

PROTECTIVE ORDER MATERIAL

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FOIL BOARDING COMPANY, INC.

Petitioner,

v.

MHL CUSTOM, INC.

Patent Owner

U.S. Patent No. 9,359,044

IPR Case No.: IPR2024-00086

**PATENT OWNER'S RESPONSE TO PETITION FOR *INTER PARTES*
REVIEW OF U.S. PATENT NO. 9,359,044**

IPR2024-00086

MHL 2044

Foil Boarding Co., Inc. and MHL Custom, Inc.

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EXHIBIT LIST

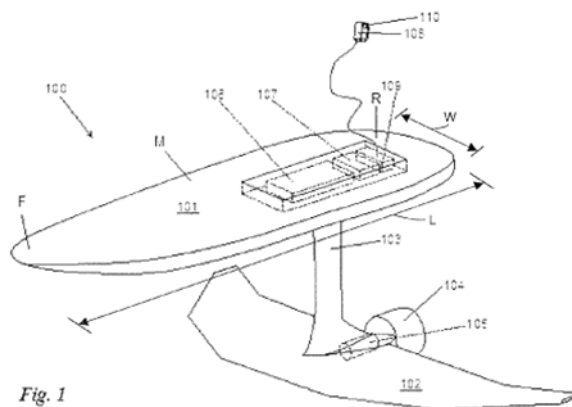
Exhibit No.	Description
2001	<i>MHL v. Foil Boarding Company, Inc.</i> , 3:22-cv-21258 – Scheduling Order (DN31)
2002	Foil Boarding Company, Inc. Invalidity Contentions
2003	WayBack Machine archives for the URL for EvoloReport and Dr. Kutteneuler's website
2004	Wayback Machine Archive Information
2005	Båtnytt Publisher Information via WayBack Machine (Certified Translation)
2006	First Declaration of Dr. Timothy Takahashi
2007	YouTube Help – Change Video Settings
2008	Declaration of Nicholas Leason
2009	Excerpts of Expert Report of Christopher Barry
2010	First Declaration of Dr. Jacob Langelaan
2011	Declaration of Cort Larned
2012	"Here's a Surfboard That Can 'Fly'", The Weekly Journal, Oct. 30, 2019
2013	"The innovative surfing tech making waves", BBC, March 14, 2022
2014	"David Carson Rises Up", Standup Journal: A Water Lover's Magazine, March 25, 2020

2015	"Feel the Thrill of Flying and Surfing With Lift Foil's LIFT3 eFoil", Interesting Engineering, September 8, 2021
2016	"eFoils are the Next Personal Watercraft", BoatingMag.com, August 14, 2021
2017	"Lift Electric Hydrofoil", Uncrate
2018	"Omeir Saeed: Alladin May Ditch His Magic Carpet for This", Tech Times, September 4, 2020
2019	"This 'flying' surfboard can help anyone master the waves", TechNow, July 7, 2017, MHL_0100400-401
2020	"Lift eFoil Is a Motorized Hydrofoil That Lets You Surf Above the Water", The Daily Want
2021	Magic surfing experience with eFoil boards, Inspired by Sports, September 30, 2019
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2028	Joint Claim Construction Statement and Chart
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I. INTRODUCTION AND OVERVIEW

These proceedings involve Petitioner's attempt to invalidate U.S. Patent Number 9,359,044 ("the Patent"), entitled "Weight-Shift Controlled Personal Hydrofoil Watercraft," which was filed on October 8, 2014, claiming priority to U.S. Provisional App. No. 61/889,071 filed on October 10, 2013, and issued on June 7, 2016. The Patent is broadly directed to a passively stable personal hydrofoil watercraft that is controlled by the weight shift of a user. Generally, the watercraft described and illustrated in the Patent has a surfboard-like flotation device, a strut that extends below the flotation device, and hydrofoil wing(s). The Patent further describes the watercraft as powered by a propulsion system and battery-operated, electric motor.¹ Below is an image of Figure 1 of the Patent:



¹ The Board's Decision granting institution, Paper 12, pp. 4-6, sets forth a comprehensive summary of the Patent.

The following images are illustrative of commercial embodiments of the Patent in the form of the products manufactured and sold by Patent Owner:



As can be seen, the commercial embodiments of the Patent are electrically powered, personal, hydrofoil watercraft (“eFoils”). Since 2018, Patent Owner has sold the Patented embodiments under its “Lift” branding.

Petitioner seeks to invalidate the claims of the Patent set forth below as obvious under 35 U.S.C. §103:

Ground #	Claims Challenged	Cited References
1	1,2,5–8,10–15,17, 18,20,21	EvolReport, Woolley
2	1,5–8,10,17,21	EvolVideos, Woolley
3	2,12–14,20	EvolVideos, Woolley, TorqeedoManual
4	11	EvolVideos, Woolley, TorqeedoManual, Gleeson
5	15-18	EvolVideos, Woolley, TorqeedoManual, Manning

All of the grounds asserted by Petitioner fail for the various reasons discussed herein. As a preliminary matter, the challenges based on the asserted EvoloReport, EvoloVideos and TorqeedoManual references fail because those references do not qualify as prior art in that there is insufficient evidence of their public accessibility prior to the effective date of October 13, 2013. It is Petitioner's burden to establish public accessibility by a preponderance of the evidence and it has fallen well-short of meeting that burden. Because all of the grounds rely on one or more of these references, those grounds should all be rejected.

Petitioner's grounds also fail on their substance because they rely on incomplete, conclusory, and erroneous obviousness rationales. The asserted prior art references fail to teach all the claim limitations. Notwithstanding that fact, there

would not have been any motivation to make the asserted combinations, let alone any reasonable expectation of success in achieving the claimed inventions. Simply stated, combining Woolley's hydrofoil arrangement with any of the Evolo references would result in an unstable and uncontrollable craft.

Finally, even if it could be established that the cited references support a finding of obviousness, the totality of the evidence submitted, including secondary considerations, lead to the conclusion that the challenged claims would not have been obvious.

II. THE EVOLO AND TORQEEDO REFERENCES ARE NOT PRIOR ART

Petitioner cites to EvoloReport, EvoloVideos, and TorqueedoManual as alleged prior art. However, Petitioner's evidence is insufficient to demonstrate by a preponderance of the evidence that these references were publicly available prior to the earliest effective filing date of October 10, 2013. It is not Patent Owner's burden to establish that the asserted references were not publicly accessible. It is Petitioner's burden to present sufficient evidence of public accessibility and Petitioner has failed to meet its burden. Moreover, with respect to EvoloVideos, Petitioner fails to present sufficient evidence to show that a POSITA would have been motivated to combine the three asserted videos.

A. The Asserted References Were Not Publicly Accessible**1. The Standard for Public Accessibility Under §102**

Petitioner's burden is to prove by a preponderance of evidence that the asserted prior art was "publicly accessible" in that it was "disseminated or otherwise made available to the extent that [a POSITA], exercising reasonable diligence, can locate it." *Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 772 (Fed. Cir. 2018); *RPX Corp. v. Iridescent Networks, Inc.*, IPR2018-00254, Paper 20 at 19 (PTAB, Dec. 10, 2018); and *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 (PTAB Dec. 20, 2019) (precedential) (articulating the preponderance of evidence standard for public accessibility).

Online availability, standing alone, is insufficient to demonstrate public accessibility. *See Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348-49 (Fed. Cir. 2016). Evidence must be presented to show a POSITA could have reasonably found the reference online. *Acceleration Bay*, 908 F.3d at 773. A work is not publicly accessible if the only people who know how to find it are the ones who created it. *Samsung Elecs. Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1372 (Fed. Cir. 2019); *SRI Int'l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1196-97 (Fed. Cir. 2008). "[E]lectronic documents may be publicly accessible if they were indexed or catalogued, or if there were other tools for customary and meaningful research." *SRI*, 511 F.3d at 1196.

2. *The EvoloReport Was Not Publicly Accessible*

Petitioner alleges that EvoloReport is a “design document describing work conducted by a Master’s Level course on Marine Design/Lightweight Design taught at Kungliga Tekniska högskolan (‘KTH’) in Stockholm, Sweden” which was “authored by the instructors and students in the class.” Pet. 13. Through testimony of one of those instructors, Professor Kутtenkeuler, Petitioner alleges a PDF of EvoloReport was published on the website for the Marine Design and Lightweight Design courses taught by Kутtenkeuler in 2009. *Id.*, ¶¶18-19. Petitioner and Kутtenkeuler further cite a web address where the report was located, *Id.*, ¶18, but that web-address only contains EvoloReport itself, not the course or project websites. Kутtenkeuler also identifies a web-address for his course website (*Id.*, ¶ 8), as well as a web-address for the Evolo project website (*Id.*, ¶ 9). However, screenshots or images depicting those websites were not identified in his Declaration and were not produced as evidence by Petitioner. In short, the evidence submitted by Petitioner to show that EvoloReport was publicly accessible consists entirely of Kутtenkeuler’s conclusory statement that he published the report online. *Id.*, ¶18.

This uncorroborated evidence falls short of satisfying Petitioner’s burden to prove public accessibility. First, “the Federal Circuit has recently emphasized the need for corroboration of testimony that is used to prove a document is a printed publication.” *RPX Corp.*, IPR2018-00254, Paper 20 at 19 (citing *Nobel Biocare*

Servs. AG v. Intradent USA, Inc., 903 F.3d 1365, 1377–81 (Fed. Cir. 2018)).

Petitioner offers no corroborating evidence to support Kутtenkeuler's conclusory statement.

Second, even if EvoloReport was technically accessible online, and Patent Owner disputes that the evidence presented is sufficient to establish this fact, technical accessibility does not equate to public accessibility. *See Blue Calypso*, 815 F.3d at 1348-49 (Fed. Cir. 2016). There must be some evidence presented showing that a POSITA, using reasonable diligence, could have found EvoloReport online. Other than the *Båtnytt* article, which is insufficient to prove public accessibility as discussed below, Petitioner cites no evidence to show how a POSITA could find EvoloReport online. For example, with respect to online searching, no evidence has been presented as to the type of search terms one might use to find EvoloReport online through any search engine. There is no evidence to show that EvoloReport was indexed online. There is no evidence offered to demonstrate the steps that could be taken to search online and then locate the report. There is no evidence as to how someone not associated with the project could find EvoloReport online.

Third, evidence gathered by Patent Owner directly contradicts the position that EvoloReport or the Evolo project webpage were publicly available prior to 2020. The *Wayback Machine* (or Internet Archive) shows that both EvoloReport and the project website were not archived online until *June of 2020*. EX2003; EX2039,

pp.15-20. The *Wayback Machine* confirms that only “publicly available” websites get archived on the site. EX2004 (“[T]he Archive collects web pages that are publicly available. We do not archive pages that require a password to access, pages that are only accessible when a person types into and sends form a, or pages on secure servers.”); EX2039, pp.5-7. The implication is that neither EvoloReport nor the project webpage were “publicly available” until 2020, when they were finally archived by the *Wayback Machine*.

