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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SMAXTEC INC. and
SMAXTEC ANIMAL CARE GMBH,
Petitioners

v.

ST REPRODUCTIVE TECHNOLOGIES, LLC,
Patent Owner

Case IPR2024-00875
Patent No. 9,844,206

**PATENT OWNER'S REQUEST FOR DIRECTOR REVIEW
OF FINAL WRITTEN DECISION**

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EXHIBIT LIST

Exhibit	Description
EX2001	Declaration of Dr. Tim Bowser
EX2002	<i>Curriculum Vitae</i> of Dr. Tim Bowser
EX2003	Declaration of Thomas W. Landers, IV in Support of Motion to Appear <i>Pro Hac Vice</i>
EX2004	Declaration of Jonathan M. Hernandez in Support of Motion to Appear <i>Pro Hac Vice</i>
EX2005 (Not filed)	Declaration of Timothy J. Bowser, Ph.D. Pursuant to 37 C.F.R. 42.64(b)(2)
EX2006	DOUG BANIA, BUSINESS VALUATION RESOURCES, LLC, THE COMPREHENSIVE GUIDE TO ECONOMIC DAMAGES, VOL. 2, CH. 38 (Jimmy S. Pappas et al. eds., 7th ed. 2023), https://nevium.com/wp-content/uploads/2023/12/Bania-Chapter-38.-Using-Internet-Analytic-Tools-for-Valuation-and-Damages-Calculations-in-Internet-IP-Infringement-and-Defamation-Cases.pdf
EX2007	Emory University, Goizueta Business School, <i>Become a Google Power User: Tips and Techniques</i> , https://libraries.emory.edu/media/5321
EX2008	A.M. Bellon, <i>Does animal charisma influence conservation funding for vertebrate species under the US Endangered Species Act?</i> , Environmental Economics and Policy Studies (2019)
EX2009	Declaration of Dr. Timothy J. Bowser, Ph.D. in Support of Patent Owner Response
EX2010	Deposition Transcript of Tami M. Brown-Brandl, Ph.D. (January 29, 2025)
EX2011	Declaration of Meredith Knoff
EX2012	<i>Curriculum Vitae</i> of Meredith Knoff
EX2013	Dorothea Salo, <i>Innkeeper at the Roach Motel</i> , 57 Libr. Trends 98 (2008), https://dx.doi.org/10.1353/lib.0.0031

EX2014	Kwame Kodua-Ntim, <i>University Academics' Usage of Open Access Institutional Repositories</i> , 30 J. Libr. Res. Sharing 101 (2021), https://doi.org/10.1080/1072303X.2022.2103227
EX2015	Alex Wood-Doughty et al., <i>Do Download Reports Reliably Measure Journal Usage? Trusting the Fox to Count Your Hens?</i> , 80 Coll. & Rsch. Librs. 694 (2019), https://doi.org/10.5860/crl.80.5.694
EX2016	<i>Frequently Asked Questions on Public Statistics</i> , Cornell Univ.: arXiv, https://info.arxiv.org/help/faq/statfaq.html
EX2017	<i>In-depth guide to how Google Search works</i> , Google Search Cent., https://developers.google.com/search/docs/fundamentals/how-search-works
EX2018	<i>Our new search index: Caffeine</i> , Google Search Cent., https://developers.google.com/search/blog/2010/06/our-new-search-index-caffeine (June 9, 2010)
EX2019	<i>Facts about Google and Competition: How Google Search Works</i> , Google, https://web.archive.org/web/20111104131332/https://www.google.com/competition/howgooglesearchworks.html (Mar. 19, 2016)
EX2020	<i>Grey Literature (in the Health Sciences)</i> , USC Librs.: Rsch. Guides, https://libguides.usc.edu/healthsciences/grey_literature
EX2021	Yazdan Mansourian & Nigel Ford, <i>Search persistence and failure on the web: a "bounded rationality" and "satisficing" analysis</i> , 63 J. Documentation 680 (2007), https://www.emerald.com/insight/content/doi/10.1108/00220410710827754/full/html
EX2022 (Not filed)	Second Supplemental Declaration of Timothy J. Bowser, Ph.D. Pursuant to 37 C.F.R. 42.64(b)(2)
EX2023 (Not filed)	Supplemental Declaration of Meredith Knoff Pursuant to 37 C.F.R. 42.64(b)(2)
EX2024	Deposition Transcript of Tami M. Brown-Brandl, Ph.D. (June 19, 2025)

I. INTRODUCTION

The Board’s Final Written Decision in the *Inter Partes* Review of U.S. Patent No. 9,844,206 finding every claim unpatentable is erroneous as a whole, but the conclusory invalidation of dependent claims 4, 6, and 18-20 (the “Reviewed Claims”) was sufficiently egregious to merit the Director’s prompt review and reversal. Each of the Reviewed Claims recites narrowing limitations that Patent Owner distinguished from the prior art based in part on expert testimony and admissions from Petitioners’ expert. The Board, however, summarily and erroneously invalidated these claims, based largely on its assessment of the broader independent claims of the ’206 Patent. In doing so, the Board failed to consider and resolve Patent Owner’s arguments directed to the narrower Reviewed Claims, relied on arguments or concessions that Patent Owner *did not* make, and made undeniably inconsistent findings.

The Board’s erroneous findings and failure to address Patent Owner’s claim-specific arguments are readily apparent in its treatment of claims 18-20. For all grounds addressing these claims, the Board erroneously stated that Patent Owner did not “separately argue” validity, “instead relying on its prior argument against claim 1.” FWD, 81; *see also id.*, 48-49. That is untrue—Patent Owner made specific arguments concerning dependent claims 18-20 and their unique limitations in its Response, Sur-Reply, and at the Oral Hearing. Nonetheless, the Board found

the claims unpatentable by simply incorporating its discussion of the independent claims, thus failing to address Patent's Owner claim-specific arguments. As further evidence of the Board's failure to engage in an analysis of the Reviewed Claims, the Board found claims 19 and 20 obvious over Trevarthen, despite its separate irreconcilable finding that Trevarthen fails to disclose or suggest the *same limitations* in claim 6.

All of the Challenged Claims were entitled to a fulsome and fair analysis, but in invalidating the Reviewed Claims, which issued over eight years ago, the Board failed to conduct such a review. Because a proper review would necessarily result in a finding that Petitioners failed to meet their burden, Patent Owner respectfully requests that the Director review and reverse the Board's decision that claims 4, 6, and 18-20 are unpatentable. Alternatively, Patent Owner requests that the Director vacate the Board's decision and terminate the proceedings.

II. DIRECTOR REVIEW IS NECESSARY TO ADDRESS THE BOARD'S FLAWED DEPENDENT CLAIM ANALYSIS

In summarily invalidating the Reviewed Claims, the Board mischaracterized the record, failed to address Patent Owner's arguments and evidence specific to the dependent claims, improperly relied on and incorporated arguments applicable only to broader, independent claims, and made conflicting findings regarding the same element. These deficiencies present erroneous findings of material fact and abuses of discretion, both of which independently merit Director Review and

reversal of the Board’s decision. *See* USPTO Website, Director Review Process (<https://www.uspto.gov/patents/ptab/decisions/director-review-process>) (visited Dec. 22, 2025).

Both the PTAB and the Federal Circuit have recognized that failure to address a Patent Owner’s arguments and evidence relating to a dispositive issue is an abuse of discretion. *Weber, Inc. v. Provisur Techs., Inc.*, IPR2022-00599, Paper 74, 5-6 (P.T.A.B. Nov. 29, 2023) (vacating final decision after “find[ing] that Board failed to address Patent Owner’s evidence supporting its arguments on motivation to combine”); *see Provisur Techs., Inc. v. Weber, Inc.*, 50 F.4th 117, 123-24 (Fed. Cir. 2022) (vacating final decision where “Board’s analysis does not explicitly address [patent owner’s] arguments”). The Federal Circuit has further recognized that it is error to fail to conduct an “independent evaluation” of dependent claims when engaging in a patentability analysis. *Dana Corp. v. Am. Axle & Mfg.*, 279 F.3d 1372, 1376 (Fed. Cir. 2002). Director review and reversal is also warranted if the Board reaches conclusions that are internally inconsistent as a matter of law. *See Nested Bean, Inc. v. Big Beings USA PTY LTD*, IPR2020-01234, Paper 42, 18-19 (P.T.A.B. Feb. 24, 2023) (precedential).

