 door handle. Upon on an identification of the potential presence of an owner by a capacitive sensor 106, a controller 108 of the vehicle 102 may initiate a challenge-accept sequence with the key fob 104. The sequence may include the controller 108 sending a low-frequency key wake-up message to the key fob 104, and listening for a high-frequency response from the key fob 104 including an identification code. Upon receipt of the correct identification code, the vehicle controller 108 may unlock the vehicle 102 doors.

Van Wiemeersch ¶ 12; *see id.* ¶ 11; *see also* Spec. ¶ 3 (Appellant acknowledges “[v]ehicles equipped with [PEPS] functionality are known in the art.”). The Examiner concludes that a person of ordinary skill in the art would have had reason to combine the teachings of Utter and Van Wiemeersch to achieve the method recited in claim 1. Final Act. 4. “The motivation is [to] save power as the system would wake up by the passive challenge therefore it would be in a sleep/quiescent state instead of continuously and actively looking to communicate with the fob.” *Id.*; *see* Utter ¶¶ 23 (“Ordinarily, fob 20 is in a sleep state wherein only a small portion of its electronics are operating in a power conserving mode, but sufficient to recognize the arrival of signal 35 from module 40.”), 26 (“Method 400 begins with START 402 that desirably occurs when power is provided to fob 20. Fob 20 is conveniently but not essentially in a sleep mode wherein most of the electronics in fob 20 are quiescent and just enough are powered to detect an incoming signal.”); Van Wiemeersch ¶¶ 12 (“The sequence may include the controller 108 sending a low-frequency key

*wake-up message* to the key fob 104” (emphasis added)), 28 (“For example, the controller 108 may send a low-frequency key *wake-up message* to a key fob 104 (emphasis added)); *see also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007) (“Under the correct analysis, *any need or problem known in the field of endeavor at the time of invention and addressed by the patent* can provide a reason for combining the elements in the manner claimed.” (emphasis added)).

Appellant contends the combined teachings of Utter and Van Wiemeersch fail to render claim 1 obvious for three reasons. Appeal Br. 9–15. For the reasons given below, we are not persuaded of dispositive Examiner error by Appellant’s contentions.

First, Appellant contends that the combined teachings of Utter and Van Wiemeersch fail to teach or suggest the “dynamic configuration” of the PEPS system initiated by a passive challenge. Appeal Br. 9–11. Initially, we note that the term “dynamic configuration” is not recited in claim 1. *See id.* at 16 (Claims App.). Appellant contends, however, that “the functional transmitter identifier is dynamically configured (i.e., generated, issued and compared) within the remote fob for authentication with the body control module.” Reply Br. 2; *see Spec.* ¶ 10. Thus, we understand Appellant to contend that the recited steps of “*generating* a functional transmitter identifier in the remote fob using the vehicle identifier received from the body control module,” “*issuing* the functional transmitter identifier from the remote fob to the body control module of the first vehicle,” and “*comparing* the functional transmitter identifier with at least one authenticated identifier stored in the body control module,” describe the *dynamic configuration* of the PEPS system. Appeal Br. 16 (Claims App.) (emphases added).

Appellant asserts that “[t]he Examiner concedes that Utter does not disclose initiating a passive challenge function in the first vehicle or communicating with the fob in response to the passive challenge function” and “[n]owhere does Van [Wiemeersch] teach or suggest that the wake-up message sent by the controller 108 includes a vehicle identifier.” Appeal Br. 10. Nevertheless, the Examiner relies on the *combined* teachings of Utter and Van Wiemeersch to teach initiating a passive challenge function in the first vehicle and sending a message from the first vehicle including a vehicle identifier. Final Act. 3 (citing Utter ¶ 20 (lines 1–11)); *see* Ans. 5. Moreover, Utter discloses

During authentication, signal 35 contains *the unique ID of the particular vehicle 40* being accessed and preferably a randomly or pseudo-randomly generated challenge is also sent. Processor 42 uses the information from signal 35, in concert with an encryption or other authentication algorithm and the fob information stored in memory 44, to generate expected responses from fobs 20 programmed to the vehicle. During authentication, a fob present in the vicinity of vehicle 40 receives signal 35 via receiver 28 and compares the received vehicle ID with those stored in memory 24.