3. *Båtnytt Does Not Remedy the Public Accessibility Deficiencies*

Recognizing its evidentiary problem in demonstrating a POSITA using reasonable diligence would be able to locate EvoloReport, Petitioner turns to an obscure Swedish consumer boating magazine as a “research aid”. However, *Båtnytt* does not cure Petitioner’s deficiencies and does not qualify as a “research aid”.

While the Federal Circuit recognizes that “research aids” may be used to establish public accessibility, this is not without limitations. For example, the research aid must also have been publicly accessible prior to the critical date. The reference must provide a POSITA with a “sufficiently definite roadmap” leading to the asserted prior art. *Blue Calypso*, 815 F.3d at 1350. An adequate roadmap need not give “turn-by-turn directions” but should at least provide enough details from which it can be determined that a POSITA would reasonably be certain to locate the asserted prior art. *Id.*

A published article contained within a “seminal publication” with an express citation to the asserted prior art typically provides the necessary guidance to qualify as a research aid. *See Cornell Univ. v. Hewlett-Packard Co.*, No. 01-cv-1974, 2008 U.S. Dist. LEXIS 39343, at *20–21 (N.D.N.Y. May 14, 2008) (an article in a “seminal publication in the field of electrical engineering” with an explicit citation to the allegedly invalidating reference qualified as a research aid). It is Petitioner’s burden to prove that *Båtnytt* (1) was a “seminal” publication in the field of watercraft design and engineering; (2) was publicly accessible prior to October 2013; (3) included an express citation to EvoloReport; and/or (4) provided an adequate “roadmap” to locate EvoloReport online. Petitioner fails to prove any of these things.

It bears emphasis that the only evidence of record that *Båtnytt* could be a proper research aid is the uncorroborated, conclusory testimony of Petitioner’s expert that it is a “popular” magazine and that it “would be typical reading and research material for a POSITA to keep track of developments in the industry....” EX1002, ¶¶30-31. There is otherwise no evidentiary support or corroboration for

either of these conclusions.² There is certainly no evidence to support a finding that *Båtnytt* was a “seminal” publication.

Nonetheless, Patent Owner provides rebuttal testimony through Dr. Takahashi. Takahashi opines that a POSITA would utilize free search tools such as Google Scholar to search *indexed* publications of relevance. EX2006, ¶38; EX2033, ¶¶43-44. Such search tools include major scientific publishers (Elsevier, Wiley, etc.), professional societies (American Society of Mechanical Engineers – ASME, American Physical Society - APA, etc.), and other academic sources. EX2006, ¶38; EX2033, ¶¶43-44. This is consistent with numerous scholarly guides regarding conducting engineering research. *See e.g.*, EX2034-EX2038. For example, a “Guide to Engineering Research” from Northern Arizona University confirms Takahashi’s statements, stating “[e]ngineers share their research findings primarily through journal articles and conference papers, but also through technical reports, patents, standards, websites, trade publications, and dissertations and theses.” EX2036; EX2033, ¶45. A POSITA here would look to these types of sources in the

² Petitioner cites to a website stating that the *Båtnytt* publication had a readership of 125,000 in November, 2009. EX. 1021. Patent Owner will seek to exclude this evidence as well as *Båtnytt* itself.

design of a personal watercraft as opposed to an obscure, more general boating magazine.³ *Båtnytt* is a small, Swedish print circulation directed to consumers who want to buy boats. EX2005; EX2033, ¶46. *Båtnytt* is not what a POSITA would look to in designing a new personal hydrofoil watercraft because of the lack of technical information and because a POSITA would more likely conduct a search of indexed sources. EX2006, ¶38; EX2033, ¶¶44-46.

Even assuming a POSITA would look to *Båtnytt*, there is no evidence that the article could have been located online or elsewhere except for the uncorroborated Kutenkeuler statement that he saw the magazine on newsstands in Stockholm. EX1018, ¶31. There is no evidence that the article exists online (or ever existed online), much less evidence that it was indexed in any meaningful way as to allow a POSITA to find it unless they happened to be walking by the same newsstand in Stockholm and noticed the publication.

Finally, even if it could be assumed that *Båtnytt* was publicly accessible and could reasonably be found, the article itself is defective in that it does not directly link to EvoloReport. See *Blue Calypso*, 815 F.3d at 1350 (finding that even if the

³ The design of the personal watercraft, as claimed in the '044 Patent, is a technical endeavor that would require looking to more than a consumer magazine could provide. EX2033, ¶46

article would have led a reader to the department website, there was no evidence that it would have led them to the personal website which contained the prior art). Just like the alleged research aid in *Blue Calypso*, *Båtnytt* only provides a link to the project website, *not* the report itself. No evidence has been presented to provide the roadmap as to how one could arrive at the project website and then locate and review EvoloReport. No evidence is presented to show or explain how one might find the course webpage from the project webpage (recall that Kuttenueler's testimony is that he published the report on the course web page, *not* the project webpage – EX1018, ¶18). Petitioner does not submit as evidence screenshots of the project website or the course website as they appeared prior to October of 2013 so that the roadmap could at least be visualized. Petitioner only relies upon the conclusory testimony of Kuttenueler that he published the report on the course website and asks the Board to draw its own roadmap from *Båtnytt* to the report from there. But, without evidence of the link or roadmap from *Båtnytt* to the project website, to the course webpages, and then to the EvoloReport, the evidence is insufficient just like the evidence in *Blue Calypso*.

4. The EvoloVideos Were Not Publicly Accessible

In addition to EvoloReport, Petitioner relies upon EvoloVideos⁴ as part of Grounds 2-5 of its Petition. Pet., 8,58. The evidence presented by Petitioner is likewise deficient to prove that these videos were publicly accessible.

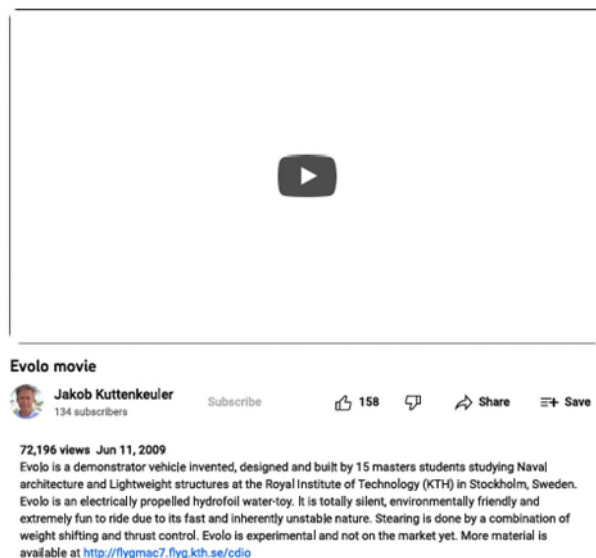
Starting with the video entitled “EvoloVideos-EvoloMovie” (EX1008 and EX1009), the video itself (EX1008), has no date or identifying information. The following is an image of the complete screen shown within EX1008:



Petitioner offers no testimony explaining or identifying this video. While Kутtenkeuler refers to a video he uploaded to YouTube in 2009, there is no testimony of record demonstrating that this video is the actual video Kутtenkueler claims to have uploaded. EX1018, ¶¶24-27.

⁴ Patent Owner will seek to exclude the EvoloVideos, and associated “screenshots”, as evidence in these proceedings.

Petitioner may cite EX1009 as purporting to show when this video was uploaded. However, no video is depicted within EX1009 and no witnesses have provided testimony explaining what the screenshot is or what it depicts. The following is an image of EX1009 as submitted:



There is no evidentiary connection between the video shown as EX1008 and the YouTube information shown within EX1009.

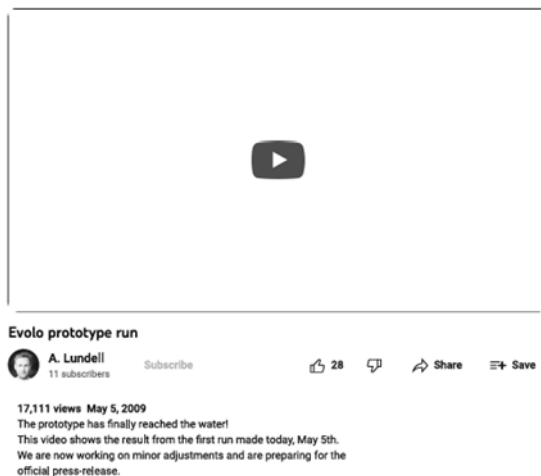
Even assuming that EvoloVideo-EvolvoMovie was the video uploaded to YouTube by Kutteneuler in 2009, there is no evidence that the video was publicly accessible at that time. There is no evidence that the video was either indexed or searchable such that a POSITA exercising reasonable diligence could locate it. Finally, much like with EvoloReport, Kutteneuler's testimony is in direct contradiction to evidence from the *Wayback Machine* indicating that the referenced

YouTube page was not archived until 2020. EX2041, p. 11-12. Petitioner has not met its burden to show that EvoloVideos-EvoloMovie was publicly accessible.

Petitioner presents even less evidence with respect to “EvoloVideos-PrototypeRun” (EX1006 and EX1007) and “EvoloVideos-Torqueedo” (EX1010 and EX1022). The only “evidence” related to public accessibility is Kутtenkeuler’s statement that “I know that my Evolo students also uploaded videos to YouTube in 2008 and 2009.” EX1018, ¶27. Kутtenkeuler does not testify that these two videos are the videos his students uploaded, nor does Petitioner provide any other evidence that these videos are the videos to which Kутtenkeuler refers. Even with Kутtenkeuler’s testimony, however, there is no evidence of public accessibility for the same reasons the evidence related to EvoloVideos-EvoloMovie is deficient. That is, the videos themselves, as depicted in EX1006 and EX1010, have no dates or identifying information and there is no evidence explaining what the videos are. See the following images taken from the referenced videos:



Similarly, no videos are depicted in the screenshots of EX1007 and EX1022 and no witnesses have provided testimony explaining what the screenshots are or what they depict.



There is no evidentiary connection between the videos shown and the purported screenshots. There is likewise no evidence that these videos were either indexed or searchable. Petitioner fails to meet its burden to prove public accessibility.

5. *TorqeedoManual Was Not Publicly Accessible*

Petitioner cites to “TorqeedoManual” for Grounds 3-5. EX1014.⁵ However, there is no evidence as to what TorqeedoManual is, who created it, what it was used for, when it was created, or whether it was ever published. If it was published, there is no evidence as to the nature of the publication – including but not limited to whom it was published and in what context it was published. There is nothing to prove that

⁵ Patent Owner will seek to exclude TorqeedoManual.

TorqueedoManual was publicly accessible. The only date Petitioner might point to for public accessibility is the date referenced on page 7 of TorqueedoManual. EX1014. Similar arguments have been rejected and evidence virtually identical to TorqueedoManual has consistently been deemed deficient and incapable of showing publicly accessibility without more than a mere date reference. *See Navico Inc. v. Garmin International, Inc.*, 2017 WL 3750252, *3 (E.D. Tex. 2017) (manual was not a permitted prior art publication since accused infringer had failed to produce evidence to show public accessibility except for its copyright date); *Goss Int'l Americas, Inc. v. Graphic Mgmt. Assocs., Inc.*, 739 F. Supp. 2d 1089, 1119 (N.D. Ill. 2010) (manuals were not printed publications when there was no showing how an interested member of the public could have obtained a copy of the manual); and *ResQNet.com, Inc. v. Lansa, Inc.*, 594 F.3d 860, 865-66 (Fed. Cir. 2010) (mere existence of a manual without evidence of publication or dissemination was not sufficient to render it a “printed publication”).

There is no evidence of TorqueedoManual's public accessibility. As a result, it cannot qualify as prior art.

B. EvoloVideos Have Been Improperly Combined

Another fatal issue with Petitioner's use of EvoloVideos is its failure to present evidence demonstrating that a POSITA would have been motivated to combine the three videos into a single reference for purposes of an obviousness

analysis. Petitioner states that EvoloVideos refer to a collection of three separate videos: including the aforementioned EvoloVideo-PrototypeRun, EvoloVideo-EvoloMovie, and EvoloVideo-Torqueedo. Pet. 8, 58. Yet, Petitioner provides only a conclusory rationale for combining these references together. Pet., 58. Petitioner provides no evidence that these three separate videos are, in fact, “the same information” as alleged.

In fact, other than visual similarity, there is no evidence to indicate that the videos depict the “same information” at all. There is no evidence that the same prototype version or even the same vehicle is shown in the different videos.⁶ Kутtenkeuler states that the Evolo team built several prototypes, including a first prototype tested in October 2008, a second prototype tested in December 2008, and a final prototype tested in May and June 2009. EX1018, ¶¶11-14. Kутtenkeuler additionally states that certain videos are from the 2008 and 2009 prototype testing sessions. EX1018, ¶27. Based on Kутtenkeuler’s testimony, it is highly likely that EvoloVideo-PrototypeRun and EvoloVideo-EvoloMovie show two or more different prototypes.

⁶ The only evidence regarding the use of a Torqueedo motor comes from EvoloReport, which is *not* cited prior art with respect to Grounds 2-5.

Even if Petitioner had presented evidence of the three videos comprising the “same information,” that alone is insufficient to provide a motivation to combine the references. *Purdue Pharma L.P. v. Depomed, Inc.*, 643 F. App’x 960, 965-966 (Fed. Cir. 2016). Petitioner has not articulated a motivation to combine the videos; accordingly, they are improperly combined into a single “Evolovideos” reference and should not be considered to render the claims obvious.

III. ADDITIONAL RELEVANT BACKGROUND

Prior to addressing the substance of Petitioner’s obviousness arguments, additional background on hydrofoil dynamics and the Woolley reference is warranted. This is necessary because Petitioner and its expert, Dr. Brizzolara, conflate the functions of equilibrium and stability and ignore the characteristics of Woolley that weigh heavily on these functions. Petitioner blindly argues that the inventions of the Patent are obvious because Woolley solves the deficiencies of the Evolo references.

A. Hydrofoils

Hydrofoils normally consist of one or more submerged elements or wings capable of producing lift (*i.e.*, a vertical force). EX2031, ¶3. This is functionally like the wing and horizontal tail on an aircraft. *Id.* A hydrofoil can thus be thought of as an airplane that “flies” underwater. *Id.*

A hydrofoil generates a lift force, a drag force, a lateral force, a rolling moment, a pitching moment, and a yawing moment. EX2031, ¶4. For simplification, the following discussion is limited to the longitudinal degrees of freedom.⁷ This includes motion in the fore/aft and up/down directions, and pitch rotation (*i.e.*, nose-up/nose-down rotation). *Id.* The net force and moment produced by a hydrofoil is the sum of the forces and moments produced by the hydrofoil. *Id.* Normally a POSITA computes moment (M) about the center of gravity of the vehicle. *Id.*

The net force is separated into lift and drag. EX2031, ¶4. Thrust from the propulsion system is treated independently. *Id.* The magnitude of the lift force produced by the hydrofoil is dependent on water density, speed, a reference area (normally the area of the wing), and the lift coefficient. *Id.*, ¶5. The lift coefficient, in turn, is dependent on the angle of attack (*i.e.*, the angle between the incoming flow and the wing), and the pitch rate (*i.e.*, the rate of change of the pitch angle of the vehicle). *Id.* These parameters depend upon the geometric design of the hydrofoil (*i.e.*, the design of the wing(s), as well as their locations with respect to one another). *Id.* The magnitude of the drag force depends upon water density, speed, the

⁷ Note that a POSITA normally separates these degrees of freedom for analysis purposes. EX2031, ¶4.

reference area, and the drag coefficient. *Id.*, ¶6. The drag coefficient, in turn, depends on the angle of attack, the wing design, and the particular airfoil chosen or designed for the particular application. *Id.*

The magnitude of the pitching moment is dependent on water density, speed, the reference area, and the pitching moment coefficient. EX2031, ¶6. The pitching moment coefficient, in turn, depends on the angle of attack and the pitch rate. *Id.* These parameters are dependent on the design of the wing(s), the relative arrangement of the wing(s), and on the location of the center of gravity with respect to the neutral point. *Id.*

1. Equilibrium

When a system is in equilibrium, all forces and moments sum to zero. In the case of a hydrofoil, that means that:

$$L = W$$

$$T = D$$

$$M = 0$$

EX2031, ¶7; EX2033, ¶35. Lift force (L) equals weight (W) (*i.e.*, forces in the up-down direction sum to zero), thrust (T) equal drag (D) (*i.e.*, forces in the fore-aft direction sum to zero), and pitch moment (M) equals zero (*i.e.*, the torques pitching up or down sum to zero). EX2031, ¶7; EX2033, ¶35. A POSITA (as well as the Patent) often refers to equilibrium as “trim.” EX2031, ¶7

2. Stability

A particular equilibrium may be stable. If an equilibrium is stable, there is a restoring force that seeks to return the system back to its equilibrium after a disturbance. EX2031, ¶8; EX2033, ¶31. Stability is commonly described in terms of static stability (*i.e.*, the initial tendency to return to equilibrium after a disturbance) and dynamic stability (*i.e.*, it eventually returns to the equilibrium position). EX2031, ¶8; EX2033, ¶31. A system that is statically stable may (but not necessarily) be dynamically stable. EX2031, ¶8; EX2033, ¶31. However, a system that is dynamically stable must also be statically stable. EX2031, ¶8; EX2033, ¶31.

Passive stability means that stability is achieved without the need for active control systems or mechanisms. Passive stability is achieved by satisfying certain conditions in the equations that govern the dynamics of a system. In the case of a hydrofoil, when disturbed to a pitch up (nose-up rotation), the dynamics must develop a pitch down moment (or nose-down rotation), and *vice versa*. The conditions governing longitudinal (pitch) stability can be summarized as:

$$C_{M_\alpha} < 0$$

$$C_{M_q} < 0$$

EX2031, ¶10. That is, C_{M_α} (the derivative of pitching moment coefficient with respect to angle of attack) is less than zero. In simple terms, this means, for example,

that a disturbance that causes it to nose-up (increasing the angle of attack) will result in a negative pitch moment, which will push nose-down (reducing the angle of attack) – this is static pitch stability. *Id.* When also considering dynamic stability, C_{M_q} (the derivative of pitching moment coefficient with respect to pitch rate) is also less than zero (i.e., a disturbance that causes an increase in the rate of pitch will result in a negative restoring moment). *Id.* Additionally, the existence of a stable equilibrium requires that:

$$C_{M_0} > 0$$

Id. That is, C_{M_0} (the pitching moment coefficient at zero angle of attack and zero pitch rate) is greater than zero. *Id.*

C_{M_α} is dependent on the location of the center of gravity and the neutral point. EX2031, ¶10. The neutral point is defined as the location of the center of gravity where the hydrofoil becomes unstable. *Id.* If the center of gravity is forward of the neutral point, then the hydrofoil will be stable, whereas, if the center of gravity is aft of the neutral point, then the hydrofoil will be unstable. *Id.* The neutral point is dependent on the design of the hydrofoil. *Id.*

Stability, however, is not simply achieved by placing the center of gravity ahead of the neutral point. EX2031, ¶11. With respect to passive stability, it is important to provide a range of stable equilibria so that the rider can control the

watercraft while maintaining stability. *Id.* Consider a desired equilibrium at some nominal speed - if we assume a desired equilibrium is at a constant pitch angle (*i.e.*, pitch rate equals zero), then a desired speed results in a desired angle of attack. *Id.* Further, at the desired angle of attack, $M = 0$ (pitch moment equals zero) must also be satisfied. *Id.* Because the weight-shift controlled personal hydrofoil watercraft does not have moveable control surfaces, this can only be satisfied by adjusting C_{M_α} or, in other words, by changing the location of the center of gravity with respect to the neutral point. *Id.* Whether the location of the center of gravity will result in $M = 0$ at a desired angle of attack (and thus desired speed) depends on the location of the neutral point, the pitching moment coefficient at zero angle of attack and zero pitch rate, and the lift coefficient with respect to the angle of attack. *Id.* As noted previously, these parameters are dependent on the design of the hydrofoil. *Id.*

Additional complexities must also be considered with respect to stability. The rider on a watercraft such as that disclosed in the Patent will be positioned on the board (or floatation device) resulting in the center of gravity being far above the hydrofoil. EX2031, ¶12. Such positioning results in the system as a whole being dynamically equivalent to an inverted pendulum, which is inherently unstable (as an analogy, imagine balancing a broomstick on the palm of your hand). EX2031, ¶12; EX2033, ¶40. Another complication arises from the thrust (the submerged propulsor) being spaced far below the center of gravity. EX2031, ¶13; EX2033, ¶41.

Without any other considerations, such an arrangement results in a strong nose-up pitching moment. EX2031, ¶13. Thus, the hydrofoil must be designed to be stable in the presence of the inverted pendulum instability as well as the thrust being positioned far below the center of gravity. EX2031, ¶14.

B. Woolley

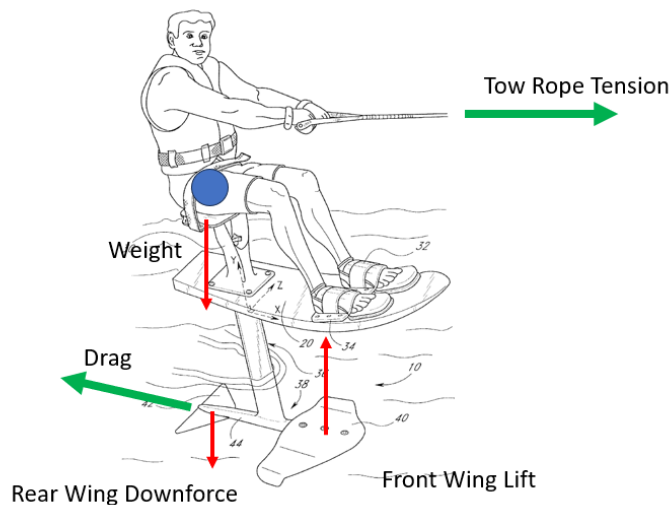
U.S. Patent No. 6,234,856⁸ (“Woolley”) is titled “Flying Ski.” Woolley describes certain improvements to a flying ski, including a seat and safety belt that secures and supports the seated rider to the ski while the rider and the device are towed behind a motorboat. EX1011, 1:31-37; 1:53-60. The flying ski of Woolley includes a board and seat that extends generally perpendicular to and upward from the board in order to support the seated rider. *Id.* at Abstract.

Woolley describes recreational equipment in the form of a ski designed to be towed behind a boat. EX1011, Abstract; 1:5-8; 1:10-20; 1:53-55; 2:48-51; 3:44-47; 4:4-8; Fig. 1. As the Woolley ski is towed, it is towrope that defines the position of the ski, as the trajectory of the ski must always lie within an arc behind the towing watercraft. In other words, it is the towrope and motorboat towing the device that serve as the control mechanism. Since the rider's legs and feet are belted into the ski (EX1011, 6:7-18; 8:48-9:12), there is only a limited ability for the rider to shift

⁸ Petitioner was instructed to replace EX1011 with USPN 6,234,856.

weight. For example, the specification states “that the device may be adapted to accommodate beginner riders “while being relatively unresponsive to rider actions (such as swaying side to side). In this mode, ski responsiveness is generally analogous to a conventional jet ski.” EX1011, 16:42-47.

Although not discussed in Woolley, for such a craft to be in equilibrium, as described above, the forces and moments must sum to zero. EX2033, ¶73-74. Again, in the longitudinal direction, lift must equal weight, thrust must equal drag, and the pitch moment must equal zero. *Id.* Therefore, with respect to the illustration below, the weight of the rider and craft must be in equipoise with the net lift created by the hydrofoil. *Id.* Also, the towrope tension must be in equipoise with the drag created by the underwater structure. EX2033, ¶74



As to the pitch moment, a nose-down torque is created by the drag force and the force from the motorboat pulling the towrope. *Id.* Therefore, to be in equipoise with

such forces the hydrofoil arrangement must create an equal nose-up torque. *Id.* The upward lifting force of the front blade and the downward force of the rear blade create a nose-up torque. *Id.* Further, movement of the towrope up or down in the vertical direction can contribute to the nose-down and nose-up torques. EX2033, ¶¶106,141

As to Woolley's references to "stability", the patent does not provide a definition or explain it in a manner recognizable to a POSITA. EX2033, ¶75. Nor is the patent's disclosed hydrofoil arrangement an indicator of stability. Nonetheless, the towrope pulled by a motorboat is a significant contributing factor to any alleged stability or controllability of the device.

IV. CLAIM CONSTRUCTION

The Board provided guidance regarding claim construction that Patent Owner will utilize in this response. Paper 12, p. 12-14.

In addition, with respect to a person of ordinary skill in the art ("POSITA"), the Board noted that "there is some overlap in the proposed levels of ordinary skill in the art" and declines to make a precise determination regarding the level of skill in the art. Paper 12 at 12. Patent Owner utilizes the definition of a POSITA provided in its preliminary response. A POSITA in the field of the Patent on October 10, 2013 would have had at least a Bachelor's degree in engineering or physics with experience in fluid dynamics and experience with watercraft, aircraft, or hydrofoil

craft, or at least a Bachelor's degree in the field of engineering specializing in naval architecture and substantial experience with naval architecture including some experience with watercraft, aircraft, or hydrofoil craft. EX2006, ¶22; EX2033, ¶21.

A. “Designed to provide passive static stability”

Patent Owner does not dispute Petitioner's proposed construction of “designed to provide passive static stability” as “designed such that the hydrofoil has an initial tendency to return to its original condition when disturbed without the hydrofoil having any moveable components,” which is consistent with the district court's prior construction. Pet., 12-13.

V. EVOLOREPORT + WOOLLEY DOES NOT RENDER THE CLAIMS UNPATENTABLE

Claim 1 (and thus all the challenged claims) requires a “hydrofoil having no moveable surface and designed to provide passive static stability controlled solely by weight shift of the user.” EX1001, 7:27-48. The EvoloReport and Woolley combination (Ground 1) fails to provide this claim element and, further, fails to render claim 1 obvious because Petitioner's position rests upon incomplete, conclusory, and/or erroneous rationales.

A. EvoloReport + Woolley Does Not Teach Passive Static Stability

The parties agree that “passive static stability” should be construed to mean “designed such that the hydrofoil has an initial tendency to return to its original

condition when disturbed without the hydrofoil having any movable components.” Pet., 12-13. EvoloReport does not teach a device with passive static stability, which Petitioner admits in looking to Woolley for this feature. Pet., 26; EX2033, ¶101. EvoloReport lacks any evidence of longitudinal stability and admits that rolling stability remained an unsolved problem. EX2006, ¶¶44,67; EX1003, page 142.

Petitioner and its expert, Dr. Brizzolara, allege that “[a] POSITA would have been motivated to combine EvoloReport with Woolley to provide for a passively stable hydrofoil.”⁹ Pet., 26. However, neither the Petitioner nor Brizzolara provide evidence that Woolley’s hydrofoil is “designed such that the hydrofoil has an initial tendency to return to its original condition when disturbed.” In fact, they never mention or use in their analysis the construction of the claim element.

Although Woolley generally discusses “stability,” there is no evidence that what Woolley is referring to is “static stability.” This is not surprising given that Woolley does not explain “stability” in a manner recognizable to a POSITA. EX2033, ¶75. As will be discussed herein, neither Woolley’s hydrofoil arrangement (a front wing that creates an upward force and rear wing that creates a downward force) nor its discussion of “stability” speak to the hydrofoil design criteria needed

⁹ The phrase of claim 1 is actually “a hydrofoil [...] designed to provide passive static stability [...]”.

to create the necessary restoring moments for stability. EX2033, ¶78. This is at odds with Brizzolara's suggestion that Woolley uses a "well-known method" for increasing stability by using "counteracting forces" between the forward wing and the rear wing of the hydrofoil. EX1002, ¶57. The problem with Brizzolara's opinion is that Woolley's hydrofoil arrangement is not in and of itself an indicator of stability because the front and rear blade arrangement must be considered in conjunction with other factors, including the location of the center of gravity with respect to the neutral point. EX2033, ¶78.

Ground 1 fails because it does not specify where this claim limitation, as properly construed, is found in the references. *Samsung Elec. Co., Ltd. v. Advanced Coding Tech., LLC*, IPR2024-00062, Paper 11 at pp.5-6 (PTAB May 23, 2024) (petitioner's burden not satisfied where analysis did not apply the construction of the claim limitation against the cited references.); *Dominion Dealer Solutions, LLC v. Autoalert, Inc.*, IPR2013-00225, Paper 15 at 4 (PTAB Oct. 10, 2013) (it is petitioner's responsibility "to explain specific evidence that supports its arguments . . ."); see also 37 C.F.R. § 42.104(b)(4).

B. No Motivation to Combine EvoloReport and Woolley and No Reasonable Expectation of Success

"Obviousness" under §103 requires Petitioner to demonstrate that a POSITA (1) would have been motivated to combine or modify prior art teachings and (2)

would have a reasonable expectation of success in doing so to arrive at the claimed invention. *Endo Pharm., Inc. v. Actavis LLC*, 922 F.3d 1365, 1373 (Fed. Cir. 2019). Neither of these exist here.

1. Woolley's Method is Not a Motivation to Combine

Petitioner argues Woolley “discloses solutions to the stability problems discussed and contemplated throughout EvoloReport.” Pet., 22. Petitioner points to Woolley’s “front planing blade containing a chorded upper surface that tapers towards the rear so that the upper surface has a larger surface area than the lower surface, which causes an upward lifting force on the forward blade” and “use of the rear blade with a negative angle of attack, so that the rear blade creates a downward force on the rear blade” as creating passive static stability. Pet., 26-27; EX1002, ¶¶56-57. Brizzolara concludes that the use of such counteracting forces between the blades “is a well-known method for increasing pitch stability by a POSITA.” EX1002, ¶57.

In its Institution Decision, the Board stated that it has “questions about Dr. Brizzolara’s testimony that Woolley’s use of ‘counteracting forces . . . is a well-known method for increasing pitch stability’ when applied to the self-propelled watercraft shown and described in the EvoloReport.” Paper 12, p. 42 (citation removed). The Board was right to question Brizzolara’s testimony.

When asked if his statement regarding the supposed “well-known method” was accurate, Brizzolara stated that he “didn’t phrase it in the best possible way.” EX2042, 48:3-20. Brizzolara abandoned his prior testimony for good reason. Such a configuration is *not* a well-known method for increasing pitch stability, nor is it determinative of stability. Indeed, for there to be static stability, it must be able to create “restoring moments” when disturbed in order to have an initial tendency to return it to its original condition. EX2033, ¶78; EX2042, 40:11-14 (“If the forces and moment tend to restore the vehicle to the initial referenced equilibrium condition, then you say that it’s stable, statically stable.”).

Brizzolara’s “well-known method” does not speak to the restoring moments necessary for static stability. EX2042, 50:10 -51:23 (“Q. . . . that statement in paragraph 57, doesn’t speak to the restoring moments that are created for stability, correct? A. No, no. . . . Q. But that statement doesn’t mean that it would achieve stability? A. If you can or cannot, it depends on the actual geometry. I cannot tell you in general. I cannot be so general. . . .”). Instead, Brizzolara’s statement speaks to achieving equilibrium (where the forces and moments sum to zero), *not* stability. *Id.*, 50:10-22. But, as Takahashi explains (and Brizzolara concedes), simply because a configuration may achieve equilibrium is *not* determinative of stability. EX2033, ¶77; EX2042, 56:23-25. As discussed above, certain conditions govern the dynamics of the system which must be satisfied to achieve passive stability. *Supra*,

pp. 23-25. And, whether or not those conditions would be satisfied are dependent on the design of the hydrofoil, the angle of attack, and the location of the center of gravity, among other things. EX2031, ¶10.

Although Brizzolara maintains Woolley's hydrofoil configuration is "more prone to be stable than other configurations," "is a good one to achieve stability," or "is a better configuration[] than others," he admitted that such a configuration does *not* mean that it would be stable. EX2042, 48:3-20; 51:9-25. Static stability is not present simply because there are counteracting forces, because, as admitted by Brizzolara, static stability "depends on the actual geometry." *Id.* at 51:9-25 (emphasis added).

The broomstick analogy provides a practical example. Consider the difference between balancing a broomstick upright on the palm of your hand (an unstable condition) versus allowing it to hang downwards as you grip the top end between your thumb and fingers (a stable condition). That is, you may be able to find an equilibrium as you balance the broomstick upright, but any small disturbance will cause the broomstick to tip over. EX2031, ¶8. Thus, even assuming Woolley's hydrofoil arrangement can achieve equilibrium, the "counteracting forces" of its hydrofoil arrangement do not provide motivation to combine it with EvoloReport to achieve static stability nor would a POSITA reasonably expect success in arriving at

the claimed invention of having “a hydrofoil . . . designed to provide passive static stability.”

2. There are Critical Differences Between EvoloReport and Woolley

Notwithstanding Brizzolara's misleading statement regarding Woolley's alleged stability, there are additional reasons why Ground 1 fails. Woolley is different from both the claimed invention and EvoloReport in several respects, all which Petitioner and Brizzolara ignore.

First, Woolley's propulsive force is generated solely from the towrope, which is in front of the craft and above the plane of the water. EX2006, ¶74; EX1011, Abstract. Woolley makes no mention of being self-propelled. Conversely, the EvoloReport's propulsion is generated from the propeller, which is located well below the water at or near the submerged hydrofoil. EX2033, ¶¶106-109,140-143.

Second, Woolley's towrope is near the center of gravity of the ski and rider. EX2033, ¶¶105-109,140-143. Therefore, Woolley's hydrofoil elements are designed to account for the propulsive force being transmitted from a towrope held near the craft's center of gravity. EX2006, ¶74. In contrast, EvoloReport's propulsive force is well below the center of gravity. EX2033, ¶¶105-109,140-143; EX2006, ¶73.

Third, Woolley's towrope is used to aid in control of the ski. That is, the user can move the towrope to provide steering and control moments. EX2033, ¶106. EvoloReport, on the other hand, is self-propelled with no external mechanism or

movable controls to steer or control the craft. *Id.*, ¶54. These differences cannot be ignored. A hydrofoil is not designed in a vacuum; the position of the propulsive forces, among other things, must be taken into account when considering hydrofoil stability. EX2006, ¶74.

Simply taking Woolley's hydrofoil and placing it on EvoloReport would *not* generate a device with passive static stability. EX2006, ¶74. As to Woolley, its hydrofoil arrangement creates a nose-up torque or rotation. EX2033, ¶¶105,139; EX2042, 52:1-14. Such a rotation must be counteracted by a nose-down rotation through the hydrodynamic drag of the hydrofoil and the effects of the propulsive force. EX2033, ¶74; EX2042, 52:1-14. The towrope force of Woolley creates such counteraction. EX2033, ¶76-77. This accounts for the possibility of equilibrium. EX2033, ¶¶76-77. Even if Woolley's hydrofoil arrangement achieves equilibrium through the balancing of forces as described above, for the hydrofoil to satisfy the conditions that govern stability, as alleged, it must be designed to account for the propulsive force being transmitted from a towrope being held by a sitting, belted in rider near the center of gravity. *Id.*

Additionally, unlike EvoloReport or the claimed invention, Woolley's pitching moment (up or down) can be adjusted by the user lifting or lowering the towrope. EX2033, ¶106; EX2031, ¶20; EX2042, 53:4 –54:1. For example, if Woolley pitches upward, the user can counteract that moment by lifting the towrope

to cause the craft to pitch down. This is akin to using moveable control surfaces on a hydrofoil. Therefore, the towrope significantly contributes to any alleged stability. EX2033, ¶141.

Now consider adding Woolley's hydrofoil arrangement to EvoloReport. In that regard, EvoloReport's propulsion is a pushing force below the water and well below the craft's center of gravity. EX2033, ¶106-109. Such a combination would result in increasing the nose-up pitching moment already present from Woolley's hydrofoil arrangement, resulting in a strong destabilizing effect. *Id.*; EX2042, 55:1-5 ("Q. If you were to take the towrope away and place a propeller down at the hydrofoil, would it cause it to pitch up? A. With respect to when the towrope was in the air, yes."). Further, neither Woolley nor EvoloReport suggest how that instability would be overcome. EX2033, ¶111.

Woolley's hydrofoil arrangement is configured based on where the propulsive force is relative to the center of gravity. EX2006, ¶74. Therefore, the location of Woolley's propulsive force does not contribute to destabilizing the system like a propulsor would if it were located far below the center of gravity like that found in EvoloReport. EX2031, ¶20; EX2033, ¶110. Consider pulling someone on roller skates with a rope tied around their waist versus a rope tied around their ankles. In the latter case, the propulsive force is likely to pull the person's feet out from underneath them. EX2031, ¶20. Thus, Woolley's hydrofoil arrangement combined

with EvoloReport would not result in the claimed invention, as this combination would result in an unstable craft. EX2006, ¶74; EX2031, ¶21; EX2033, ¶101.

Given the differences between EvoloReport and Woolley, a POSITA would not be motivated to make such a combination and expect success without the impermissible use of the Patent as a roadmap. *Lululemon Athletica Canada Inc. v. Nike, Inc.*, IPR2023-00189, Paper 37 at 68 (PTAB May 13, 2024). In fact, the EvoloReport in combination with Woolley would *not* result in a “hydrofoil [...] designed to provide passive static stability” as recited in Claim 1. EX2006, ¶¶67-78; EX2033, ¶101; EX2031, ¶¶21-22. Regardless, in light of the critical differences between EvoloReport and Woolley, a POSITA would not have a reasonable expectation of success at arriving at the claimed invention.

3. Petitioner Only Offers Unsupported and Conclusory Statements

Petitioner and Brizzolara summarily conclude that “[t]o the extent that the disclosed hydrofoil in Woolley could be found to not be designed to provide passive static stability, a POSITA would have sufficient knowledge to modify the disclosed hydrofoil in Woolley such that it would be designed to provide passive static stability.” Pet., 29; EX1002, ¶6. However, there are several design considerations a POSITA would need to consider and overcome to arrive at the claimed invention. Petitioner offers no support or rationale as to its contention a POSITA would modify Woolley to achieve the claimed invention. To the contrary, the only motivation to

modify Woolley comes from a hindsight reading of the Patent. *Medit Corp. v. 3ShapeA/S*, IPR2023-01317, Paper 6 at pp.26-27 (PTAB March 29, 2024) (petitioner's contention that a POSITA would have been motivated to modify a prior art reference must be supported by "sufficient reasoning with rational underpinnings.").

4. *There is No Reasonable Expectation of Success*

Assuming Petitioner met its burden that all the claim limitations are found in EvoloReport and Woolley and there is a motivation to combine, the Patent must nonetheless not be found unpatentable because Petitioner fails to provide any evidence that there would have had a reasonable expectation of success.

"[T]he expectation of success must be founded in the prior art, not in the applicant's disclosure." *In re Dow Chem. Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988). This "reasonable expectation of success requirement refers to the likelihood of success in combining references to meet the limitations of the claimed invention" not whether a POSITA "would reasonably expect the prior art references to operate as those references intended once combined." *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016). To claim, as Petitioner does, that all the limitations of the claims are present in the prior art is insufficient to satisfy the inquiry regarding a reasonable expectation of success. *See Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 993 (Fed. Cir. 2017); *see*

also Intelligent Bio-Systems, 821 F.3d at 1367 (motivation to combine and reasonable expectation of success are two different legal concepts).

Petitioner focuses on Woolley's statements regarding hydrofoil design and its alleged "stability" teachings. Pet., 26-29; EX1002, pp. 21-24 (¶¶55-61). However, even assuming Woolley provides "static stability" (which it does not), neither the Petitioner nor Brizzolara mention how, or provide any rationale as to why, a POSITA would reasonably expect success in combining the references to meet the claim language requiring "the hydrofoil . . . designed to provide passive static stability controlled solely by weight shift of the user." *Id.* Thus, Petitioner fails to provide the evidence to meet its burden. Regardless, for the reasons discussed above, a POSITA would not reasonably expect success in combining EvoloReport with the hydrofoil of Woolley to achieve the claimed invention.

C. EvoloReport + Woolley Does Not Teach Passive Static Stability or Weight Shift Control

In addition to aiding any alleged stability, the towrope and motorboat of Woolley function to control Woolley. EX2006, ¶53. Petitioner alleges that "[t]he limitation 'controlled solely by weight shift of the user' refers to the control of the entire personal watercraft, rather than the control of the hydrofoil separately from the personal watercraft."¹⁰ Pet., 26. However, the full claim phrase is "the hydrofoil

¹⁰ Petitioner proposed no construction of this phrase.

having no moveable surface and designed to provide passive static stability controlled solely by weight shift of the user.” EX1001, 7:42-44. Woolley’s hydrofoil is not designed to provide passive static stability controlled solely by weight shift of the user.

Petitioner alleges that “[b]ecause EvoloReport does not disclose any other moveable objects that would change the force of gravity on the disclosed watercraft, the weight shift of the user of the disclosed watercraft is the gravity shift disclosed in EvoloReport.” Pet., 25. However, EvoloReport does not teach a hydrofoil that is designed to both provide passive static stability and allow control solely by weight shift of the user. EX1001, 7:42-44; EX2006, ¶¶76-78. Even Petitioner agrees, stating that it is “the purported passive stability of the claimed hydrofoil [that] allows ‘the watercraft to be controlled by weight shift rather than by mechanical system’” (Pet., 25), while simultaneously utilizing Woolley to allegedly provide a passively stable hydrofoil. Pet., 25-26. This is an admission that EvoloReport’s hydrofoil does not provide passive static stability or allow control solely by weight shift. Woolley’s hydrofoil design does not allow for sole control via weight shifting. EX2006, ¶53. Nor would a POSITA look to Woolley for a hydrofoil design that would allow for sole control via weight shift. Woolley, including its hydrofoil, is designed to be controlled by an external control system (*i.e.*, the towrope and the motorboat), not solely via weight shift. EX2006, ¶¶52-53.

Woolley's towrope aids in both achieving any potential equilibrium position and any potential stability of the craft, while also contributing to the directional control of the craft. For example, the towrope can be lifted or lowered to cause the hydrofoil to pitch up or down. EX2031, ¶20; EX2033, ¶106; EX2042, 53:14-19. If Woolley were disturbed such that it pitched upward, the towrope could be vertically lifted to "stabilize" the craft, *i.e.*, cause the craft to pitch down in order to counteract the upward disturbance. EX2031, ¶20; EX2033, ¶106.

In addition, because the user is strapped into a seat, Woolley minimizes the amount of weight a user is able to shift. EX1011, 8:60-62; EX2006, ¶¶52-53. Thus, Woolley's operation depends, in part, on the towrope and motorboat. In other words, although Woolley describes that a user may, in some circumstances contribute to steering and control, the control remains largely with the towrope and motorboat. EX2006, ¶¶52-53. Control of Woolley is not "solely by weight shift of the user". EX2006, ¶¶52-53.

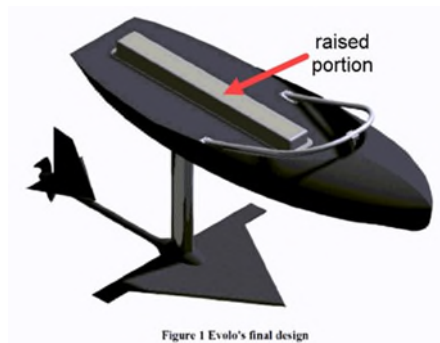
Petitioner's argument is that one can simply take the allegedly "stable" Woolley hydrofoil and attach it to EvoloReport and it would result in EvoloReport having "a hydrofoil fixedly interconnected with the lower end of the strut, the hydrofoil having no moveable surface and designed to provide passive static stability controlled solely by weight shift of the user" as claimed. However, as detailed above, the EvoloReport and Woolley combination does not teach every element of

claim 1, nor is there a motivation to combine them; further, even if this were not true, Petitioner fails to provide any explanation for why a POSITA would reasonably expect success at achieving the claimed invention with the combination.

D. Dependent Claims

1. Claim 11

Petitioner alleges that EvoloReport teaches “wherein the battery and motor speed controller are contained in a waterproof compartment integrated into the floatation device” as recited in claim 11. Pet., 43. The relied upon portions of EvoloReport do not discuss the waterproof compartment being integrated into the floatation device. EvoloReport merely states that the “floating body should also have room for batteries.” EX1003, p. 550. Takahashi opines that EvoloReport does not teach that the compartment is *integrated into the floatation device*. EX2033, ¶118. Additionally, “Evolos final design”, an image of which is reproduced herein, includes a raised portion, in which the Petitioner alleges the battery is located. EX1003, p. 3.



Petitioner admits that the “Evoloreport does not specifically disclose whether the motor speed controller is contained within the ... waterproof battery container....” Pet., 45. Petitioner argues that the stated use of the Torqueedo system would have motivated a POSITA to incorporate the motor speed controller into the waterproof compartment. Pet., 48. But, Petitioner does not provide reasoning for why a POSITA would have an expectation of success. Any expectation of success would only be found using the Patent as a roadmap, not the prior art. *See In re Dow Chem.*, 837 F.2d at 473. Evoloreport in combination with Woolley does not render claim 11 obvious.

2. Claim 12

Petitioner alleges that Evoloreport discloses “an electric motor integrated into a waterproof, streamlined pod and the watercraft comprises a cooling system” as required by claim 12. Pet., 48. However, Petitioner takes great liberties with Evoloreport’s disclosure. There is no indication that the electric motor is integrated into a streamlined pod or what would result from “sourc[ing] a product that matches the data produced in terms of power requirement and thrust for the Evolo, [and] then remov[ing] the excess parts to build the motor and electrical system into the Evolo’s design.” EX1003, p. 491. Petitioner points to Evoloreport’s statement that “the motor must be built into some type of watertight housing,” but Evoloreport admits that this is a “sub-area[] to be verified” and the “[c]onstruction of such must be

verified.” EX1003, p. 515. EvoloReport and Woolley do not teach an electric motor integrated into a waterproof streamlined pod as claimed. *Dominion*, IPR2013-00225, Paper 15 at 3 (it is Petitioner’s responsibility “to explain specific evidence that supports its arguments....”); *see also* 37 C.F.R. § 42.104(b)(4) (“The petition must specify where each element of the claim is found in the prior art....”). EvoloReport in combination with Woolley does not render claim 12 obvious.

3. Claim 15

Petitioner alleges that EvoloReport, which did not implement a wireless controller, nevertheless discloses “a wireless handheld controller having a transmitter, and a throttle interface having a receiver, wherein the transmitter is adapted to send wireless signals to the receiver that cause an output of the propulsion system to change” as recited in claim 15. Despite Petitioner’s statement that EvoloReport contemplated regulating the motor wirelessly, the final design described in the EvoloReport describes a watercraft where the motor “*controller must be applied to the handles*” so that the operator can regulate the motor while holding onto the handles. EX1003, p.550 (emphasis added); EX2033, ¶¶120,159. As Takahashi explains, the “presence of hand grips describes functionality similar to a motorcycle (with handlebar operated controls).” EX2033, ¶120. Such a design does not allow for wireless controls, as an operator needs to grip the handle. Petitioner

and Brizzolara fail to identify a transmitter or throttle interface in the prior art and fail to provide any support for their allegation that “[a] POSITA would have had the knowledge and experience to incorporate” such items and have a reasonable expectation of success. *Dominion, supra*; see also 37 C.F.R. § 42.104(b)(4), *supra*. EvoloReport in combination with Woolley does not render claim 15 obvious.

4. Claims 2,5-8,10,13,14,17,18,20, and 21

Petitioner alleges that EvoloReport teaches each limitation of claims 2,5-8, 10,13,14,17,18,20, and 21. For at least the reasons discussed for the claims on which these claims depend, EvoloReport in combination with Woolley does not render these claims obvious.

VI. EVOLOVIDEOS + WOOLLEY DOES NOT RENDER THE ASSERTED CLAIMS UNPATENTABLE

Grounds 2 through 5 utilize the “Evolovideos” (EX1006, EX1008, and EX1010) as the primary invalidating reference Pet., 8-9. EvoloReport is *not* included as prior art in these grounds. Any teachings from EvoloReport cannot be utilized when referencing EvoloVideos – as the Petitioner has not presented any ground that combines both EvoloReport and EvoloVideos.

A. EvoloVideos + Woolley Does Not Teach Passive Static Stability

Takahashi opines, based on his review of EvoloVideos, “when operated as a hydrofoil, the watercraft lunges and plunges into and out of the water” and exhibits

a “lack of both pitching stability and rolling stability”. EX2006, ¶95; EX2033, ¶¶126,134-135. As shown in the below images reproduced from EvoloVideos, the watercraft exhibits a porpoising motion. Takahashi opines, “[i]n view of this porpoising, the watercraft of the EvoloVideos cannot be said to be ‘passively stable.’” EX2006, ¶85; EX2033, ¶135.



EX1006 at 1:42



EX1006 at 1:43

Takahashi states that a POSITA would recognize that “the watercraft depicted in the EvoloVideos could only be stabilized using some sort of active control system

(*e.g.*, through the use of moveable hydrodynamic control surfaces).” EX2006, ¶96; EX2033, ¶136.

Despite the admitted fact that EvoloVideos do not teach passive static stability, Petitioner and Brizzolara allege that “[a] POSITA would have been motivated to combine the watercraft disclosed in the EvoloVideos with Woolley to provide for a passively stable hydrofoil.”¹¹ Pet., 64. However, neither the Petitioner nor Brizzolara provide evidence that Woolley’s hydrofoil is “designed such that the hydrofoil has an initial tendency to return to its original condition when disturbed.” In fact, they never mention or use in their analysis the construction of the claim element. Further, as discussed herein, Woolley does not teach a hydrofoil designed to provide passive static stability as required by claim 1.

Petitioner further fails to provide analysis regarding its alleged motivation to combine EvoloVideos and Woolley and ignores the requirement of a reasonable expectation of success. *See Endo Pharm.*, 922 F.3d at 1373. As discussed herein, there are critical differences between Woolley and EvoloReport; these differences are also applicable to EvoloVideos, as the propulsive force shown in EvoloVideos is also provided by a propeller, disposed under the plane of the water and well below

¹¹ Claim 1 actually states “a hydrofoil [...] designed to provide passive static stability [...]”.

the center of gravity, pushing the craft. Petitioner ignores these differences and the effects they have in attempting such a combination.

Petitioner alleges that “[i]n EvoloVideos, the user of the watercraft is shown to control the watercraft solely by the weight shift of the user” (Pet., 64), but the only evidence offered is a *ten second* clip from one of the videos (0:50 to 1:00 of EX1006). EX1002, p. 58. However, the clip from EX1006 is insufficient to establish that the watercraft depicted therein includes a “hydrofoil having no moveable surface and designed to provide passive static stability *controlled solely by weight shift of the user.*” Takahashi notes that “when operated as a hydrofoil, the watercraft lunges and plunges into and out of the water” and exhibits a “lack of both pitching stability and rolling stability.” EX2006, ¶103; EX2033, ¶¶126,134-135. Accordingly, the EvoloVideo’s hydrofoil is not designed to provide passive static stability or allow control solely by weight shift of the user. EX2006, ¶103; EX2033, ¶135. Woolley also fails to teach a hydrofoil designed to be controlled *solely* by the weight shift of the user.

B. Ground 2 Dependent Claims

1. Claim 7

Petitioner alleges that EvoloVideos (specifically, EX1008 and EX1010) depict a “hydrofoil [that] is indirectly connected to the strut” as recited in claim 7. Pet., 66-70. Petitioner does not provide evidence that the EX1008 device is the same

as the partially depicted structure in EX1010. For this reason, and the reasons discussed for the claims on which claim 7 depends, EvoloVideos in combination with Woolley does not render claim 7 obvious.

2. Claims 5,6,8,10,17 and 21

Petitioner alleges that that EvoloVideos and Woolley teach each limitation of claims 5, 6, 8, 10, 17, and 21. For at least the reasons discussed for the claims on which these claims depend, the EvoloVideos in combination with Woolley does not render these claims obvious.

VII. EVOLOVIDEOS + WOOLLEY + TORQUEEDOMANUAL DOES NOT RENDER THE ASSERTED CLAIMS UNPATENTABLE

Petitioner asserts as Ground 3 that claims 2, 12-14, and 20 are obvious in view of EvoloVideos, Woolley, and TorqueedoManual. Petitioner has not presented sufficient evidence as to this Ground.

A. Claims 2 and 14

Petitioner alleges that EvoloVideos (specifically, EX1006 and EX1008) and TorqueedoManual teach each limitation of claim 2, and that a POSITA would have been motivated to combine their teachings. Pet., 77-80. Petitioner also alleges that Woolley teaches each limitation of claim 14. Pet., 85. Even assuming there is motivation to combine, Petitioner fails to provide any evidence that a POSITA would have had a reasonable expectation of success. Thus, Petitioner has not met

its burden. *See Personal Web.*, 848 F.3d at 993. EvoloVideos in combination with Woolley and TorqueedoManual does not render claims 2 and 14 obvious.

B. Claim 12

Petitioner alleges that EvoloVideos (specifically, EX1010) and the TorqueedoManual teach that “the electric motor is integrated into a waterproof, streamlined pod and the watercraft comprises a cooling system” as recited in claim 12. Pet., 80. Petitioner takes liberties with the disclosures. Neither EvoloVideos (EX1010) nor the TorqueedoManual teach anything regarding a “waterproof, streamlined pod” as recited in the claim. At best, the references show that a motor is enclosed in something, but there is nothing to indicate the enclosure is waterproof or that the enclosure is a streamlined pod. Further, Petitioner does not provide any evidence that a POSITA would have had a reasonable expectation of success in making the combination to arrive at the claimed invention. Thus, Petitioner has not met its burden. *See Personal Web.*, 848 F.3d at 993. EvoloVideos in combination with Woolley and TorqueedoManual does not render claim 12 obvious.

C. Claim 13

Petitioner alleges that EvoloVideos teach the electric motor being “removably interconnected with the hydrofoil through a fitting” as recited in claim 13. Pet., 82-84. In particular, Petitioner reproduces still shots that allegedly illustrate the connection of a hydrofoil to the motor, and conclusory states that this “depicts a

watercraft in which the electric motor is removably interconnected through bolt connections....” Pet., 84. The portions of EvoloVideos-Torqueedo (EX1010) pointed to by Petitioner are vague and ambiguous regarding the connection of the motor and hydrofoil. Moreover, Petitioner fails to provide evidence indicating that the alleged bolting shown is “removably interconnected” as required by claim 13. EvoloVideos in combination with Woolley and TorqueedoManual does not render claim 13 obvious.

D. Claim 20

Petitioner alleges that EvoloVideos (EX1010) and TorqueedoManual teach that “the electric motor is a brushless motor.” Pet., 85. The Petition alleges EvoloVideos (specifically EX1010) “depict installing a Torqueedo Cruise 4.0 R motor.” *Id.* There is no evidence that the EvoloVideos-Torqueedo (EX1010) motor is the same or similar motor to those in the other EvoloVideos (EX1006, EX1008). Neither Petitioner nor Brizzolara provide any evidence regarding how it was determined from EvoloVideos (EX1010) that this was the motor installed. See EX1002, ¶¶142-145, 147. Petitioner utilizes information regarding the type of motor from EvoloReport, which is not cited art in this Ground, and is improper to utilize. Even assuming that the depicted motor is a Torqueedo Cruise 4.0 R motor, TorqueedoManual is directed to the “Cruise 2.0 S” and the “Cruise 2.0 L.” EX1014, p. 1. Finally, TorqueedoManual does not disclose the motor being brushless.

Evolovideos in combination with Woolley and Torqueedomanual does not render claim 20 obvious.

VIII. EVOLOVIDEOS + WOOLLEY + TORQUEEDOMANUAL + GLEASON DOES NOT RENDER THE ASSERTED CLAIMS UNPATENTABLE

Petitioner asserts as Ground 4 that claim 11 is obvious in view of Evolovideos, Woolley, Torqueedomanual, and Gleason. Petitioner has not presented sufficient evidence as to this Ground.

Petitioner alleges that Gleason teaches that the “battery and motor speed controller are contained in a waterproof compartment integrated into the flotation device” as recited in claim 11. Pet., 85. Petitioner further alleges that it would have been obvious to combine the teachings of Gleason with Evolovideos (specifically, EX1006) because Evolovideos “depicts a flotation device having a container for batteries within the flotation device.” Pet., 87. First, Petitioner fails to provide evidence from Evolovideos that the raised portion to which they point contains the batteries. Information regarding the contents of this raised compartment is garnered from EvoloReport, which is not cited as art for this Ground. Second, Petitioner fails to provide evidence that a POSITA would have a reasonable expectation of success at arriving at the claimed invention. Petitioner has not provided sufficient motivation to combine Gleason and Evolovideos, nor has Petitioner made any

reference to an expectation of success. EvoloVideos in combination with Woolley, Torquedo Manual, and Gleason does not render claim 11 obvious.

IX. EVOLOVIDEOS + WOOLLEY + TORQUEEDOMANUAL + GLEASON + MANNING DO NOT RENDER THE ASSERTED CLAIMS UNPATENTABLE

Petitioner asserts as Ground 5 that claims 15 and 18 are obvious in view of EvoloVideos, Woolley, TorquedoManual, Gleason, and Manning. Petitioner has not presented sufficient evidence as to this Ground.

A. Claim 15

Petitioner alleges that Manning discloses a “a wireless handheld controller having a transmitter, and a throttle interface having a receiver, wherein the transmitter is adapted to send wireless signals to the receiver that cause an output of the propulsion system to change” as recited in claim 15. Pet., 89. Petitioner further alleges that a POSITA would be motivated to combine the teachings of Manning with those of EvoloVideos, and states that in EvoloVideos an operator “uses a handle mounted throttle [...], the user must constantly grip the handle at the specific location of the throttle [... and] [b]y removing this limitation, a user would be able to grip the handles in whatever location is most comfortable and offers the most support and control.” Pet., 90-91. However, a POSITA would not be motivated to make the combination because if a user were to remove their hand(s) from the handles shown in EvoloVideos in favor of a wireless handheld controller, the device

shown in EvoloVideos (due to its lack of stability) would be extremely difficult to pilot without being thrown overboard. EX2033, ¶159. EvoloVideos in combination with Woolley, TorquedoManual, Gleason, and Manning does not render claim 15 obvious.

B. Claim 18

Petitioner alleges that EvoloVideos (EX1010) teach a “strut having an internal passage and electrical wires extending from the electric motor to the waterproof compartment inside the strut through the internal passage for controlling the electric motor” as recited in claim 18. Pet., 92-93. However, all EvoloVideos (EX1010) demonstrate is that there are wires extending out of an end of a cylindrical rod Petitioner argues is the strut. Petitioner provides no evidence from EvoloVideos that the opposing end of these wires connect to or control the electric motor. Petitioner’s mere statement that another of EvoloVideos (EX1006) demonstrates a “strut [is] connected to the craft below the battery compartment” is insufficient. *Id.* at 93. Petitioner has not provided evidence that the cylindrical rod it alleges is the strut in EX1010 is the same strut of EX1006; further, assuming they are the same strut, positioning of the strut proximate the battery compartment does not evidence that the strut has “an internal passage and electrical wires extend from the electric motor to the waterproof compartment inside the strut through the internal passage for controlling the electric motor” as recited in claim 18. EvoloVideos in combination

with Woolley, Torquedo Manual, Gleason, and Manning do not render claim 18 obvious.

X. SECONDARY CONSIDERATIONS WEIGH HEAVILY IN FAVOR OF NONOBVIOUSNESS

Evidence of secondary considerations (or objective indicia of non-obviousness) “can be the most probative evidence of nonobviousness in the record, and enables the [Board] to avert the trap of hindsight.” *Leo Pharm. Prods., Ltd. v. Rea*, 726 F.3d 1346, 1358 (Fed. Cir. 2013). Further, “[s]econdary considerations evidence can establish that ‘an invention appearing to have been obvious in light of the prior art was not.’” *Apple Inc. v. Int’l Trade Comm’n*, 725 F.3d 1356, 1366 (Fed. Cir. 2013). Secondary considerations to be considered include commercial success; long-felt yet unsolved need; failure of others to solve the problem addressed; skepticism or disbelief; positive recognition; copying; licensing; and unexpected results or properties. *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013).

Here, the secondary considerations weigh heavily in favor of a finding that the Patent is not obvious.

A. Nexus

There should be a nexus between the evidence of secondary considerations and the merits of the claimed invention. *Volvo Penta of the Americas, LLC v.*

Brunswick Corp., 81 F.4th 1202, 1210 (Fed. Cir. 2023). Nexus is presumed if a marketed product embodies the claimed features and is coextensive with them. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 723 F.3d 1363, 1372 (Fed. Cir. 2013); *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019). Stated differently, a patent owner is entitled to a presumption of a nexus if it shows that “the asserted objective evidence is tied to a specific product and that product ‘is the invention disclosed and claimed in the patent.’” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1335 (Fed. Cir. 2016). Even where nexus cannot be presumed, “the patent owner is still afforded an opportunity to prove nexus by showing that the evidence of secondary considerations is the ‘direct result of the unique characteristics of the claimed invention.’” *Fox Factory*, 944 F.3d at 1373 (quoting *In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996)).

Patent Owner's Lift eFoils (*i.e.*, the marketed product) are commercial embodiments of the invention disclosed and claimed in the Patent and are coextensive with the features of the Patent. EX2009, ¶¶72-73 (summarizing the relevant features of the product in comparison to certain claim elements) and Exhibit 5 to EX2009 (claim chart confirming that Patent Owner's products are commercial embodiments); EX2008, ¶¶16, 20; and EX2010, ¶8 (the Patent covers a “passively stable weight-shift controlled electrically-powered hydrofoil personal watercraft. In other words, an entire hydrofoil watercraft.”). Even if it was determined that Patent

Owner was not entitled to a presumption, the evidence of secondary considerations set forth below are directly tied to the unique features of the patent. As a result, under either method a nexus must be found.

B. Commercial Success

Commercial success can be shown by establishing both success in the marketplace and a nexus between the commercial product and the claimed invention. *Volvo, LLC*, 81 F.4th at 1210. Commercial success may demonstrate non-obviousness; for example, if the invention had been obvious, there is a presumption that someone else would have brought it to the market sooner. *Merck & Co., Inc. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1376 (Fed. Cir. 2005). Success in the marketplace can be demonstrated by significant sales of the product at issue in a relevant market and high market share – provided those things can be attributed to the benefits of the patented technology. *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1312 (Fed. Cir. 2006).

In 2017, Patent Owner became the first to commercially manufacture an eFoil through its Lift branded eFoils. EX2008, ¶16; EX2043, ¶6. Many of the alleged prior art references, from Evolo (2008/2009), Woolley (2004), Gleason (1976),

Manning (2008), and the TorqeedoManual (2007)¹², date back years. Petitioner's obviousness argument is belied by the fact that despite these references being around for so long, no one else was able to bring an eFoil to market until Patent Owner did, using the technology of the Patent, in 2017. In the context of this consideration, if the invention disclosed in the Patent was obvious based on the references cited by Petitioner, then presumably anyone else could, *and would*, have combined the asserted references and created a commercially successful product well-before 2017.

As to the actual commercial success of Patent Owner's products, in 2018, the first year in which products were sold, the total annual revenues increased by over ■ million, or by over ■%, from the previous year. EX2008, ¶24. Total revenue continued to climb as the product gained popularity; and in 2019 the total revenue was ■ million, with over ■ million in sales in the U.S. alone. *Id.* This reflects an increase in over ■ in a two-year period after the patented products first entered the market. In 2020, total revenue grew to ■ million (with around ■ million directly from eFoil sales and around ■ million from sales in the U.S.); in 2021, total revenue was ■ million (with nearly ■ million from eFoil sales and ■ million from sales in the U.S.); in 2022, total revenue was ■ million (with ■

¹² Patent Owner disputes the authenticity of the date referenced in the TorqeedoManual as argued herein.

million from eFoil sales and [REDACTED] million from sales in the U.S.); and in 2023, total revenue was [REDACTED] million (with [REDACTED] million from eFoil sales and [REDACTED] million from sales in the U.S.). *Id.*

These figures not only reflect how commercially successful the products have been, but also how the market has grown. Patent Owner created the worldwide market for eFoils in 2018, and at that time it enjoyed a [REDACTED] market share. EX2008, ¶25; EX2043, ¶6-7. While its market share has naturally decreased with the increase in competition, as of today Patent Owner still directly controls approximately [REDACTED] of the global eFoil market with another [REDACTED] of the market being covered by licensees of the Patent. EX2008, ¶25; EX2043, ¶6-7. Patent Owner's revenues have increased annually despite this loss in market share. This shows tremendous commercial success.

