

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AXON ENTERPRISE, INC., DEDRONE HOLDINGS, INC., AND
SKYDIO, INC.

Petitioners

v.

AIRSPACE DEFENSE, INC.

Patent Owner

Case No. IPR2025-00629

Patent 10,514,711

PETITIONERS' REPLY TO PATENT OWNER'S RESPONSE

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LIST OF EXHIBITS

Ex. No. ¹	Description
1001	U.S. Patent No. 10,514,711 to Bar-Nahum <i>et al.</i> , “Flight Control Using Computer Vision” (the “’711 Patent”)
1002	File History for U.S. Patent No. 10,514,711
1003	Declaration of Dr. William Singhose
1004	Complaint for Patent Infringement, <i>Airspace Systems, Inc. v. Dedrone Holdings, Inc.</i> , Case No. 1-24-cv-01625 (E.D. VA), September 13, 2024
1005	U.S. Patent Application Publication No. 2017/0160751 to Pierce <i>et al.</i> , “System and Method for Controlling Drone Movement for Object Tracking Using Estimated Relative Distances and Drone Sensor Inputs” (“Pierce”) filed December 5, 2016, published June 8, 2017
1006	U.S. Provisional Application No. 62/263,510 to Pierce <i>et al.</i> , “System and Method for Controlling Drone Movement for Object Tracking Using Estimated Relative Distances and Drone Sensor Inputs” (“Pierce Provisional”), filed December 4, 2015
1007	U.S. Patent Application Publication No. 2017/0161911 to Kumar <i>et al.</i> , “System and Method for Improved Distance Estimation of Detected Objects” (“Kumar”) filed December 5, 2016, published June 8, 2017
1008	U.S. Provisional Application No. 62/263,496 to Kumar <i>et al.</i> , “System and Method for Improved Distance Estimation of Detected Objects” (“Kumar Provisional”), filed December 4, 2015
1009	U.S. Patent No. 9,769,387 to Beard <i>et al.</i> , “Action Camera System for Unmanned Aerial Vehicle” (“Beard”) filed November 5, 2014, published September 19, 2017

¹ Citations to patents are made by column and line cite; citations to patent publications are made by paragraph number; citations to Exhibit 1002 are made with reference to the Bates-stamped pagination; citations to other exhibits are made to the page number of the document itself.

1010	U.S. Patent Application Publication No. 2017/0059692 to Laufer <i>et al.</i> , “Mitigation of Small Unmanned Aircraft Systems Threats” (“Laufer”) filed August 26, 2016, published March 2, 2017
1011	U.S. Patent No. 8,874,283 to Cavote, “Drone for Inspection of Closed Space and Method Thereof” (“Cavote”) filed December 4, 2012, published October 28, 2014
1012	Internet Archive Wayback Machine screenshot of www.lauferradarsystems.com/technology , dated August 1, 2017
1013	Laufer Wind, Eagle Take Minimization System, Contract DE-EE0007884.0000, Final Technical Report, dated March 28, 2018
1014	U.S. Patent Application Publication No. 2003/0143524 to Lerner, “Method and System for Determining the Amount, Distribution and Confirmation of Genetic Material in a Cell” (“Lerner”) filed January 31, 2002, published July 31, 2003
1015	U.S. Provisional Application No. 62/405,972 to Bar-Nahum <i>et al.</i> , “Multimodal Sensor Empowered Awareness Engine for Target Recovery and Object Path Prediction” (“’972 Provisional”), filed October 9, 2016
1016	Quadrotor Helicopter Flight Dynamics and Control: Theory and Experiment, Hoffmann <i>et al.</i> , American Institute of Aeronautics and Astronautics
1017	DJI Spreading Wings S1000+ User Manual, Version 1.4, dated January 2016
1018	Excerpts from <i>Control Theory for Humans</i> , Jagacinski and Flach, 2003
1019	Excerpts from <i>Control Systems Engineering</i> , Nise, 2004
1020	Excerpts from <i>Modern Control Systems</i> , Dorf and Bishop, 2005
1021	U.S. Patent Application Publication No. 2012/0106800 to Khan <i>et al.</i> , 3-D Model Based Method for Detecting and Classifying Vehicles in Aerial Imagery (“Khan”), filed October 28, 2010, published May 3, 2012
1022	PCT International Publication Number WO2017/123477 to Hogasten, Vehicle Based Radar Upsampling (“Hogasten”), filed January 6, 2017, published July 20, 2017, designating the U.S. and filed in English
1023	U.S. Provisional Application No. 62/277186 to Hogasten, “Vehicle Based Radar Upsampling” (“Hogasten Provisional”), filed January 11, 2016