Utter ¶ 20 (lines 1–11). Thus, we are persuaded that the combined teachings of Utter and Van Wiemeersch teach or suggest “issuing a vehicle identifier from the body control module of the first vehicle to the remote fob in response to the passive challenge function.” Appeal Br. 16 (Claims App.). As the Examiner correctly observes, it is improper for Appellant to challenge the references individually when the Examiner relies on their combined teachings to teach or suggest this limitation. Ans. 4.

As Utter explains, “the unique ID of the particular vehicle 40” is used by the fob to generate “a response value,” corresponding to the recited

functional transmitter identifier. Final Act. 3 (citing Utter ¶ 20 (lines 11–17)). Further, Utter explains that “[t]his response value is then sent[, i.e., issued,] as signal 33 to the vehicle.” Utter ¶ 20 (lines 16–17); *see* Final Act. 3. Utter then explains that “[u]pon receipt of signal 33 from the fob, vehicle processor 42 will compare the received response to the expected responses it has calculated.” Utter ¶¶ 20 (lines 17–19), 21 (lines 8–12); *see* Final Act. 3. Specifically, Utter explains:

Thus, authentication can take place either in fob 20 or in module 40 or partly in each. What is important is that the combination of fob 20 and vehicle module 40 authenticate by comparing query signals received from the other with IDs or other unique tags stored in their internal memory, and accept the command or query if a match is found and reject the command or query if a match is not found.

Utter ¶ 21 (lines 13–19). Thus, we are persuaded that the Examiner demonstrates that Utter teaches or suggests the “generating,” “issuing,” and “comparing” steps, in view of Van Wiemeersch’s teachings, as recited in claim 1.

Second, Appellant contends Utter fails to describe an authentication process using a functional transmitter identifier to enable *exclusive* radio frequency communication between the fob and the body control module (BCM). Appeal Br. 11–14; Reply Br. 2–3. Appellant asserts that “[i]n this context, the term ‘exclusive’ is intended to mean to the exclusion of others; shutting out or prohibiting others; single or sole.” Appeal Br. 12 n.1. Nevertheless, Appellant does not identify where the term “exclusive” – or this definition – appears in the Specification, and we find no use of the term “exclusive” in the Specification.

Claim 1 recites “[a] method for authenticating *a remote fob* selected

from a plurality of fleet fobs *with at least one of a plurality of vehicles.*” Appeal Br. 16 (Claims App.) (emphases added). Further, any such exclusivity recited in claim 1 is constrained by the subsequent wherein clause: “the body control module cannot be authenticated with the plurality of fleet fobs other than the remote fob such that radio frequency communication therebetween is disabled *until another passive challenge function is initiated in the first vehicle.*” *Id.* (emphasis added). Thus, the claim language does not foreclose a plurality of fobs authenticated with a plurality of vehicles. The Specification explains, “it is desirable to develop a simple, quick and secure manner for associating a keyless fob with a BCM in a PEPS-equipped vehicle. In addition, it is desirable to allow *a single PEPS keyless fob to be fully operational (passive commands, active commands and immobilizer functions) on more than one vehicle.*” Spec. ¶ 6 (emphasis added).

[T]he PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant’s specification.

*In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). In view of the language of claim 1 and the Specification’s disclosure, we do not interpret the term “exclusively” or “exclusive” in claim 1 “to mean to the exclusion of others; shutting out or prohibiting others; single or sole.” Instead, in this context, we interpret these terms to mean only that one of a plurality of fobs may be authenticated to one of a plurality of vehicles *at a time*. See Ans. 7 (“Therefore, at least in one moment in time, there is exclusive RF communication between the remote fob and the BCM.”).

Appellant asserts that:

As claimed, the functional transmitter identifier is dynamically configured to exclusively pair a fleet vehicle with a remote fob and vice versa. In other words, a dynamic configuration is implemented using the functional transmitter identifier as a separate authentication process to enable exclusive radio frequency communication between a specific fleet fob with a particular fleet vehicle. *In this way, the remaining fleet fobs, which would otherwise be readily authenticated with the particular fleet vehicle cannot be authenticated, and thus are incapable of enabling remote fob functionality.* A different fleet fob can only be authenticated to that particular fleet vehicle by initiating another passive challenge, which dynamically configures the functional transmitter identifier of this different fleet fob for authentication with the body control module of the first vehicle.