Patent Owner's commercial success is directly attributable to the claimed features of the Patent – the primary of which is the ease in which the products can be operated. In other words, the passive stability of the craft, which exists without requiring active stabilizers such as the moveable surfaces or steering systems like are found in traditional personal watercraft, makes the products user friendly and popular with consumers. EX2008, ¶¶19,22; EX2010, ¶11; and EX2043, ¶6-7. These features allow people of all skill levels and all ages to be able to enjoy the products even if they have minimal training and ability. EX2043, ¶6-7. Since the Patent

covers the entirety of the disclosed product, there is an indisputable nexus between the claimed invention and Patent Owner's commercial success.

C. Long-Felt Yet Unresolved Need and Failure of Others

Evidence of a “long-felt but unresolved need can weigh in favor of the non-obviousness of an invention because it is reasonable to infer the need would not have persisted had the solution been obvious.” *Apple Inc. v. Samsung Electronics Co.*, 839 F.3d 1034, 1056 (Fed. Cir. 2016). Establishing a long-felt need first requires (1) objective evidence that a recognized problem existed in the art for a long period of time without solution; (2) the long-felt need must not have been satisfied by another before the claimed invention; and (3) the invention must in fact satisfy the long-felt need. *Varian Med. Sys., Inc. v. William Beaumont Hosp.*, No. IPR2016-00162, Paper 69 at 40, (P.T.A.B. May 4, 2017). Evidence that others tried but failed to make the claimed invention “is particularly probative of obviousness.” *Azurity Pharms., Inc. v. Alkem Lab'ys Ltd.*, 655 F. Supp. 3d 270, 301 (D. Del. 2023); *In re Cyclobenzaprine Hydrochloride*, 676 F.3d 1063, 1082 (Fed. Cir. 2012) (“Evidence is particularly probative of obviousness when it demonstrates both that a demand existed for the patented invention, and that others tried but failed to satisfy that demand.”).

Here, the inventor of the Patent, Professor Langelaan, was looking for a personal watercraft that was smaller and portable, self-powered, environmentally

friendly, and could be ridden like a surfboard or snowboard. EX2010, ¶¶2-3. At that time, the market for personal watercraft consisted of (a) larger, gas-powered craft such as jet-skis or wave-runners which are typically larger, weigh over 500 pounds, are loud, and are difficult to operate in waves or chop; (b) self-powered surfboards which were powered by small internal combustion engines, electric engines or which incorporated control surfaces such as a steering mechanism (all of which did not carry enough power and were not stable or controlled solely by weight shift); or (c) water skis, wake boards and/or hydrofoil “air chairs” which were pulled or towed by a boat. EX2010, ¶¶2,3,5; EX2008, ¶¶7-9. There was nothing on the market which matched what Langelaan wanted in terms of being self-propelled, passively stable, weight shift controlled and sufficiently portable for easy transportation. EX2010, ¶¶3,5,12.

Langelaan's efforts proved successful. His invention addressed *all* of the recognized market needs in that he was able to create a personal watercraft that was portable, electric-powered, controlled solely by weight-shift, stable, and fun to ride like a surfboard or snowboard. See EX2010, ¶19; and EX2008, ¶¶8,12-13.

Moreover, Langelaan succeeded where others had long failed. Patent Owner's CEO, Nick Leason, tried and failed for six years to create a personal electric hydrofoil before discovering and ultimately acquiring the rights and ownership to

what became the Patent. EX2043, ¶¶19-23. Leason stated that his efforts failed because the crafts were underpowered or difficult to ride. EX2043, ¶¶19-20.

The EvoloReport provides additional evidence of a desire for and failure to achieve a passively stable personal watercraft, as neither the EvoloReport (nor the EvoloVideos¹³) describe a watercraft that was passively stable as claimed by the Patent. EX2010, ¶18; EX2033, ¶¶83,127. The EvoloReport describes attempts to address longitudinal stability during the project's design stages but lacks any evidence of actual success in doing so. EX2006, ¶¶43-44,67; EX2033, ¶61. Further, the authors of the EvoloReport admit that rolling stability remained an unsolved problem in their final design. EX2006, ¶44; EX2033, ¶61; EX1003, p. 142. Petitioner admits that Evolo fails to teach a passively stable watercraft through its citation of *Woolley*, not the EvoloReport or EvoloVideos, as allegedly teaching this limitation. Pet., 25-26. This is because EvoloVideos (EX1006, EX1008) depict an uncontrollable porpoising watercraft that at any moment could have sent its rider into the water. EX2006, ¶85; EX2033, ¶168. The EvoloVideo's failure to demonstrate passive stability reflects failure to make the claimed invention of the Patent.

¹³ This assumes that these videos represent the prototypes discussed in the EvoloReport.

D. Industry Praise and Licensing

Evidence that the industry praised a claimed invention, or a product that embodies the patent claims, weighs against a finding of obviousness. *Apple Inc.*, 839 F.3d at 1053. Similarly, licensing the technology at issue is an objective indicator that the market values the licensed technology. *Impax Labs., Inc. v. Lannett Holdings Inc.*, 246 F. Supp. 3d 1024, 1039 (D. Del. 2017).

The Lift eFoils garnered instantaneous industry praise even before entry into the market; indeed, soon after Patent Owner released its first marketing video featuring the product in 2017, the video was quickly viewed over 100 million times online with Patent Owner immediately being flooded with industry (and competitor) calls and emails praising and inquiring about the product. EX2008, ¶15. Industry praise continued as the product began being sold in the market. *Id.*, ¶17; EX2043, ¶¶27-29. Numerous articles have featured Patent Owner's products, both discussing and praising the product(s), their stability, and their ease of use. *See e.g.*, EX2012-EX2023; EX2043, ¶30 and Exhibits A-G, I-M, P-U, W, and Y.¹⁴ Patent Owner's

¹⁴ "Efoils are easy to learn even if you have no surfing experience" [...] "Lift is one of the market leaders ...". EX2043, Exhibit E; and "Within about 15-20 minutes I had gone from never seeing an electric hydrofoil to successfully standing up and riding one." EX2043, Exhibit R.

products have received overwhelmingly positive feedback from customers. EX2008, ¶17, EX2043, ¶¶27-30. Much of the industry praise has focused on the novelty and simplicity of the product and how easy it is to get beginners riding the device with relative ease; and this type of praise is only possible due to the watercraft's patented features like passive stability and lack of control surfaces and steering mechanisms. EX2043, ¶¶27-28.

Mr. Cort Larned, a third-party who has been a key figure in the watersports industry since 1976 and has instructed over 500 people on how to operate Patent Owner's eFoils, confirms that the technology was "revolutionary" in the watersports industry and so accessible and easy to ride that almost anyone could learn to ride one. EX2011, ¶¶1-7,14. Mr. Larned placed particular emphasis on stability as being the key feature contributing to the ease of use and further touted maneuverability, power source and the use of a handheld controller as standing out from anything else that previously existed in the market. *Id.*, ¶¶9,11,16. Mr. Larned confirms the overwhelmingly positive reaction to the product that people in the industry have expressed. *Id.*, ¶¶16,18.

Finally, the licensing of the Patent demonstrates the value of the patented technology in the eyes of the industry. The Patent was originally licensed to Patent Owner from Langelaan on an exclusive basis. EX2010 ¶¶12-13, EX2008, ¶¶14-17; EX2043, ¶5. After eventually acquiring all rights from Langelaan, Patent Owner

has licensed rights to the Patent to competitors, including Fliteboard Pty Ltd. (“Fliteboard”) and MSLR Electric Incorporated (“MSLR”). EX2008, ¶31. These licenses demonstrate the nexus between the features of the patented product and the elements of the Patent. Finally, Langelaan and Patent Owner indicate that they have received numerous inquiries from other companies in the personal watercraft industry about potentially licensing the patent. EX2010, ¶16; EX2008, ¶31.

E. Copying

After Patent Owner first marketed and released its first-generation Lift eFoil in 2017/2018, several competitors quickly entered the market selling what were virtually identical eFoils. EX2008, ¶¶27-28; EX2043, ¶¶9-14.¹⁵ All of these competitors had access to the Lift eFoils and the products they created were identical in both appearance and function. EX2043, ¶¶9-11. These competitors included Avante Innovations, LLC (“Avante”), Fliteboard, Shenzhen Waydoo (“Waydoo”), Takuma, and Petitioner. *Id.* Avante and Takuma eventually stopped selling. *Id.*, ¶29. Fliteboard entered into a license with Patent Owner. *Id.*, ¶32. Patent Owner filed a lawsuit against Waydoo and in April of 2023, a Delaware jury found that Waydoo was a willful infringer of the Patent. *See MHL Custom, Inc. v. Waydoo*

¹⁵ Reviewers have recognized that other eFoils in the market share similar features. EX2043, Exhibit E.

USA, Inc., et al. (D. Del. 1:21-cv-00091), DN 220 (submitted herewith as EX2023).

Patent Owner also sued Petitioner for patent infringement and that case is stayed pending the outcome of these proceedings. EX2008, ¶30. The infringing Waydoo products, for example, feature similar dimensions, components, and functionality as the Lift eFoils. EX2043, ¶13.

F. Unexpected Results

“In considering unexpected results, courts ask whether ‘the claimed invention exhibits some superior property or advantage that a person of ordinary skill in the relevant art would have found surprising or unexpected.’” *Forest Lab’ys., LLC v. Sigmapharm Lab’ys., LLC*, 918 F.3d 928, 937 (Fed. Cir. 2019). The embodiments of the Patent demonstrate far superior results than the closest prior art in the form of: (1) larger, gas-powered craft such as jet-skis or wave-runners; (2) self-powered surfboards with minimal power; (3) self-powered watercraft with active control surfaces; and/or (4) water skis, wake boards and/or hydrofoil air chairs which were pulled or towed by a boat. EX2010, ¶¶2,3,5; EX2008, ¶¶7-9; EX2043, ¶15-17.

Part of what made the embodiments of the Patent successful, and made their performance results unexpected, was the unforeseen ease of use of the craft. And the ease of use is due almost exclusively to the craft’s stability. EX2008, ¶19; and EX2011, ¶¶11,16-17; EX2043, ¶¶27-30. This is evident through the testimony of Leason, who experienced unexpected success upon applying the patented

technology in that during his prior experimentation, he believed that a control surface (i.e. a steering mechanism or rudder) would be required to counteract the destabilizing forces created by the propulsion system. EX2043, ¶¶24-26. Upon implementing the technology of the Patent, which did not include movable surfaces or steering systems, the embodiments were still unexpectedly able to achieve passive stability. *Id.*

Based on the above analysis, the secondary considerations conclusively demonstrate that the Patent is non-obvious and Petitioner's challenge should be rejected.

VIII. CONCLUSION

For at least the reasons presented herein, Petitioner has failed to prove that the challenged claims of the Patent are unpatentable.

Dated: September 17, 2024

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Patent Owner hereby certifies that the present paper contains 13,928 words (as counted by the “Word Count” feature of Microsoft Word™). This word count excludes the table of contents, table of authorities, table of exhibits, certificate of word count, and certificate of service.

Dated: September 17, 2024

Respectfully submitted,

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that on September 17, 2024, a copy of the Patent Owner's Response and Exhibits 2029 to 2043 are being served by electronic mail on the following counsel of record:

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