1024	U.S. Patent Application Publication 2013/0301905 to Malecki et al., “System and Method for Determining an Orientation and Position of an Object” (“Malecki”), filed April 10, 2013, published November 14, 2013
1025	U.S. Patent Application Publication 2012/0004844 to Sahasrabudhe et al., “Formation Flying Method and System” (“Sahasrabudhe”), filed June 29, 2011, published January 5, 2012
1026	Claim Listing of Challenged Claims
1027	Siemens SIMATIC VS72X Manual, 2005
1028	<i>Command Limiting in Reconfigurable Flight Control</i> , Bodson et al., Journal of Guidance, Control, and Dynamics, Vol. 21, No. 4, July-August 1998
1029	Stipulation Email on May 29, 2025
1030	Second Declaration of Dr. William Singhose
1031	Definition of “autonomous” dated September 16, 2016
1032	Definition of “autopilot” dated September 22, 2015
1033	Transcript of Deposition of Dr. Nikolaos Papanikolopoulos in IPR2025-00629
1034	U.S. Patent No. 9,760,806 to Ning et al., “Method and System for Vision-Centric Deep-Learning-Based Road Situation Analysis” (“Ning”) filed May 11, 2016, published September 12, 2017
1035	Big/Little Deep Neural Network for Ultra Low Power Inference, Park et al., <i>2015 International Conference on Hardware/Software Codesign and System Synthesis Proceedings</i> , January 20, 2016 (“Park”)
1036	You Only Look Once: Unified, Real-Time Object Detection, Redmon et al., <i>2016 IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Proceedings</i> , February 6, 2017 (“Redmon”)
1037	Declaration of Professor Hall-Ellis
1038	Transcript of Deposition of Dr. Nikolaos Papanikolopoulos for IPR2025-00530

I. INTRODUCTION

The Petition challenges claims 1-20 (“Original Claims”) of U.S. Patent No. 10,514,711 (the “’711 Patent”). Petition (Paper 1, “Pet.”) at 7-8. Patent Owner (“PO”) filed a Motion to Amend (Paper 21, “MTA”) concerning claims 1-4 and 8-20, and requested cancelation of original claims 5-7. MTA at 1. The MTA is non-contingent with respect to original claims 1-4, 8-11, and 13-20, and contingent with respect to original claim 12. *Id.* at 1, 3-24; Patent Owner’s Response (Paper 20, “POR”). Original claim 12 is therefore the only original claim at issue in this IPR, and the only claim that PO addresses in the POR. But PO’s arguments depend on a strained interpretation of “autonomously navigating” that is not supported by the specification, prosecution history, or claims. And regardless, even under PO’s incorrect interpretation, claim 12 is still unpatentable. Pet. at 34, 71, 80.

II. CLAIM CONSTRUCTION

A. Patent Owner’s Interpretation of Claim 12 is Erroneous

Claim 12 recites:

“The method of claim 1, further comprising:
receiving a geographical location associated with the target detected at
least in part using a ground-based sensor;
autonomously navigating the reference aerial vehicle towards the
received geographical location; and
determining to allow image-based navigation.”

EX1001, claim 12. PO—under the guise of plain and ordinary meaning—seeks a construction of “autonomously navigating the reference aerial vehicle towards the received geographical location” as “making navigation decisions by the reference aerial vehicle by-itself, without outside control.” POR at 10-12. This overly restrictive interpretation improperly reads in the requirement that *all* navigation decisions be made on the aerial vehicle and demands the *complete absence* of outside control. This narrowing interpretation is not the plain and ordinary meaning of “autonomously navigating...” and is contradicted by the specification. PO’s construction should be rejected for multiple reasons.

1. PO’s inconsistent interpretations throughout this IPR show PO’s new interpretation is not the plain and ordinary meaning of the phrase.

PO’s proposed plain and ordinary meaning of “autonomously navigating” has shifted throughout this IPR. Even within the POPR PO proposed two different and inconsistent plain and ordinary meanings. There, PO first argued that one plain and ordinary meaning was “performing navigation by the reference UAV² itself.” POPR

² The claim does not recite or require a “UAV.” Rather, the claim recites a “reference aerial vehicle,” and the specification says the “interceptor aerial vehicle” can include an “airplane,” a “helicopter,” or “any other vehicle capable of flight.” EX1001, 3:47-

at 30. PO on the very next page argued that the phrase “means making flight decisions by a component of the reference UAV itself.” *Id.* at 31. Now, PO argues for yet another interpretation—this time even narrower—and says the plain and ordinary meaning is “making navigation decisions by the reference aerial vehicle by-itself, without outside control.” POR at 11-12. PO’s expert, Dr. Papanikolopoulos, concedes that PO’s current proposal is not the same as PO’s prior proposals. EX2025 at 87 (FN2) (acknowledging that the “POPR presented not the same but a similar meaning”). PO’s inconsistent and changing position on the plain and ordinary meaning of “autonomously navigating...” alone justifies rejecting PO’s new, overly-narrow interpretation.

2. The Board has already rejected PO’s attempt to limit the performance of method steps to onboard the aerial vehicle.

PO’s attempt to limit the “autonomously navigating” step to performance “by the reference vehicle by-itself, without outside control” recycles logic the Board already rejected. In the POPR, PO argued that the step of “detecting a target in the image including by applying a machine learning model to the image” in claims 1 and 20 should be interpreted narrowly to require performance of that step “aboard the reference UAV.” POPR at 12-17. The Board, however, rejected that

51. Any suggestion that the claim is limited to unmanned vehicles is inconsistent with the claim and specification.

interpretation. ID at 8. The Board reasoned that the step “merely require[s] that a target be ‘detected,’” and that the step “do[es] not require that target detection be performed ‘aboard the reference UAV.’” *Id.* The Board explained that the “Specification makes clear that the claims should not be limited to aspects of the disclosed embodiments, as Patent Owner proposes to do here.” *Id.* (citing Ex. 1001, 2:56-59 (“The invention is described in connection with such embodiments, but the invention is not limited to any embodiment. The scope of the invention is limited only by the claims...”). The Board further reasoned that PO “fails to cite any lexicographic definition or clear and unambiguous disclaimer of claim scope sufficient to limit the claims in the manner it proposes.” *Id.* at 9.

PO’s interpretation of “autonomously navigating” again improperly seeks to import limitations from the specification into the claims. According to PO, not only must the step be performed onboard the reference aerial vehicle, but it must be performed “by the reference aerial vehicle *by-itself, without outside control.*” The Board’s logic in rejecting the onboard performance of the “detecting” limitations applies equally to PO’s even narrower interpretation of “autonomously navigating,” as there is nothing in the claims, specification, or extrinsic evidence that warrants that interpretation. EX1030, ¶30.

3. The intrinsic evidence does not support PO's interpretation.

Starting with the claims, no claim elements require the aerial vehicle to perform the step of “autonomously navigating” by-itself, without any outside control. EX1001, claims 1, 12; EX1030, ¶31. The step itself does not recite *where* the step is performed and does not exclude performance or involvement by another component. *Id.* The context of the claim also does not limit performance to the aerial vehicle. In fact, claim 12, which depends from claim 1, is a “method of performing a flight control operation of a reference aerial vehicle” and does not recite where that method is performed, let alone that it is performed on the aerial vehicle alone without outside control. *Id.* This is exactly what the Board recognized in rejecting PO's construction of the “Detecting Limitations” in the ID. *Supra* Section II.A.2.

The specification also does not support PO's interpretation. EX1030, ¶32. First, PO's improper attempt to limit the term to aspects of disclosed embodiments alone warrants rejecting PO's interpretation. Each of PO's citations uses permissive language and is described as an example embodiment. PO cites to 9:38-43, but that states that the CPU “may” (i.e., permissive language) be configured to perform flight decisions in one “example” of a UAV “embodiment[.]” *See also* 9:7-10 (stating that the Fig. 3A discussion is “in accordance with some embodiments”); *see also* 9:49-51 (describing “other embodiments”); 15:28-31 (stating that the process of Figure 4 is performed by the UAV “[i]n some embodiments”). The Board acknowledged in

the ID that importing these type of example embodiments is improper, because the '711 Patent “makes clear that the claims should not be limited to aspects of the disclosed embodiments.” ID at 8-9 (citing EX1001 at 2:56-59). And none of PO’s citations includes a lexicographic definition of “autonomously navigating” or a clear and unambiguous disclaimer that would justify limiting the term to performance solely on the aerial vehicle without any outside control. EX1030, ¶32.

Second, PO’s citations do not even support its interpretation. PO cites to EX1001 at 9:25-27, but this simply deals with generic CPU functionality for a UAV—that the UAV’s CPU can control operation of the UAV—but says nothing about the UAV making “navigation decisions” without “outside control” and certainly does not preclude outside control. EX1030, ¶33. EX1001 at 9:38-43 says that the CPU “*may* be configured to **perform** one or more flight decisions for the UAV,” with an example being “provid[ing] one or more flight commands to a flight controller module.” Consistent with that example, PO states that the CPU “‘performs one or more flight decisions for the UAV’ **by providing** ‘one or more flight commands.’” POR at 11. But the CPU ***providing commands*** does not require the aerial vehicle’s CPU to actually ***make*** flight decisions (let alone “navigation decisions”) ***by itself*** or preclude the UAV from receiving ***any*** outside control (e.g., a ground station first providing commands to the UAV or modifying the UAV’s commands in-flight, such as a speed or location). EX1001 at 9:38-43; EX1030, ¶33.

The other sections cited by the PO also are not supportive. EX1030, ¶34. PO cites to EX1001 at 9:49-51, but this broadly says that the “[i]n other embodiments, the CPU is configured to autonomously fly UAV 301” and says nothing about **how** the UAV flies autonomously. It does not describe the UAV making any “navigation decisions,” what “navigation decisions” are, or that such decisions are made by the reference vehicle itself “without outside control.” EX1030, ¶34. Finally, EX1001 at 16:49-55 is unrelated to claim 12, because it concerns the autonomous adjustment of flight direction and speed based on “location and size of the target within the captured image,” which happens **after** an aerial vehicle has navigated to a received location and is capturing images of the target. *Id.*; EX1001 at 15:64-16:55, Fig. 4 (steps 404, 406, 408). “[A]utonomously navigating the reference aerial vehicle towards the received geographical location” of claim 12 concerns how the reference aerial vehicle gets to that received location in the first place. *Id.* And, in any event, 16:49-55 does not limit performance of that action on the aerial vehicle itself or preclude all outside control. EX1030, ¶34.

Third, PO’s interpretation improperly excludes disclosed embodiments. *Eko Brands, LLC v. Adrian Rivera Maynez Enters., Inc.*, 946 F.3d 1367, 1373 (Fed. Cir. 2020) (claim construction that excludes a preferred embodiment is “rarely, if ever, correct”); EX1030, ¶35. Claim 12 recites, in part, “**receiving a geographical location** associated with the target detected at least in part **using a ground-based**

sensor” and “autonomously navigating the reference aerial vehicle **towards the received geographical location.**” EX1001, Claim 12. The specification describes that ground station 104 “is used to manage interceptor aerial vehicle 102,” including by providing “instructions, commands, sensor data, and/or other data that can be used by interceptor aerial vehicle 102 to . . . navigate to and/or capture a target aerial vehicle.” EX1001, 3:43-61. The specification discloses that the reference aerial vehicle receives “updated” location data from ground-based sensors and that the location is “continually received as a new or updated location of the target,” including as a “stream of locations tracked for the target.” EX1001 at 4:14-22, 15:50-63. The “received location is utilized to navigate towards the received location.” *Id.*, 15:64-16:3; *see also id.* at 4:34-37 (explaining the ground station communicates in real time with the aerial vehicle and can “redirect” the aerial vehicle). Therefore, contrary to PO’s interpretation, the claim language “autonomously navigating the reference aerial vehicle **towards the received geographical location**” by its own terms occurs **with** outside control by virtue of the continually new or updated locations and navigation commands received from a ground-based sensor. *Id.*; *see also id.* at 29:39-41 and 29:47-49 (describing techniques be “distributed throughout one or more devices”); EX1030, ¶35. PO’s interpretation—requiring “autonomously navigating the reference aerial vehicle” to mean “making **navigation decisions** by the reference aerial vehicle by-itself, **without outside control**”—would thus conflict

with and even exclude these portions of the specification, weighing against PO's interpretation. *Id.*; *Eko Brands, LLC*, 946 F.3d at 1373; *Phillips*, 415 F.3d at 1313 (“Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, **but in the context of the entire patent, including the specification**”) (emphasis added). EX1030, ¶¶35-36.

PO also does not cite to any prosecution history defining “autonomously navigating” or otherwise disclaiming or disavowing subject matter in a way that would compel PO's interpretation. POR, 10-12; EX1030, ¶36.

4. PO's extrinsic dictionary definitions are temporally irrelevant, and PO cites its conclusory expert declaration once.

“[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question ***at the time of the invention, i.e., as of the effective filing date of the patent application.***” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (*en banc*) (emphasis added). PO, however, ignores that rule. Rather than rely on definitions showing the meaning of “autonomous” as of the '711 Patent's March 26, 2018 filing date (or its claimed priority dates of October 9, 2016 and October 10, 2017), PO cites dictionaries dated in 2025—almost 9 years after the '711 Patent's earliest priority date. POR at 11 (citing EX2025 at § IX, which refers to EX2011 and EX2012 in ¶87); *see* EX2011 (dated in upper left corner “7/14/25, 12:27 PM”); EX2012 (dated in upper left corner

“7/14/25, 12:29 PM”). These definitions should not be afforded any weight, as PO has not shown that they reflect the meaning of “autonomous” to POSITAs as of the correct time period. EX1030, ¶37. And PO cites to its expert declaration a single time at the end of the section, leaving almost all of the statements to be unsupported attorney argument. Regardless, that declaration does nothing to support PO’s interpretation. *Compare* EX2025, ¶¶84-87, *with* POR at 10-12.

B. The Correct Interpretation of Claim 12

If any construction is necessary, the plain and ordinary meaning of “autonomously navigating the reference aerial vehicle towards the received geographical location” is navigating the reference aerial vehicle towards the received geographical location without human control. EX1030, ¶38. This meaning is fully supported by the intrinsic record and extrinsic sources. *Id.*

The ’711 Patent explains that its purported invention addresses issues in the background art associated with “flight controllers manually operated by a human user.” EX1001 at 1:27-34. For example, human control may require a “human user to have visual sight of the aerial vehicle and/or an image captured by the aerial vehicle,” and challenges can exist when “a trained human user is unavailable or unable to react quickly enough to perform a desired flight maneuver.” *Id.* The patent states that “it may not be desirable to manually control the interceptor aerial vehicle to follow the target UAV.” *Id.* at 3:24-26. As such, the ’711 Patent’s use of

“autonomous” is rooted in a lack of human control, which supports the interpretation that “autonomously navigating the reference aerial vehicle towards the received geographical location” is navigating the reference aerial vehicle towards the received geographical location without human control. *Id.*; EX1030, ¶39.

This interpretation also is consistent with, and does not exclude, the ’711 Patent’s embodiments describing that the ground station provides commands to the reference aerial vehicle, including to navigate the aerial vehicle towards the target location. EX1001 at 3:54-61, 4:34-37, 12:15-17, 14:10-13, 15:59-63; EX1030, ¶40.

Extrinsic evidence also supports Petitioners’ interpretation. EX1030, ¶41. In contrast to PO’s Cambridge English Dictionary definition of EX2012 that has not been shown to reflect a POSITA’s understanding of “autonomous” as of the ’711 Patent’s earliest claimed priority date (Section II.A.4, *supra*), Petitioners provides a dictionary definition (EX1031) as of the correct time that supports Petitioners’ interpretation. *Id.* EX1031, which is dated September 16, 2016 (prior to the ’711 Patent’s earliest claimed priority date of October 9, 2016), defines “autonomous” in the vehicle context as “navigated and maneuvered by a computer, **without a need for human control or intervention** under normal road conditions.” EX1031, 5. And PO’s Cambridge definition EX2012 even supports Petitioners as well, stating that “an autonomous machine or system is able to operate **without being controlled directly by humans**,” with an “autonomous vehicle” being a relevant example.

EX2012. EX1030, ¶42. These definitions thus support how “autonomously navigating the reference aerial vehicle towards the received geographical location” is navigating the reference aerial vehicle towards the received geographical location without human control. EX1030, ¶43.

Moreover, when testifying about different levels of “autonomy” in the context of autonomous vehicles, PO’s own expert distinguished them based on level of human involvement: “As you increase the autonomy, you take the human more and more out.” EX1038, 21:14-24:11 (also confirming that in 2015 people believed that complete autonomy meant there is no human involved).

The correct meaning of “autonomously navigating” in the context of the ’711 Patent excludes human control, not all outside input, given the patent’s discussion of problems with human control in navigation, its use of outside inputs from computers on the ground when navigating, and the understood meaning of the word “autonomous” at the time. EX1030, ¶¶43-45.

III. CLAIM 12 IS UNPATENTABLE

A. Grounds 1, 9, 10, 17, and 18 Render Claim 12 Obvious Under Both Petitioners’ Correct Interpretation of Claim 12 And PO’s Erroneous Interpretation of Claim 12

As demonstrated by the Petition, Beard and Laufer (Ground 1), as well as Pierce and Laufer (Ground 9), Pierce, Kumar, and Laufer (Ground 10), Pierce, Sahasrabudhe, and Laufer (Ground 17), and Pierce, Kumar, Sahasrabudhe, and

Laufer (Ground 18) each renders claim 12 obvious. Pet. at 34, 71, 80; EX1030, ¶46. All of PO's patentability arguments are cabined to its erroneous interpretation that the "‘plain and ordinary / customary’ meaning of ‘autonomously navigating the reference aerial vehicle’" is "making navigation decisions by the reference aerial vehicle by-itself, without outside control." POR at 10-18. Rejecting that interpretation results in rejection of all of PO's patentability arguments. But even under PO's erroneous interpretation, these grounds still render obvious claim 12. EX1030, ¶46.

1. Ground 1: Beard and Laufer

As the Petition demonstrated, the Beard-Laufer combination teaches UAV 100 is brought to within an imaging range of the target using an interception location and autopilot commands (*autonomously navigating the reference aerial vehicle towards the received geographical location*). Pet. at 10-13, 34; EX1010, ¶¶0022-0031, 0038-0040, Fig. 4; EX1030, ¶47. Because UAV 100 utilizes the autopilot commands to control its flight, UAV 100 is navigating itself towards the interception location autonomously, without any human control. Pet. at 10-13, 34; EX1010, ¶¶0022-0031, 0038-0040, Fig. 4; EX1030, ¶47. Indeed, Laufer teaches that the autopilot commands "pilot an interceptor aircraft to [the] interception location" and that they include "a yaw command, pitch command, and/or motor speed commands." EX1010, ¶¶0040-0041 (further noting "[a]ircraft control commands [] are used by

interceptor aircraft flight controller [] to pilot the interceptor aircraft toward interception location”). Laufer further explains that the autopilot commands are generated by an “autopilot command module” based on the interception location and an “interceptor aircraft dynamics model.” *Id.*, ¶0040. Laufer also distinguishes its autopilot commands from human control, explaining that in some embodiments “a user can manually override control of [the] interceptor aircraft” via a “manual input.” *Id.* at ¶¶0026, 0031, 0037; EX1030, ¶47. And PO acknowledges how Laufer’s autopilot commands are separate from human control, stating “Laufer’s autopilot commands may not be provided by a human, and may instead be generated by a computer, such as one of Laufer’s autopilot command module[sic].” POR at 14. As such, the combination of Beard and Laufer meets the correct interpretation of navigating the reference aerial vehicle towards the received geographical location without human control. *Id.*; see Section II.B, *supra*; EX1030, ¶47.

As noted, PO’s arguments against Beard and Laufer are cabined to its erroneous interpretation that the “‘plain and ordinary / customary’ meaning of ‘autonomously navigating the reference aerial vehicle’” is “making navigation decisions by the reference aerial vehicle by-itself, without outside control.” POR at 10-12. Because all of PO’s arguments hinge on that incorrect interpretation, the Board can reject them all for that reason alone. EX1030, ¶48.

But PO's arguments also fail under PO's incorrect interpretation. EX1030, ¶49. As an initial matter, PO never challenges the combination of Beard and Laufer, instead focusing on Laufer individually. POR at 12-16. This is wrong. "One cannot show non-obviousness by attacking references individually where the rejections are based on combinations of references." *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Additionally, PO's statements amount to nothing more than unsupported attorney argument. PO only cites to its expert declaration (EX2025) to support the generic allegation that "claim 12 is patentable" (POR at 18) but provides no support for any of its specific arguments, including its arguments regarding a POSITA's motivation to combine prior art and expectation of success. POR at 12-18.

PO's argument against Beard and Laufer is that a POSITA would not have "combined Beard and Laufer, at least because the proposed combination does not provide a reasonable expectation of achieving autonomous navigation of an aerial vehicle, and thus the claimed invention of claim 12." POR at 12-13. PO focuses on how Laufer purportedly describes that its central controller 115 is "not on-board a UAV" and autopilot commands not generated by the UAV, and that Laufer's UAV thus "does not navigate itself." *Id.* at 13-15. PO further relies on the same arguments to conclude that "Laufer does not teach or suggest 'autonomously navigating the reference aerial vehicle'" and "the Beard-Laufer combination does not teach all of

the limitation[sic] of claim 12.” *Id.* at 15-16. PO misses the mark. EX1030, ¶¶49-50.

As discussed above (Section II.A, *supra*), claim 12 includes no requirement that “autonomously navigating the reference aerial vehicle towards the received geographical location” occurs on-board a UAV, and PO’s interpretation conflicts with claim 12 itself and the specification, which makes PO’s entire argument inapposite. EX1030, ¶51. Moreover, regardless of whether or not autopilot commands are determined on board UAV 100 in the Beard-Laufer combination, the combination teaches that UAV 100 uses the autopilot commands to control itself toward the received interception location. Pet. at 10-13, 34; EX1010, ¶¶0022-0031, 0038-0040, Fig. 4; EX1030, ¶¶51-52. A POSITA would have understood that during the time period in which UAV 100 uses such autopilot commands, it is making navigation decisions by itself, without any outside control. *Id.*; EX1030, ¶¶51-52. This is because the use of autopilot commands by UAV 100 means that UAV 100 is autonomously controlling itself—for example, controlling its yaw, pitch, and/or motor speed—according to the autopilot commands and without any other external or outside control. Pet. at 10-13, 34; EX1010, ¶¶0022-0031, 0038-0040, Fig. 4; EX1030, ¶¶51-52. This is what it means for a vehicle to be controlled via “autopilot.” EX1030, ¶¶51-52; EX1032, 5. PO’s own expert even confirmed this:

Q. Is changing speed in response to a speed command a navigation decision?

A. Yes.

EX1033, 124:7-9; *see also id.*, 127:2-5 (similar testimony regarding pitch). This is exactly what UAV 100 itself would be doing even if the autopilot commands for speed were coming from the ground – changing speed in response to a speed command. *Id.*; EX1030, ¶¶51-54. PO’s expert thus confirmed this (in and of itself) is a navigation decision which would satisfy PO’s interpretation. *Id.* As such, Beard and Laufer teach “making navigation decisions by the reference aerial vehicle by-itself, without outside control,” teaching PO’s erroneous interpretation. *Id.*

PO does not contest that Beard and Laufer teach the other elements of claim 12. Pet. at 10-13, 18-27, 34; POR at 12-16. EX1030, ¶55.

2. Grounds 9 and 10: Pierce and Laufer (Ground 9)/Pierce, Kumar, and Laufer (Ground 10)

As the Petition demonstrated, in the Pierce-Laufer/Pierce-Kumar-Laufer combinations, drone 102 is brought to within an imaging range of the target using an interception location and autopilot commands (*autonomously navigating the reference aerial vehicle towards the received geographical location*). Pet. at 68-71; EX1010, ¶¶0022-0031, 0038-0040, Fig. 4; EX1030, ¶56. Laufer’s teachings are utilized in these grounds in the same way as in the Beard-Laufer ground. *See* Pet. at 10-13, 34, 68-71. As such, for the same reasons discussed above, the Pierce-Laufer/Pierce-Kumar-Laufer combinations teach the use of autopilot commands by

drone 102 that meet both Petitioners’ correct interpretation and PO’s erroneous interpretation of “autonomously navigating the reference aerial vehicle towards the received geographical location.” See Section III.A.1. PO does not contest that the Pierce-Laufer/Pierce-Kumar-Laufer combinations teach the other elements of claim 12. Pet. at 56-60, 68-71; POR at 16-17.

3. Grounds 17 and 18: Pierce, Sahasrabudhe, and Laufer (Ground 17)/ Pierce, Kumar, Sahasrabudhe, and Laufer (Ground 18)

Pierce, Sahasrabudhe, and Laufer (Ground 17) and Pierce, Kumar, Sahasrabudhe, and Laufer (Ground 18) render obvious Claim 12 for the same reasons discussed in the Petition and in Section III.A.2, *supra*. Pet. at 80; EX1030, ¶57.

IV. CONCLUSION

Petitioners respectfully submit that Claim 12 is unpatentable.

Respectfully submitted,

BAKER BOTTS L.L.P.

A handwritten signature in black ink, appearing to read "Chad C. Walters". The signature is fluid and cursive, with a long horizontal stroke extending from the end.

Chad C. Walters (Reg. No. 48,022)

Lead Counsel for Petitioners

Date: March 9, 2026

CERTIFICATE OF COMPLIANCE

I hereby certify that this Petitioner's Reply to Patent Owner's Response complies with the type-volume limitations of 37 C.F.R. § 42.24(c)(1) because it contains 4,021 words (as determined by the Microsoft Word word-processing system used to prepare the reply), excluding the parts of the reply exempted by 37 C.F.R. § 42.24(c).

Respectfully submitted,

BAKER BOTTS L.L.P.



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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I certify that on this 9th day of March, 2026, **Petitioners' Reply To Patent Owner's Response** and **Exhibits 1030-1038** were served by email on the following counsel for Patent Owner:

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