Appeal Br. 12 (italics added; underlining by Appellant). Appellant then contends:

Nothing in Utter suggests that these distinct authentication processes may be combined for authenticating the remote fob to enable exclusive radio frequency communication and the body control module of the first vehicle such that radio frequency communication between the body control module and the other fleet fobs is disabled until another passive challenge function is initiated in the first vehicle.

*Id.* at 13 (citing Utter ¶¶ 20, 21). We disagree.

Utter's Figure 1 is reproduced below.

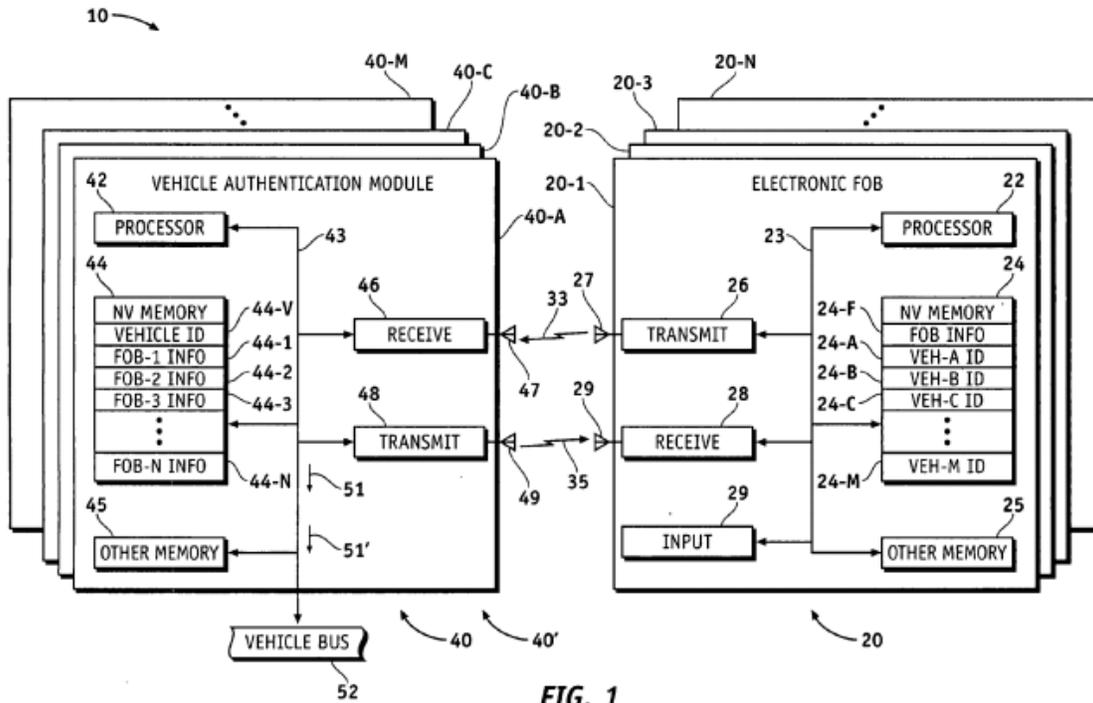


FIG. 1

Figure 1 depicts “a simplified schematic block diagram of a system adapted to train and authenticate a *single* key to multiple vehicles or multiple keys to a *single* vehicle or a combination thereof.” Utter ¶ 10 (emphases added); *see id.* ¶ 1. Thus, Utter’s Figure 1 teaches or suggests, among other combinations, authenticating a *single* fob to a *single* vehicle. *See* Final Act. 3 (citing Utter, Fig. 1). Further, Utter discloses:

If the outcome of query 318 is YES (TRUE), meaning that the fob did return the right answer, then method 300 advances to APPROVE AUTHENTICATION REQUEST step 322 wherein the authentication request is granted and whatever command is associated therewith is approved for execution by, for example, having processor 42 transmit appropriate signal 51, 51' to vehicle bus 52. *Following authentication approval step 322, method 300 loops back to initial query 306 as shown by path 323 and awaits a further authentication request.*

Utter ¶ 25 (lines 20–29) (emphasis added); *see* Final Act. 4.

Appellant further contends that because “Utter explicitly teaches that a single vehicle can respond to multiple fobs, and that multiple fobs can control multiple vehicles,” Utter teaches away from the recited methods. Appeal Br. 13–14. For the reasons given above, Appellant misunderstands the scope of Utter’s teachings. *See* Ans. 8; *see also DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009) (“A reference does not teach away . . . if it merely expresses a general preference for an alternative invention[.]”). Thus, we are not persuaded that Utter teaches away from the recited methods.