As discussed below, the Board’s conclusory analysis and invalidation of the Reviewed Claims runs afoul of the foregoing Federal Circuit and PTAB requirements for a proper, complete analysis of *all* challenged claims. And

because the Petition fails to establish invalidity of the Reviewed Claims by a preponderance of the evidence without the Board's improper shortcuts, the unpatentability decision should be reversed.

III. OVERVIEW OF THE PATENT AND REVIEWED CLAIMS

The '206 Patent is directed to a remote livestock management system that uses implanted RFID devices with sensors to measure an animal's physiological characteristics and to provide real-time alerts to farmers about their animals' health or reproductive status. In the preferred embodiment, the sensors are contained in a bolus that is implanted in the reticulum of a dairy cow. The claimed invention applies innovative program logic to combine the animal's physiological information and additional information about the animal, such as a dairy cow's level of milk production, to generate relevant alerts. These features allow farmers to remotely monitor the status of their herd in real-time, without having to physically inspect each animal.

The Reviewed Claims add important limitations to the "animal management system" of the independent claims. For example, claims 4 and 18 enhance the system by requiring the identification of an actual "occurrence of an illness" based on both an animal's "health information" and the "sensed physiological information" acquired from the RFID device. EX1001, claims 4, 18. This novel feature of the invention is exemplified in the specification by the ability to provide

a “diagnosis” of a specific illness using various sensed and stored information as inputs. *Id.*, Fig. 6, 12:51-13:8. These limitations, namely incorporating “health information” in the claimed logical expression *and* “indicat[ing] an occurrence of an illness,” are not found in the independent claims. *Id.*, claims 1, 17. Claims 6 and 19-20 depend from claims 4 and 18 and add further enhancements to the system not present in the independent claims. These include the ability to prevent disease outbreak by alerting farmers when “a greater than selected number of said illness have occurred” in their herd over a “selected period of time.” *Id.*, claims 6, 19-20.

IV. ARGUMENT

A. The Board Erred in Finding Claims 4 and 18 Obvious.

1. All Grounds: The Board’s Analysis of Claim 18 Rests on an Erroneous Characterization of Patent Owner’s Arguments.

In all grounds that address claim 18, the Board’s analysis and unpatentability finding turns on the mistaken premise that Patent Owner relied solely on its arguments supporting the patentability of independent claim 1, but that is demonstrably false. For both grounds, the Decision states that “Patent Owner does not separately argue claim 18, instead relying on its prior argument against *claim 1*.” FWD, 81 (addressing Laitinen) (emphasis added), 48 (addressing Trevvarthen). In its Response, however, Patent Owner unequivocally argued that “Petitioners cannot establish obviousness [as to claim 18] for the same reasons *claim 4* remains

patentable.” POR, 45-46 (emphasis added); *id.*, 63-64 (making similar arguments for the Laitinen grounds). Patent Owner further explained that the Trevarthen and Laitinen combinations fail to teach or suggest the “health information” or “occurrence of an illness” limitations recited in both claims 4 and 18. *Id.* Thus, Patent Owner did not simply rely on its “argument against claim 1,” and the Board’s statement to the contrary is an erroneous finding of fact.

That erroneous finding was material to the Decision because it formed the basis of the Board’s disposition of claim 18. After incorrectly stating that Patent Owner relied on its claim 1 arguments, the Board concluded that claim 18 was obvious in view of the Trevarthen and Laitinen combinations “for the reasons discussed above for [independent] claims 1 and 17,” without undertaking any further analysis. FWD 49, 81. In other words, the Board’s misidentification of Patent Owner’s arguments led it to bypass any analysis of the dependent claim limitations and to dispose of claim 18 summarily based on reasoning directed to different claims with different limitations. The law, however, requires the Board to consider Patent Owner’s arguments and to independently evaluate each claim. *Provisur*, 50 F.4th at 123-24; *Dana Corp.*, 279 F.3d at 1376. The Board’s misapprehension of Patent Owner’s arguments and its decision to treat the dependent claims as rising and falling with claims 1 and 17 was error.

2. *Trevarthen Grounds: The Board and the Petition Fail to Provide Evidence That Trevarthen Renders Obvious the “Health Information” and “Occurrence of an Illness” Limitations in Claims 4 and 18.*

The Board failed to address and resolve Patent Owner’s arguments and testimonial evidence showing that the Trevarthen-based prior art combinations fail to disclose or suggest storing “health information” and entering that information into a “logical expression” that “indicates an occurrence of an illness,” as recited in claims 4 and 18.¹ The Board adopted Petitioners’ argument that Trevarthen’s historical log of past animal treatments comprises the recited “health information.” FWD, 39-40. But the Board failed to address Patent Owner’s argument, supported by expert testimony, that a mere treatment log could never meet the “health information” limitation as used in the claims, and never pointed to any disclosure or suggestion in the prior art of using such a treatment log in a “logical expression,” as required. POR, 34-37; EX2009, ¶¶173-176. Similarly, the Board failed to address the specific requirement that the “health information” be used to “indicate an occurrence of an illness,” something Patent Owner’s expert opined

¹ As addressed in Section IV.A.1, the Board did not even address these limitations in its analysis of claim 18, let alone consider them in view of Patent Owner’s arguments and evidence.

Trevarthen's system was incapable of doing. POR, 38-40; EX2009, ¶¶177-185. Instead, the Board merely referred back to its claim 1 analysis. FWD, 40. But neither claim 1 nor the Board's analysis addresses the specific "occurrence of an illness" recitation in claim 4.

For "health information," the Board summarily concluded that a POSA "would understand 'treatments' as including health history," but erred in failing to address Patent Owner's argument that such "treatments" would not be entered into a logical expression as claimed. FWD, 40. Instead, the Board resolved that requirement by incorporating its claim 1 analysis of "sensed and stored animal information." *Id.* (citing limitations 1[E] and 1[F]). That analysis, however, referred only to alleged expressions that use "temperature" and "milk production" as inputs, not "treatments." *Id.*, 31-38. The cited discussions never mention Trevarthen's treatment log, let alone address Patent Owner's argument that it would not be used in a logical expression.

The Board also made an erroneous finding of material fact by concluding that a POSA "would include stored animal **health information** in the logical expression," while citing evidence that says nothing about the treatment logs identified as the health information. *Id.*, 40 (emphasis added) (citing EX1003, ¶¶133-135; EX1005, 1, 18, 115, 121). In Exhibit 1003, Petitioners' expert identifies "treatments" as "health information" and then refers to Trevarthen's

alleged expressions that only use milk production or temperature as inputs.

EX1003, ¶¶133-135. She never opines that a POSA would include treatments in those expressions, let alone to indicate an illness. To the contrary, she admitted at her deposition that she is “not aware of any livestock management software that uses information from the treatment log to indicate illness.” EX2010, 83:17-84:1. And Patent Owner’s expert further explained why “such historical treatment data is not applicable in a logical expression” at all. EX2009, ¶¶173-176. The Board never addressed either expert’s testimony. Moreover, the cited pages from Trevvarthen only refer to milk- and temperature-based alerts and to a general concern with “disease outbreak.” EX1005, 1, 8, 115, 121. They never suggest using treatment logs in an expression. Thus, finding a connection between “health information” and a “logical expression” based on those citations—especially in view of expert testimony directly contradicting such a connection—was erroneous.

The Board further erred by failing to address the additional requirement that the identified logical expressions must specifically “indicate an occurrence of an illness.” Patent Owner and its expert repeatedly explained that Trevvarthen merely purports to identify “fluctuations” in temperature or milk production, which is not “an illness.” POR, 38-40; Sur-Reply, 14; EX2009, ¶¶177-185. Rather than engaging those arguments, the Board resolved the “occurrence of an illness” limitation simply by citing its discussion of claim 1. FWD, 40. But claim 1 does

not have the “occurrence of an illness” requirement, and the cited discussion does not address that language or Patent Owner’s contentions. FWD, 31-38. The Board thus abused its discretion by failing to analyze another express limitation of claim 4 and by failing to consider or resolve Patent Owner’s arguments related to that limitation.

3. *Laitinen Grounds: The Board Failed to Analyze Key Limitations in Claims 4 and 18.*

a) Claims 4 and 18: The Board Erred in Its Analysis of “Health Information” and “Occurrence of an Illness.”

The Board’s analysis of the “health information” and “occurrence of an illness” limitations under the Laitinen-based grounds mirrors the deficient analysis it provided for the Trevarthen grounds.² The Board identifies what it contends is the claimed “health information” in the reference but again erroneously ignores the additional requirements that the health information be entered into a logical expression and used to indicate an illness. Instead of addressing those requirements of claim 4, the Board merely cites its analysis of temperature and milk production in claim 1. The Board never explains how the purported health

² Again, the Board failed to even address these limitations in its analysis of claim 18 under the Laitinen grounds, as discussed in in Section IV.A.1.

information is used in an expression to indicate an illness.

The Board agreed with Petitioners that Laitinen's reference to historical "data concerning the animals' health" teaches the "health information" of claim 4, but it never addresses Patent Owner's argument that Petitioners fail to connect that data to any alleged expression as required by the claim. FWD, 73. Instead, the Board simply quotes Laitinen's generic statement that the "collected historical data . . . enables individual health surveillance and the creation of remote health care services" to find that Laitinen suggests "using stored health data for health care services." *Id.* The Board then refers to its prior discussions of claim 1 to find that a POSA would have been motivated to "provide a logical expression for identifying illness as a logical value, using sensed and stored animal information as variables." *Id.* But that prior discussion is limited to using temperature and milk production as the "sensed and stored animal information"—it never mentions the "collected historical data," let alone explain how it would be used in an expression to indicate illness. *Id.*, 61-67. Then, without further explanation, the Board cites Petitioners' expert to conclude that a POSA "would have included stored animal health data in the logical expression for identifying animal illness, thereby providing remote health care services." *Id.*, 73 (citing EX1003, ¶¶198-199).

The Board's analysis under Laitinen includes multiple errors. First, the Board abused its discretion by disposing of claim 4 by reference to claim 1,

without addressing or resolving whether the identified “health information” is entered into a logical expression that indicates an illness, as argued by Patent Owner. *See* POR, 62; *Weber, Inc.*, IPR2022-00599, Paper 74, 5-6; *Dana Corp.*, 279 F.3d at 1376. Second, the Board’s conclusion based on expert testimony is an erroneous finding of material fact because the cited paragraphs do not in any way support it. *See* EX1003, ¶¶198-199. Paragraph 198 merely identifies Laitinen’s historical “data concerning the animal’s health” as the “health information,” while paragraph 199 only discusses “entering temperature and milk production information”—not health information—into Laitinen’s “second logical expression.” *Id.* Petitioners’ expert never opines that a POSA would use Laitinen’s historical “data” in that or any other expression to “provide remote health care services,” as the Board suggests. Nor does she identify any logical expression that uses such information to indicate an illness. Finding that such alleged “health data” would be used in a logical expression to indicate an illness based on those cited paragraphs is therefore erroneous.

b) Claim 4: The Board Abused Its Discretion by Advancing a Theory Not Raised by Petitioners.

The Board also abused its discretion by substituting its own arguments for Petitioners’ to find claim 4 unpatentable over Laitinen based on a theory never advanced in the Petition. Unlike the analysis of claim 1 in the Petition—which cites multiple alternative expressions for the broader, independent claim

invention—the narrower analysis of claim 4 in the Petition identifies *only* Laitinen’s “second logical expression” (i.e., the “inverse function”) as one that would use “milk production” to “indicate[] an occurrence of an illness.” Pet., 54. But in finding claim 4 unpatentable over Laitinen, the Board went outside the bounds of the Petition to rely on a “new expression” that allegedly uses milk and temperature information. Specifically, the Board incorporated its analysis of claim 1, where it relied on Petitioners’ “new expression” after determining that it “need not rely on Laitinen’s inverse function.” FWD, 62, 65; *see also id.*, 73 (citing its discussion of “limitations 1[E] and 1[F]” for claim 4). But that cannot apply to claim 4, where Petitioners relied exclusively on Laitinen’s inverse function. Pet., 54. The Board was thus required to address whether a POSA would modify *that* expression to include the claimed milk information, which it never did.

Nor did the Board address Patent Owner’s well-supported arguments showing why a POSA would *not* make such a modification. *See* POR, 54-57; Sur-Reply, 21-22. For example, Patent Owner’s expert explained how Laitinen’s inverse function is used to assess the effectiveness of medication and then provided several reasons why milk production is not useful for that purpose. EX2009, ¶¶227-237. But the Board never addressed those arguments or the supporting testimony. Instead, it ignored them and improperly relied on a theoretical “new expression” that Petitioners did not advance for claim 4 in the Petition.

B. The Board Erred in Finding Claims 6 and 19-20 Obvious.

1. Trevarthen Grounds: The Board's Decision Is Contrary to Its Own Findings, Demonstrating an Overall Failure to Adequately Address the Dependent Claims.

The Board's unpatentability findings for claims 19 and 20 based on Trevarthen suffer from the same erroneous factfinding that infected its analysis of claim 18. As with claim 18, the Board stated—incorrectly—that Patent Owner “re[ie]d] on its prior argument against claim 1,” and on that basis simply incorporated its analysis of claims 1 and 17 to find the claims unpatentable. FWD 48-49. But Patent Owner expressly argued that claims 19 and 20 are patentable for the same reasons as claim 6. POR, 46-47. The Board's misstatement reflects an erroneous finding of fact that led it to ignore Patent Owner's material arguments.

Independently, the Board's finding that claims 19 and 20 are unpatentable based on Trevarthen is facially inconsistent with its finding that Trevarthen did not render claim 6 obvious, reflecting another erroneous finding of material fact. When addressing claim 6, the Board correctly found that Trevarthen was not shown to render the claim unpatentable because the reference fails to teach or suggest identifying whether “a greater than [a] selected number of said illness have occurred” in a “plurality of animals.” FWD, 42-43. But when it moved to its analysis of claims 19 and 20, the Board made no mention of the fact that those claims recite the same limitations as claim 6, that Petitioners addressed those

limitations by referring to their prior discussion of claim 6, or that Patent Owner expressly argued that claims 19 and 20 are not obvious for the same reasons as claim 6. FWD, 48-49; Pet., 36-37; POR, 46-47. Rather, the Board failed to undertake *any* analysis of claims 19 and 20, finding those claims unpatentable without explaining how Trevvarthen could fail to suggest those limitations for purposes of claim 6, yet somehow suggest them when recited in claims 19 and 20. Those findings cannot be reconciled. The Board thus made internally inconsistent findings of material fact regarding the same reference and the same claim limitations, rendering its unpatentability findings for claims 19 and 20 erroneous. *See Nested Bean*, IPR2020-01234, Paper 42, 18-19.

2. *Laitinen Grounds: The Board's Findings on Claims 6, 19, and 20 Should Be Reversed.*

With respect to Laitinen, because claim 6 depends from claim 4, the Board's findings as to claim 6 should also be reversed for the reasons discussed in Section IV.A.3. Additionally, because claims 19 and 20 depend from claim 18, the Board's findings as to those claims should be reversed for the reasons given in Sections IV.A.1 and IV.A.3(a).

V. CONCLUSION

For the foregoing reasons, the Board's findings that claims 4, 6, and 18-20 are unpatentable should be reversed. Alternatively, the Director should vacate the Board's decision as to those claims and terminate the proceedings.

Dated: December 22, 2025

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing was served on counsel of record on December 22, 2025 by filing this document through the Patent Trial and Appeal Case Tracking System (P-TACTS), as well as delivering a copy via electronic mail to counsel of record for the Petitioners at the following addresses:

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CERTIFICATE OF COMPLIANCE

The undersigned certifies that the foregoing Patent Owner's Request for Director Review of Final Written Decision, exclusive of the Table of Contents, Certificate of Service, and Exhibit List, is less than 15 pages.

This paper also complies with the formatting requirements of 37 C.F.R. §42.6(a).

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