As noted above, we agree with the Examiner that Utter’s “response value,” corresponds to the recited “functional transmitter identifier.” *See* Final Act. 3 (citing Utter ¶ 20 (lines 11–17)). Thus, we also agree that Utter teaches or suggests an authentication process using a functional transmitter identifier to enable exclusive radio frequency communication between a fob and a body control module of a vehicle.

Third, Appellant contends the Examiner fails to show that a person of ordinary skill in the relevant art would have had reason to combine the teachings of Utter and Van Wiemeersch to achieve the methods of claim 1 with a reasonable expectation of success. Appeal Br. 14–15; Reply Br. 3. In particular, Appellant contends the Examiner fails to explain how or why the identified reason to combine the teachings of the applied references, namely, to achieve power savings, would lead to the recited methods. Appeal Br. 14–15. We disagree.

As the Examiner has shown, Utter teaches or suggests the majority of the limitations of claim 1. Final Act. 3–4. Although the Examiner acknowledges that “Utter does not explicitly disclose initiating a passive

challenge function in the first vehicle and communicate with the fob in response to the challenge,” the Examiner finds that these limitations are taught by Van Wiemeersch. *Id.* at 4. The Examiner explains:

The motivation [to combine the teachings of Utter and Van Wiemeersch] is [to] save power as the system would wake up by the passive challenge therefore it would be in a sleep/quiescent state instead of continuously and actively looking to communicate with the fob. Power consumption is well known problem in PEPS system and wake up messages is a well-known solution for said problem as shown by the prior art therefore, one of ordinary skill in the art would have pursued the known potential solution (wake message) to the problem (power consumption) of latency with a reasonable expectation of success.

Ans. 10–11; *see* Utter ¶¶ 23, 26; Van Wiemeersch ¶¶ 12, 28.

As noted above, “any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *KSR*, 550 U.S. at 420. Moreover, “[o]bviousness does not require absolute predictability of success,” but rather only a reasonable expectation of success. *In re O’Farrell*, 853 F.2d 894, 903 (Fed. Cir. 1988). Give the limited purpose for which the Examiner relies on Van Wiemeersch (*see* Final Act. 4) and the well-known nature of the applied teachings of Van Wiemeersch (*see* Spec. ¶ 3), we are persuaded the Examiner has adequately shown that a person of ordinary skill in the relevant art would have had reason to combine the teachings of Utter and Van Wiemeersch to achieve the methods, as recited in claim 1, with a reasonable expectation of success.

Consequently, on this record, the Examiner did not err in rejecting claim 1, or similar claims 11 and 17, as rendered obvious over the combined

teachings of Utter and Van Wiemeersch, and we sustain the rejection of those claims.

*B. Dependent Claims 2–10, 12–16, and 18–20*

The Examiner determines that dependent claims 2–10, 12–16, and 18–20 are rendered obvious over the combined teachings of Utter and Van Wiemeersch, alone or in combination with the teachings of one or more other references. *See* Final Act. 5–20. Appellant does not challenge the obviousness rejections of the dependent claims separately from their base claims, independent claims 1, 11, and 17. Appeal Br. 15; Reply Br. 4. Therefore, for the reasons given above, we also sustain the obviousness rejections of the dependent claims.

DECISION

1. The Examiner did not err in rejecting claims 1–20 under 35 U.S.C. § 103, as obvious over the combined teachings of Utter and Van Wiemeersch, alone or in combination with the teachings of one or more other references.
2. Thus, on this record, claims 1–20 are not patentable.

CONCLUSION

We affirm the Examiner’s rejections of claims 1–20.

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>References</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 5, 7, 8, 10, 11, 13, 14, 16–20	103	Utter, Van Wiemeersch	1, 5, 7, 8, 10, 11, 13, 14, 16–20	
2	103	Utter, Van Wiemeersch,	2	

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		Mitchell		
3, 4	103	Utter, Van Wiemeersch, Mitchell, Brecht	3, 4	
9, 12, 15	103	Utter, Van Wiemeersch, Brecht	9, 12, 15	
6	103	Utter, Van Wiemeersch, Forest	6	
<b>Overall Outcome</b>			1-20	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED